

CAMANCHE DAM AND RESERVOIR
Mokelumne River, California

WATER CONTROL MANUAL

APPENDIX II
To
Master Manual of Reservoir Regulation
San Joaquin River Basin, California

SEPTEMBER 1981

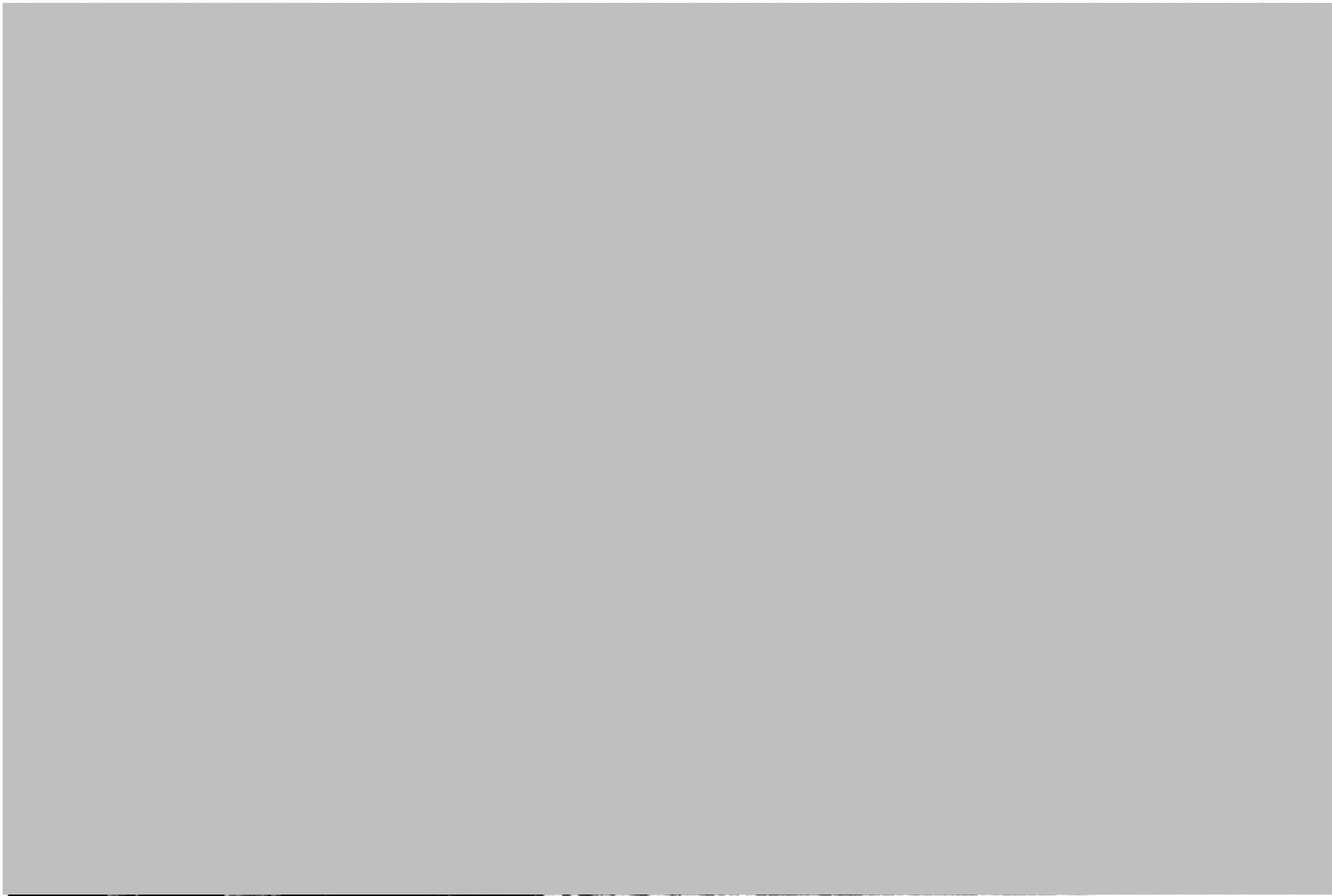
DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

**CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

SEPTEMBER 1981

**Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California**





CAMANCHE DAM AND RESERVOIR

1



**Camanche Dam and Reservoir
Mokelumne River, California
Pertinent Data**

GENERAL

Drainage Areas

Salt Springs Reservoir near West Point	169 sq. mi.
Lower Bear Reservoir	82 sq. mi.
Mokelumne River at Mokelumne Hill	544 sq. mi.
Pardee Reservoir near Valley Springs	578 sq. mi.
Camanche Reservoir near Clements	621 sq. mi.
Mokelumne River below Camanche Dam	627 sq. mi.
Mokelumne River at Woodbridge	661 sq. mi.

Flows at Camanche Reservoir

Mean Annual Runoff (1964-1979)	491,500 ac-ft
Maximum Unimpaired April-July Runoff (1907)	1,023,000 ac-ft
Maximum Mean Daily Inflow (21 Nov 50)	28,800 cfs
Standard Project Rain Flood Maximum	
Instantaneous Inflow	115,000 cfs
Spillway Design Flood Maximum	
Instantaneous Inflow	261,000 cfs

CAMANCHE DAM AND RESERVOIR

PARDEE DAM AND RESERVOIR

Camanche Dam



Spillway



Outlets



Total Discharge Capacities

Gross Pool, Elev. 235.5	6,000 cfs
Flood Control Pool, Bottom Elev. 205.1	5,000 cfs

Camanche Reservoir

Elevations

Normal Operating Pool	215.0 ft.
Flood Control Pool, Bottom	205.1 ft.
Gross Pool	235.5 ft.
Spillway Design Flood Pool	260.0 ft.

Areas

Normal Operating Pool	6,200 Acres
Flood Control Pool, Bottom	5,500 Acres
Gross Pool	7,600 Acres
Spillway Design Flood Pool	8,700 Acres

Storage Capacities

Normal Operating Pool	288,900 ac-ft
Flood Control Pool, Bottom	230,900 ac-ft
Gross Pool	430,000 ac-ft
Spillway Design Flood Pool	641,000 ac-ft

Camanche Powerplant (Proposed)



Pardee Dam



Spillway



Outlet



Pardee Reservoir

Elevation

Minimum Operating Pool	260.0 ft.
Gross Pool	567.7 ft.
Spillway Design Pool	578.0 ft.

Area

Minimum Operating Pool	0 Acres
Gross Pool	2,250 Acres
Spillway Design Pool	Acres

Storage Capacities

Minimum Operating Pool	0 ac-ft
Gross Pool	210,000 ac-ft
Spillway Design Pool	234,000 ac-ft

Pardee Powerplant



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1. The first part of the document
 discusses the importance of
 maintaining accurate records
 for all transactions. This
 includes both financial and
 operational data.

2. The second part of the document
 outlines the various methods
 used to collect and analyze
 this data.

3. The third part of the document
 provides a detailed overview
 of the results of the study.

4. The fourth part of the document
 discusses the implications of
 the findings and offers
 recommendations for future
 research.

5. The fifth part of the document
 provides a summary of the
 key findings and conclusions.

6. The sixth part of the document
 discusses the limitations of the
 study and the need for further
 research.

7. The seventh part of the document
 provides a final summary of
 the document and its
 findings.



**Camanche Dam and Reservoir
Mokelumne River, California
Pertinent Data**

LOWER BEAR RIVER DAM AND RESERVOIR



Spillway



Outlet



Lower Bear River Reservoir

Elevation	
Minimum Operating Pool	5,709 ft.
Spillway Crest	5,818.2 ft.
Gross Pool	5,822.2 ft.
.....	5,826.2 ft.
Area	
Minimum Operating Pool	100 Acres
Spillway Crest	700 Acres
Gross Pool	750 Acres
Storage	
Minimum Operating Pool	3,300 ac-ft
Spillway Crest	46,900 ac-ft
Gross Pool	50,700 ac-ft

SALT SPRINGS DAM AND RESERVOIR

Salt Springs Dam



Spillway



Outlet



Salt Springs Reservoir

Elevation	
Minimum Operating Pool	3720 ft.
Spillway Crest	3949.2 ft.
Gross Pool	3959.2 ft.
Top of Radial Gates	3960.2 ft.
Area	
Minimum Operating Pool	170 Acres
Spillway Crest	920 Acres
Gross Pool	960 Acres
Storage Capacities	
Minimum Operating Pool	5,000 ac-ft
Spillway Crest	128,000 ac-ft
Gross Pool	142,000 ac-ft

Salt Springs Powerplant





NOTICE TO USERS OF THIS MANUAL

Regulations specify that this Water Control Manual be published in looseleaf form, and only those sections, or parts thereof, requiring changes will be revised and printed. Therefore this copy should be preserved in good condition so that inserts can be made to keep this manual current.

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**CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

WATER CONTROL MANUAL

**Photo - Camanche Dam and Lake
Personnel
Pertinent Data**

Frontis Piece

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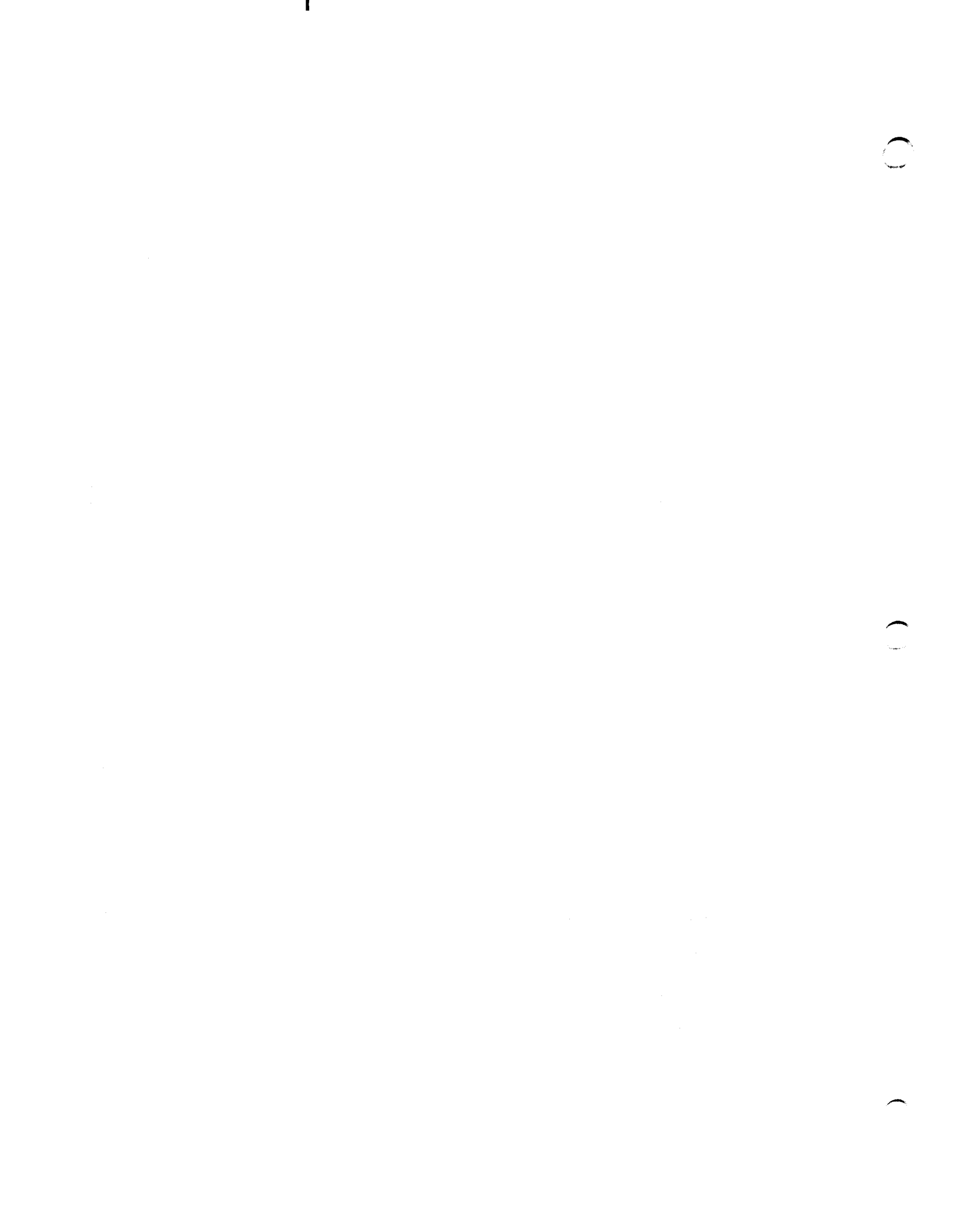


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A	Standing Instructions to Damtenders for Camanche Dam
B	Code of Federal Regulations Title 33, Par. 208.11
C	Field Working Agreement Camanche Dam and Reservoir



CHAPTER I - INTRODUCTION

1-01. AUTHORIZATION

The Camanche Dam and Reservoir Water Control Manual, Mokelumne River California is an appendix to the San Joaquin River Basin Master Water Control Manual. It is prepared in accordance with instructions contained in ER 1110-2-241, EM 1110-2-3600, and ETL 1110-2-251, all pertaining to requirements for reports on reservoir regulation for projects subject to the provisions of Section 7 of the Flood Control Act of 1944 (58 Stat. 890). The pertinent portion of that act reads as follows:

"Hereafter it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such . . ."

1-02. PURPOSE AND SCOPE

This manual provides the detailed plan of regulation for Camanche Dam and Reservoir which is located on Mokelumne River about 24 miles northeast of Stockton, California. A map of the Camanche Reservoir area is shown on Plate 1. Location of the project is shown on Plate 2. A portion of the material used in preparation of this report was furnished by the East Bay Municipal Utility District, Oakland, California, and some of the plates showing technical features of the project were furnished by Bechtel Corporation, consulting engineers for the project to the East Bay Municipal Utility District. A description of the overall San Joaquin River Basin plan of flood control is given in the Master Manual of Reservoir Regulation, San Joaquin River Basin, California.

1-03. RELATED MANUALS AND REPORTS

This manual is Appendix II to the San Joaquin River Basin Master Water Control Manual. Other related reports are as follows:

<u>Title</u>	<u>Date Approved</u>
Master Manual of Reservoir Regulation San Joaquin Basin California	July 1954
Appendix I	
Appendix II Camanche Dam and Reservoir	September 1981
Appendix III New Hogan Reservoir	June 1969
Appendix IV Farmington Reservoir	October 1967
Appendix V New Melones Dam and Lake	January 1980
Appendix VI Don Pedro Lake	August 1972
Appendix VII New Exchequer Dam and Reservoir	November 1970
Appendix VIII Merced County Stream Group Project	September 1959
Appendix IX Buchanan Lake	June 1973
Appendix X Hidden Lake	March 1975
Appendix XI Friant Dam and Millerton Lake	August 1980
Appendix XII Big Dry Creek Reservoir and Diversion	July 1954
Appendix XII Redbank and Fancher Creeks	
Appendix XIV Los Banos Detention Reservoir	October 1970

Title (Cont'd)

Date Approved


Office Report Flood Control Hydrology Mokelumne River and Tributaries, California	22 June 1959
Office Report Flood Control Reservoir Operation Mokelumne River Basin, California	August 1959
Review Report on Flood Control Mokelumne River, California (including Camanche Reservoir Cost Allocation)	1 September 1961

1-04. PROJECT OWNER

Camanche Dam and Reservoir is owned by East Bay Municipal Utility District (EBMUD).

1-05. OPERATING AGENCY

East Bay Municipal Utility District with headquarters in Oakland, California is the operating agency for Camanche Dam and Reservoir.



Standing instructions to damtenders are contained in Exhibit A.

1-06. REGULATING AGENCIES

The flood control operating principles for Camanche Dam and Reservoir have been mutually agreed upon by EBMUD and the Corps of Engineers. The project will be operated in such a manner as to secure the greatest practicable benefits from flood control, water supply, irrigation, power, fishery, and recreation. Flood control will be operated to limit flows below Camanche Dam, insofar as possible, to a maximum release of 5,000 cfs. Irrigation releases will be made in accordance with agreements with the Woodbridge Irrigation District, the North San Joaquin Water Conservation District, and for other downstream riparians and appropriators. Fishery releases will be made in accordance with an agreement with the State Department of Fish and Game.

CHAPTER II - DESCRIPTION OF PROJECT

2-01. LOCATION

Camanche Dam and Reservoir are on the Mokelumne River near Jackson, California. Camanche Dam is located approximately 10 miles downstream from Pardee Dam, a 345 foot high concrete gravity arch structure completed in 1929. The location of Camanche dam with respect to the Mokelumne River basin is shown on Plate 2. The project can be reached by driving east from Lodi on State Highway 12.

2-02. PURPOSE

Camanche Dam and Reservoir provides storage for flood control, irrigation, power, recreation, and downstream fishery needs. Camanche Reservoir with a gross capacity of 430,882 acre-feet provides holdover storage to meet downstream water requirements in order to permit increased exports for municipal and industrial water supply from upstream Pardee Reservoir to the service area of the East Bay Municipal Utility District. In addition, Camanche and Pardee Reservoirs provide maximum flood control space reservation of 200,000 acre-feet during the winter months, any portion of which can be satisfied by empty space existing in Pardee Reservoir, and a partial credit for empty space in PG&E's Salt Springs and Lower Bear Reservoirs.

2-03. PHYSICAL COMPONENTS

The principal features of Camanche Dam were completed in November 1963.

At gross pool, the water-surface area of the reservoir is 7,600 acres and the shoreline totals about 63 miles. Area-capacity curves for the reservoir are shown on Chart A-1 in Exhibit A; Chart A-3 is an area-capacity table. Water-surface elevations of Camanche Reservoir at selected storage levels are:

STORAGE LEVEL	ELEVATION (Feet)
Minimum pool-normal operation (230,000 acre-feet)	205.0
Gross pool (430,900 acre-feet)	235.5
Spillway design flood pool (642,000 acre-feet)	260.1

a. Outlet Works.

[REDACTED]

[REDACTED] The discharge capacity of the outlet works varies from about 5,000 cubic feet per second at reservoir elevation 205.1 feet which is the bottom of the 200,000 acre-foot flood-control reservation, to about 5,650 cubic feet per second at gross pool elevation 235.5 feet.

[REDACTED]

[REDACTED] Exhibit A, Chart A-8 shows partial-opening ratings for the two main valves on each outlet conduit.

b. Spillway.

[REDACTED]

[REDACTED] Plate 5 shows the spillway in detail. Discharge capacity at elevation 260.0 feet is 182,000 cfs, Exhibit A, Chart A-5 shows the spillway rating curve for Camanche Dam.

c. Power Plant. There is no existing power plant at Camanche Dam. However, a power plant at Camanche Dam along with additional power facilities at Pardee Dam is being developed by EBMUD under a plan called the Lower Mokelumne River Project, Federal Energy Regulatory Commission Project No. 2916, and is scheduled for completion in 1983.

[REDACTED]

d. **Mokelumne River Fish Hatchery Installation.** The Mokelumne Fish Hatchery Installation consisting of approximately 120,000 square feet of spawning channels a hatchery building, offices and parking space, occupies the left bank of the Mokelumne River downstream of Camanche Dam (see Plate 7). The gravel spawning channel, 6,540 feet in length, is constructed in two loops (four channels) with a full capacity of 15,000,000 king salmon eggs per year. A small steelhead hatchery and two concrete rearing ponds were designed for an annual production capacity of 100,000 steelhead yearlings, later modified to 100,000 yearling steelhead trout and/or king salmon in combination. A 120-foot fish ladder, constructed at the request of the State Department of Fish and Game, provides access from the river to the hatchery. East Bay Municipal Utility District plans to modify the existing fish ladder and install a training fence to guide salmon and steelhead to the fish ladder. The District also has agreed to modify the existing dam outlets so that more effective mixing of warm and cold can occur as part of the addition of a power plant to Camanche Dam.

2-04. RELATED CONTROL FACILITIES

Intermittent private levees above State Highway 99 provide protection to the Mokelumne River bottom lands near Lockeford and Clements. Below Highway 99 and above Dry Creek private levees exist along the right bank. This area contains Reclamation District No 1002, the McCormick-Jensen Tract, Deadhorse Island area, the Thornton Farms area, and a large tract west of Thornton Farms. These areas are protected by private levees of varying heights. The levee heights on the right bank of the Mokelumne River are lower than the left bank levees so that a failure is less likely to occur over the left bank levee, which protects a populous area.

2-05. REAL ESTATE ACQUISITION

All lands required for the Camanche Project, totaling 15,250 acres and including the small community of Camanche, were acquired by East Bay Municipal Utility District. Lands were acquired up to elevation 248.0 feet and outward therefrom generally to the nearest one-fourth quarter section lines.

2-06. PUBLIC FACILITIES

At Camanche Reservoir two recreation areas; Camanche North Shore Resort and South Camanche Shore, and the reservoir itself are available for public use. The agency responsible for developing recreational opportunities at the two recreation areas is the Camanche Regional Park Board. The six-member Board was formed by a Joint Exercise of Powers Agreement between San Joaquin, Amador, and Calaveras Counties in 1963 to protect and develop recreational resources of Camanche Regional Park Lands. The East Bay Municipal Utility District leases much of the 6,885 acres surrounding Camanche Reservoir to the Board; the leased land being referred to as Camanche Regional Park. Recreational facilities at both locations are similar and include boat rentals, launch ramps, a marina, and a bait and tackle shop. Additional day-use facilities are available, including picnic area, riding stables, beaches, and store and a restaurant. Overnight facilities include camp sites, rental cottages and mobile home lots. Adjacent to the North Shore Resort area is a hunting preserve known as the Bean

Hollow Hunting Preserve and Shotgunners' Resort, where bird hunting and a skeet and trap range are available. The recreation areas are shown on Plate 8. The following tabulation summarizes the facilities available.

CAMANCHE RESERVOIR - RECREATION DEVELOPMENT		
TYPE OF DEVELOPMENT	SITE OR QUANTITY	
	NORTH SHORE	SOUTH SHORE
Campsites	300	500
Trailer sites	--	178
Rental cottages	25	6
Motel rooms	16	--
Mobile home sites	146	63
Picnic sites	450	450
Boat launch	10 lanes	10 lanes
Marina	1	1
Riding stable	1	1
Children's playground	1	--

CHAPTER III - HISTORY OF PROJECT

3-01. AUTHORIZATION FOR FLOOD CONTROL ALLOCATION

A monetary contribution by the Federal Government toward the construction cost of Camanche Dam and Reservoir in the interest of flood control was authorized by Section 205 of the Flood Control Act of 1960 (P.L. 86-645, 86th Congress, 2d Session). The amount of contribution was determined as 28.9 percent of the actual construction costs of the dam and not to exceed a maximum of \$14,000,000. The economics justification for this allocation was determined by the Secretary of Army and approved by the President of the United States on 9 March 1962. The cost to date of \$34,988,536.82 for construction of Camanche Dam and Reservoir and system improvements was approved by the Chief of Engineers on 2 August 1978, with \$10,111,684.25 comprising the Federal contribution.

Under terms of Contract No. DA-04-167-CIVENG-62-57 entered into 19 March 1962 by the United States of America and the East Bay Municipal Utility District of the City of Oakland, State of California, the District agreed to complete construction of Camanche Dam and Reservoir on or before 31 December 1965, to provide protection against Mokelumne River floods by providing a maximum of 200,000 acre-feet of storage to be operated primarily for control of floods, and to operate said dam and reservoir for flood control in accordance with rules and regulations prescribed by the Secretary of the Army pursuant to the provisions of Section 7 of the Flood Control Act of 1944.

3-02. PLANNING AND DESIGN

Extensive studies were made of the Mokelumne River basin by the East Bay Municipal Utility District (EBMUD) and by the Corps of Engineers. These studies gave consideration to single-purpose and multiple-purpose storage at the Camanche site and at several upstream sites. Entirely independent but like conclusions were reached by EBMUD and by the Corps of Engineers that the most practical and economical development of the basin would be realized by construction of a water supply and flood control reservoir at the Camanche site. The developed plan of protection was contained in the review survey report on flood control in the Mokelumne River basin, dated 1 September 1961. This report was undertaken in response to a resolution adopted 25 July 1946 by the Committee on Flood Control of the House of Representatives, and Section 205 of the Flood Control Act of 1960. Explorations and geologic investigations, including foundation conditions, properties and extent of basin materials and sources of construction materials, the basis for design, and cost estimates were accomplished by EBMUD or its consulting engineers, the Bechtel Corporation, and were reviewed and checked by the Corps of Engineers, Sacramento District.

3-03. CONSTRUCTION

Camanche Project was constructed by the East Bay Municipal Utility District with reservoir and site clearing beginning in January 1962 and excavation for the main dam foundation beginning in April 1962. Embankment for the main dam was begun in

October 1962 and topped out in November 1963. Completion of intakes and outlet works was accomplished in January 1963. The fish hatchery and spawning channel was completed in March 1963. The project was operationally completed in April 1964 with the completion of the [REDACTED], [REDACTED] spillway. (The current EBMUD schedule for construction of the powerhouse assumes commencement of commercial operations in August 1983.)

3-04. RELATED PROJECTS

There are a number of reservoirs in the drainage basin above Camanche Reservoir (see Plate 2). The reservoirs are used for irrigation, power, and/or water supply. The more important of these are Pardee Reservoir with a capacity of 210,000 acre-feet, Salt Springs Reservoir with a capacity of 142,000 acre-feet (130,000 acre-feet below fixed spillway crest), and Lower Bear Reservoir with a capacity of 52,000 acre-feet. These reservoirs generally control or considerably reduce small and moderate floods but have only negligible influence on large floods, especially those that occur during the latter part of the main flood season. No other reservoir project is operated to control floods in the Mokelumne River basin. However, the operation of Camanche Reservoir is based in part on the amount of empty space available at any time in Pardee, Lower Bear, and Salt Springs Reservoirs, as noted on the Flood Control Diagram, Chart A-12 in Exhibit A. Camanche Reservoir is operated for conservation and other purposes in conjunction with Pardee Reservoir.

[REDACTED]
[REDACTED]. Pardee Reservoir impounds 209,950 acre-feet of water at gross pool (elevation 567.65) as indicated by capacity data contained in Exhibit A on Charts A-2 and A-4.

[REDACTED]. A spillway rating curve is given in Exhibit A, Chart A-6.

[REDACTED]
[REDACTED]
[REDACTED]. An outlet rating curve is given in Exhibit A, Chart A-9. A domestic water supply intake to EBMUD aqueducts is provided by an outlet tower south of the left dam abutment.



3-05. MODIFICATIONS TO REGULATION

The general plan of regulation remains unchanged. However, a variable release schedule was developed based on actual or forecasted inflow and the percentage of required flood control reservation that has been used. This release schedule has been incorporated in the latest Flood Control Diagram.

3-06. PRINCIPAL REGULATION PROBLEMS

In the river reach below Clements the nondamaging flow has decreased due to intensified agricultural development and growth within the river channel between levees since the construction of Camanche Dam. Seepage from percolating water through and/or under the levees adjacent to lands along the Mokelumne River presently occurs when flows exceed 3,000 cfs.



CHAPTER IV - WATERSHED CHARACTERISTICS

4-01. GENERAL CHARACTERISTICS

The Mokelumne River is a principal eastside tributary to the San Joaquin River system entering a delta reach of that stream in the Sacramento-San Joaquin Delta about 20 miles northwest of Stockton, California. It rises on the western slope of the Sierra Nevada and flows in a southwesterly direction through mountains and foothills, and thence across the flat valley floor to its mouth. The Mokelumne River Basin, including tributaries downstream of Lodi, comprises an area of 2,400 square miles, of which 800 square miles are valley floor. Together with its principal tributaries, the North, Middle and South Forks, the Mokelumne River drains about 621 square miles at Camanche Dam. The basin above Camanche Dam is about 69 miles long, on the average, and about 9 miles wide. It is bordered on the north by the Cosumnes River and Dry Creek basins and on the south by the Stanislaus and Calaveras Rivers and Bear Creek basins. Plate 2 is a map of the tributary area. Topographic features and locations of stream-gaging stations are shown on Plate 11. Plate 12 shows profiles of the main stem and its principal tributaries. For descriptive purposes, the project area has been divided into two parts: (1) the mountains and foothills above Camanche Dam, and (2) the foothills and valley floor below the dam.

4-02. TOPOGRAPHY

a. **Mountains and Foothills Above Camanche Dam.** Above Camanche Dam, the Mokelumne River drains 621 square miles of mountains and foothills. The North Fork is the main branch of the Mokelumne River and rises near Ebbetts Pass (elev. 8730 feet) in Alpine County. Fifty miles west of its source, about 30 miles upstream of Camanche Dam, the North Fork is joined by the South and Middle Forks to form the main stem of the river. The North Fork drains about 60 percent of the total area and most of the high portion of the basin. The Middle and South Forks together drain about 25 percent of the total area (150 square miles). The portion of the watershed above the foothills is characterized by streams flowing through well-incised, steep-walled canyons and are fed by many short, steep-sided tributaries. The overall slope of the stream above Camanche Dam is approximately 110 feet per mile, ranging from 20 feet per mile in the lower reaches to more than 150 feet per mile on the upper tributaries. Elevation ranges from 100 feet at the dam to 10,000 feet in the headwater region. As shown in the tabulation below, about half the area is above 5,000 feet.

ELEVATION RANGE (Feet)	PERCENTAGE OF AREA
9,000-10,000	1
8,000-8,999	12
7,000-7,999	14
6,000-6,999	10
5,000-5,999	13
4,000-4,999	14
3,000-3,999	12
2,000-2,999	9
1,000-1,999	4
100-999	11

b. **Foothills and Valley Floor Below Camanche Dam.** The Mokelumne River from Camanche Dam to the mouth of Dry Creek, at the edge of the Delta, has a length of about 38 miles. The area between the dam and the mouth of Dry Creek consists of 13 square miles of undeveloped area and wasteland (dredge tailings), and about 60 square miles of highly developed agricultural land. Vegetation in the rolling foothill portion, about 5 square miles, is largely grass with scattered native brush and oak trees. The valley floor area slopes gently to the west and to the southwest from an elevation of about 100 feet at Clements to about 20 feet above sea level at the edge of the Sacramento-San Joaquin Delta.

4-03. GEOLOGY AND SOILS

a. **Mountains and Foothills Above Camanche Dam.** The geologic features drainage area above Camanche Dam reflect igneous and metamorphic rock structures. Massive granitic outcroppings are visible in the upper third of the basin. Metamorphic rocks of sedimentary and volcanic origin generally predominate over the remainder of the area. Vegetation consists of scattered conifers and subalpine species in upper elevations. A heavy cover of fir and cedar in intermediate elevations; and a light cover of deciduous trees, chaparral and grasses in lower elevations. The vegetation pattern is summarized below.

VEGETATION	ELEVATION RANGE (Feet)	PERCENTAGE OF AREA
Grass lands	500 - 4,000	10
Chaparral	1,000 - 4,000	20
Sub-alpine	7,000 - 10,000	11
Light conifers	4,000 - 9,000	18
Heavy conifers	4,000 - 8,000	15
Deciduous forest	500 - 9,000	26

b. **Foothills and Valley Floor Below Camanche Dam.** The valley floor is traversed by a network of irrigation canals originating at Woodbridge Dam, and irrigation pipelines of the North San Joaquin Water Conservation District originating at river pumps located northwest of Lockeford. Soils are dry and moderately well drained to well drained and are favorable for agriculture. Orchards and vineyards are common and large areas are devoted to row crops.

4-04. SEDIMENT

The sediment inflow to Camanche Reservoir consists of the material carried through Pardee Reservoir and sediments originating in the local area between Pardee Dam and Camanche Dam. A study of sedimentation in reservoirs in California was made by the U.S. Soil Conservation Service and summarized in a report entitled, "Reservoir - Sedimentation in the Sacramento-San Joaquin Drainage Basins, California", dated July 1947. Based on sediment surveys made in connection with this report it was found that the average annual sediment inflow to Pardee Reservoir had been 0.15 acre-feet per square mile on the basis of an estimated trap efficiency of 95 percent for that reservoir. Therefore, 5 percent of the sediments from the area above Pardee would enter Camanche Reservoir. The sediments passing through Pardee Dam are primarily colloidal materials and only an insignificant portion thereof are trapped in Camanche Reservoir. The sediment producing characteristics of the 43 square uncontrolled local drainage area below Pardee Reservoir are similar to those for the area above Salt Springs Valley Reservoir. Sedimentation data for this reservoir, which is located in the foothills about 20 miles southeast of Camanche Dam was included in the referenced report. The average annual sediment inflow for that reservoir was found to be 0.20 acre-foot per square mile based on an estimate trap efficiency of the reservoir of 95 percent. Application of this inflow rate and similar trap efficiency would result in a 50-year sediment accumulation in Camanche Reservoir of 430 acre-feet from the local area. In view of the foregoing, it is estimated that in a 50 year period, the total sediment inflow to Camanche Reservoir would be less than 500 acre-feet.

4-05. CLIMATE

a. **General.** Climate in the Mokelumne River basin is characterized by cool, wet winters and hot, dry summers. Normal annual precipitation for the watershed above Camanche Dam is 46.9 inches, and ranges from 19 inches at Camanche Dam to 60 inches in the upper part of the basin. In very dry years, annual precipitation at Camanche Dam averages about 6 inches; in very wet years, it averages about 30 inches. Plate 13 shows isohyets of normal annual precipitation over the basin.

b. **Temperature.** Winter temperature in the mountains averages around freezing and occasionally drops below zero, and summer temperature is moderate. Extremes of 111°F and 23°F have been recorded in the vicinity of Camanche Dam. Temperature at the dam may drop below freezing for a few hours for several consecutive days during winter, but no extended periods of subfreezing temperature have been recorded. Observed extremes for three representative stations in the basin are 115°F and 22°F at Camp Pardee, 101°F and 19°F at Salt Springs Powerhouse, and 84°F and -4°F at Twin Lakes. Temperature data for these stations are tabulated below:

AVERAGE MONTHLY TEMPERATURES
(Degrees Fahrenheit)

MONTH	CAMP PARDEE ELEVATION 660	SALT SPRINGS POWERHOUSE ELEVATION 3,700	TWIN LAKES ELEVATION 7,830
January	45.1	42.8	25.1
February	49.6	45.3	26.8
March	53.9	46.5	29.5
April	57.9	51.5	34.6
May	65.1	58.2	41.2
June	72.1	65.9	49.4
July	78.6	74.1	56.7
August	77.5	73.0	56.6
September	73.3	69.0	51.0
October	65.3	60.8	42.6
November	54.7	50.9	34.0
December	46.7	44.5	27.5
AVERAGE	61.6	56.9	39.6
LENGTH OF RECORD (Years)	49	31	46

c. **Precipitation.** Major storms occur from November through April. Winter storms, which account for about 80 percent of the annual precipitation in the basin, originate over the Pacific Ocean and are associated with frontal systems containing masses of moist air moving inland against mountain barriers. Below 4,000 feet, precipitation usually occurs as rain. Intensities are moderate, but rain generally continues for 3 or 4 days and is often followed by additional storm fronts. Above 4,000 feet, precipitation usually occurs as snow, although warm winter storms have brought rain to as high as 10,000 feet. Above 5,000 feet, snow normally accumulates into a deep snowpack, and may fall as late as April or May.

Precipitation in summer is largely confined to mountain areas and occurs as occasional rain or thunderstorms. Rain may be intense for short periods, but is confined to relatively small areas. Precipitation data for three representative stations in the basin are tabulated below.

AVERAGE MONTHLY PRECIPITATION						
MONTH	CAMP PARDEE ELEVATION 660		SALT SPRINGS POWERHOUSE ELEVATION 3,700		TWIN LAKES ELEVATION 7,830	
	Amount (Inches)	Percent of N.A.P.	Amount (Inches)	Percent of N.A.P.	Amount (Inches)	Percent of N.A.P.
January	3.61	17.6	7.88	17.8	8.34	18.1
February	3.57	17.4	7.26	16.4	7.02	15.3
March	3.27	15.9	6.51	14.7	6.65	14.5
April	1.88	9.1	4.00	9.0	4.10	8.9
May	0.62	3.0	1.99	4.5	1.93	4.2
June	0.25	1.2	0.78	1.8	1.25	2.7
July	0.04	0.2	0.19	0.4	0.50	1.1
August	0.08	0.4	0.29	0.6	0.57	1.2
September	0.21	1.0	0.69	1.6	0.82	1.8
October	1.18	5.7	2.52	5.7	2.46	5.3
November	2.63	12.8	5.09	11.5	4.85	10.6
December	3.22	15.7	7.10	16.0	7.47	16.3
TOTAL	20.56	100.0	44.30	100.0	45.96	100.0
LENGTH OF RECORD (Years)	50		45		58	

d. **Snowfall.** On 1 April of an average year, the snowpack at 6,000 and 9,000 feet has a water equivalent of 27 and 46 inches, respectively. When snowfall is abnormally heavy and little snowmelt occurs during the winter months, the water equivalent may be as much as 150-200 percent of average. Representative data on average water equivalents during the later winter and early spring period follow:

STATION	ELEVATION	DRAINAGE	AVERAGE WATER EQUIVALENT (Inches)			
			1 FEB	1 MAR	1 APR	1 MAY
Lake Alpine	7,550	N.F. Mokelumne River	23.6	34.8	41.4	34.8
Dorrington*	4,800	M. & S.F. Mokelumne River	5.7	6.7	5.5	0.9

* Based on period of 1938 - 1979

e. **Evaporation.** The average historical monthly evaporation at Camanche Dam is listed in the following tabulation. All data were obtained from a Class "A" hand pan.

PAN EVAPORATION AT CAMANCHE DAM IN INCHES	
January	1.7
February	2.4
March	4.4
April	6.1
May	9.4
June	11.9
July	13.1
August	11.7
September	9.0
October	6.0
November	2.6
December	1.7
Annual	80.0

f. **Wind.** A continuous recording ground level anemometer is located at Camp Pardee. Although records have been made since 1972, they are not complete and are not published. The nearest station with wind records is Stockton, California. The records at Stockton are considered representative of Camanche Dam. The fastest wind recorded at Stockton was 46 miles per hour from the SE and occurred in Jan 1967. The maximum velocity for a 1-hour duration at Stockton is estimated at 30 miles per hour.

4-06. STORMS AND FLOODS

Floods in the Mokelumne River Basin are typical of those occurring on the other Sierra Nevada streams. Floods are rather frequent and of two general types, winter rain floods and spring snowmelt floods. Rain floods from sustained intense rainfall over the Mokelumne River Basin can occur anytime from November through March. Flow is intensified when rain or snow at intermediate elevations adds snowmelt to rain flood runoff. Other important variables affecting runoff include soil moisture conditions, depth of snow at the beginning of the flood-producing storm, temperatures, and surface winds associated with the storm. Rain floods are characterized by sharp, high peak flows, short duration of floodflow, and comparatively small volume of runoff. Reservoirs upstream from Camanche Reservoir usually detain some of the runoff, but during large floods they fill and spill. If filling occurs early in the flood, the reservoirs have only a minor effect on the inflow to Camanche Reservoir.

The largest rain flood of record on the Mokelumne River was in December 1964. Unimpaired flows and volumes at Camanche Dam for the seven largest rain floods of record are tabulated below:

DATE	PEAK FLOW (cfs)	MAXIMUM MEAN DAILY FLOW (cfs)	7-DAY VOLUME (Acre-Feet)
23 Dec 1964	42,000*	36,200	246,000
1 Feb 1963	40,000*	29,900	146,000
23 Dec 1955	38,000	34,700	211,000
21 Nov 1950	38,000*	30,400	244,000
11 Dec 1937	34,000*	23,000	102,000
19 Mar 1907	25,500	23,000	176,000
30 Jan 1911	18,900	16,700	115,000

* Estimated Value

Snowmelt floods can be expected any time from April through July. They are characterized by low peak flows, long duration of floodflow, and large volume of runoff. The snowmelt flood potential varies according to the depth and areal extent of the snowpack and temperature; the highest rates of snowmelt runoff usually occur during years of an unusually deep snowpack. High flows are sustained during May and June when rising daily temperature cause the snowpack to melt. Unimpaired flows and volumes at Camanche Dam for the largest snowmelt floods of record are tabulated below.

YEAR	MAXIMUM MEAN DAILY FLOW (cfs)	120-DAY VOLUME (Acre-Feet)
1938	9,040	940,000
1906	9,000	1,004,000
1967	8,650	824,000
1969	7,820	900,000
1952	7,450	957,000
1907	7,080	1,016,000

4-07. RUNOFF CHARACTERISTICS

Most of the runoff from the Mokelumne River basin occurs from November through July. In general, runoff from November through March results from rains that may extend to an elevation of 10,000 feet, and runoff from April through July usually results from snowmelt. Most of the runoff from the basin originates in the area above Camanche Dam, and more than half of that amount results from snowmelt. The average seasonal unimpaired runoff (October - September) at the damsite for 74 years of record (1905-78) is 737,500 acre-feet. The maximum runoff was 1,717,900 acre-feet (233 percent of average) in water year 1907, and the minimum was 129,100 acre-feet (18 percent of average) in water year 1977. Plate 14 is a list of the unregulated monthly inflows to Camanche Reservoir for 1904-77. Corresponding historical (regulated) inflows are shown on Plate 15. Average monthly runoff data at four gaging stations upstream from the dam are in the following tabulation.

AVERAGE MONTHLY GAGED RUNOFF
(1,000 Acre-Feet)

M O N T H	M.F. MOKELUMNE R. AT WEST POINT DA 68 SQ. MI.		S.F. MOKELUMNE R. NR WEST POINT DA 75 SQ. MI.		N.F. MOKELUMNE R. BLW SALT SPRGS DAM DA 170 SQ. MI.		MOKELUMNE R. NR MOKELUMNE HILL DA 544 SQ. MI.	
	Amount	Percent of Annual	Amount	Percent of Annual	Amount	Percent of Annual	Amount	Percent of Annual
Oct	0.7	1.6	0.9	1.5	2.0	1.3	30.4	4.4
Nov	1.2	2.8	1.8	3.0	3.3	2.1	33.4	4.9
Dec	2.9	6.7	4.6	7.7	5.4	3.5	46.2	6.8
Jan	5.1	11.7	7.6	12.8	4.4	2.8	51.3	7.5
Feb	6.1	14.0	8.6	14.4	5.9	3.8	50.5	7.4
Mar	7.7	17.7	10.5	17.6	7.2	4.6	64.6	9.5
Apr	8.8	20.2	11.3	19.0	14.6	9.4	81.5	11.9
May	6.7	15.4	7.8	13.1	46.6	30.3	118.1	17.3
Jun	2.5	5.7	2.9	4.9	53.1	34.2	105.3	15.4
Jul	0.9	2.1	1.4	2.4	7.6	4.9	39.8	5.8
Aug	0.5	1.2	1.4	2.4	2.8	1.8	31.9	4.7
Sep	0.4	0.9	0.7	1.2	2.5	1.6	30.1	4.4
TOTAL	43.5	100.0	59.5	100.0	155.4	100.00	683.1	100.0
PERIOD OF RECORD:	1912-1978		1934-1978		1927-1977		1928-1978	

The pattern of runoff in the Mokelumne River basin is altered by storage facilities and interbasin and intrabasin diversions. A list of stream gaging stations, their locations, drainage areas, periods of record, and peak flows is given on Plate 11.

4-08. WATER QUALITY

The chemical, physical, and biological properties of surface water at any given point are the product of a multitude of factors including geography; geology; climatic conditions; discharge; floral and faunal communities; ground water supply; and of major significance, the effect of man, his activities, and his domestic animals. Generally, the quality of surface waters above Camanche Dam is good. As the waters of the Mokelumne River descend from the headwaters in the Sierra Nevada Mountains towards the San Joaquin Valley, water quality is gradually influenced or degraded, primarily by natural geochemical process, and the influence of small, localized areas of human habitation or utilization. It should be noted that Pardee Reservoir is the source from which EBMUD supplies potable water to its service area.

4-09. CHANNEL AND FLOODWAY CHARACTERISTICS

Below Camanche Dam the Mokelumne River flows through 55 miles of natural channel. As shown below, the channel capacity of the lower Mokelumne River ranges from 5,000 cfs to 26,000 cfs.

REACH	INDEX STATION	STAGE (Feet)	CHANNEL CAPACITY (cfs)
Camanche Dam to Clements	Camanche	9.8	5,000
Clements to State Highway 99	Camanche	9.8	5,000
Lodi	Woodbridge	29.5	26,000
Lodi to Mouth of Dry Creek	Woodbridge	29.5	26,000

The channel capacities shown above serve as criteria for the flood control operation of Camanche Dam as outlined in Exhibit A to this report. Seepage from percolating water through and/or under the levees adjacent to lands along the Mokelumne River occurs below Clements when flows exceed 3,000 cfs. Approximate travel times in flow in the lower Mokelumne River are as follows:

REACH	DISTANCE (River Miles)	TRAVEL TIME HOURS
Camanche Dam to Clements	5	2
Clements to Lodi	15	7.5
Lodi to Thornton (mouth of Dry Creek)	17	10

A rating curve for Mokelumne River below Camanche Dam is shown on Chart A-10 (in Exhibit A).

Historically the Mokelumne River has flooded large areas between State Highway 88 and the Sacramento - San Joaquin Delta. The long narrow flood plain of the Mokelumne River below Camanche Dam and above State Highway 99 is an extensively farmed area. With flows of 30,000 cfs at Lodi, flooding will occur to Lodi and Woodbridge and to intensive agricultural land on both sides of the Mokelumne River near Lodi. The flood plain of a major flood, such as the standard project rain flood, would inundate all of the bottom lands below Camanche Dam, and, beginning about five miles above State Highway 99, would flood low benchlands on each side of the river (see Plate 16). Flooding on the right bank would follow close to the river to north of Lodi and then flood northwesterly until it reaches the Mokelumne-Consumnes Delta. Flooding on the left bank of the river would continue in a southwesterly direction until it is restrained by levees of the delta tracts. The southern limits of the Mokelumne River join the Bear Creek overflow area. The Mokelumne River area inundated by the standard project rain flood consists of 3,000 acres urban-suburban area, and about 69,000 acres of agricultural land. Several State highways and county roads, as well as main lines of the Southern Pacific and Western Pacific Railroads across the flood plain.

Additional land in the Mokelumne-Cosumnes Delta area, up to elevation 20 feet is subject to inundation. The flood problems in the Mokelumne - Cosumnes Delta are caused from the main Mokelumne, Cosumnes River, and other tributaries in the vicinity of Thornton. Lands and improvements in this area are subject to damaging overflow from combined flows of the Mokelumne and Cosumnes River, Dry Creek, Laguna Creek, and Snodgrass Slough.

4-10. UPSTREAM STRUCTURES

Water resources development in the Mokelumne River Basin consists of facilities for hydroelectric power generation, irrigation, municipal and industrial water supply, and recreation. The principal reservoirs in the basin are tabulated on Plate 17; the largest are shown on Plate 2.

P.G.E. operates several facilities upstream from Camanche Reservoir in conjunction with its power operation in the basin. Upper Blue Lake, Lower Blue Lake, Twin Lake, Meadow Lake, Upper Bear River Reservoir, Lower Bear River Reservoir, and Salt Springs Reservoir on the North Fork Mokelumne River or tributaries that provide about 220,000 acre-feet of storage for irrigation, power generation and domestic use. Salt Springs Reservoir, capacity 141,000 acre-feet, on the North Fork Mokelumne River provides the major regulation for the project. Water stored in the reservoir is diverted through Salt Springs Powerhouse Unit No. 1. The storage reservoirs on the Bear River divert water for use through Salt Springs Unit No. 2. The flow from Salt Springs Powerhouse is conducted into the Tiger Creek conduit to Tiger Creek forebay. After passing through the Tiger Creek Powerhouse, the water is returned to North Fork and impounded in Tiger Creek Afterbay for diversions into the West Point Tunnel and into Amador County's water supply pipeline. Water flowing through the Salt Springs Powerhouse in excess of capacity of the Tiger Creek conduit is allowed to flow down the North Fork to Tiger Creek Afterbay. Water diverted into the West Point Tunnel passes through West Point Powerhouse and, at the powerhouse tailrace, is merged with water diverted by the Electra Diversion Dam, located on the North Fork Mokelumne River immediately upstream of West Point Plant. A portion of these combined flows enter the Electra Tunnel for transport to Lake Tabeaud, forebay for Electra Powerhouse. Water is diverted from Lake Tabeaud into the Amador Canal (capacity 30

cfs) for irrigation, municipal and domestic uses in Jackson, Sutter Creek, Ione and vicinities. The Electra Powerhouse is located on the main stem of Mokelumne River and discharges from its turbines are regulated by Electra Afterbay Dam. The powerplant capacities of the project are as follows:

PLANT	POWER INSTALLATION (kilowatts)
Salt Springs	39,050
Tiger Creek	51,000
West Point	13,600
Electra	89,100

Calaveras County water agencies have old rights to divert water from the South Fork and Middle Forks of the Mokelumne River for use in Calaveras County. Currently, the Calaveras Public Utility District diverts from the Middle and South Forks and pumps the water into a pipeline to Jeff Davis Reservoir.

Pardee Reservoir, of 210,000 acre-feet capacity, is located approximately 10 miles upstream from Camanche Dam. It functions primarily as a storage unit to permit the export of municipal and industrial water to the east San Francisco Bay region. The export is accomplished by means of three aqueducts (total capacity 515 cfs) with one conduit 65 inches, one 67 inches, and one 87 inches in diameter. The present maximum allowable annual diversion is 365,000 acre-feet. Pardee and Camanche Reservoirs also provide incidental storage to regulate downstream irrigation water requirements. Including the Pardee Tunnel, Mokelumne and Lafayette Aqueducts, the total distance for raw water from Pardee Reservoir to the Orinda Filter Plant in EBMUD's service is 91 miles. Irrigation water supplies are diverted from Pardee Reservoir for use by the Jackson Valley Irrigation District. Releases from the reservoir, other than sluices or spills, are utilized to generate power at the 18,750 KW plant at the dam. Construction of an additional power unit, schedule for completion in 1983, will bring total capacity up to 28,650 kW. The developed power is sold at the site to the P.G.&E. Company.

4-11. DOWNSTREAM STRUCTURES



4-12. ECONOMIC DATA

The Mokelumne River basin proper includes Lodi, Thornton, Woodbridge, and the agricultural area from Camanche Dam to the Mokelumne-Consumnes Delta. Lodi is the trading center of a very productive agricultural area. Local industries in and near Lodi include wineries, food processing plants, packing and storage facilities for grapes, and diversified manufacturing. On lands adjacent to the Mokelumne River the crops grown consist of corn, milo, grapes, and tomatoes. In lands further back, alfalfa, irrigated pasture, fruit and nuts, grapes, asparagus, tomatoes, corn, rice, and sugarbeets are grown. In the Mokelumne-Cosumnes Delta, which contains leveed reclamation districts and large areas of unprotected lands subject to fairly frequent flooding, rice, corn, and milo and other summer crops are grown. In protected areas, the areas of higher elevation with less frequent flooding, irrigated pasture, rice, tomatoes, milo, and corn are grown. In the reclamation districts which flood only with a major flood, asparagus, and orchards are grown in addition to the crops listed above. One large cattle feeding establishment and several gas wells are in the flood plain.

The Mokelumne River is crossed by several important railroads, state highways, and county roads. The Southern Pacific and Western Pacific Railroads, Interstate Route 5, and State Highway 99 cross the Mokelumne River service area from north to south. State Highway 12 crosses the service area from east and west. The area is served by a network of county roads. Bus and truck lines provide passenger transportation and freight service. One private airfield is situated in the Mokelumne River basin.

a. **Population.** The total population of Amador, Calaveras, and San Joaquin Counties is given in the following tabulation.

COUNTY	TOTAL POPULATION		
	1960	1970	1975
Amador	10,000	11,000	14,950
Calaveras	10,400	13,700	15,850
San Joaquin	251,700	292,000	301,100

It was estimated in 1960 that 27,900 people lived in the Mokelumne River flood plain and that the population was about 85 percent urban and 15 percent rural. The population of Lodi in 1975 was approximately 32,000.

b. **Agriculture.** In the project document studies, "Review Report on Flood Control, Mokelumne River, California," dated 1 September 1961, a comparison of the present (1961) and prospective (2015) crop use of land in the flood plain of the Mokelumne River was given and is indicated in the following tabulation.

CROP (Use)	1961 (Acres)	2015 (Acres)
Alfalfa	12,990	13,700
Irrigated pasture	15,400	17,400
Rice	790	negligible
Truck crops	4,270	6,000
Grain and hay	2,800	200
Field crops	6,780	7,010
Orchard and vineyard	19,200	22,000
Dry pasture and idle	6,280	200
Future urban	--	2,000
TOTAL	68,510	68,510

The following tabulation gives the gross value of agricultural production for 1975 in the three counties in which the Mokelumne River basin lies.

COMMODITY GROUP	GROSS VALUE AGRICULTURAL PRODUCTION (\$1,000)		
	SAN JOAQUIN	CALAVERAS	AMADOR
Field Crops	138,935	2,360	2,298
Seed Crops	8,036	--	--
Vegetable Crops	99,098	10	--
Fruit and Nut Crops	108,302	447	632
Nursery and Cut Flowers	10,455	15	63
Apiary Products	655	3	--
Livestock	17,103	3,937	2,253
Livestock Products	64,166	52	187
Poultry	5,125	1,226	--
Poultry Products	28,667	--	--
TOTAL	480,542	8,540	5,433

Gross value of the five major crops produced in San Joaquin County for 1975 is given in the following tabulation:

CROP	GROSS VALUE (\$1,000)	% STATE TOTAL
Tomatoes	62,315	10.9
Grapes	34,265	6.1
Sugarbeets	30,574	11.3
Market eggs	28,667	9.0
Barley	8,350	5.4

c. **Industry.** There were approximately 91,800; 3,700; and 3,900 people in San Joaquin; Amador; and Calaveras Counties, respectively, employed in industrial pursuits in 1970. Services and the wholesale and retail trade accounted for about 50 percent of the total employment. Employment by industry is given in the following tabulation.

EMPLOYMENT BY INDUSTRY SECTOR

INDUSTRY SECTOR	PERSONS EMPLOYED		
	SAN JOAQUIN	AMADOR	CALAVERAS
Agriculture, Forestry, & Fisheries	9,604	261	302
Mining	169	108	97
Construction	5,732	286	481
Manufacturing	16,008	698	643
Transportation, Communication, and Utilities	8,081	296	231
Wholesale and Retail Trade	21,313	701	776
Finance, Insurance, and Real Estate	3,730	160	197
Services	26,323	1,047	1,225
State and Local Governments	10,470	412	326

d. Flood Damages. Flood damage along the Mokelumne River below Camanche Dam is caused by both general rain and snowmelt floods. Rain floods, characterized by high peaks, small volume, and short duration, are generally damaging to rural-residential and agricultural areas, whereas snowmelt floods, characterized by low peaks, large volume, and long duration, are generally damaging to low-lying agricultural areas only. In addition, Mokelumne River floodflows may contribute to flooding along the lower San Joaquin River in the Delta.

Flood control operation of Camanche Dam has significantly reduced flood damage along the lower Mokelumne River. The prescribed operation would control all Mokelumne River floods of record to objective project flows, and control the Standard Project General Rain Flood to flows of approximately 60,000 cfs below Camanche Dam.

Damage costs for selected floods along the Mokelumne River below Camanche Dam are summarized below. For comparison these amounts have been adjusted to reflect the damage preventable under 1979 conditions with the Camanche Reservoir project in full operation.

FLOOD	DAMAGE	
	AT TIME OF FLOOD	PREVENTABLE UNDER 1979 CONDITIONS WITH PROJECT IN FULL OPERATION
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

* [REDACTED]

The combined operation of Camanche and projects on the Calaveras, Stanislaus, Tuolumne, Merced and San Joaquin Rivers will prevent most of the remaining flood damage along the lower San Joaquin River and in the Delta.



CHAPTER V - DATA COLLECTION AND COMMUNICATION NETWORKS

5-01. HYDROMETEOROLOGIC STATIONS

Current hydrologic data for use in the combined operation of Pardee and Camanche Dams are available from the following stations:

- a. [REDACTED].
- b. [REDACTED].
- c. Two evaporation pans at Camanche Dam and one at Pardee Dam.
- d. [REDACTED].
- e. [REDACTED]; [REDACTED].
- f. [REDACTED].

All the above stations are operated by East Bay Municipal Utility District, except for the stream gaging station below Camanche Dam which is operated by the Geological Survey.

Outflow from Camanche Reservoir is computed by adding together the flows through the outlets and over the spillway. Flows are calculated from rating curves (Charts A-5 and A-7). Outflow from Pardee Reservoir is computed by adding together the flows through the powerhouse, through the outlet and over the spillway.

Inflow to Camanche Reservoir is computed from records of reservoir storage, outflow, and evaporation; computed quantities are supplemented by records of outflow from Pardee Reservoir and Mokelumne River near Mokelumne Hill stream-gaging station.

g. Data for record and planning purposes are available from storage and outflow records available from operations of reservoir upstream from Camanche Reservoir, and from the following non-reporting stations:

- (1) Several Geological Survey stream gages on tributaries upstream from Camanche Reservoir and on the Mokelumne River downstream of Camanche Dam.
- (2) Numerous National Weather Service precipitation gages upstream from Camanche Dam.
- (3) Numerous snow courses in the mountain area upstream from Camanche Dam (see Plate 13). The courses are operated by various agencies, and the data from them are published by the California Cooperative Snow Surveys (California Department of Water Resources).

5-02. WATER QUALITY STATIONS

The East Bay Municipal Utility District has a limited program of water quality sampling at Camanche Reservoir. The following tabulation list data concerning active "Water quality Stations" as of the end of Water Year 1977. The U.S. Geological Survey in conjunction with the California Department of Water Resources collects samples to determine sediment quantities and sizes, and to perform chemical analysis. The U.S.G.S. publishes all water quality data in their annual surface water and water quality reports for California. Provisional data are obtained from U.S.G.S. as needed, by telephone.

WATER QUALITY STATIONS			
SAMPLING STATION	DRAINAGE AREA Sq Mi	SAMPLE	SAMPLE FREQUENCY
Mokelumne River near Mokelumne Hill, California	544	Temperature	Daily
Mokelumne River at Woodbridge*	661	Temperature Instantaneous Suspended Sediment and Particle Size Specific Conductance Trace Elements Chemical Analysis Microbiological** Analysis	Daily 1 per Month Daily 4 per Year 1 per Month 4 per Year

*National Stream Quality Accounting Network Station

**Certain tests are conducted monthly during summer

5-03. SEDIMENT STATIONS

The movement of sediment in the Pardee-Camanche Reservoir system is not monitored by means of actual sediment sampling in the river or periodic surveying of sedimentation and degradation ranges upstream and downstream of the project.

a. Facilities.

(1) SEDIMENT SAMPLING STATIONS. The only regular sampling at hydrometeorological stations in the Mokelumne River basin is at Mokelumne River at Woodbridge, California gaging station. Sampling was initiated in 1951 by the U.S. Geological Survey. Data is published by the U.S.G.S. annually.

(2) SEDIMENTATION RANGES. None.

(3) DEGRADATION RANGES. None.

b. **Reporting.** Not applicable.

c. **Maintenance.** Not applicable.

d. **Annual Inspection of Range Monuments.** Not applicable.

5-04. RECORDING HYDROLOGIC DATA

[REDACTED] The Camanche Dam weather station includes: a nonrecording rain gage, and two evaporation pans. [REDACTED]

[REDACTED]. Primary maintenance of the gages is performed by the U.S.G.S. A report of daily observations for Camanche Dam and Reservoir is transmitted by telephone to the Reservoir Control Section, Sacramento District by East Bay Municipal Utility District's Oakland office. The following information is provided each workday, except during periods prior to, or after, the flood season, when the Corps finds less frequent data exchanges satisfactory.

- a. Camanche Reservoir
 - (1) Pool Elevation
 - (2) Reservoir Storage
 - (3) Mean Inflow
 - (4) Mean Outflow
 - (5) Precipitation
- b. Pardee Reservoir
 - (1) Reservoir Storage
 - (2) Mean Inflow
 - (3) Precipitation
 - (4) Natural Flow
- c. Storage in Salt Springs Reservoir
- d. Storage in Lower Bear Reservoir
- e. Salt Springs Powerhouse
 - (1) Precipitation
 - (2) Temperature
- f. Calaveras Big Trees
 - (1) Precipitation
 - (2) Temperature
- g. Caples Lake
 - (1) Precipitation
 - (2) Snow (water content)
 - (3) Temperature

Records of all required observations are entered in a electronic computer data base located in the Reservoir Control Section.

5-05. COMMUNICATIONS NETWORK

Communication between Camanche Reservoir (Pardee Reservoir Headquarters) and East Bay Municipal Utility District's office in Oakland is by radio and telephone. Communication between EBMUD and Reservoir Control Section, Sacramento District Corps of Engineers is accomplished by telephone via their Water Operations Department located in Oakland.

5-06. COMMUNICATION WITH PROJECT

The scheduled time for daily telephone reports to Reservoir Control Section, Sacramento District Corps of Engineers is between 0800 and 0900 hours. Special arrangements are made with East Bay Municipal Utility District to operate the stations at other hours during flood periods.

a. **Regulating Office with Project Office.** In normal operations, instructions for the storage and release of water from the reservoir are issued by the Manager of the Water Operations Department EBMUD, or his duly authorized representative to the Superintendent, Pardee Center Headquarters. The manager's reports described in Exhibit A of this manual (Standing Instructions for Damtenders) will be transmitted to Reservoir Control Section. During flood control operations, instructions for storage and release of flood water will be issued by the Manager of Water Operations Department EBMUD to the Superintendent, Pardee Center. In the event that communications with Camanche Dam and Reservoir is disrupted, the Superintendent will direct regulation of the reservoir in accordance with the emergency rules and regulations in Chapter VII and Exhibit A of this manual.

b. **Between Project Office and Others.** When rates or releases are expected to increase in excess of 1,000 cfs in 6 hours, the sheriff of San Joaquin County, the State Department of Water Resources, the State-Federal River Forecast Center, and the State Flood Operations Center will be notified by EBMUD. The State-Federal River Forecast Center notifies local television and radio stations and newspapers in order that they may warn the general public. The Superintendent, Pardee Center, will warn the general public in the immediate vicinity of the dam.

5-07. PROJECT REPORTING INSTRUCTIONS

The Superintendent, Pardee Reservoir Headquarters, is responsible for operation and maintenance of the weather station at the dam, for making daily observations of reservoir gages, and for preparing the hydrologic data for the daily report. Daily reports of reservoir, streamflow, and other data are transmitted to EBMUD office in Oakland. At that time, the Water Operations Department issues the necessary instructions for flood control regulation, weather and streamflow forecasts, instructions for issuing flood warnings, and, if necessary, the requirements for regulating procedures and data collection to be performed outside the regular working hours. Unanticipated conditions which arise are reported immediately to EBMUD's office and new instructions are then issued by Water Operations Department. During extended periods of flooding, consultation and assistance will be provided by the Reservoir Regulation Section, Sacramento District Corps of Engineers, when appropriate and to the extent possible.

5-08. WARNINGS

East Bay Municipal Utility District maintains contact with the local district office National Weather Service (NWS) at all times concerning general meteorological conditions. Some weather sequences are reported daily and others are reported on six-hour or hourly periods. Regular forecasts are made four times a day and all pertinent information is made available to EBMUD offices in Oakland. Quantative rainfall forecasts are issued by the NWS office in Sacramento for the Mokelumne River basin. The Joint Federal-State River Forecast Center, which monitors weather conditions and river stages on a year-round basis routinely provides river and flood forecasts that apply to lower Mokelumne and San Joaquin Rivers. If floods on major streams become imminent, the Federal-State Flood Operations Center is activated. This center operates on a 24-hour basis and, among other flood emergency activities, advises all interested parties of flood situations as they develop. The center furnishes flood warnings and forecasts or river stages including the lower Mokelumne and San Joaquin Rivers to the local news media, law enforcement agencies, and other responsible agencies for their use and for dissemination to the public.

[REDACTED]

[REDACTED]. The State-Federal River Forecast Center notifies local television and radio stations and newspapers in order that they may warn the general public. [REDACTED], [REDACTED]

There are no specific formalized plans for flood fighting or emergency evacuation of people and personal property from Mokelumne River flood plain. However, San Joaquin County has a standing emergency plan that covers floods as one of several possible emergency situations. The plan provides for an emergency services council and a variety of actions for pre-emergency, actual emergency, and post-emergency situations. The California Department of Water Resources, through the Flood Operations Center, coordinates flood fighting activities throughout the State and is authorized to receive requests from local public agencies for assistance during floods. The Corps of Engineers responds to requests for flood fighting and rescue work from the California Office of Emergency Services (OES) when the emergency is beyond the capabilities of State and local governmental agencies.

Section 8589.5 of the Government Code of California provides that the California Office of Emergency Services (OES) shall designate areas within which death or personal injury would, in its determination, result from the partial or total failure of a dam.

[REDACTED]. On the basis of the map, the appropriate public safety agencies of any city, county, or city and county, the territory of which includes the area, shall adopt emergency procedures for the evacuation and control of populated areas below the dam.



CHAPTER VI - HYDROLOGIC FORECASTS

6-01. GENERAL

The ultimate aim of the forecasting system for the basin above the reservoir is to forecast approximate rates of inflow to the reservoir for given periods and to estimate the total volume to be expected in order that outflow rates may be controlled, insofar as possible, without causing damages downstream. The present flood warning system consists of gages on the main stem and major tributaries of the Mokelumne River. Flows in the Mokelumne River are the result of snowmelt and rainfall, which are sampled at important stations in the basin.

a. Role of Corps. The Corps will monitor weather forecasts and keep track of quantitative forecasts of snowmelt runoff.

b. Role of Other Agencies. In order to assure that the flood control operation of Camanche Dam will be as effective and reasonable as possible, it is essential that EBMUD, the operating agency, keep advised at all times of possible flood hazards, weather conditions, inflow to the reservoir, and flow in upstream tributaries. The National Weather Service (NWS) prepares weather and flood forecasts and makes the information available to Federal, State and local agencies and to the public through the State-Federal River Forecast Center. Snowmelt forecasts are made by EBMUD, State of California Department of Water Resources, and the NWS.

6-02. FLOOD CONDITION FORECASTS

a. Requirements. Camanche Reservoir, in conjunction with New Hogan, New Melones, Don Pedro, Buchanan, Hidden, New Exchequer, and Friant Reservoirs is operated for optimum control of floodflows through the San Joaquin Valley. To achieve optimum control of flood flows, forecasts of runoff are necessary. For spring snowmelt floods the runoff forecasts are generally adequate. A specific system has not been developed to forecast winter rainfall runoff accurately.

b. Methods.

(1) **RAIN FLOODS.** A workable, reliable method of forecasting an inflow flood hydrograph for Camanche Reservoir has not been developed.

(2) **SNOWMELT FLOODS.** The April through July forecast of snowmelt runoff in the Mokelumne River basin is of primary concern for operation of Camanche and Pardee reservoirs. Seasonal forecasts pertinent to operation are made by the East Bay Municipal Utility District. A forecast of runoff for the Mokelumne River at Pardee Dam is made after the 1 April snow accumulation data are available, and periodically adjusted to account for observed runoff and additional predipitation. The following equation developed by EBMUD is currently in use:

$$TNF = 20.696 P_2 + 3.242 P_1 + 4.816 A + 2.969 D + 2.919 U + 1.676 W - 192.899$$

TNF = True Natural Flow, 1 April - 31 July, in thousand acre-feet

P_2 = Five Station Thiessen Average Precipitation, in inches, 1 April - 30 June (Pardee Center, Tiger Creek Powerhouse, Calaveras Big Trees, Salt Springs Powerhouse, Caples Lake)

P_1 = Five Station Thiessen Average Precipitation, in inches, 1 October - 31 March (same stations as above)

A = 1 April Water Content of Snow at Lake Alpine

D = 1 April Water Content of Snow at Dorrington

U = 1 April Water Content of Snow at Upper Carson Pass

W = 1 April Water Content of Snow at Wheeler Lake

The 50 percentile line of Plate 18 is used for estimating the future component of the P_2 variable. In application of this equation, a forecast is made on 1 April and revised periodically as the precipitation during the April-June period deviates from the 50 percentile line shown on Plate 18.

6-03. CONSERVATION PURPOSE FORECASTS.

a. Requirements. Forecast of spring snowmelt volume of Mokelumne River at Pardee Dam is made by the East Bay Municipal Utility District. This provides an estimate of expected runoff so the anticipated water supply can be apportioned and power operations can be tailored to the water supply.

b. Methods. The forecasts are made by EBMUD based on measurements of snow depth and water content at selected stations, antecedent fall precipitation and normal or forecasted spring precipitation. The procedure presently in use is discussed in 6-02 b.

6-04. LONG RANGE FORECASTS

Long range forecasts are not made.

a. Requirements. Not applicable.

b. Methods. Not applicable.

CHAPTER VII - WATER CONTROL PLAN

7-01. GENERAL OBJECTIVES

Camanche Dam and Reservoir is a multipurpose development with primary objectives of flood control to lower Mokelumne River basin to increase the project yield of East Bay Municipal Utility District from Pardee Dam, and to maintain river flows to downstream water rights holders. Recreation, hydroelectric power generation, and downstream fishery enhancement are also provided by the project.

7-02. MAJOR CONSTRAINTS

Releases from Camanche Reservoir will be at rates that will minimize erosion and seepage problems below Clements to the extent practicable.

7-03. OVERALL PLAN FOR WATER CONTROL

- a. To protect the City of Lodi against all reasonably probable rain floods.
- b. To protect the agricultural areas along the Mokelumne River between Camanche Dam and the mouth of Dry Creek against damaging flows during all but very large floods, and to minimize and delay damaging flows during large floods.
- c. To control flows in the Mokelumne River downstream from Camanche Dam to existing channel capacities, insofar as practicable; and, in conjunction with operation of other projects in the lower San Joaquin River Basin, to reduce flooding along the lower San Joaquin River and in the Sacramento-San Joaquin Delta.
- d. To restrict flows downstream in the Mokelumne River to a controlling rate of 5,000 cfs at the stream gage below Camanche Dam, insofar as possible.
- e. To provide the maximum conservation storage practicable so that all downstream release requirements can be met without impairing the flood control function of the reservoir.
- f. To provide the maximum amount of power practicable consistent with required flood control operations and the conservation functions of the reservoir.
- g. To provide releases to enhance an anadromous fishery on the lower Mokelumne River.

7-04. STANDING INSTRUCTIONS TO DAMTENDER

During normal flood periods, the reservoir will be regulated in accordance with normal regulations for flood control operation in paragraph 7-05a and Exhibit A of this manual. Exhibit A is designed for optimal separation from this manual and use as an

emergency flood control regulation guide. To facilitate independent use of Exhibit A, charts required for the emergency flood control operation of Camanche Dam and Reservoir are included therein. Instructions for storage and discharge of floodwaters in the flood control space will be issued by the East Bay Municipal Utility District, Oakland, California. In the event communications with the utility district are disrupted, the reservoir will be regulated in accordance with the emergency regulation for flood control operation in paragraph 7-05b.

7-05. FLOOD CONTROL

a. Normal Regulation for Flood Control. Flood control regulation begins when storage in Camanche Reservoir exceeds the flood control space required at any particular time as determined from the Flood Control Diagram. The Flood Control Diagram for Camanche Reservoir (Chart A-12) is the basic project document regarding operation for flood control. This diagram is the result of careful analysis of flood frequency, seasonal flood potential, and downstream channel capacities consistent with project objectives and operating experience gained during the last 15 years. The diagram shows the requirement for:

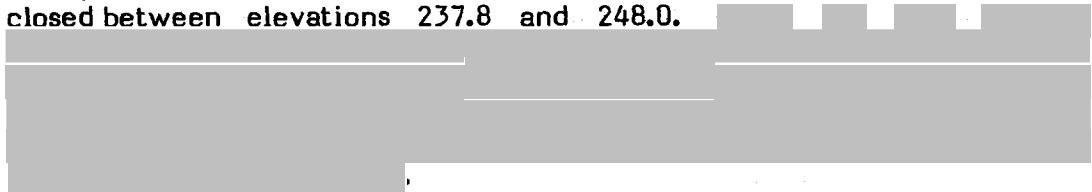
- (1) 200,000 acre-feet of storage from 5 November to 15 March, and;
- (2) As much as 200,000 acre-feet of conditional flood control space from 15 March to 1 July, and decreasing to zero on 1 August. Conditional flood control space requirement is determined by use of parameter lines which are dependent upon forecasts of snowmelt runoff, giving consideration to the channel capacity of 5,000 cfs below Camanche Dam.

When the reservoir pool elevation is below 235.5 feet, flood control releases will be made in accordance with the release schedule stated on the Flood Control Diagram (Chart A-12). During floods in which flow over the spillway occur, the main valves will be operated by gradually closing the valves as pool rises above gross pool elevation (235.5 feet) to control the total outflow from the spillway and outlets to 5,000 cfs as long as possible (see Chart A-10). When the pool reaches elevation 237.8 feet, the valves will be closed. Reservoir regulation will follow surcharge operations (described below) when pool exceeds elevation 248.0 feet and transfer to flood control operation when pool recedes to gross pool, elevation 235.5 feet. Water stored in the flood control space will be released as rapidly as downstream conditions permit, but not to exceed 5,000 cfs. When the required flood control space has been obtained in Camanche Reservoir, flood control operation will cease and conservation operation will resume.

b. Emergency Regulation. If communications with the project are disrupted, the following procedures will be followed for project operation:

- (1) Continue release in accordance with the last instructions from East Bay Municipal Utility District Office in Oakland, and make every attempt to re-establish communication.
- (2) If communication cannot be re-established, make releases in accordance with Release Schedule on the Flood Control Diagram (Chart A-12).

(3) Surcharge operation: When the reservoir pool is above elevation 237.8, close the main valves (see Chart A-10). The valves will remain closed between elevations 237.8 and 248.0.



7-06. RECREATION

No firm recreation pool has been established for Camanche Reservoir. However, since the water stored in Camanche Reservoir is not used for municipal water supply and the annual fluctuation in reservoir elevation is typically less than 30 feet, it has had popular appeal as a recreation area. The Camanche Regional Park Board representing the counties of San Joaquin, Amador, and Calaveras, has a lease arrangement with East Bay Municipal Utility District for use of certain lands adjacent to Camanche Reservoir, and for use of the reservoir water for incidental use for recreation purposes. The Park Board has granted leases for the development of recreation facilities on the North Shore (Camanche North Shore, Inc.) and on the South Shore (Camanche Lake Park) of Camanche Reservoir.

7-07. WATER QUALITY

East Bay Municipal Utility District samples the Camanche and Pardee reservoirs quarterly to provide temperature profiles.

7-08. FISH AND WILDLIFE

The California State Department of Fish and Game is responsible for developing and maintaining a lake fishery in Camanche Reservoir. The lake fishery is influenced by certain operational features of the reservoir, such as pool fluctuations during the spawning season. Camanche Reservoir contains a large variety of game fish including large- and small-mouthed bass, black bass, bluegill, redear sunfish, black crappie, white and channel catfish. Kokanee salmon, and brown and rainbow trout are also stocked. Below Camanche Dam, the river is inhabited by several resident and anadronous fish species which include rainbow trout, steelhead trout, king salmon, Sacramento squawfish, suckers, and a variety of rough fish species.

Wildlife species inhabiting the Camanche Reservoir area include over 150 bird species. Bird species include sparrows, fly catchers, jays, band-tailed pigeons, quail, and woodpeckers; migrating waterfowl, such as wood ducks, teal, mallards, and Canada geese; and predatory species including southern bald eagles and hawks. Various amphibians include the California newt, western toad, and pacific treefrog. King snakes, rattlesnakes, sharp-tailed snake, and alligator lizards make up part of the reptile population.

To mitigate for historical salmon spawning ground, inundated by Camanche Reservoir, East Bay Municipal Utility District entered into an agreement with California State Department of Fish and Game to pay for the construction cost and operation of a hatchery located downstream of Camanche Dam, and in addition make certain releases from Camanche Reservoir in the interests of fish. During years in which natural runoff of Mokelumne River for the 9 months preceding 1 July exceeds 370,000 acre-feet, and


when total storage of 1 July in Camanche and Pardee Reservoirs combined is over 370,000 acre-feet, releases totaling up to 13,000 acre-feet must be made. In critical dry years, i.e., years in which less than 370,000 acre-feet runoff or 370,000 acre-feet combined 1 July storage is available, releases totaling up to 5,400 acre-feet must be made for fish. In addition to the insufficiency of natural runoff or water storage, or both, no year shall be considered a "critically dry year" unless the diversions of EBMUD for its municipal water supply shall prior to the commencement of such a year equal or exceed the average annual rate of 250,000,000 gallons daily. Such releases are made in accordance with an agreement between EBMUD and the State Department of Fish and Game, and vary with the season from zero during the period April through October to 20-66 cfs November through March, not to exceed 150 cfs at any time.

7-09. WATER SUPPLY

The East Bay Municipal Utility District is the municipal and industrial water supplier for a 300 square mile area along the eastern side of San Francisco Bay comprising portions of Alameda, and Contra Costa counties. Pardee Reservoir is operated primarily for storage and diversion of water to meet the domestic needs of the District's service area. Water is diverted by means of the three Mokelumne Aqueducts with a total transportation distance from Pardee Reservoir to the service area of approximately 91 miles. Camanche Reservoir was constructed primarily to increase the project yield from Pardee Reservoir by re-regulating the Pardee releases to meet requirements of downstream appropriators.

7-10. HYDROELECTRIC POWER

There is no existing power plant at Camanche Dam. Power facilities at Camanche Dam and additional facilities at Pardee Dam, are being prepared under a plan called the Lower Mokelumne River Project Federal Energy Regulatory Commission Project No. 2916 and are scheduled for completion in the summer of 1983.



7-11. NAVIGATION

Navigation is not a project purpose of Camanche Dam and Reservoir. However, there is an existing project on the lower Mokelumne River for the purpose of aiding navigation. Improvements consist of removal of snags and other obstructions from the river channels and dredging of shoals in main stream and both the North and South Forks from the mouth of the Mokelumne River to the Galt-New Hope bridge. The project provides about 35 miles of navigable channels which are extensively used by pleasure craft.

7-12. OTHER.

a. **Water Entitlements Upstream of Camanche Dam.** The Mokelumne River Hydroelectric Power Project on the North Fork Mokelumne River, owned by P.G.&E. Company, and Pardee Reservoir owned by East Bay Municipal Utility District are operated in accordance with existing water rights and written limits set by certain judgments and decrees commonly known as the "Lodi Decrees." P.G.&E. Company operates the Amador Canal by diverting water from Lake Taboada to serve the cities of Jackson, Sutter Creek, Ione, and vicinities for municipal, domestic, and other uses. Amador County diverts from the North Fork Mokelumne River at Tiger Creek Afterbay to serve the domestic water needs of the central county area. Calaveras County water agencies have old rights to divert water from the South Fork and Middle Forks of the Mokelumne River. Calaveras Public Utility District diverts from the Middle and South forks and pumps the water into a pipeline to Jeff Davis Reservoir. Diversion rights by various agencies and actual diversions now occurring are given in the following tabulation:

AGENCY	FACILITY MAX. CAPACITIES (cfs)	ANNUAL DIVERSION RIGHT (Acre-Feet)	APPROXIMATE PRESENT ANNUAL DIVERSION (Acre-Feet)
EBMUD	504	365,000	245,000
Amador County Water Agency	3	1,150 (1)	300
Jackson Valley Irrigation District	50	3,850 (1)	3,850
Pacific Gas & Electric Co. (Amador Canal)	30	15,000 (1)	10,000
Calaveras Public Utility District (CPUD)	15	6,656 (2)	1,500
Calaveras County Water District (CCWD)	6	400 (2)	350

- Note (1) Total per year for Amador County not to exceed 20,000 acre-feet, under Mountain County prior right.
 (2) Total per year for Calaveras County not to exceed 27,000 acre-feet, under Mountain County prior right.

b. **Water Entitlements Downstream of Camanche Dam.** Camanche Reservoir is operated in accordance with existing water rights, in compliance with written limits set by certain judgments and decrees commonly known as the "Lodi Decrees", and in accordance with various agreements between EBMUD and other agencies.

Operation under the existing water rights and agreements includes the following:

1. Release of water for downstream riparian rights.
2. Release of water for downstream appropriators with rights prior to those of EBMUD.
3. Providing flood control (Corps of Engineers).
4. Release of water for irrigation (Woodbridge Irrigation District, North San Joaquin Water Conservation District) under agreements.
5. Supplying water to the Mokelumne River Fish Hatchery (California Department of Fish and Game).
6. Providing downstream fish releases (Fish and Game).

Camanche Reservoir will also be operated for power generation after construction of a power plant scheduled for completion in 1983. Water releases required under the above mentioned water rights and agreements will be used for the operation of the power plant.

7-13. DEVIATION FROM NORMAL OPERATION.

The East Bay Municipal Utility District may be requested to deviate from the water control plan. Prior approval of deviations with regards to flood control is required from District Engineer, Sacramento District Corps of Engineers, except for emergencies and minor deviations as discussed in subparagraphs a. and b. below.

a. Emergencies. Some emergencies that can be expected are: drowning and other accidents, removal of livestock or farm equipment, and failure of operation facilities. Necessary action would create equal or worse conditions. The District Engineer, Sacramento District Corps of Engineers, will be informed as soon as practicable.

b. Unplanned Minor Deviations. There are unplanned instances that create a temporary need for minor deviations from the normal regulation of the reservoir, although they are not considered emergencies. Construction accounts for the major portion of the incidents and includes utility stream crossings, bridge work, bank protection work, and major construction contracts. Changes in releases are sometimes necessary for maintenance and inspection. Requests for changes of release rates are generally for a few hours to a few days. Each request is analyzed on its own merits. Consideration is given to upstream watershed conditions, potential flood threat, conditions of reservoirs, and possible alternative measures. In the interest of maintaining good public relations, the requests are complied with, providing there are no adverse effects on the overall operation of the project for the authorized purposes. Approval for these minor deviations will normally be obtained from the District Engineer, Sacramento District Corps of Engineers, by telephone. A written confirmation explaining the deviation and conditions will be furnished by EBMUD.

c. **Planned Deviations.** Each condition should be analyzed on its merits. Sufficient data on flood potential, reservoir and watershed conditions, possible alternative measures, benefits to be expected, and probable effects on other projects and useful purposes will be presented by letter or telephone to District Engineer, Sacramento District Corps of Engineers, along with recommendations for review and approval.

7-14. RATE OF RELEASE CHANGE





CHAPTER VIII - EFFECT OF WATER CONTROL PLAN

8-01. GENERAL

Camanche Dam and Reservoir regulates floodflows in the lower Mokelumne River basin and lower San Joaquin River by controlling releases in so far as possible to obtain the maximum practical reduction in flood damages. The flood control storage in Camanche Reservoir is adequate to control the floods of record and the 50-year rain flood to existing channel capacities below the dam. Storage is provided for conservation, flood control, recreation, and downstream fishery. Storage will also be provided for hydroelectric power generation after construction of a power plant scheduled for completion in 1983. The conservation pool provides storage of flows until needed downstream for irrigation and for water sports opportunities and fishing.

8-02. SPILLWAY DESIGN FLOOD

Design of the spillway at Camanche Dam was based on the probable maximum flood presented in Appendix A, Hydrology Review Report on Flood Control Mokelumne River, California dated September 1961. Such a probable maximum flood would result from the combination of the most severe meteorologic and hydrologic conditions that could occur on the basin above the dam. No specific study was made by the Hydrometeorological Branch of the National Weather Service, formally called the U.S. Weather Bureau, to determine the probable maximum precipitation for the Mokelumne River Basin. However, results of such a study for adjacent Stanislaus River Basin was furnished by the Weather Bureau in June 1957. A study made of these two basins comparing orographic lift, the depth of moist air inflow and outflow, and the rate at which air was transported across these basins indicated that the probable maximum precipitation over the Mokelumne river Basin should be about 113 percent of that over the Stanislaus River Basin, or a total of about 25 inches. Based on an average of 25 inches for 72 hours over the basin, the probable maximum flood would result in a peak inflow of 261,000 cfs and a 5-day volume of 657,000 acre-feet. Reservoir routings (Plate 19) beginning with pool elevation at 235.5 feet indicate a maximum pool elevation of 260.1 feet, 2.9 feet freeboard and a maximum outflow of 188,000 cfs.

As a check on the adequacy of the spillway the State of California, Department of Water Resources, Division of Safety of Dams developed a probable maximum flood using the U.S. Weather Bureau Hydrometeorological Report No. 36 for precipitation for the National Dam Inspection Program. The snowmelt contribution, losses, and time of concentration for this flood were taken directly from the Corps hydrology appendix. Pertinent data from this study follows:

PMP (72 hr)	32.6 inches
Snowmelt	4.92 inches
Total Losses	9.96 inches
Volume (72 hr PMP)	908,000 acre feet
Peak Inflow	272,500 cfs

Routing this flood through Camanche Reservoir would overtop Camanche Dam if the reservoir level was at the spillway crest at the onset of the storm. However, if the 200,000 acre-feet of flood reservation storage was available at the onset of the storm, the probable maximum flood will pass through the spillway with two feet of freeboard and a peak outflow of 196,000 cfs.

8-03. FLOOD CONTROL

The principal objective of the flood control plan is prevention of inundation of agricultural areas in the lower Mokelumne River basin and the towns of Clements and Lodi. The flood control storage in Camanche Reservoir is adequate to control all the floods of record and the 50 year rain flood to existing channel capacities below the dam.

a. **Standard Project Flood.** A general rain standard project flood was developed to test the operation of Camanche Dam under extreme conditions. A standard project flood (SPF) is one that can be expected from the most severe combination of meteorologic and hydrologic conditions characteristic of the geographical region, excluding extremely rare combinations. The adopted SPF is described in detail in "Appendix A, Hydrology Review Report on Flood Control Mokelumne River, California", dated September 1961.

The standard project rain flood at Camanche Dam has a peak of 115,000 cfs and a 5-day volume of 320,000 acre-feet. It results from a standard project storm that lasts 90 hours and deposits 16.42 inches of rain on wet ground in the drainage area above Camanche Reservoir. The flood was computed on the basis of criterion in a September 1958 office report entitled "Standard Project Rain Flood Criteria, Sacramento-San Joaquin Valley, California." Because the release capacity of Camanche Dam is comparatively small, the critical duration for control of rain floods is longer than that of a single storm. Accordingly, an SPF series (19-day) was developed. A routing of the series through Camanche Reservoir is shown on Plate 20. Maximum outflow is 59,000 cfs, and maximum storage is 522,000 acre-feet.

Values for the standard project rain flood, major historical rain floods, and the probable maximum flood are tabulated below. All values reflect unimpaired flows.

FLOOD	PEAK INFLOW (cfs)	RATIO TO SPF	7-DAY VOLUME (Acre-Feet)	RATIO TO SPF
Standard Project	115,000	1.00	326,000	1.00
December 1964	42,000*	0.37	246,000	0.76
February 1963	40,000*	0.35	146,000	0.45
December 1955	38,000	0.33	211,000	0.64
November 1950	38,000*	0.33	244,000	0.75
December 1937	34,000*	0.30	102,000	0.31
March 1907	25,500	0.22	176,000	0.54
January 1970	19,000	0.17	129,000	0.40
January 1911	18,900	0.16	115,000	0.35
Probable Maximum	261,000	2.27	657,000 ^{1/}	2.02

^{1/} 5-day Volume
* Estimated Value

b. Reservoir Design Flood.

(1) RAIN FLOOD. Experience in the Central Valley of California has indicated that protection of agricultural areas against floods exceeded on the average about once in 50 years is desirable. This is considered to be a practical degree of protection for the Mokelumne River agricultural areas, and therefore protection against floods of 50-year magnitude was adopted as the project objective. Routing of the 50-year rain flood series (a peak flow rate of about 50,000 cfs and a 19-day volume of 349,000 acre-feet) to a downstream channel capacity of 5,000 cfs is shown on Plate 20. In addition, it is desirable to protect the City of Lodi against the Standard Project Rain Flood. Operation of the 200,000 acre-feet of flood control will control 90 percent of the standard project flood to channel capacity at Lodi (26,000 cfs).

(2) SNOWMELT FLOOD. Camanche Reservoir does not have a Reservoir Design Snowmelt Flood. However, operation of the 200,000 acre-feet of flood control reservation in Camanche Reservoir will control all historical snowmelt floods to a downstream channel capacity of 5,000 cfs. The largest flood that could be controlled would have an exceedance of about once in 120 years, on the average.

c. Historical Floods. Hypothetical operations of the historical November-December 1950, December 1955, and December 1964 rain floods are shown on Plate 21. Historical operations of the 1967 and 1969 snowmelt floods and hypothetical routing of the 1906 snowmelt flood are shown on Plate 22.

8-04. RECREATION

At Camanche Reservoir, the two recreation areas Camanche North Shore Resort and South Camanche Shore remain open throughout the year, but heaviest use occurs during the period March through October. On some three-day weekends, such as Memorial Day, the Fourth of July, and Labor Day, 20,000 to 25,000 people attend the park, exceeding existing facility capacities. Annual attendance figures for the north and south shore recreation areas are tabulated below:

YEAR	NORTH SHORE	SOUTH SHORE	TOTAL
1978	308,000	187,000	495,000
1977*	257,000	137,000	394,000
1976	300,000	223,000	523,000
1975	275,000	235,000	510,000

* 1977 was a drought year. Low reservoir levels reduced recreation potential and attraction.

8-05. WATER QUALITY

Water quality in both Pardee and Camanche Reservoirs is maintained in accordance with provisions contained within applicable State Water Resources Control Board permits. It should be noted that Pardee Reservoir is the source from which the District supplies potable water to its service area and as such extensive measures are maintained to insure that this source is maintained at the highest quality. The California Department of Fish and Game monitors the temperature of water releases to the Mokelumne Fish Hatchery in an attempt to maintain water temperatures within acceptable limits to prevent disease.

8-06. FISH AND WILDLIFE

The impoundment of the Mokelumne River at Camanche Dam has created a clear, warm water reservoir that has given rise to a greatly expanded and diversified fresh water community. As discussed in paragraph 7-08 many species live and reproduce in the reservoir habitat.

The reservoir provides excellent resting grounds for migratory waterfowl. The shallow water areas attract a variety of birds and animals, which in turn attract species predatory on them. Some animal forms are displaced or have their habitat altered when the reservoir level rises during floods. Pheasants, chukar, quail, and wild turkey are stocked in the Bean Hollow Hunting Preserve and Shotgunner's Resort located adjacent to the North Shore Resort area. King salmon migrate to the Camanche project during the months of October, November, and December. Young salmon are present from February through June. Steelhead trout are most plentiful during their upstream migration in the months of January, February and March. Both steelhead trout and king salmon migrate up the Mokelumne River and ascend the hatchery fish ladder. The adult steelhead are artificially spawned and returned to the river. The eggs are incubated until hatched, and the fry are transferred to hatchery troughs and subsequently to rearing ponds. The steelhead are raised in the ponds for one year and then are released into the river. Approximately 100,000 yearling steelhead trout and/or king salmon in combination are produced in this manner each year.

King salmon are manually removed from the crowding channel at the end of the fish ladder and placed in the facility's spawning channels. Here the adults spawn and die. The fertilized eggs hatch in about 50 days, and most return directly to the river to begin their journey to the sea. However, many of the salmon fry are raised to yearling size in two of the channels to increase their chances of survival after release. The total capacity for salmon production is 15 million eggs per year.

8-07. WATER SUPPLY

The average annual inflow to Camanche Reservoir for 16 years of record is 491,500 acre-feet. The inflow records at Camanche Reservoir reflect the historical diversion and storage of water upstream of Camanche Dam. Water included under existing water rights and under existing agreements with water users below Camanche Dam, exclusive of fish, totals a maximum of about 155,000 acre-feet annually of

which about 115,000 acre-feet is presently being utilized. The average annual discharge at Mokelumne River below Camanche Dam stream gage for 15 years of record (1964-1978) is 505,900 acre-feet annually. Average monthly flow data in 1,000 acre-feet for the same location is given in the following tabulation:

MONTH	AMOUNT	PERCENT OF ANNUAL
October	41.5	9.2
November	27.6	5.5
December	19.5	3.8
January	49.7	9.8
February	40.9	8.1
March	39.8	7.9
April	49.4	9.8
May	63.1	12.5
June	53.7	10.6
July	42.3	8.3
Aug	40.6	8.0
Sep	37.8	7.5
TOTAL	505.9	100.0

8-08. HYDROELECTRIC POWER

The project proposed under Lower Mokelumne River Project, Federal Energy Regulatory Commission Project No. 2916 makes no changes in the storage capacities of Camanche or Pardee Reservoirs and does not alter the timing or quantity of releases from Camanche Reservoir. Its principle purpose is to use the current releases mandated for downstream appropriators, flood control, fish and other uses to generate additional power from an additional power unit at Pardee and a new power plant at Camanche Dam. The requirements of all prior water rights will still be met. All water diverted by the proposed power plants, will be returned to the river immediately downstream of the power plants. The current capabilities to operate for flood control will not be changed by the proposed power developments.

8-09. NAVIGATION

None.

8-10. FREQUENCIES

a. **Unregulated Flow Frequencies.** Unregulated flows and statistical parameters for Mokelumne River at Camanche Dam for rain floods and snowmelt floods are tabulated on Plate 23. Flow frequency curves for peak, 1 day, 3 day, 7 day, 15 day, and 30 day flows for rain floods are shown on Plate 24. Flow frequency curves for peak, 1-day, 3-day, 7-day, 15-day, 30-day, 60-day, 90-day and 120-day flows for snowmelt floods are shown on Plate 25. The statistics were computed using the HEC Regional Frequency program.

b. Peak Flow Frequencies Project Condition. Peak flow frequency curves for the Mokelumne River below Camanche Dam for project conditions for rain floods and snowmelt floods are shown on Plates 24 and 25, respectively. Curves reflect operation of Camanche Dam for the period 1964-1979 which includes both dry and wet periods and is representative of a longer period of record. In order to extend the flow frequency curves to include very rare events, such as the one percent and rarer floods, hypothetical floods were routed through Camanche Reservoir.

c. Storage-Frequency Curve. A storage-frequency curve is shown on Plate 26, and storage-duration curves are shown on Plate 27. Curves are for the total combined storage of Pardee and Camanche Reservoirs to reflect the condition that the required flood control space may be divided in any proportion between the two reservoirs. The seasonal variation of reservoir storage frequency is shown on Plate 28. The level of storage is the highest in the spring at the beginning of the recreation season (May - September) as a result of storing runoff for water supply and flood control. Subsequent releases made through the summer for water supply and downstream rights draw the reservoir system down for the beginning of the winter flood season.

d. Operation Record. The official operating record of Camanche Reservoir is published in Water Supply papers of the U.S. Geological Survey.

Operation of Camanche Dam began in December 1964 and is shown on Plate 29. A record of flood control requirements and storage and flows pertinent to flood control operation is contained in monthly reports submitted to the Chief of Engineers by the District Engineer, Sacramento District, Corps of Engineers, Sacramento, California.

e. Key Control Points. Lodi is the primary point of concern for urban protection. Existing channel capacity through Lodi is estimated at about 26,000 cfs. However, the primary point of control is the reach of channel between Clements and Lodi with a maximum capacity of 5,000 cfs. Releases from Camanche Dam are held to 3,000 cfs as long as possible (See Exhibit A, Flood Control Diagram Chart A-12) to minimize agricultural damage downstream of Clements caused by extensive seepage and bank erosion.

8-11. OTHER STUDIES

a. Examples of Regulation. The Corps of Engineers does not have in progress, or planned for the immediate future, any studies in the Mokelumne River basin; however, it is anticipated that the Master Manual of Reservoir Regulation for the San Joaquin River Basin, dated 5 September 1953, will be revised and updated soon. A plan for coordinating flood control operation of all facilities in the basin, including storage projects on tributary streams bypass and diversion facilities, coordinated reporting and dissemination of hydrologic and operating data, and necessary interagency operating agreements, is under study and will be discussed in the master manual.

In July 1975, Tudor Engineering Company (Tudor) prepared a report for the East Bay Municipal Utility District entitled "Mokelumne River Project - Potential Power Development." Tudor assessed the potential hydroelectric projects at Railroad Flat, Big Bar, and Middle Bar. The District has further evaluated the potential for hydroelectric development. The District now believes that projects at Railroad Flat and Middle Bar

may be economically feasible and has filed an application for permits with the Federal Energy Regulatory Commission and water rights applications with the State Water Resources Control Board.

The U.S Bureau of Reclamation, Mid-Pacific Region is currently making an Appraisal Study on the possibilities for improving the use of available water supplies to meet the needs within Calaveras County. Potential reservoir sites under consideration include the Forest-Middle Fork and South Fork Mokelumne.

b. Channel and Floodway Improvement. Local interests have constructed a levee system along the river in the reach downstream from Lodi, extending from the mouth to Lodi on the left bank and from the mouth to about 7 miles downstream of Woodbridge on the right bank. Also, there are discontinuous low levees along the main river banks extending about 15 miles upstream from Lodi which provide protection to adjacent agricultural lands up to a flow of 5,000 cfs. The only Federal flood-control improvements in the lower basin consist of occasional repairs to local interest levees under Public Law 99 and sporadic snagging and clearing work.



CHAPTER IX - WATER CONTROL MANAGEMENT

9-01. RESPONSIBILITIES AND ORGANIZATION

a. General. The East Bay Municipal Utility District is responsible for the operation of the Camanche Project and for regulation of the flows of the Mokelumne River at the project for downstream water rights holders with prior rights and fishery requirements. The Corps of Engineers has prescribed the flood control operation procedure which is contained in this Water Control Manual. Operation for flood control is in accordance with the rules and regulations outlines in the Code of Federal Regulations, Title 33, Part 208.11 and reflected in the Field Working Agreement and Flood Control Diagram in the Exhibit A. Responsibilities for flood control operation of Camanche Dam are summarized below. A list of personnel involved in the operation of the reservoir for flood control are provided at the front of the manual.

b. Corps of Engineers. The District Engineer, Sacramento District Corps of Engineers, is responsible for:

(1) Approving or disapproving deviations from the prescribed flood control criteria contained in Exhibit A on Chart A-12.

(2) Advising operating agencies and the Chief of Engineers of any departure from the flood control regulations.

(3) Preparing monthly operation and other special reports relative to operation of the reservoir required by the Office, Chief of Engineers.

(4) Preparing revisions to the flood control criterion found herein.

c. East Bay Municipal Utility District. The East Bay Municipal Utility District is responsible for:

(1) Accomplishing the physical operation of the reservoir and associated facilities in accordance with the official regulations.

(2) Advising the District Engineer, Sacramento District, Corps of Engineers, of any deviation from the flood control operation.

(3) Reporting to the District Engineer, Sacramento District, Corps of Engineers, any unusual condition in the reservoir or along downstream channels that might interfere with planned flood control operation of reservoir.

(4) Taking reasonable steps to inform the public of significant changes in flood control releases.

(5) Reporting by telephone to the Reservoir Control Section, Sacramento District Corps of Engineers, data as outlined in paragraph 9-05a and other data that may be required from time to time.

(6) Keeping informed of the rules and regulations contained in the Water Control Manual and bringing to the attention of the District Engineer, Sacramento District, Corps of Engineers any features of the manual that may require clarification or revision.

(7) Keeping the District Engineer, Sacramento District, Corps of Engineers advised of any inaccuracies contained in the manual or that may develop as a consequence of changing conditions.

(8) Immediately after the end of each month, transmitting to the Reservoir Control Section, Sacramento District, Corps of Engineers, data specified in paragraph 9-05b.

d. State of California. The State Water Resources Control Board is responsible for administration of water rights. California State Department of Fish and Game has the responsibility of calling for water releases, required for downstream fisheries resources, and operation of Mokelumne Fish Hatchery.

e. Pacific Gas and Electric Company. East Bay Municipal Utility District has a contract with PG&E to market the power generated by the power plants at Camanche and Pardee Reservoirs.

9-02. INTERAGENCY COOPERATION

To insure that the flood control operation of Camanche Reservoir will be as effective as possible, it is essential that the operating agency be continually advised of possible flood hazards, weather conditions, inflows to Camanche and Pardee Reservoirs, and flows in the Mokelumne River below Camanche Dam and in the San Joaquin River. This required close liaison between East Bay Municipal Utility District and the National Weather Service, Geological Survey, Corps of Engineers, California Department of Water Resources, Pacific Gas and Electric Company, and downstream interests on a daily or hourly basis as required.

a. Local Press Bulletins. East Bay Municipal Utility District coordinates with local press for releases of public interest regarding floods and other aspects of project operation.

b. National Weather Service. East Bay Municipal Utility District and Pacific Gas and Electric Company cooperate with the National Weather Service (NWS) in operation of a network of hydrometeorological stations throughout the upper Mokelumne River basin. EBMUD and P.G. & E. report weather and streamflow data collected at their respective projects to the Weather Service. The Weather Service office in Sacramento maintains year round surveillance of weather conditions. NWS prepares and distributes forecasts to agencies responsible for flood protection and to the public by way of the local news media. The NWS office furnishes meteorological data and forecasts on a 24-hour basis. Regular forecasts are made four times a day. When the meteorological situation indicates general area precipitation, quantitative forecasts are furnished.

The NWS publishes water-supply forecasts during the middle of each month from January through May indicating the forecasted volume of spring runoff to be expected.

c. **U.S. Geological Survey.** The Geological Survey operates stream gaging stations on a cooperative basis with local, State and Federal agencies. The Geological Survey regularly measures, services and publishes the records from stream gaging stations. Reservoir stage and contents are furnished by EBMUD to the Geological Survey for publication. Preliminary flow data are available from the Survey, if required.

d. **Power Marketing Agency.** Pacific Gas and Electric Company is the current marketing agency for power generated at EBMUD facilities in the Mokelumne River basin.

e. **Other Federal, State, and Local Agencies.**

(1) **FEDERAL-STATE RIVER FORECAST CENTER.** Personnel from the NWS office in Sacramento and the California Department of Water Resources are assigned to the Joint Federal-State River Forecast Center, which monitors weather conditions and river stages on a year-round basis. If floods on major streams become imminent, the Federal-State Flood Operations Center is activated.

(2) **FEDERAL-STATE FLOOD OPERATIONS CENTER.** This center operates on a 24-hour basis and, among other flood emergency activities, advises all interested parties of flood situations as they develop. The Center furnishes flood warnings and forecasts of river stages to the local news media, law enforcement agencies, and other responsible agencies for their use and for dissemination to the public.

9-03. INTERAGENCY AGREEMENTS

A Field Working Agreement between East Bay Municipal Utility District and the Department of Army, Corps of Engineers for Flood Control Operation of Camanche Dam and Reservoir was finalized in April 1982 by representatives of EBMUD and the Corps of Engineers. The agreement was initiated to insure that there exists a clear understanding of the flood control regulations and information exchange required for the project operation. A copy of the agreement is contained in Exhibit C of this Water Control Manual.

9-04. COMMISSIONS AND COMPACTS

None.

9-05. REPORTS

a. Between 8 and 9 a.m. each workday, and at other times upon request, the dam operator or operating agency will report by telephone to the Reservoir Control Section, Sacramento District, Corps of Engineers, the following information:

(1) The amount of flood control space required by the regulations.

(2) Storages and outflows at Camanche and Pardee Reservoirs, and storages at Salt Springs and Lower Bear Reservoir; inflow to Pardee Reservoir; and anticipated outflow change at Camanche Reservoir.

(3) Precipitation at the dam and at reporting stations in or adjacent to the drainage basin.

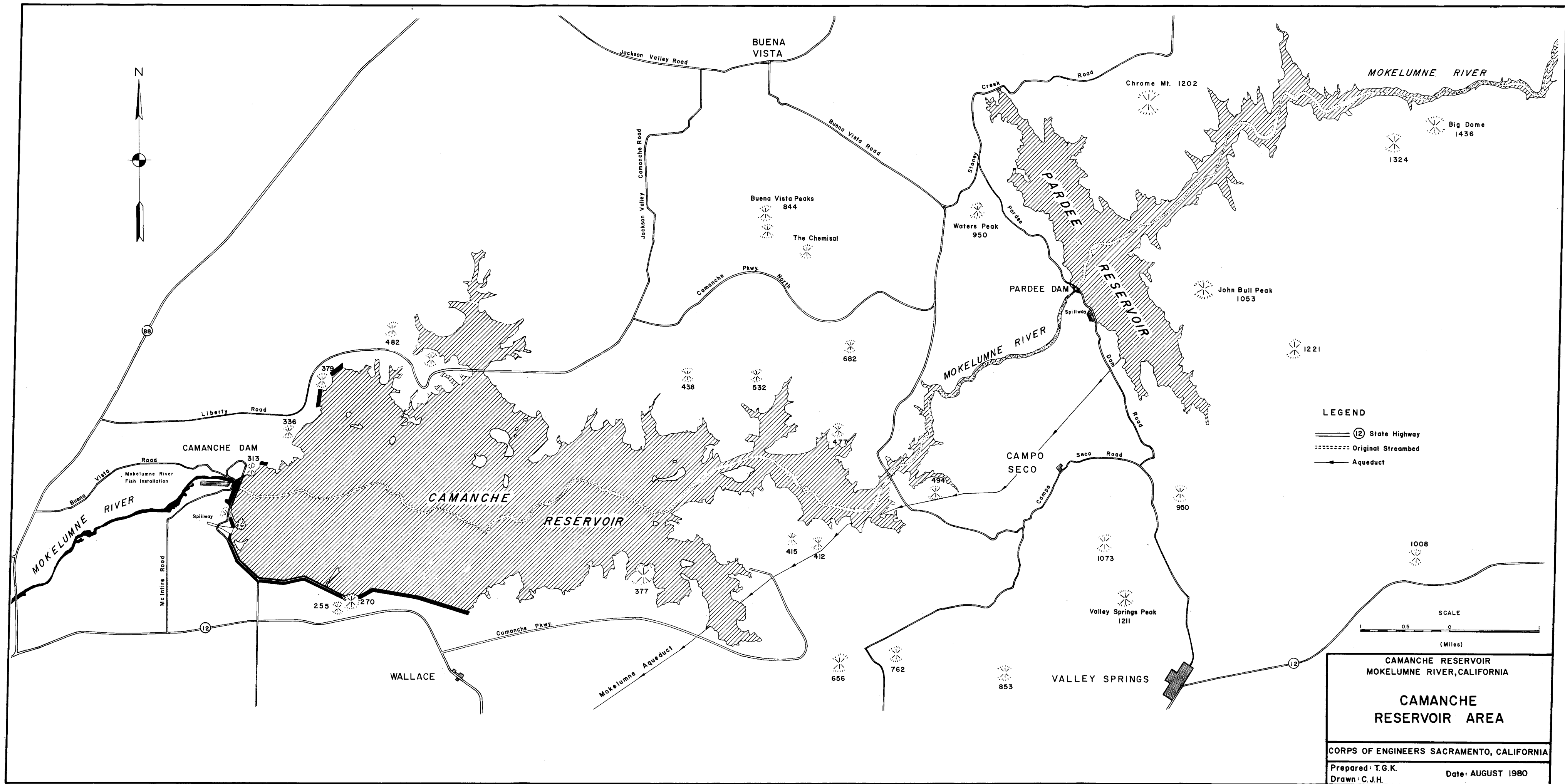
Data obtained on non-work days will be furnished on the following work day.

b. Immediately after the end of each month, the operating agency will dispatch to the Reservoir Control Section, Sacramento District, Corps of Engineers, a summary of the following operation data:

(1) Daily inflow at Pardee Reservoir and outflow at Pardee and Camanche Reservoirs.

(2) Daily storage at Salt Springs, Lower Bear, Pardee and Camanche Reservoirs.

(3) Daily requirements of flood control space.



LEGEND

- Ⓜ State Highway
- ⋯ Original Streambed
- Aqueduct

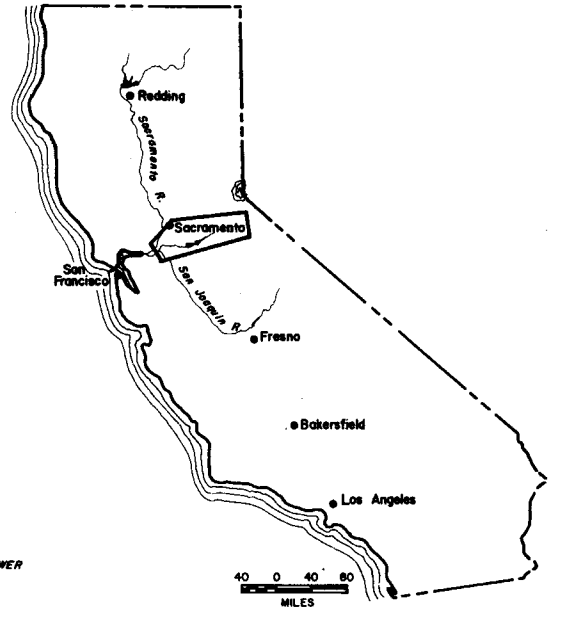
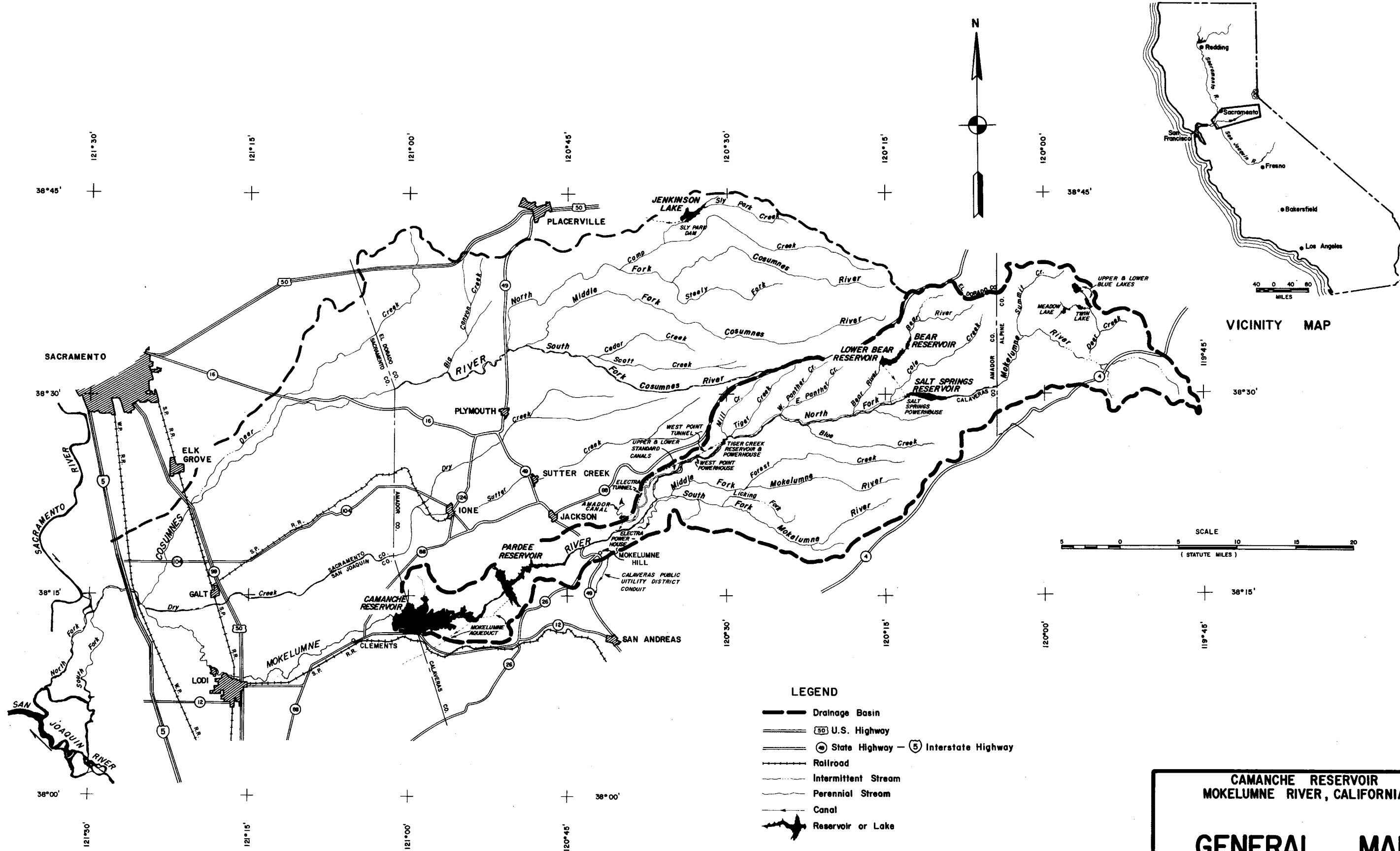
SCALE
0 0.5
(Miles)

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**CAMANCHE
RESERVOIR AREA**

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

Prepared: T.G.K. Date: AUGUST 1980
Drawn: C.J.H.



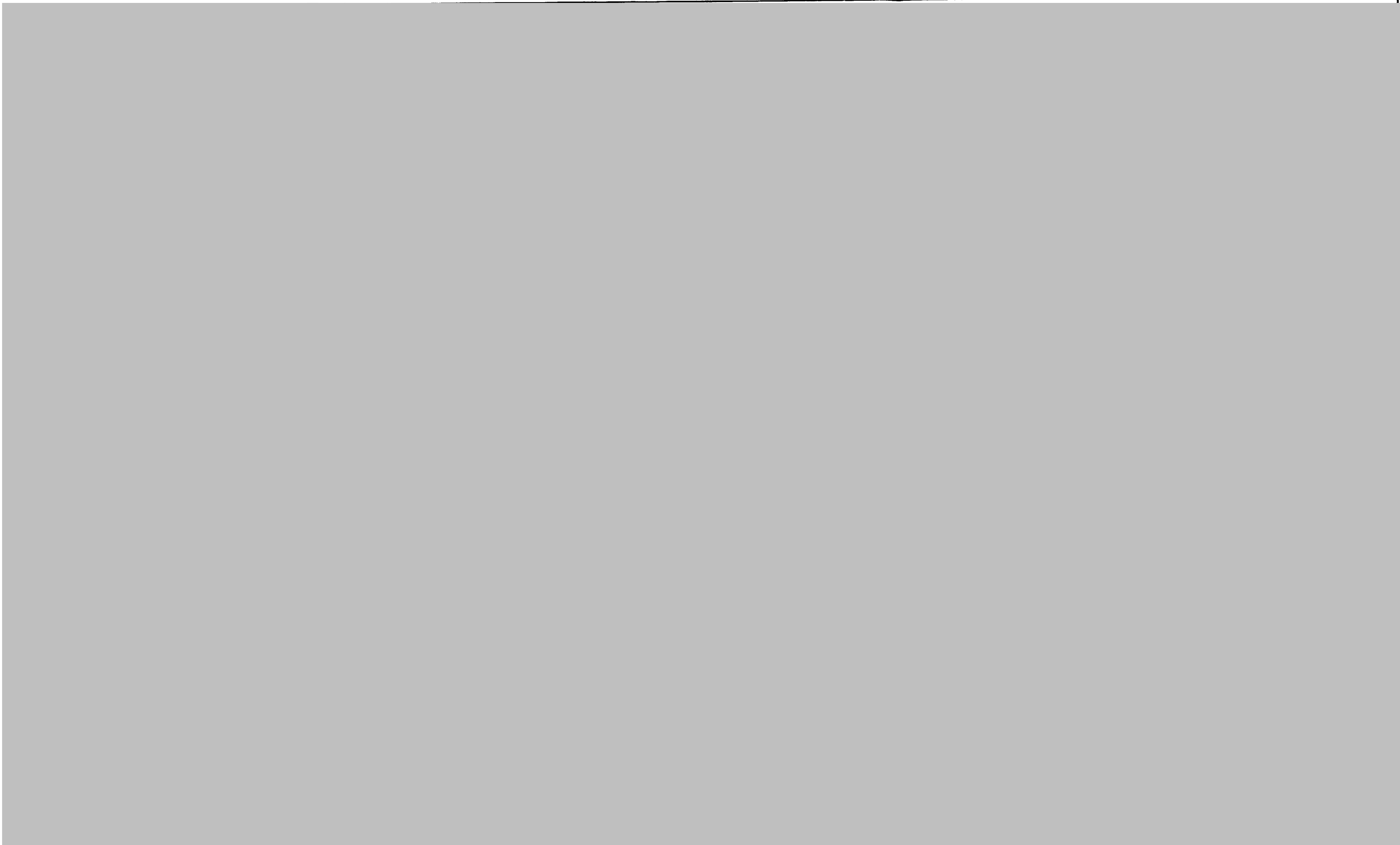
- LEGEND**
- Drainage Basin
 - U.S. Highway
 - State Highway - Interstate Highway
 - Railroad
 - Intermittent Stream
 - Perennial Stream
 - Canal
 - Reservoir or Lake

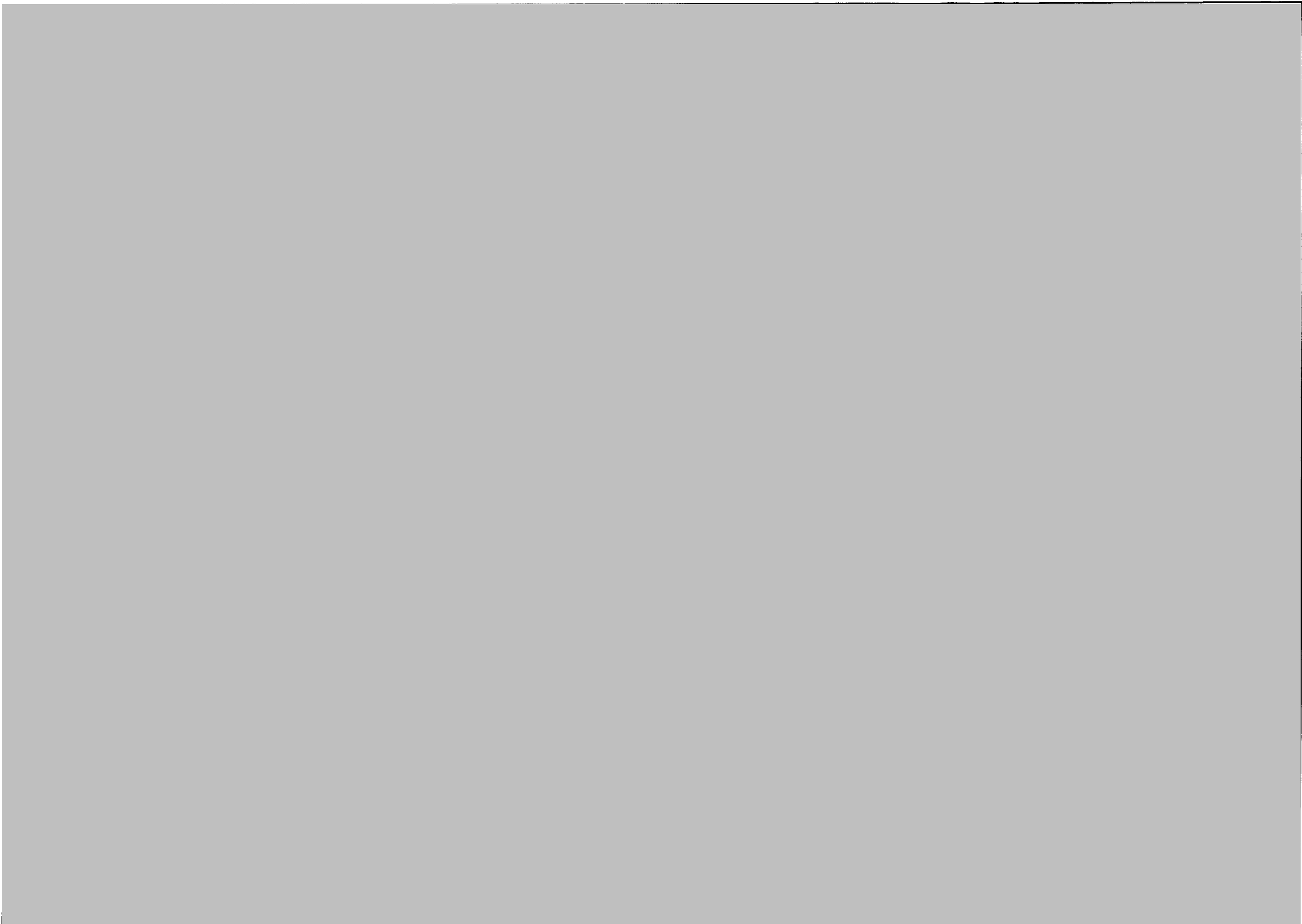
**CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA**

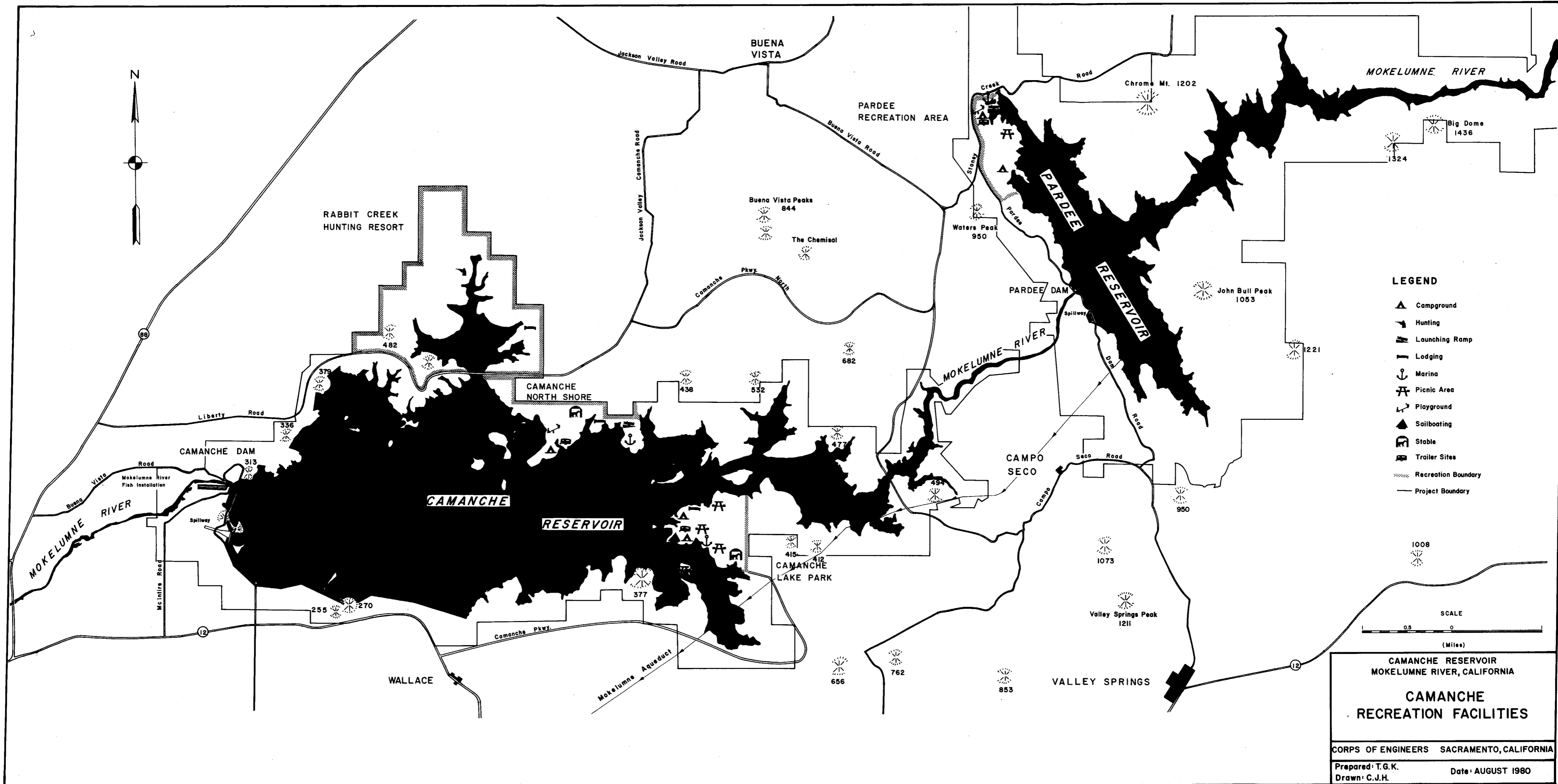
GENERAL MAP

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA
 Prepared: D.N.V. Date: AUGUST 1980
 Drawn: T.K.B.



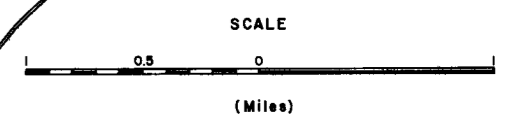






LEGEND

- ▲ Campground
- 🏹 Hunting
- 🚤 Launching Ramp
- 🏠 Lodging
- ⚓ Marina
- 🏕️ Picnic Area
- 🎡 Playground
- ⚓ Sailboating
- 🐎 Stable
- 🚐 Trailer Sites
- ⋯ Recreation Boundary
- Project Boundary

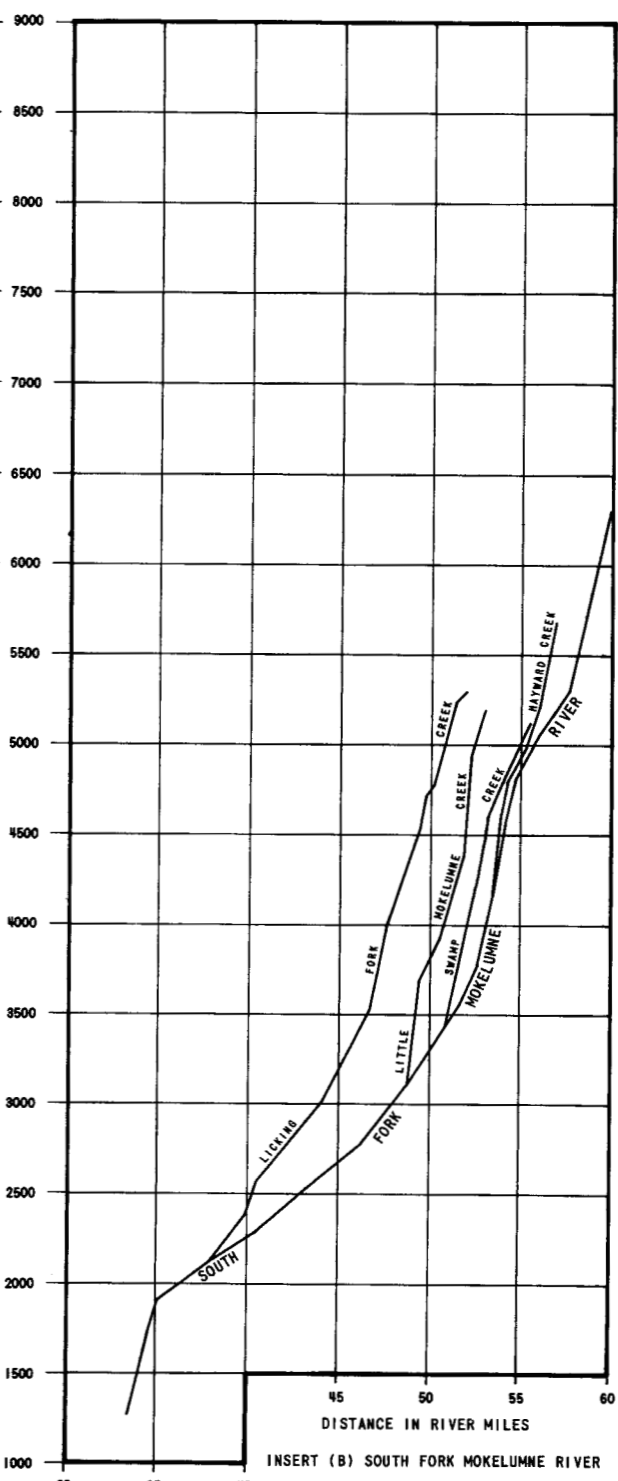
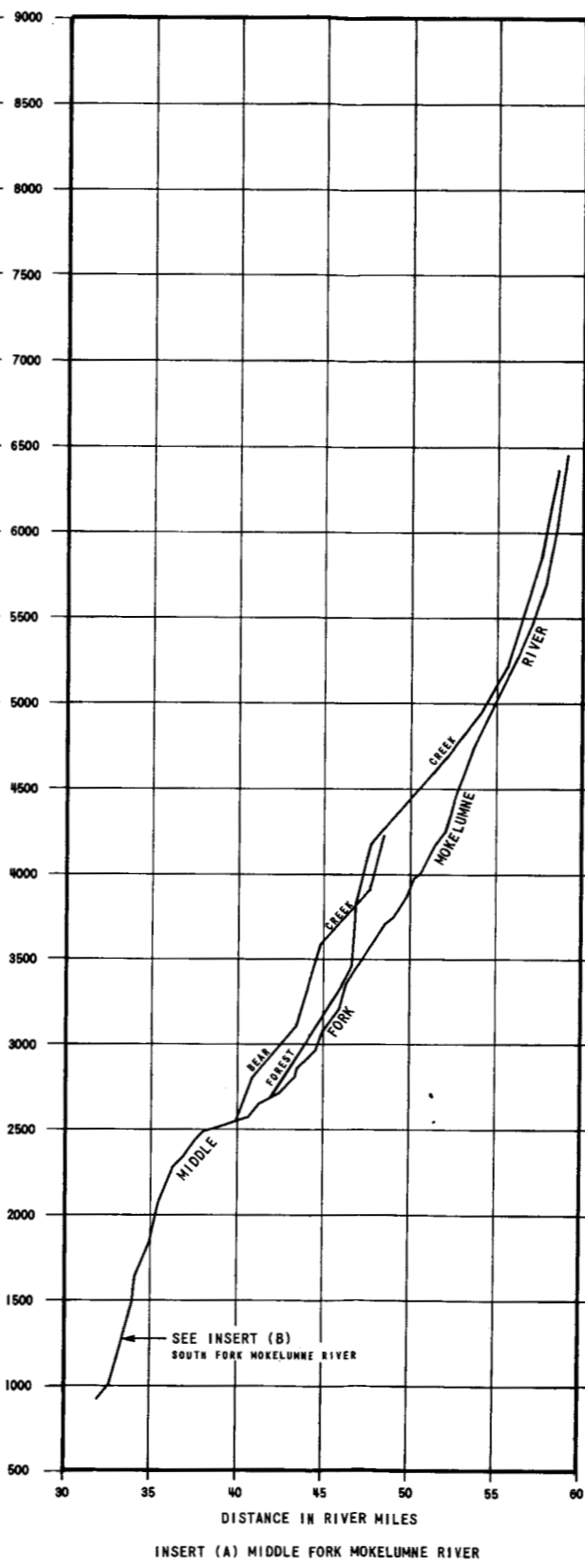
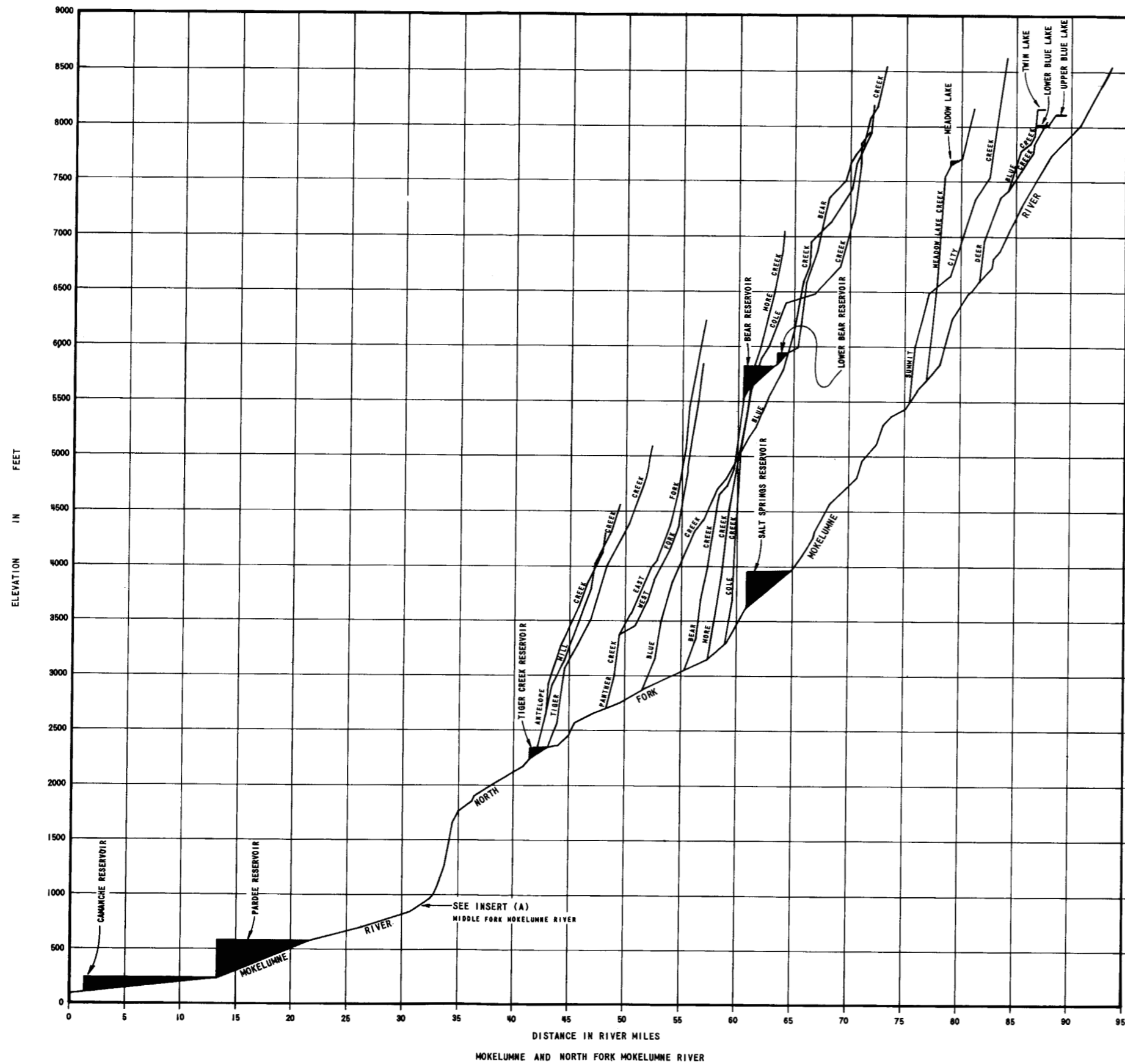


CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**CAMANCHE
RECREATION FACILITIES**

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

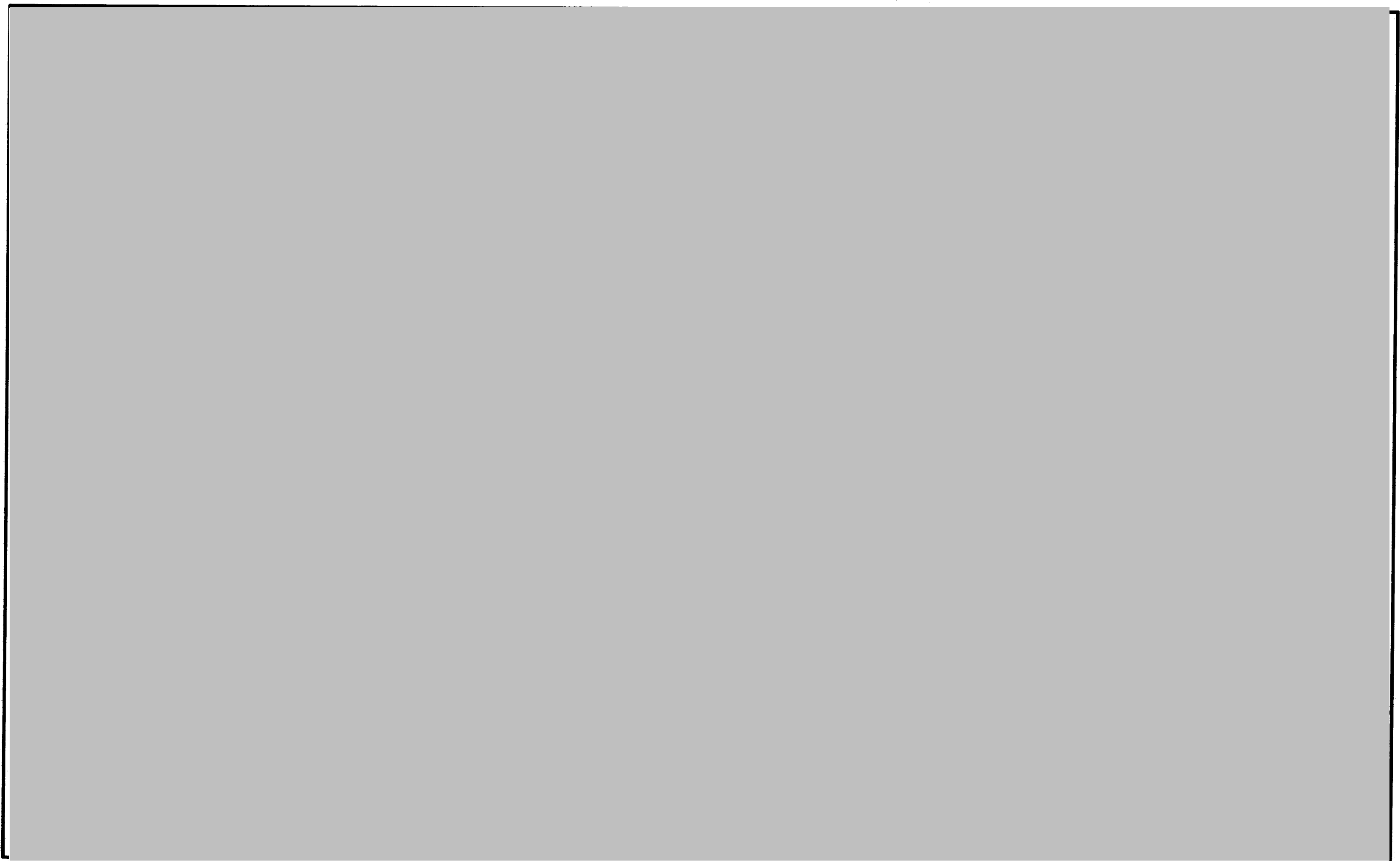
Prepared: T.G.K. Date: AUGUST 1980
Drawn: C.J.H.



CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

STREAM PROFILES

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA
 Prepared: D.N.V. Date: AUGUST 1980
 Drawn: T.K.B.



UNIMPAIRED MONTHLY INFLOWS TO CAMANCHE RESERVOIR

MOKELUMNE RIVER AT CLEMENTS

(Flow in 1,000 acre-feet)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1905	-	17.5	20.4	26.0	46.8	82.7	109.5	145.9	94.0	10.6	7.0	7.3	-
1906	6.4	4.9	5.7	68.3	52.3	169.0	193.5	278.5	340.9	204.5	20.9	11.7	1,356.6
1907	11.5	14.2	51.1	62.2	157.3	336.9	267.0	262.8	284.8	208.4	44.2	17.5	1,717.9
1908	19.0	16.4	22.3	29.7	20.2	47.3	102.0	116.8	73.3	13.2	6.7	8.2	475.1
1909	8.8	7.9	9.7	186.7	125.3	103.0	167.3	228.0	256.4	50.7	7.1	4.6	1,155.3
1910	8.1	56.6	82.6	82.6	52.6	147.2	192.9	195.7	59.7	10.6	4.0	4.4	897.0
1911	6.6	10.1	21.9	147.3	132.2	194.3	256.6	261.8	331.2	117.3	16.5	9.3	1,505.1
1912	8.8	11.9	8.4	14.0	10.8	21.1	30.8	139.9	125.0	9.9	5.6	6.6	392.8
1913	5.3	31.0	10.5	22.6	19.8	21.6	83.8	148.5	55.3	10.5	8.4	6.3	423.6
1914	7.2	8.1	14.4	169.1	101.7	104.3	143.7	260.8	198.1	50.2	10.2	7.8	1,075.6
1915	8.1	8.0	12.6	19.5	75.0	61.4	133.3	218.1	230.9	44.0	5.7	6.4	823.0
1916	6.8	8.7	19.8	79.3	98.0	175.4	194.6	205.2	180.8	46.9	10.4	6.7	1,032.6
1917	12.7	11.8	27.6	20.1	69.6	59.5	134.0	207.4	264.0	47.1	9.3	5.7	868.8
1918	4.6	5.1	3.2	3.2	19.4	106.4	122.1	147.4	87.4	8.0	4.9	8.8	520.5
1919	13.7	12.3	12.5	10.3	47.1	51.5	145.8	246.6	33.8	5.6	4.9	5.2	589.3
1920	4.7	5.3	11.8	7.8	8.2	43.6	88.5	191.6	78.7	13.8	5.8	4.8	464.6
1921	9.6	19.9	34.5	78.7	61.3	108.3	122.4	218.4	177.8	20.4	7.7	5.7	864.7
1922	7.2	4.5	10.9	19.2	59.0	56.5	106.5	317.7	279.9	39.2	10.2	7.6	918.4
1923	8.0	10.7	58.8	46.2	33.3	43.3	127.3	224.8	103.8	28.6	9.1	9.1	703.0
1924	9.4	7.1	6.9	8.7	16.0	11.2	53.1	60.9	4.2	1.2	0.3	3.0	182.0
1925	5.3	18.2	24.6	22.5	107.0	81.6	163.4	237.4	124.4	21.0	10.2	7.9	823.5
1926	5.6	7.6	14.4	13.8	38.2	46.5	132.1	84.4	15.2	5.7	5.7	5.1	374.3
1927	2.9	28.6	32.7	40.8	104.3	79.9	156.5	201.5	183.0	31.3	9.6	5.8	876.9
1928	8.2	28.0	18.8	21.9	31.3	180.8	134.9	166.7	28.1	6.5	6.5	6.6	638.3
MEAN	8.2	14.8	22.3	50.0	61.9	97.2	140.1	198.6	150.4	41.9	9.6	7.2	802.2

MOKELUMNE RIVER NEAR MOKELUMNE HILL

(Flow in 1,000 acre-feet)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1929	1.4	3.5	5.7	7.2	13.8	32.3	66.4	145.7	62.5	5.6	0.1	0.0	344.2
1930	1.2	1.4	20.3	19.3	31.9	66.3	116.1	116.3	80.4	6.6	1.2	1.3	462.3
1931	2.0	5.6	3.6	6.4	14.6	27.6	70.8	71.6	12.6	1.4	0.0	0.0	216.2
1932	0.0	3.9	19.3	23.3	58.1	68.0	109.8	231.1	199.0	31.5	3.9	1.9	749.8
1933	0.5	1.6	3.6	5.4	9.2	28.3	64.0	122.6	169.7	16.8	4.3	3.9	429.9
1934	5.6	5.9	20.0	25.4	28.9	73.3	79.2	40.9	21.2	0.8	0.1	0.7	302.0
1935	0.5	12.8	13.1	23.7	33.5	41.7	179.4	230.3	153.0	16.5	1.6	1.4	707.5
1936	3.7	4.3	5.5	40.0	138.4	101.7	187.3	246.0	144.7	22.4	5.0	2.5	901.5
1937	3.3	3.4	7.7	6.6	61.4	74.0	127.4	279.6	117.9	16.1	3.5	2.2	703.1
1938	3.5	6.6	125.4	27.5	78.3	158.3	181.0	335.1	265.4	51.1	8.6	4.6	1,245.4
1939	8.0	13.4	13.5	13.1	15.6	55.7	126.2	76.5	17.1	2.3	0.9	2.1	344.4
1940	8.6	4.2	9.4	81.4	95.3	157.9	168.2	240.1	90.1	8.8	3.2	2.3	869.5
1941	3.4	6.3	31.5	38.4	69.4	96.8	107.2	285.8	166.9	34.8	4.6	3.5	848.6
1942	4.2	11.7	66.5	97.0	76.1	60.9	153.3	221.4	241.1	52.0	8.2	4.2	996.6
1943	3.6	35.2	52.8	107.1	76.4	192.4	184.4	208.5	113.8	25.9	7.0	3.4	1,010.5
1944	5.7	4.6	8.6	13.0	23.1	46.7	66.8	189.1	79.8	12.1	3.0	0.7	453.2
1945	2.3	33.8	34.9	27.6	112.6	56.3	123.0	208.7	148.9	23.6	5.6	2.5	779.8
1946	9.1	35.6	84.3	60.6	33.0	75.3	153.5	207.5	80.4	10.4	2.4	1.7	753.8
1947	5.1	18.8	19.7	12.8	31.2	57.7	91.3	130.5	29.4	1.8	0.7	0.0	399.0
1948	15.0	12.8	8.9	28.7	15.2	29.8	106.9	206.4	185.0	25.1	4.8	2.8	641.4
1949	2.3	4.9	7.9	6.9	8.7	45.9	151.1	204.6	78.4	5.1	3.5	1.9	521.2
1950	1.8	4.5	5.2	36.6	60.3	70.2	173.9	228.4	150.1	21.4	3.3	3.8	759.5
1951	9.6	270.5	264.5	93.4	83.6	88.8	122.0	156.8	59.0	11.1	3.8	3.2	1,166.3
1952	3.4	12.9	53.3	80.5	91.1	96.4	230.4	368.0	268.5	93.6	16.2	9.5	1,323.8
1953	6.3	8.7	18.9	65.2	32.0	51.5	131.2	140.6	182.9	43.9	8.1	5.2	694.5
1954	5.2	9.5	10.7	18.8	33.2	84.0	158.5	166.8	42.4	12.9	0.0	0.5	542.5
1955	1.3	5.3	19.3	20.9	24.4	37.5	65.9	167.0	92.0	9.3	2.7	1.1	446.7
1956	1.9	4.9	238.7	186.7	77.1	85.3	124.7	275.7	207.1	43.1	7.1	4.9	1,257.2
1957	8.0	9.7	12.0	13.3	54.4	86.1	91.3	181.0	135.9	14.6	2.8	2.9	612.0
1958	5.4	9.3	17.7	25.7	84.4	97.3	179.2	353.5	223.4	57.5	13.6	5.2	1,072.2
1959	6.2	7.2	6.2	30.9	39.5	55.6	99.8	93.7	36.7	6.2	3.3	5.2	390.5
1960	3.6	2.5	3.4	7.6	47.1	74.8	106.8	124.5	43.7	5.0	1.1	2.6	422.7
1961	0.2	4.5	8.7	7.5	19.1	28.9	72.8	104.9	34.6	3.4	0.2	2.1	286.9
1962	1.9	3.2	10.3	8.6	65.2	49.3	178.6	166.3	140.3	18.7	4.2	1.6	648.2
1963	20.3	8.3	18.7	44.4	169.6	47.1	125.4	268.4	146.1	27.9	3.8	4.6	884.6
1964	6.5	40.8	19.6	17.7	18.8	27.6	82.2	142.9	67.0	7.3	1.9	2.1	434.4
1965	4.3	15.2	293.7	150.9	68.5	57.3	162.3	205.1	169.0	47.9	22.4	9.9	1,206.5
1966	8.5	28.8	21.7	22.8	21.5	71.1	139.5	128.3	15.7	3.7	1.5	3.1	466.2
1967	2.4	17.9	72.4	50.8	56.1	123.8	102.7	194.8	292.5	124.6	11.7	2.6	1,152.3
1968	4.6	4.6	9.5	15.4	68.5	59.3	87.3	114.7	35.6	4.2	3.6	2.3	409.6
1969	5.5	35.0	22.5	191.9	88.3	87.2	205.0	385.1	239.3	64.2	9.9	4.7	1,338.6
1970	12.2	12.2	64.1	238.1	81.2	82.4	78.7	193.2	125.4	20.7	3.8	1.0	913.0
1971	3.9	31.0	51.7	60.6	52.5	71.7	110.1	172.0	184.5	32.3	6.1	3.3	779.7
1972	6.2	12.4	27.8	22.0	31.7	104.1	81.2	159.4	69.7	9.7	2.2	2.9	529.3
1973	6.9	13.4	41.5	73.2	63.9	64.5	128.2	283.7	104.9	11.1	2.8	1.0	795.1
1974	7.0	85.2	68.0	105.4	39.7	117.7	136.4	246.3	146.0	37.9	9.1	3.1	1,001.8
1975	3.9	5.6	10.2	20.2	38.6	79.9	72.1	257.3	234.6	44.1	8.2	4.2	778.9
1976	22.9	24.3	13.6	10.7	13.5	28.1	44.3	71.7	7.9	1.7	4.6	2.5	245.8
1977	2.5	2.3	2.2	4.0	6.4	8.8	34.3	42.2	24.6	9.5	0.7	0.6	129.1
1978	1.0	3.5	28.3	76.5	57.3	124.2	147.0	236.6	213.4	51.6	5.7	13.5	958.6
MEAN	5.2	18.5	39.9	47.4	52.2	72.1	121.7	194.5	123.0	24.0	4.7	3.1	706.3

NOTE:

Data from 1929 through 1978 was furnished by East Bay Municipal Utility District. Flows were adjusted for evaporation and effects of storage to obtain unimpaired flows.

HISTORICAL MONTHLY INFLOWS TO CAMANCHE RESERVOIR

(Inflows in 1,000 acre-feet)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1964	-	-	25.3	41.4	46.0	7.5	5.8	5.5	16.2	17.7	20.9	17.6	-
1965	17.4	20.3	177.1	77.3	70.0	97.9	92.3	136.6	38.3	25.5	36.6	31.9	821.2
1966	33.1	37.4	27.4	67.3	36.4	20.4	33.1	6.4	8.6	18.6	26.7	20.2	335.6
1967	15.7	8.0	39.3	32.4	63.3	69.0	109.4	183.0	187.6	105.7	34.5	20.0	867.9
1968	38.8	17.6	28.6	18.3	16.0	43.3	5.4	9.9	10.9	14.4	17.9	15.4	236.5
1969	10.2	16.3	23.1	153.5	95.2	99.0	15.2	233.1	160.6	55.9	25.6	24.1	911.8
1970	28.0	21.2	27.8	154.3	71.6	78.5	46.0	66.3	94.2	23.5	15.4	14.6	641.4
1971	22.6	31.7	62.5	48.7	58.7	49.2	46.3	47.5	40.5	39.7	27.7	24.6	499.7
1972	28.8	13.9	18.1	27.7	4.1	37.3	13.1	16.1	35.1	10.0	11.8	12.4	228.4
1973	11.6	23.5	26.7	61.4	76.2	79.3	60.9	94.4	13.3	18.1	24.0	22.9	512.3
1974	18.4	34.7	63.2	90.4	50.7	105.0	118.9	113.3	121.9	34.4	37.2	24.2	812.3
1975	19.0	14.2	8.1	13.1	27.7	44.6	66.9	98.5	123.1	47.2	28.4	29.6	520.4
1976	28.7	29.4	24.8	10.0	12.4	2.1	2.3	2.5	4.8	2.6	2.4	2.7	124.7
1977	2.7	2.6	2.8	2.5	0.2	0	0	0	0	0	0	0	10.8
1978	0	0	.01	28.0	43.6	57.8	89.9	117.1	155.4	38.6	46.1	37.4	613.9
1979	19.3	13.9	17.2	33.6	42.8	54.8	68.4	97.1	65.1	29.9	20.3	20.7	483.1
MEAN	19.6	19.0	35.8	53.7	44.7	52.9	48.4	76.7	67.2	30.1	23.5	19.9	491.5

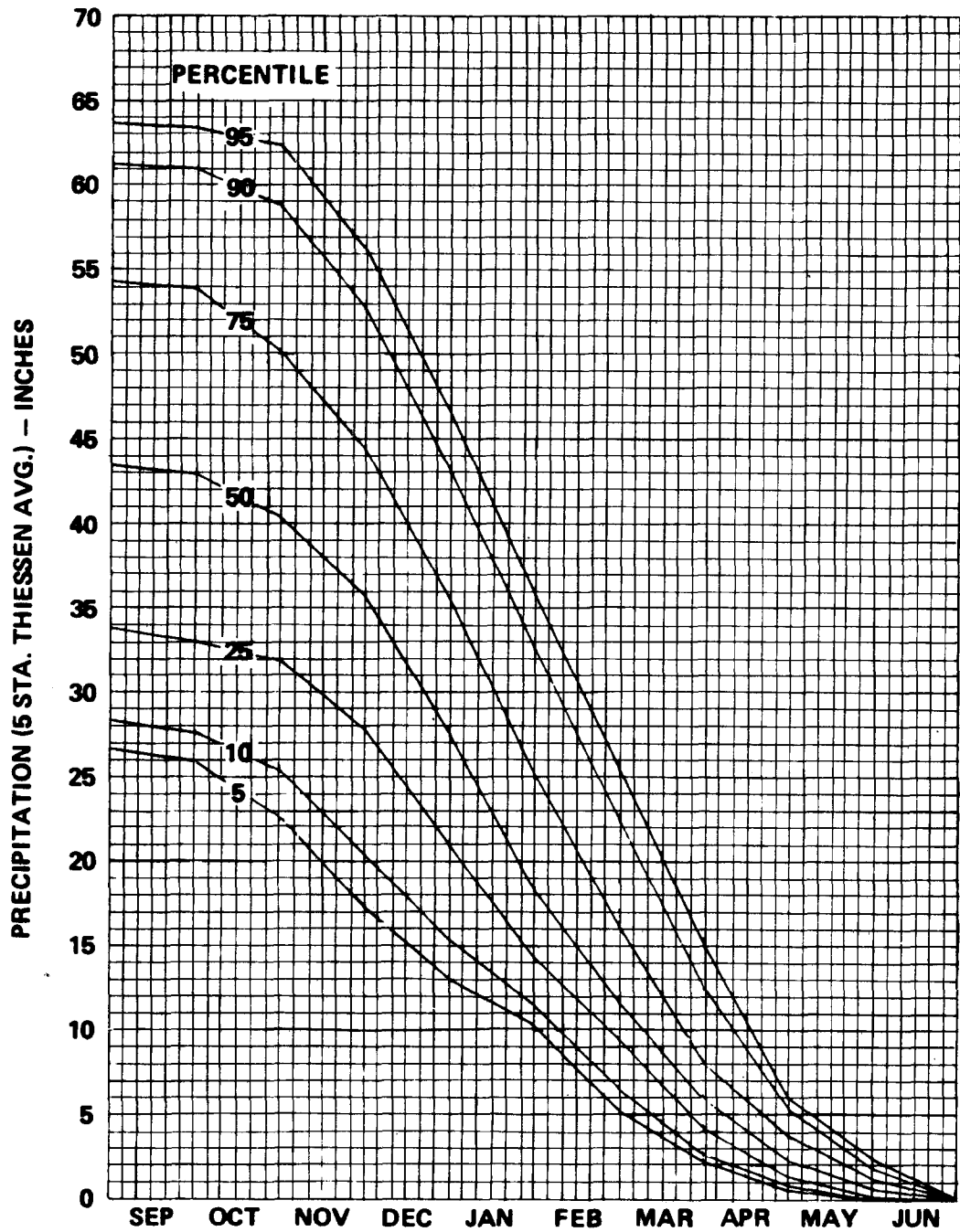


PRINCIPAL EXISTING RESERVOIRS
MOKELUMNE RIVER BASIN, CALIFORNIA

NO.	GENERAL FEATURES									DAM	SPILLWAY	OUTLET WORKS	POWER PLANT
	COUNTY	NAME OF DAM OR RESERVOIR	STREAM	TRIB AREA (sq mi)	* * PURPOSE	OPERATING AGENCY	COMPL DATE (year)	STORAGE CAPACITY (ac-ft)	FC STOR ALLOW (ac-ft)				
1	AMADOR	LAKE TABEAUD	JACKSON CREEK	2	H	PG&E	1901	1,258	∅				
2	AMADOR	LOWER BEAR RIVER	BEAR RIVER	37	H	PG&E	1952	50,680	*				
3	ALPINE	LOWER BLUE LAKE	BLUE CREEK	4.6	H	PG&E	1885	5,091	∅				
4	ALPINE	MEADOW LAKE	TRIBUTARY MOKELUMNE RIVER	5.5	H	PG&E	1903	5,656	∅				
5	AMADOR	PARDEE RESERVOIR	MOKELUMNE RIVER	575	H, S	EBMUD	1929	210,000	200,000 COMBINED STORAGE				
6	AMADOR	SALT SPRINGS RESERVOIR	NORTH FORK MOKELUMNE RIVER	169	H	PG&E	1931	141,857	*				
7	AMADOR	TIGERS CREEK AFTERBAY	NORTH FORK MOKELUMNE RIVER	360	H	PG&E	1931	2,607	∅				
8	ALPINE	TWIN LAKE	TRIBUTARY NORTH FORK MOKELUMNE RIVER	0.8	H	PG&E	1898	1,207	∅				
9	AMADOR	UPPER BEAR RESERVOIR	BEAR RIVER	28	H	PG&E	1900	7,310	∅				
10	ALPINE	UPPER BLUE LAKE	BLUE CREEK	3	H	PG&E	1881	7,300	∅				

* TRANSFERABLE SPACE

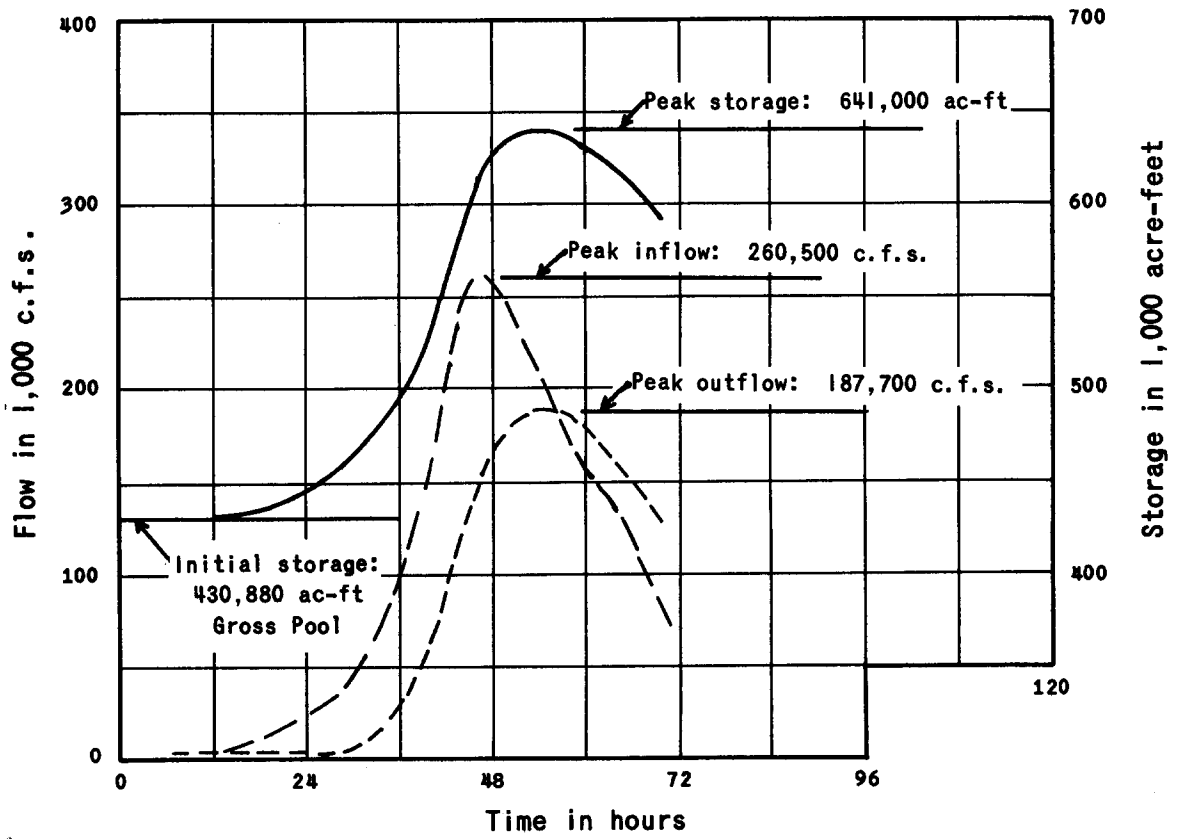
* * H - HYDROELECTRIC.
 S - WATER SUPPLY.
 PG&E - PACIFIC GAS AND ELECTRIC COMPANY
 EBMUD - EAST BAY MUNICIPAL UTILITY DISTRICT.
 1/- New plant to be added in 1983; will increase capacity to 28,650.



NOTES:

1. Curves are based on the Thiessen average of five stations: Calveras Big Trees, Caples Lake (Twin Lakes), Parder Reservoir, Salt Springs, and Tiger Creek.
2. Period used: 1929 - 30 to 1975 - 76
3. Probabilities derived from polynomial regression analysis and curves of subsequent precipitation dated March, 1977
4. Data furnished by East Bay Municipal Utility District.

CAMANCHE RESERVOIR MOKELUMNE RIVER, CALIFORNIA	
SEASONAL PRECIPITATION POTENTIAL MOKELUMNE WATERSHED	
CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA	
Prepared: C.J.H.	Date: AUGUST 1980
Drawn: J.A.M.	



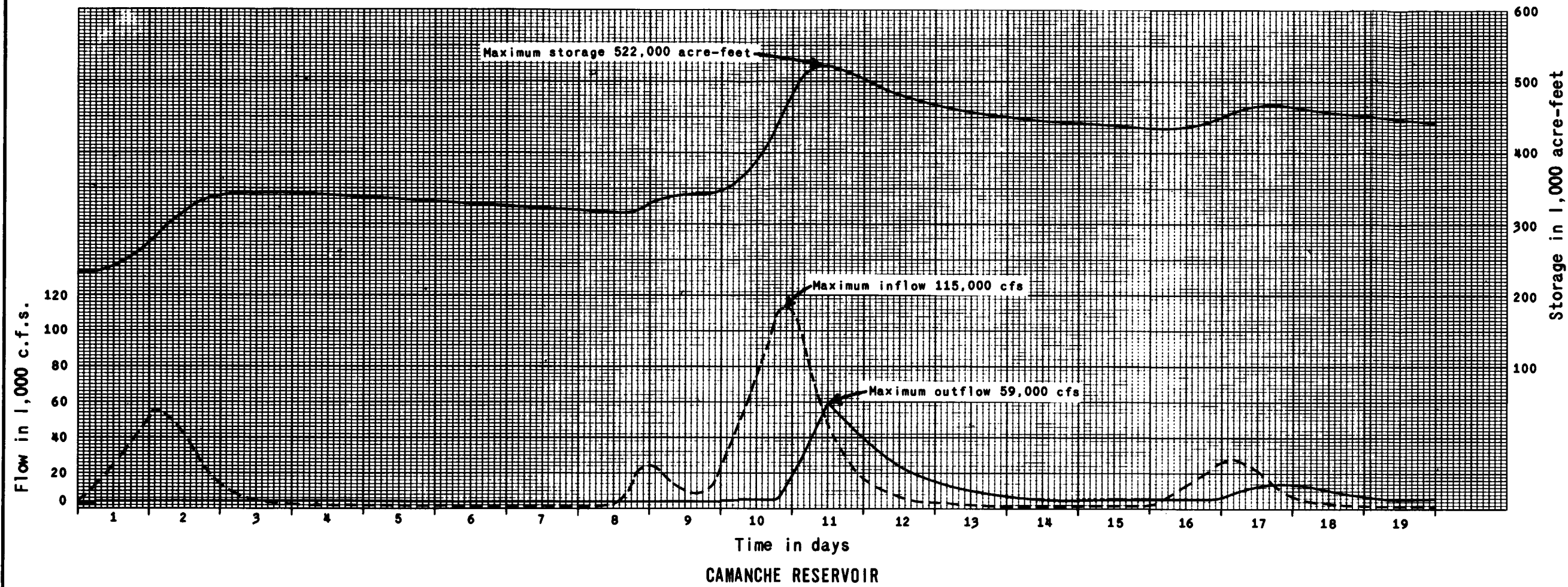
CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

SPILLWAY DESIGN FLOOD ROUTING

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

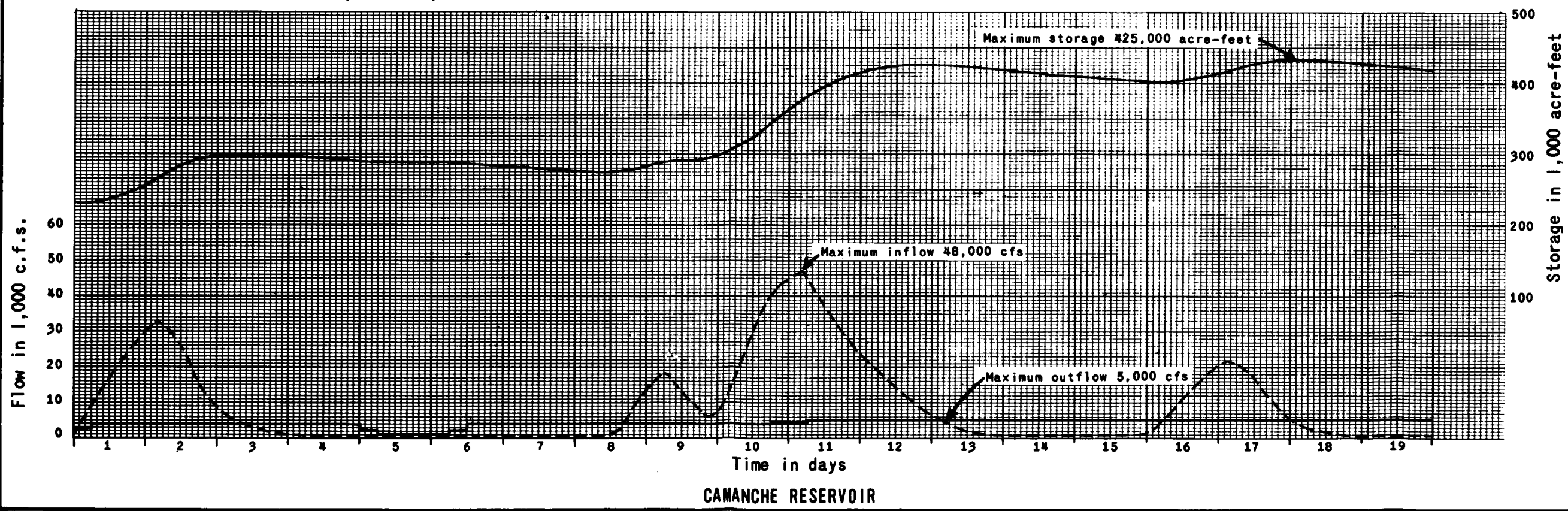
Prepared: D.J.H. Date: AUGUST 1980
Drawn: C.J.H.

STANDARD PROJECT RAIN FLOOD



- NOTES:**
1. At the onset of each routing it was assumed that all upstream reservoirs were full and that there was 200,000 acre-feet of space available in Camanche Reservoir.
 2. Releases are based on release schedule given on Flood Control Diagram.
 3. Diversion to East Bay Aqueduct considered as additional release.
 4. When storage exceeds spillway crest, outflow includes spillway flows.
 5. Reservoir Design Flood Routing assumes that flood control releases are reduced to 1,000 c.f.s. for one day, to undertake emergency downstream channel work.

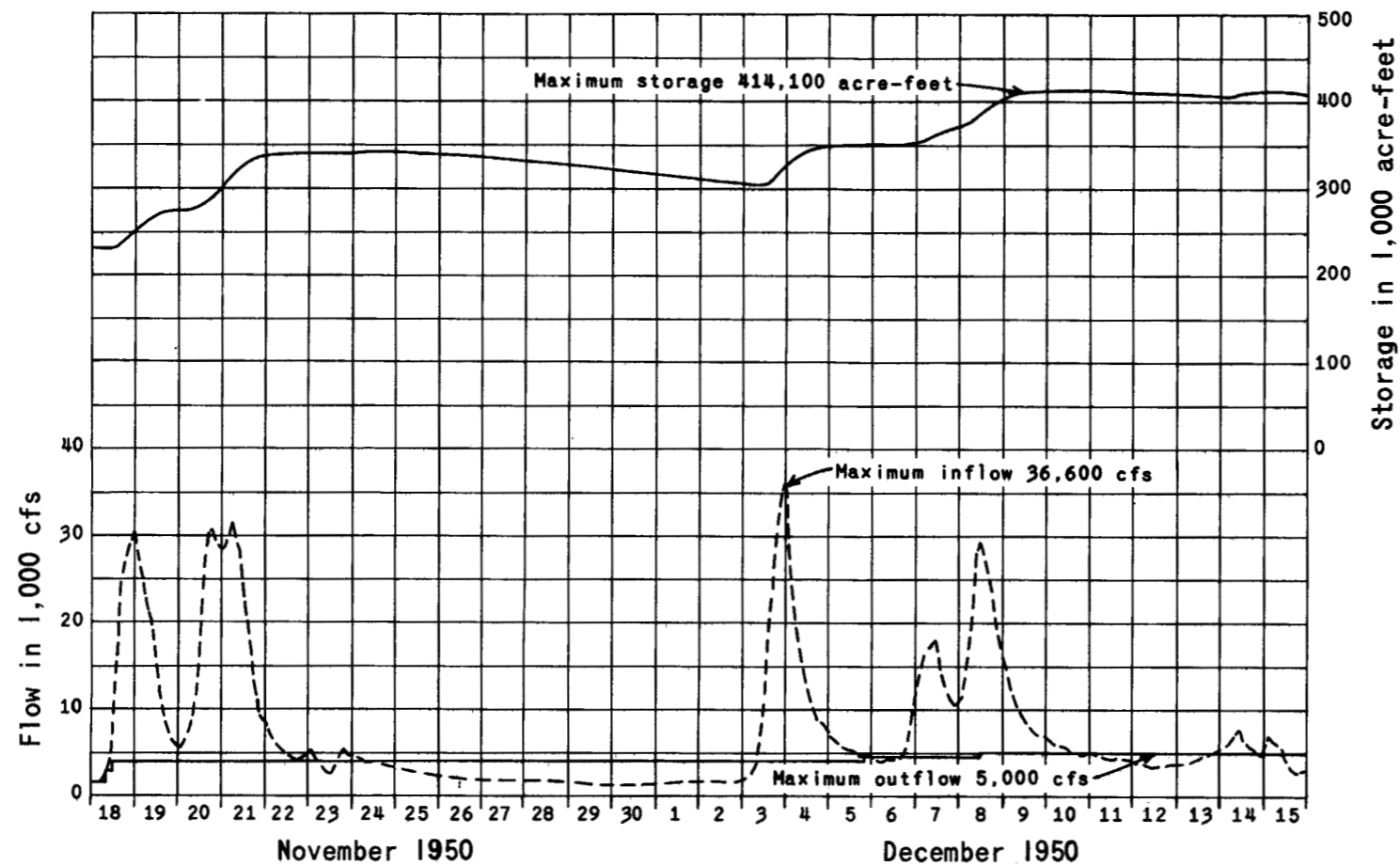
RESERVOIR DESIGN RAIN FLOOD (50 YEAR)



CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

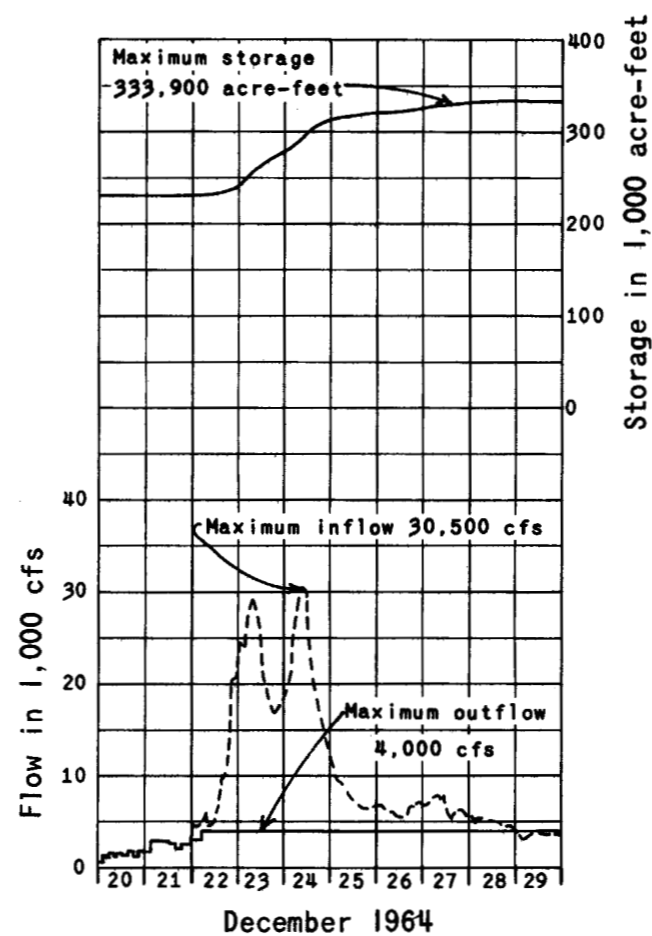
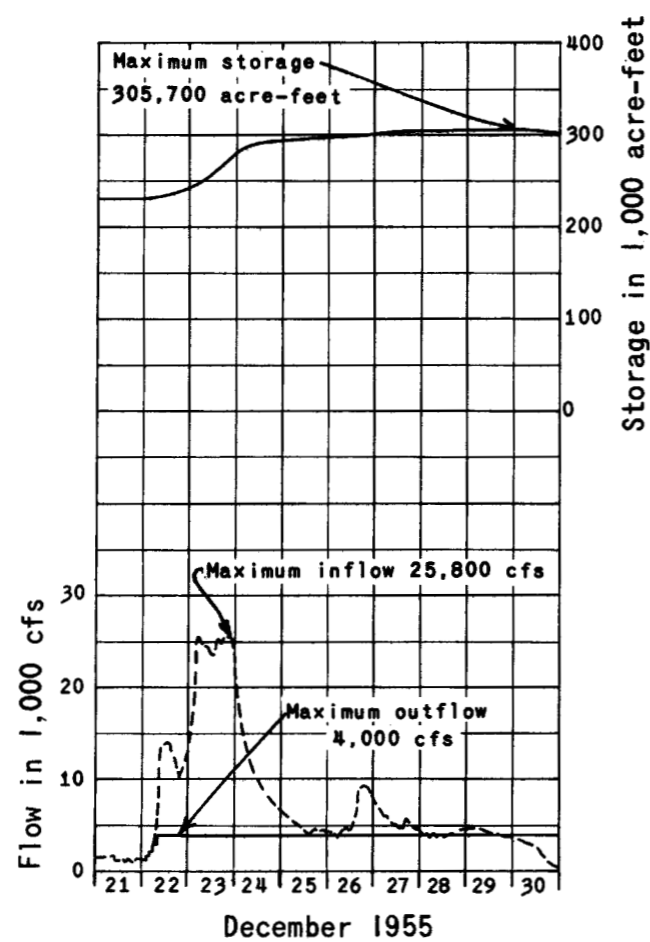
STANDARD PROJECT
RAIN FLOOD AND RESERVOIR DESIGN
RAIN FLOOD ROUTINGS

CORPS OF ENGINEERS, SACRAMENTO, CA.
 Prepared: R.L.L. Date: AUGUST 1980
 Drawn: C.J.H.



NOTES:

1. Routings through Camanche Reservoir are made in conformity with the Flood Control Diagram.
2. At the onset of each routing, it was assumed that all upstream reservoirs were full and that the required flood control space was available in Camanche Reservoir.
3. Inflow represents the historical inflow to Pardee Reservoir. Diversion to East Bay Aqueduct considered as an additional release.

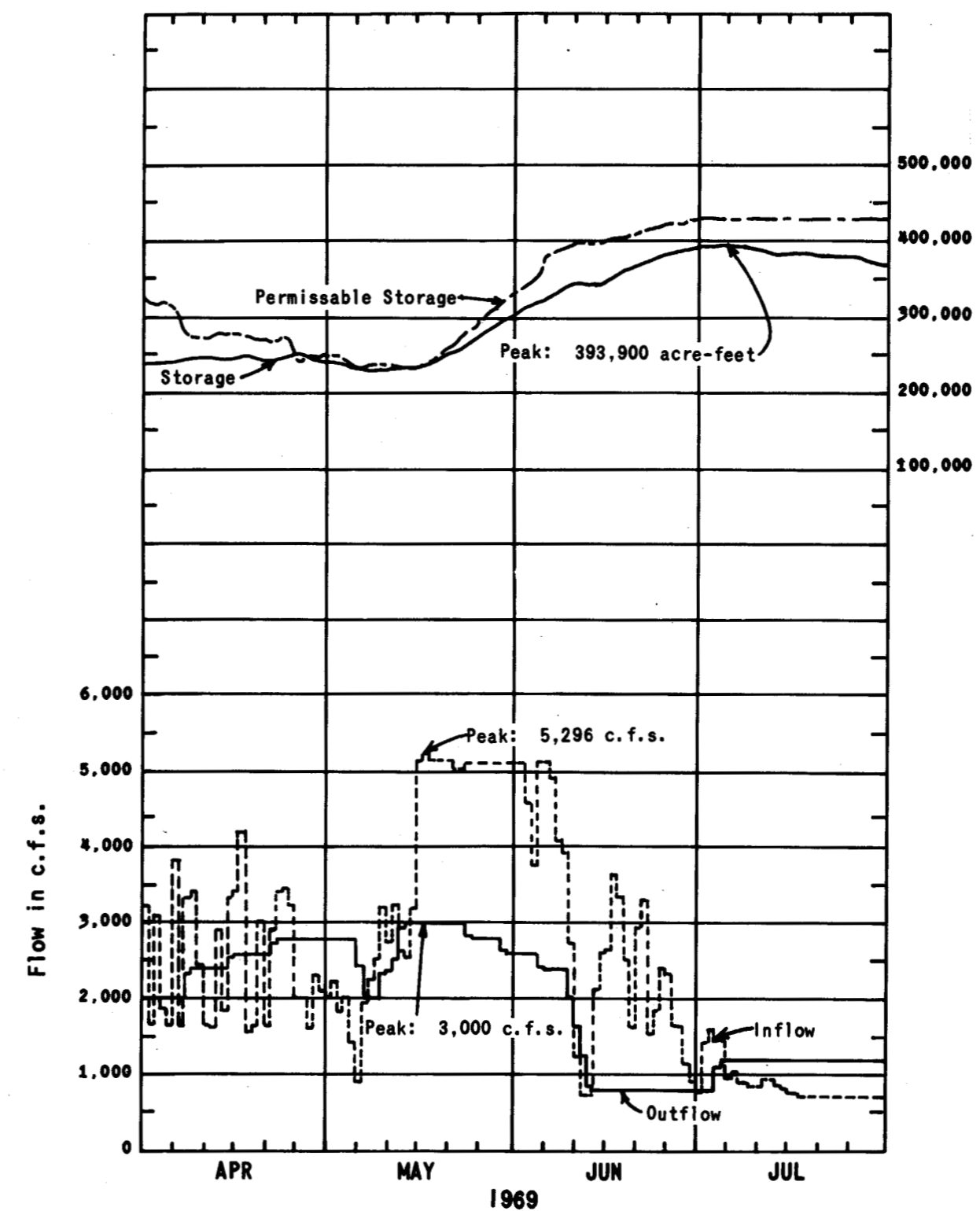
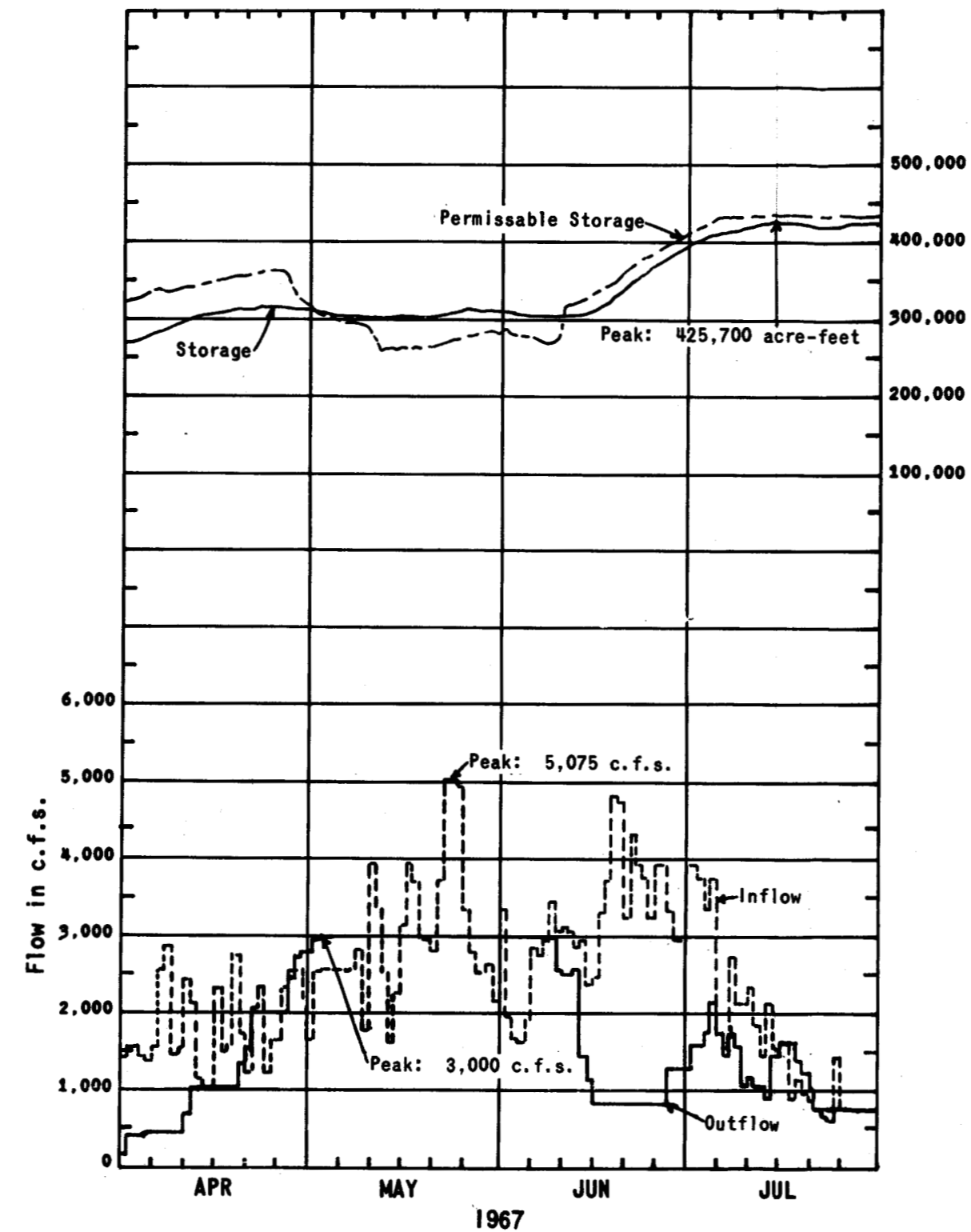
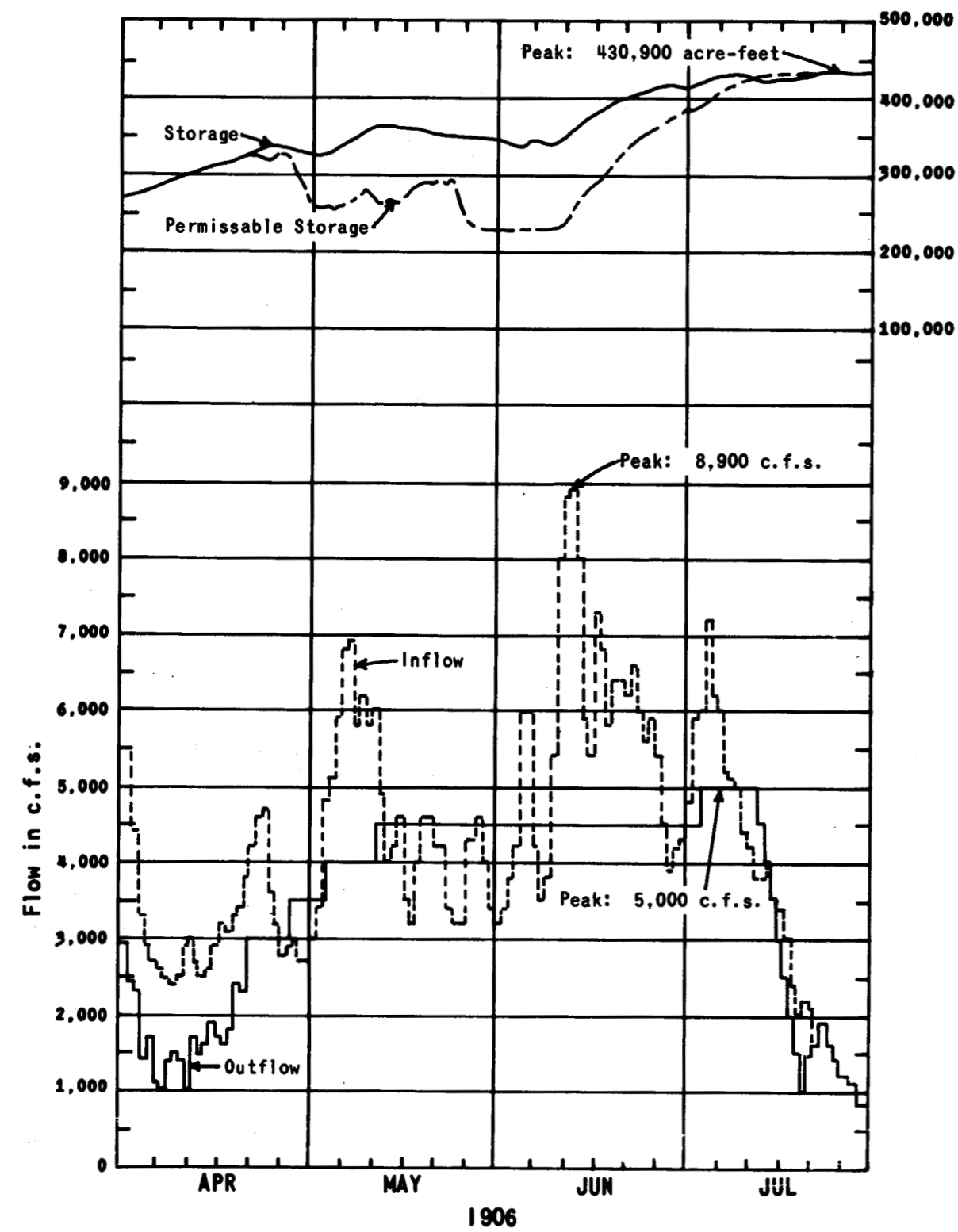


CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**HYPOTHETICAL FLOOD ROUTINGS
OF HISTORICAL
RAIN FLOODS**

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: T.G.K. Date: AUGUST 1980
 Drawn: C.J.H.



NOTES:

1. 1906 Flood - Routing is hypothetical and represents one of several possible operations.
2. 1967 and 1969 Floods - Routings are actual historical operations.

CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA
 HYPOTHETICAL AND HISTORICAL
 SNOWMELT FLOOD ROUTINGS

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA
 Prepared: C. J. H. Date: AUGUST 1980
 Drawn: C. J. H.

**ANNUAL MAXIMUM RAIN FLOOD FLOWS
MOKELUMNE RIVER AT CAMANCHE DAM
UNREGULATED CONDITION**

(Flows in cfs)

WATER YEAR	PEAK		1-DAY		3-DAY		7-DAY		15-DAY		30-DAY	
	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW
1901	19 Feb	13,200										
1904	24 Feb	19,000										
1905			2 Feb	2,380	19 Mar	1,980	18 Mar	1,780	17 Mar	1,680	2 Mar	1,360
1906			31 Mar	8,160	24 Mar	6,150	25 Mar	5,070	17 Mar	3,660	2 Mar	2,800
1907	19 Mar	25,500	19 Mar	23,000	18 Mar	17,600	17 Mar	12,700	17 Mar	8,920	2 Mar	5,610
1908			22 Jan	960	22 Jan	810	21 Jan	730	14 Jan	600	14 Jan	510
1909	14 Jan	13,100	14 Jan	12,600	14 Jan	11,100	14 Jan	7,130	13 Jan	5,360	14 Jan	3,710
1910	3 Dec	10,800	21 Nov	7,200	19 Mar	5,040	19 Mar	4,120	12 Mar	3,000	1 Mar	2,420
1911	31 Jan	18,900	30 Jan	16,700	30 Jan	14,030	30 Jan	8,270	24 Jan	5,530	20 Jan	3,790
1912			7 Mar	940	7 Mar	760	7 Mar	550	1 Mar	390	15 Feb	290
1913			8 Nov	1,520	8 Nov	1,430	7 Nov	1,380	3 Nov	820	2 Nov	520
1914	26 Jan	13,300	26 Jan	11,100	25 Jan	7,550	22 Jan	5,970	18 Jan	3,920	1 Jan	2,780
1915			13 May	6,630	11 May	5,380	11 May	4,840	8 May	3,900	19 Apr	2,980
1916	20 Mar	10,700	20 Mar	8,040	20 Mar	6,130	18 Mar	4,450	12 Mar	3,520	19 Mar	3,240
1917			25 Feb	6,400	24 Feb	4,500	21 Feb	3,910	21 Feb	2,390	21 Feb	1,620
1918	12 Mar	8,620	12 Mar	6,940	11 Mar	4,160	7 Mar	2,680	7 Mar	2,370	7 Mar	1,990
1919	11 Feb	7,540	11 Feb	7,060	10 Feb	3,710	9 Feb	2,000	9 Feb	1,190	10 Feb	1,010
1920			2 Mar	2,550	21 Mar	1,410	21 Mar	1,060	14 Mar	770	27 Feb	680
1921	18 Jan	11,100	18 Jan	7,350	18 Jan	4,510	18 Jan	2,620	18 Jan	2,000	25 Feb	1,770
1922			20 Feb	4,630	19 Feb	2,730	18 Feb	1,740	9 Feb	1,540	9 Feb	1,110
1923			6 Apr	4,710	13 Dec	3,530	10 Apr	2,780	6 Apr	2,760	21 Mar	1,810
1924			9 Feb	990	8 Feb	820	8 Feb	520	8 Feb	380	28 Jan	280
1925	6 Feb	18,500	6 Feb	9,700	6 Feb	5,730	5 Feb	3,740	5 Feb	2,750	5 Feb	2,030
1926			8 Apr	3,100	6 Apr	2,630	6 Apr	2,180	29 Mar	1,630	13 Mar	1,220
1927			22 Feb	4,840	21 Feb	4,050	18 Feb	3,520	15 Feb	2,700	15 Feb	2,000
1928	25 Mar	25,600	26 Mar	20,300	25 Mar	17,800	24 Mar	10,400	22 Mar	6,110	6 Mar	3,350
1929			5 Feb	980	23 Feb	723	3 Feb	501	3 Feb	319	3 Feb	232
1930			5 Mar	2,290	4 Mar	1,950	4 Mar	1,320	4 Mar	1,031	22 Feb	884
1931			19 Mar	936	18 Mar	770	18 Mar	649	19 Mar	522	12 Mar	557
1932			6 Feb	3,800	6 Feb	3,630	6 Feb	2,570	31 Jan	1,690	5 Feb	1,210
1933			17 Mar	726	16 Mar	675	12 Mar	615	9 Mar	524	2 Feb	452
1934			1 Jan	2,080	1 Jan	1,410	29 Dec	1,150	20 Feb	822	5 Feb	667
1935			8 Apr	6,210	6 Feb	1,060	5 Feb	832	1 Feb	661	29 Jan	574
1936	22 Feb	19,000E	22 Feb	15,000	22 Feb	9,890	21 Feb	6,040	12 Feb	4,670	12 Feb	3,240
1937			6 Feb	5,560	5 Feb	3,690	4 Feb	2,110	4 Feb	1,920	4 Feb	1,340
1938	11 Dec	34,000E	11 Dec	23,000	10 Dec	13,900	10 Dec	7,330	9 Dec	3,790	9 Dec	2,080
1939			26 Mar	1,830	25 Mar	1,700	22 Mar	1,590	18 Mar	1,340	2 Mar	855
1940			31 Mar	10,700	30 Mar	8,510	27 Mar	6,750	25 Mar	4,650	12 Mar	2,980
1941			27 Dec	3,230	1 Mar	2,980	1 Mar	2,430	23 Feb	1,840	8 Feb	1,720
1942			27 Jan	10,400	26 Jan	7,300	24 Jan	4,890	25 Jan	3,600	24 Jan	2,450
1943			10 Mar	11,400	9 Mar	8,090	6 Mar	6,100	5 Mar	4,700	5 Mar	3,510
1944			4 Mar	2,150	4 Mar	1,340	29 Feb	1,070	1 Apr	950	18 Mar	821
1945	2 Feb	22,000E	2 Feb	12,900	2 Feb	8,520	1 Feb	5,210	1 Feb	3,280	31 Jan	2,090
1946			22 Dec	6,130	22 Dec	4,210	22 Dec	3,480	21 Dec	2,850	21 Dec	1,990
1947			23 Nov	1,810	10 Mar	1,370	9 Mar	1,060	10 Mar	1,040	9 Mar	1,000
1948			18 Apr	2,640	21 Apr	2,500	17 Apr	2,370	17 Apr	2,260	3 Apr	1,810
1949			3 Mar	2,370	3 Mar	1,980	3 Mar	1,340	3 Mar	970	3 Mar	863
1950			6 Feb	3,580	4 Feb	3,120	4 Feb	2,200	4 Feb	1,480	17 Jan	1,270
1951	21 Nov	38,000E	21 Nov	30,900	19 Nov	28,800	18 Nov	17,600	18 Nov	9,040	18 Nov	8,440
1952			25 Jan	4,590	24 Jan	3,300	1 Feb	2,310	24 Jan	2,230	24 Jan	1,840
1953			14 Jan	2,100	20 Jan	1,650	17 Jan	1,490	9 Jan	1,420	31 Dec	1,110
1954			10 Mar	5,490	9 Mar	4,450	8 Mar	2,790	8 Mar	1,980	2 Mar	1,480
1955			1 Jan	1,820	1 Jan	1,130	17 Feb	817	14 Feb	628	31 Dec	507
1956	23 Dec	38,000	23 Dec	34,700	22 Dec	26,000	22 Dec	15,200	20 Dec	8,600	22 Dec	5,930
1957			25 Feb	4,210	5 Mar	3,660	4 Mar	2,600	23 Feb	2,380	14 Feb	1,740
1958			3 Apr	9,680	2 Apr	6,630	1 Apr	4,800	21 Mar	3,540	12 Mar	2,710
1959			16 Feb	2,720	16 Feb	2,400	16 Feb	1,730	16 Feb	1,170	16 Feb	992
1960			8 Feb	5,430	8 Feb	4,010	7 Feb	2,170	7 Feb	1,290	8 Feb	893
1961			11 Feb	718	11 Feb	639	22 Mar	610	17 Mar	523	1 Mar	401
1962			10 Feb	5,240	15 Feb	3,400	10 Feb	3,000	8 Feb	2,070	8 Feb	1,420
1963	1 Feb	40,000E	1 Feb	29,900	31 Jan	19,500	30 Jan	10,500	30 Jan	5,820	30 Jan	3,400
1964			15 Nov	2,780	14 Nov	2,070	14 Nov	1,290	14 Nov	1,010	5 Nov	816
1965	23 Dec	42,000E	23 Dec	36,200	22 Dec	28,800	22 Dec	17,700	20 Dec	9,870	20 Dec	6,430
1966			18 Nov	1,760	17 Nov	1,580	17 Nov	1,080	16 Nov	881	13 Nov	632
1967			17 Mar	7,790	16 Mar	6,400	16 Mar	4,330	13 Mar	2,960	26 Feb	1,850
1968			21 Feb	3,350	20 Feb	2,950	20 Feb	2,670	17 Feb	1,990	17 Feb	1,510
1969	21 Jan	20,000E	21 Jan	15,400	20 Jan	11,100	20 Jan	8,660	19 Jan	5,610	19 Jan	3,870
1970	21 Jan	19,000E	21 Jan	14,800	21 Jan	13,000	16 Jan	9,310	14 Jan	7,160	13 Jan	4,490
1971			26 Mar	5,340	26 Mar	4,050	25 Mar	2,930	17 Mar	1,840	2 Mar	1,290
1972			25 Dec	2,620	23 Dec	1,880	22 Dec	1,430	21 Dec	839	30 Jan	554
1973			12 Jan	4,430	16 Jan	3,570	12 Jan	3,120	9 Jan	2,230	12 Jan	1,600
1974			12 Nov	7,910	11 Nov	6,230	10 Nov	3,650	14 Jan	2,390	27 Nov	2,130
1975			25 Mar	4,380	25 Mar	3,260	22 Mar	2,350	20 Mar	1,750	5 Mar	1,460
1976			27 Oct	2,360	26 Oct	1,620	26 Oct	1,050	26 Oct	759	25 Oct	587
1977			2 Jan	456	22 Feb	266	24 Mar	208	17 Mar	167	1 Mar	140
1978			26 Apr	6,010	26 Apr	4,730	25 Apr	3,750	26 Apr	3,430	11 Apr	2,850
1979			12 Jan	6,780	12 Jan	3,760	11 Jan	2,190	16 Mar	1,560	19 Feb	1,480

COMPUTED STATISTICS

Years	75	75	75	75	75
Log Mean	3.680	3.549	3.409	3.276	3.154
Std. Dev.	.429	.427	.399	.376	.354
Skew	-.076	.002	-.086	-.293	-.372

ADOPTED STATISTICS

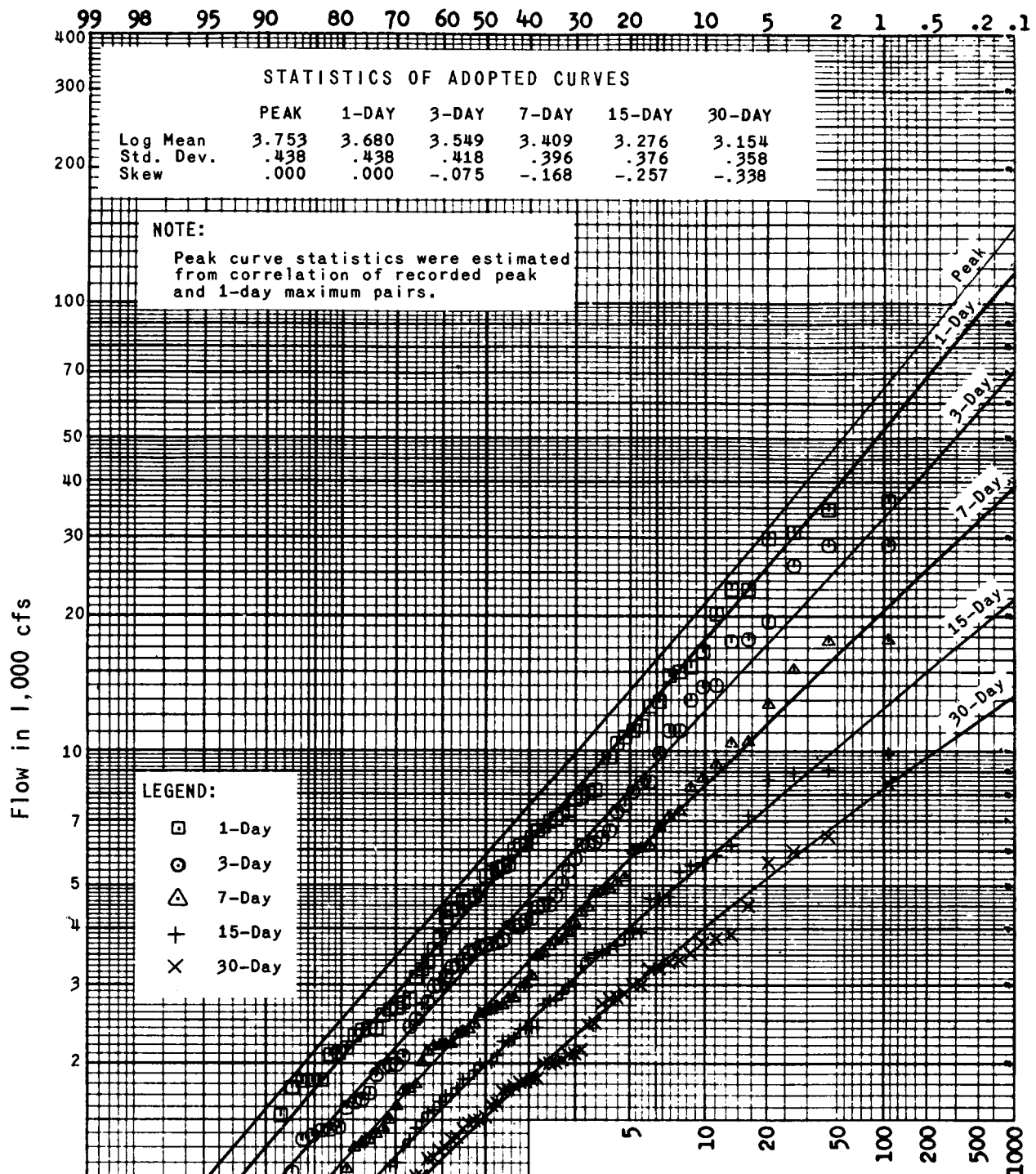
Log Mean	3.680	3.549	3.409	3.276	3.154
Std. Dev.	.438	.418	.396	.376	.358
Skew	.0	-.075	-.168	-.257	-.338

**ANNUAL MAXIMUM SNOWMELT FLOWS
MOKELUMNE RIVER AT CAMANCHE DAM
UNREGULATED CONDITION**

(Flows in cfs)

WATFR YEAR	PEAK		1-DAY		3-DAY		7-DAY		15-DAY		30-DAY		60-DAY		90-DAY		120-DAY	
	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW	DATE	FLOW
1905	17 May	5,540	17 May	4,940	17 May	3,930	16 May	3,450	15 May	3,030	15 May	2,590	18 Apr	2,240	1 Apr	1,950	1 Apr	1,510
1906	12 Jun	9,960	12 Jun	9,000	10 Jun	8,640	10 Jun	7,55	10 Jun	6,860	9 Jun	6,120	6 May	5,230	18 Apr	4,850	2 Apr	4,220
1907			2 Jun	7,080	1 Jun	6,920	30 May	6,710	28 May	5,890	15 May	5,110	15 May	4,750	12 Apr	4,590	1 Apr	4,270
1908	30 Apr	3,100	30 Apr	3,020	30 Apr	2,810	27 Apr	2,520	19 Apr	2,280	12 Apr	2,100	12 Apr	1,930	20 Mar	1,650	10 Mar	1,410
1909			2 Jun	6,800	2 Jun	6,500	1 Jun	6,040	31 May	5,220	26 May	4,420	27 Apr	4,070	5 Apr	3,650	4 Mar	3,150
1910			27 Apr	4,900	25 Apr	4,750	23 Apr	4,410	16 Apr	4,080	16 Apr	3,780	6 Apr	3,280	1 Apr	2,510	1 Apr	1,930
1911			18 Jun	8,030	10 Jun	7,460	12 Jun	7,060	5 Jun	6,800	23 May	5,980	24 Apr	5,000	27 Mar	4,740	11 Mar	4,300
1912	3 Jun	6,520	3 Jun	4,920	2 Jun	4,720	30 May	4,530	29 May	3,850	13 May	3,220	26 Apr	2,250	30 Mar	1,650	16 Mar	1,300
1913	18 May	5,580	18 May	3,840	17 May	3,300	17 May	2,890	17 May	2,740	5 May	2,530	11 Apr	2,040	21 Mar	1,620	19 Mar	1,280
1914			2 Jun	6,220	31 May	5,960	28 May	5,540	20 May	4,840	6 May	4,670	3 May	3,840	11 Apr	3,280	11 Apr	2,570
1915	8 Jun	8,290	1 Jun	7,750	31 May	6,670	28 May	6,110	28 May	5,780	24 May	4,580	24 May	2,910	24 May	1,990	24 May	1,510
1916			6 May	6,400	4 May	5,910	3 May	4,840	24 Apr	4,390	20 Apr	3,800	20 Apr	3,530	13 Apr	3,000	13 Apr	2,350
1917	10 Jun	9,300	10 Jun	7,550	8 Jun	6,800	4 Jun	5,800	3 Jun	5,460	28 May	4,670	24 Apr	4,060	19 Apr	3,230	19 Apr	2,480
1918			5 May	3,920	4 May	3,530	2 May	3,320	24 Apr	3,060	21 Apr	2,670	17 Apr	2,390	11 Apr	1,850	11 Apr	1,410
1919			1 May	5,980	30 Apr	5,660	30 Apr	5,440	30 Apr	4,580	30 Apr	4,160	1 Apr	3,260	1 Apr	2,390	1 Apr	1,810
1920	20 May	6,820	20 May	5,500	19 May	5,340	16 May	4,770	16 May	3,860	6 May	3,190	14 Apr	2,530	5 Apr	2,010	29 Mar	1,570
1921			27 May	6,400	26 May	5,930	11 May	5,150	1 Jun	4,170	12 May	3,990	21 Apr	3,470	30 Mar	2,890	28 Mar	2,300
1922	3 Jun	8,970	3 Jun	7,970	2 Jun	7,770	30 May	7,440	24 May	6,460	14 May	5,970	25 Apr	5,030	4 Apr	3,930	4 Apr	3,080
1923	17 May	6,400	16 May	5,430	16 May	5,160	12 May	4,500	5 May	4,420	2 May	3,710	21 Apr	2,810	21 Apr	2,180	21 Apr	1,670
1924	2 May	2,260	3 May	1,770	2 May	1,730	1 May	1,520	30 Apr	1,430	19 Apr	1,270	1 Apr	960	1 Apr	660	1 Apr	500
1925			16 Apr	6,910	3 May	5,890	2 May	5,260	27 Apr	3,940	1 May	3,900	8 Apr	3,390	8 Apr	2,880	8 Apr	2,210
1926	30 Apr	3,740	28 Apr	2,960	15 Apr	2,910	24 Apr	2,800	21 Apr	2,580	13 Apr	2,180	13 Apr	1,550	13 Apr	1,070	12 Apr	830
1927	17 May	7,870	17 May	6,160	15 May	5,600	13 May	4,960	23 Apr	3,960	22 Apr	3,810	23 Apr	3,500	6 Apr	2,900	6 Apr	2,280
1928			1 May	4,060	10 May	3,700	7 May	3,530	30 Apr	3,330	27 Apr	2,910	6 Apr	2,380	6 Apr	1,700	6 Apr	1,300
1929			17 May	2,990	16 Jun	2,910	13 May	2,760	3 May	2,570	27 Apr	2,330	22 Apr	1,720	28 Mar	1,420	5 Mar	1,170
1930			21 May	3,320	20 May	3,050	19 May	2,790	15 May	2,440	14 May	2,080	1 Apr	1,880	24 Mar	1,770	24 Mar	1,360
1931			6 May	2,020	4 May	1,980	30 Apr	1,880	27 Apr	1,630	17 Apr	1,420	11 Apr	970	11 Apr	687	11 Apr	548
1932			12 May	5,230	14 May	5,230	12 May	5,200	8 May	4,480	9 May	3,830	1 May	3,370	1 Apr	2,840	8 Mar	2,440
1933			30 May	5,110	29 May	4,940	27 May	4,360	30 May	3,940	21 May	3,420	25 Apr	2,280	1 Apr	1,810	1 Apr	1,410
1934			29 Mar	2,860	29 Mar	2,310	27 Mar	1,760	29 Mar	1,420	27 Mar	1,380	13 Mar	1,140	7 Mar	904	7 Mar	745
1935			23 May	5,080	23 May	4,920	22 May	4,860	23 May	4,310	9 May	3,960	15 Apr	3,620	30 Mar	3,130	7 Mar	2,510
1936			7 Jun	6,091	14 May	4,950	12 May	4,630	4 May	4,290	17 Apr	4,030	14 Apr	3,630	30 Mar	3,100	13 Mar	2,610
1937			15 May	6,190	13 May	6,030	12 May	5,440	4 May	4,800	2 May	4,390	13 Apr	3,480	21 Mar	2,910	6 Mar	2,460
1938			15 May	9,040	14 May	8,830	12 May	7,800	25 May	6,610	12 May	6,510	19 Apr	5,210	4 Apr	4,350	1 Mar	3,950
1939			8 Apr	2,570	7 Apr	2,470	6 Apr	2,400	8 Apr	2,100	2 Apr	1,920	1 Apr	1,510	1 Apr	1,100	1 Apr	8,800
1940			13 May	4,870	11 May	4,850	10 May	4,530	10 May	4,240	2 May	3,740	10 Apr	3,200	10 Apr	2,410	10 Apr	1,880
1941	13 May	7,200E	12 May	6,210	11 May	6,020	7 May	5,440	10 May	4,880	5 May	4,520	25 Apr	3,740	27 Mar	3,040	10 Apr	2,600
1942			25 May	6,540	23 May	6,110	20 May	5,820	2 Jun	4,860	20 May	4,700	6 May	3,710	4 Apr	3,290	11 Mar	2,770
1943	1 Jun	14,600E	1 Jun	7,770	29 Apr	4,930	28 Apr	4,570	23 Apr	3,980	14 Apr	3,540	5 Apr	3,270	4 Apr	2,700	4 Apr	2,120
1944			9 May	3,960	8 May	3,820	5 May	3,590	2 May	3,330	2 May	2,910	18 Apr	2,180	17 Apr	1,620	17 Apr	1,280
1945			7 May	5,430	6 May	5,350	4 May	5,170	29 Apr	4,800	19 Apr	3,910	18 Apr	3,170	27 Mar	2,590	7 Mar	2,180
1946			7 May	4,530	5 May	4,460	3 May	4,270	25 Apr	4,040	23 Apr	3,670	13 Apr	3,010	19 Mar	2,430	1 Mar	2,040
1947			4 May	4,050	3 May	3,820	1 May	3,520	20 Apr	2,570	15 Apr	2,160	11 Apr	1,700	9 Apr	1,220	9 Apr	962
1948			27 May	5,420	25 May	5,000	24 May	4,110	25 May	3,760	14 May	3,680	3 May	3,070	3 Mar	2,560	3 Mar	1,680
1949			12 May	4,450	12 May	4,800	11 May	4,140	3 May	3,600	28 Apr	3,300	10 Apr	2,820	2 Apr	2,250	2 Apr	1,760
1950			1 Jun	5,230	31 May	5,140	27 May	4,850	20 May	4,710	13 May	4,010	8 Apr	3,360	29 Mar	2,920	19 Mar	2,420
1951			20 May	3,360	26 May	3,070	20 May	3,010	16 May	2,800	3 May	2,440	4 Apr	2,240	5 Mar	2,010	4 Mar	1,730
1952	31 May	7,600E	28 May	7,450	28 May	7,240	25 May	7,050	25 May	6,750	11 May	6,380	23 Apr	5,380	28 Mar	4,640	16 Mar	4,020
1953			27 Mar	5,340	26 Mar	4,780	16 Jun	3,970	7 Jun	3,450	31 May	2,940	23 Apr	2,740	4 Apr	2,410	18 Mar	2,050
1954			23 Apr	4,140	22 Apr	3,810	22 Apr	3,510	5 May	3,270	21 Apr	3,050	1 Apr	2,470	1 Apr	1,870	1 Apr	1,470
1955			22 May	4,190	21 May	4,080	19 May	3,590	18 May	3,170	10 May	2,920	18 Apr	2,220	25 Mar	1,760	2 Mar	1,450
1956			23 May	7,580	22 May	6,530	21 May	5,810	21 May	5,220	16 May	4,590	25 Apr	3,810	4 Apr	3,160	13 Mar	2,690
1957	18 May	10,500E	19 May	7,870	18 May	5,140	31 May	4,200	26 May	3,710	16 May	3,280	23 Apr	2,540	28 Mar	2,120	26 Mar	1,680
1958			22 May	7,080	22 May	7,210	18 May	6,990	17 May	6,270	5 May	5,580	3 Apr	4,570	11 Apr	3,850	11 Apr	3,010
1959			13 May	2,240	11 May	2,140	10 May	1,930	30 Apr	1,600	16 Apr	1,550	1 Apr	1,420	18 Mar	1,210	18 Mar	949
1960			12 May	3,070	11 May	2,970	9 May	2,750	7 May	2,290	6 May	1,840	23 Mar	1,800	9 Mar	1,620	9 Mar	1,290
1961			23 May	2,140	22 May	2,100	18 May	2,000	14 May	1,790	29 Apr	1,570	2 Apr	1,340	31 Mar	1,060	31 Mar	837
1962			8 May	4,110	6 May	4,140	4 May	3,940	26 Apr	3,300	12 Apr	3,260	13 Apr	2,750	29 Mar	2,520	10 Mar	2,050
1963			21 May	5,850	20 May	5,630	18 May	5,340	17 May	4,750	5 May	4,250	23 Apr	3,370	27 Mar	2,950	13 Mar	2,400
1964			15 May	3,320	13 May	3,240	14 May	3,150	12 May	2,840	29 Apr	2,210	13 Apr	1,860	23 Mar	1,550	1 Mar	1,260
1965			22 Apr	5,200	29 Apr	4,990	25 Apr	4,530	20 Apr	4,170	15 May	3,520	16 Apr	3,360	9 Apr	2,800	10 Mar	2,370
1966			7 May	2,850	5 May	2,780	4 May	2,730	26 Apr	2,540	15 Apr	2,240	25 Mar	2,140	5 Mar	1,720	1 Mar	1,360
1967			23 May	8,650	22 May	8,480	20 May	7,830	16 May	6,770	17 May	5,420	9 May	5,090	16 Apr	4,050	28 Mar	3,460
1968			1 May	2,450	1 May	2,310	29 Apr	2,180	27 Apr	1,920	26 Apr	1,700	3 Mar	1,540	18 Mar	1,300	18 Mar	1,040
1969			11 May	7,820	10 May	7,570	9 May	7,340	9 May	6,740	8 May	6,520	19 Apr	5,240	28 Mar	4,530	9 Mar	3,780
1970			17 May	4,270	17 May	4,040	17 May	3,660	15 May	3,470	13 May	3,030	30 Apr	2,320	30 Mar	1,930	1 Mar	1,820
1971			15 May	4,010	14 May	3,900	11 May	3,570	7 Jun	3,310	11 May	2,800	30 Apr	2,750	1 Apr	2,400	1 Apr	1,940
1972			14 May	3,820	13 May	3,410	13 May	2,880	3 May	2,630	3 May	2,360	12 Apr	1,940	8 Mar	1,770	1 Mar	1,570
1973			18 May	5,990	17 May	5,890	13 May	5,690	11 May	5,180	9 May	4,340	13 Apr	3,420	18 Mar	2,700	1 Mar	2,300
1974			27 May	5,680	27 May	5,440	25 May	4,710	24 May	4,300	7 May	3,820	16 Apr	3,290	22 Mar	2,960	1 Mar	2,640
1975	7 Jun	7,100E	7 Jun	6,730	1 Jun	6,200	1 Jun	5,960	25 May	5,660	14 May	5,220	27 Apr	3,840	4 Apr	2,970	4 Apr	2,350
1976			9 May	1,600	9 May	1,560	1 May	1,410	1 May	1,430	21 Apr	1,140	29 Mar	787	1 Mar	673	1 Mar	538
1977			23 May	1,120	23 May													

Exceedence frequency per hundred years



STATISTICS OF ADOPTED CURVES

	PEAK	1-DAY	3-DAY	7-DAY	15-DAY	30-DAY
Log Mean	3.753	3.680	3.549	3.409	3.276	3.154
Std. Dev.	.438	.438	.418	.396	.376	.358
Skew	.000	.000	-.075	-.168	-.257	-.338

NOTE:
Peak curve statistics were estimated from correlation of recorded peak and 1-day maximum pairs.

LEGEND:

□	1-Day
○	3-Day
△	7-Day
+	15-Day
×	30-Day

DRAINAGE AREA 627 SQ. MI.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

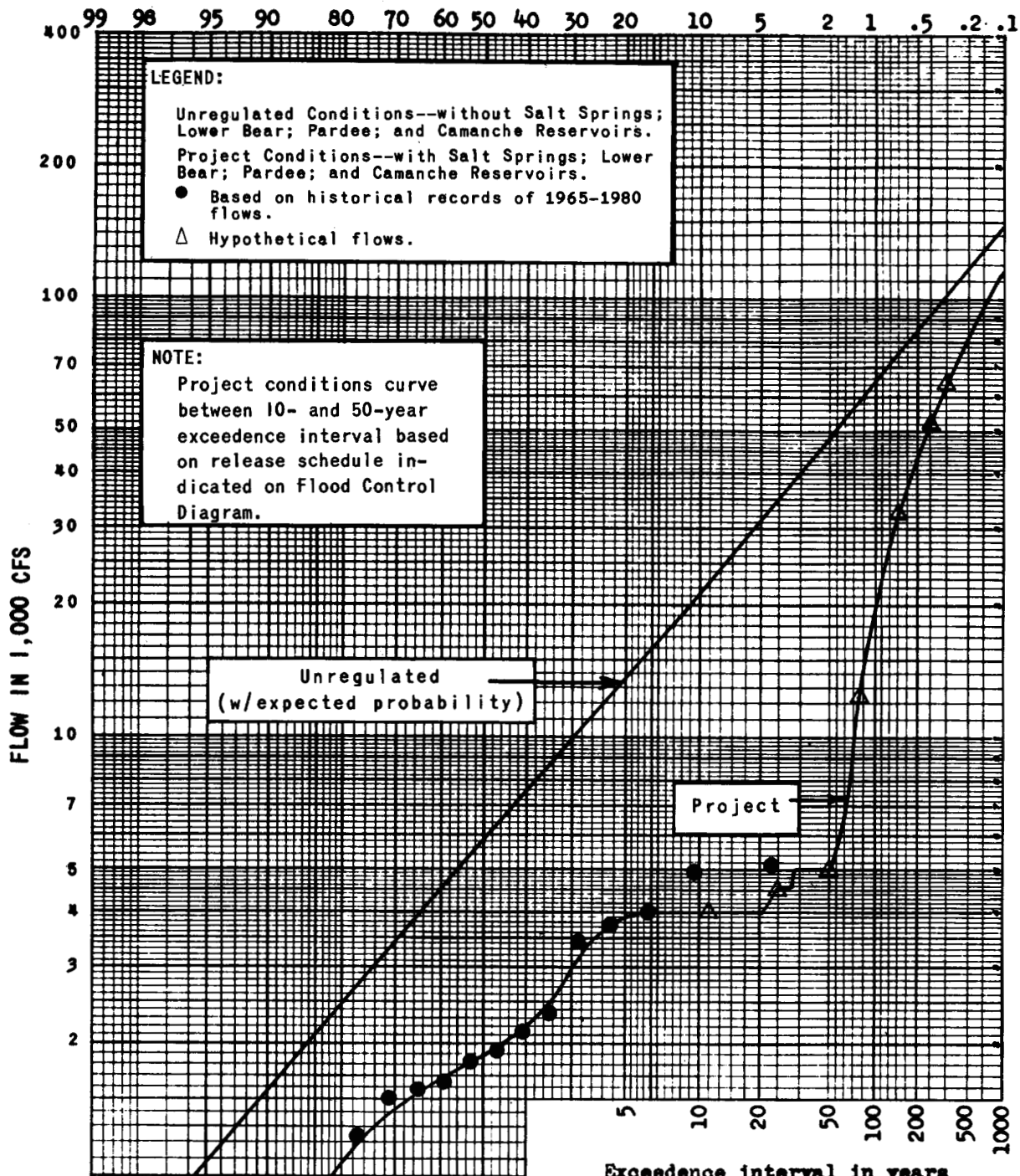
RAIN FLOOD FREQUENCY CURVES

MOKELUMNE RIVER BELOW
CAMANCHE DAM
(UNREGULATED CONDITION)

Corps of Engineers, Sacramento, Calif.

Prepared: D.J.H. Date: AUGUST 1980

Exceedence frequency per hundred years



DRAINAGE AREA 627 SQ. MI.

CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA

PEAK RAIN FLOOD FREQUENCY CURVES
 MOKELUMNE RIVER BELOW CAMANCHE DAM
 (PROJECT CONDITION)

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: DJH, RLL Date: AUGUST 1980
 Drawn: CJH

Exceedence frequency per hundred years

99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 .5 .2 .1

STATISTICS OF ADOPTED CURVES

	PEAK	1-DAY	3-DAY	7-DAY	15-DAY	30-DAY	60-DAY	90-DAY	120-DAY
Log Mean	3.742	3.677	3.647	3.609	3.560	3.509	3.428	3.339	3.249
Std. Dev.	.184	.184	.186	.189	.193	.197	.203	.210	.217
Skew	-.994	-.994	-.977	-.956	-.928	-.899	-.853	-.803	-.752

NOTES:

1. Peak curve statistics were estimated from correlation of recorded peak and 1-day maximum pairs.
2. Only recorded peaks for the first ten plotting positions are shown. The peak of 1 June 1943 was considered an outlier.

Flow in 1,000 cfs

LEGEND:

- ◇ Peak
- 1-Day
- 3-Day
- △ 7-Day
- † 15-Day
- × 30-Day
- ◇ 60-Day
- * 90-Day
- 120-Day

DRAINAGE AREA 627 SQ. MI.

Exceedence interval in years

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

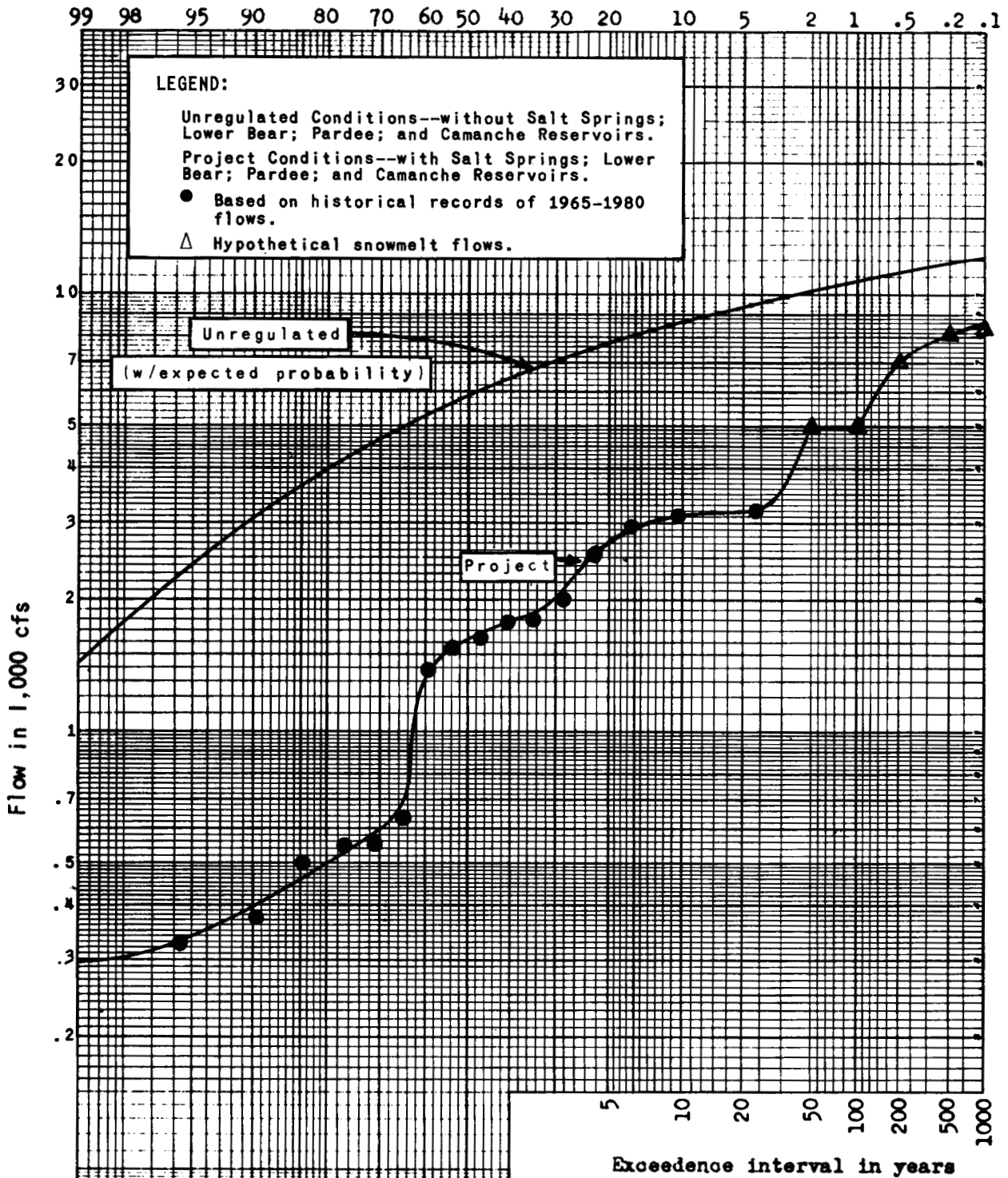
SNOWMELT FREQUENCY CURVES

MOKELUMNE RIVER BELOW
CAMANCHE DAM
(UNREGULATED CONDITION)

Corps of Engineers, Sacramento, Calif.

Prepared: C.J.H., D.J.H. Date: AUGUST 1980

Exceedence frequency per hundred years



DRAINAGE AREA 627 SQ. MI.

5 10 20 50 100 200 500 1000

Exceedence interval in years

CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA

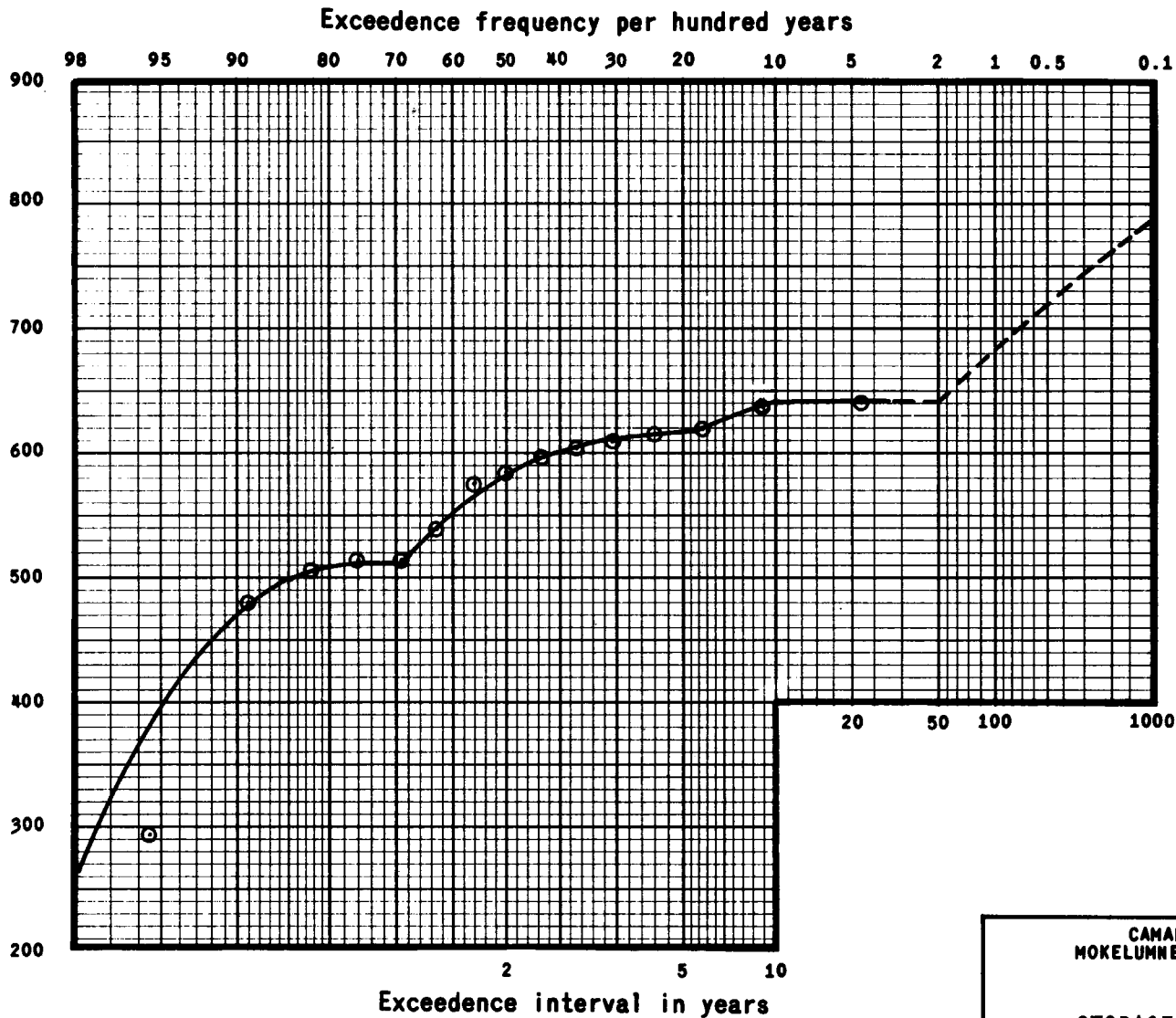
PEAK SNOWMELT FREQUENCY CURVES

MOKELUMNE RIVER BELOW
 CAMANCHE DAM
 (PROJECT CONDITION)

Corps of Engineers, Sacramento, Calif.

Prepared: DJH, RLL Date: AUGUST 1980

Combined storage in Pardee and Camanche Reservoirs
in 1,000 acre-feet



NOTES:

1. Plotted points are based on maximum daily observations for the period 1965-1979.
2. Dashed portion of curve is based on routing of hypothetical floods.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

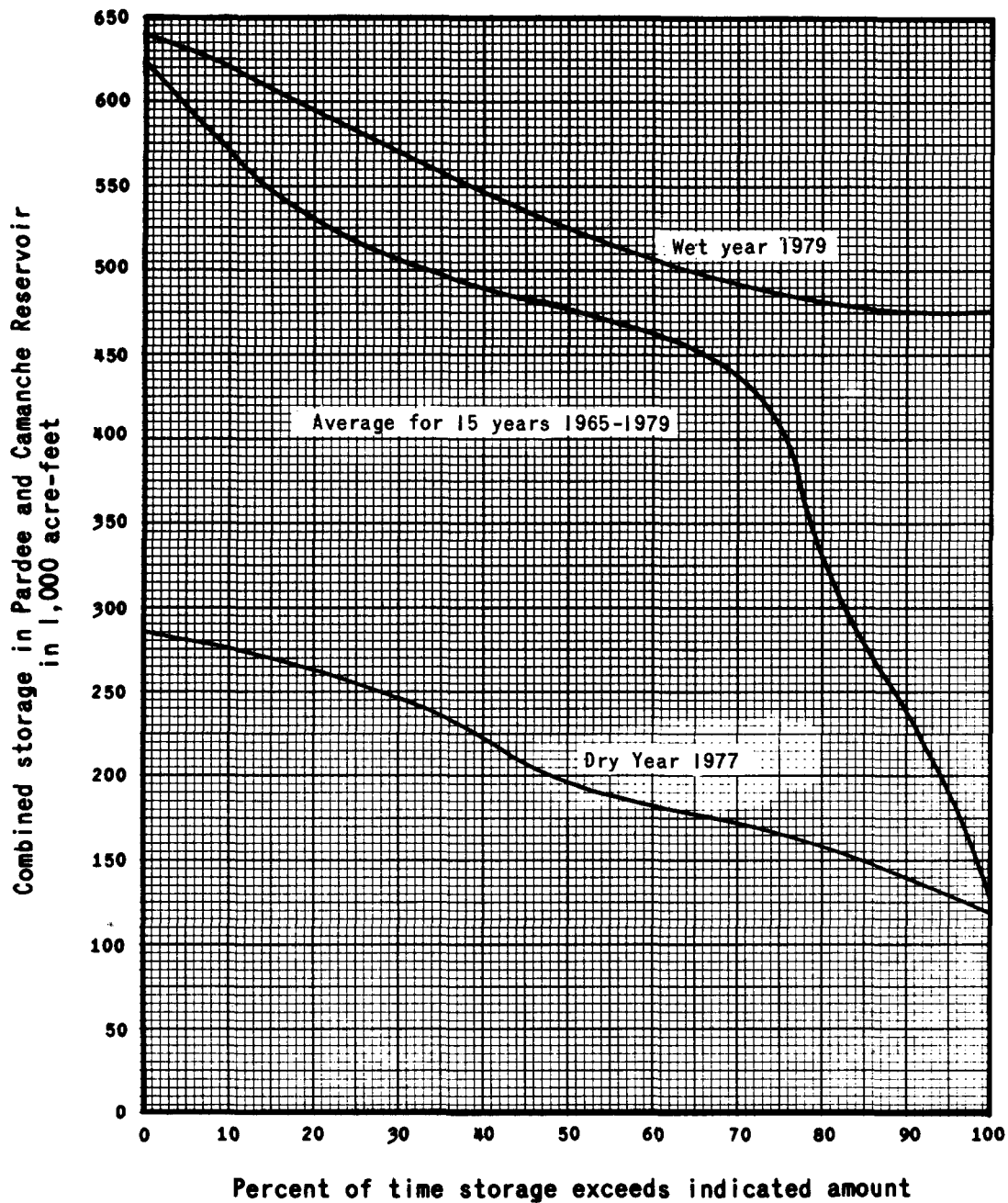
STORAGE-FREQUENCY CURVE
CAMANCHE AND PARDEE RESERVOIRS

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

Prepared: D.J.H.

Date: AUGUST 1980

Drawn: C.J.H.



NOTE:

Curves are based on daily observations for the periods indicated.

**CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

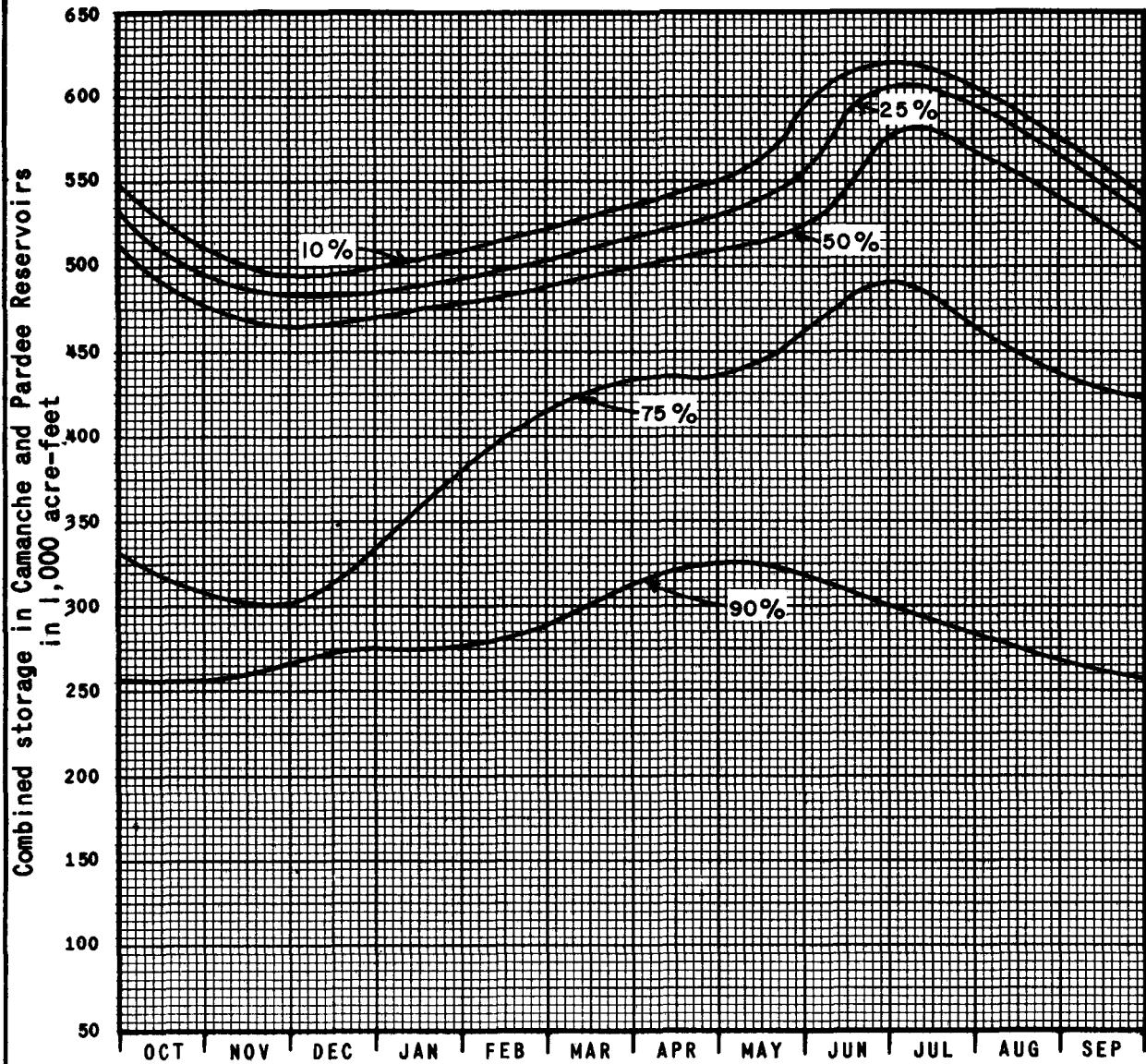
**STORAGE DURATION CURVES
CAMANCHE AND PARDEE RESERVOIRS**

CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

Prepared: D.J.H.

Date: AUGUST 1980

Drawn: C.J.H.



NOTE:

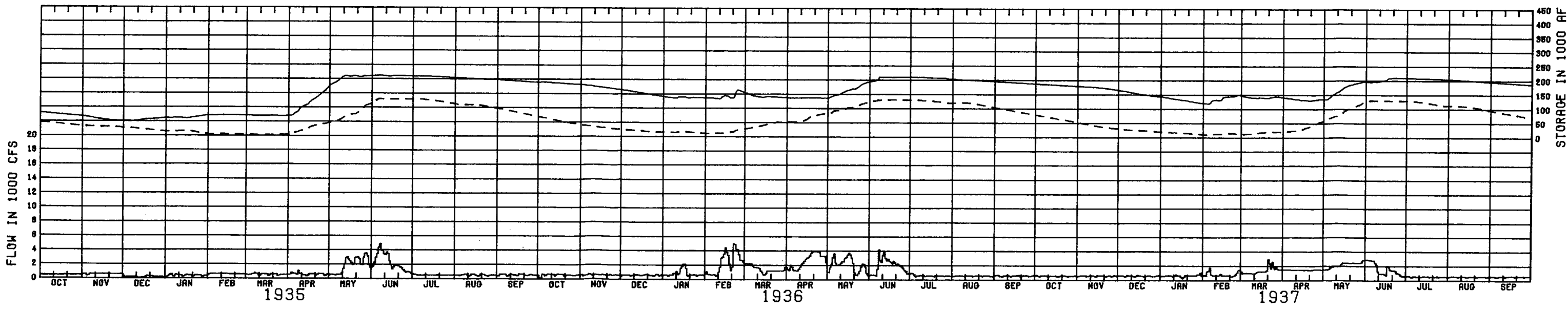
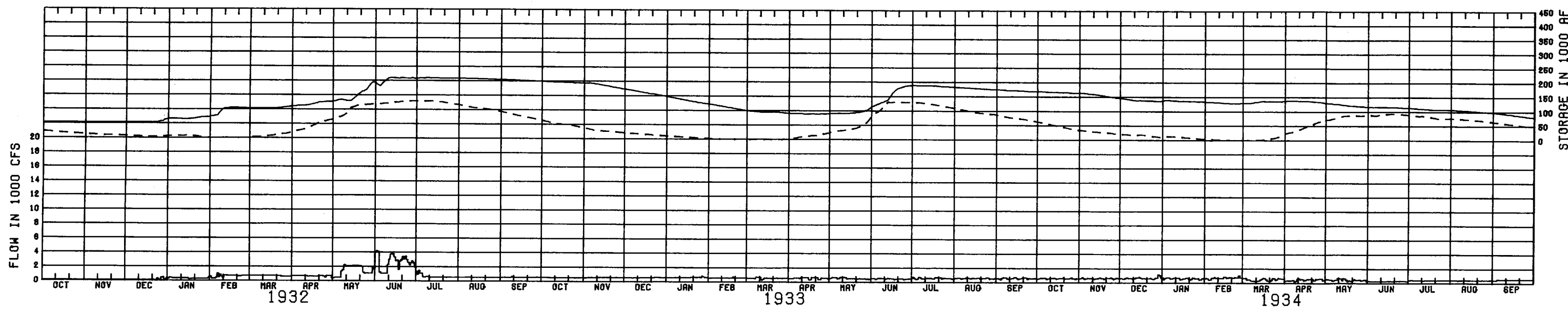
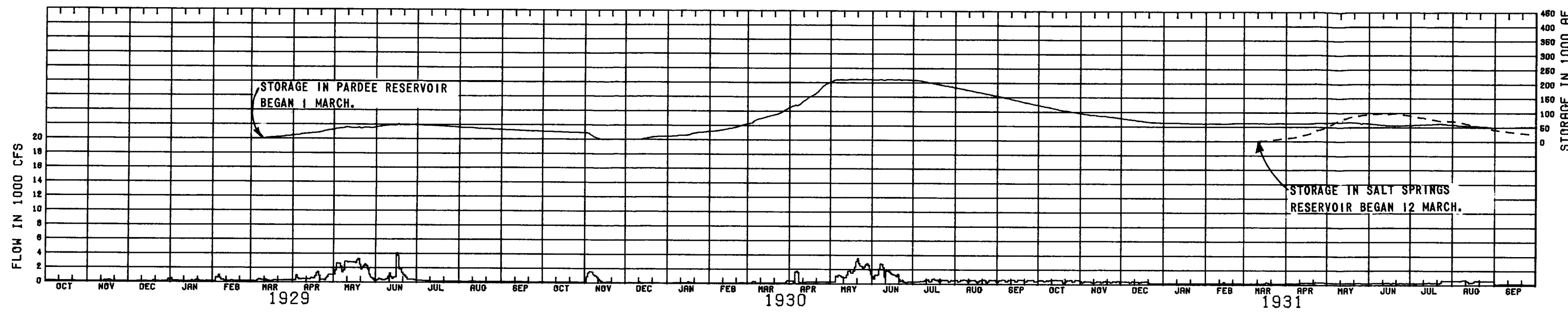
Values indicate incidence of storage exceeded on a given date for October 1964 through September 1979.

**CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

**SEASONAL VARIATION
OF RESERVOIR STORAGE FREQUENCY
CAMANCHE-PARDEE RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: D.J.H. Date: AUGUST 1980
 Drawn: C.J.H.



LEGEND :

———— PARDEE RESERVOIR STORAGE.

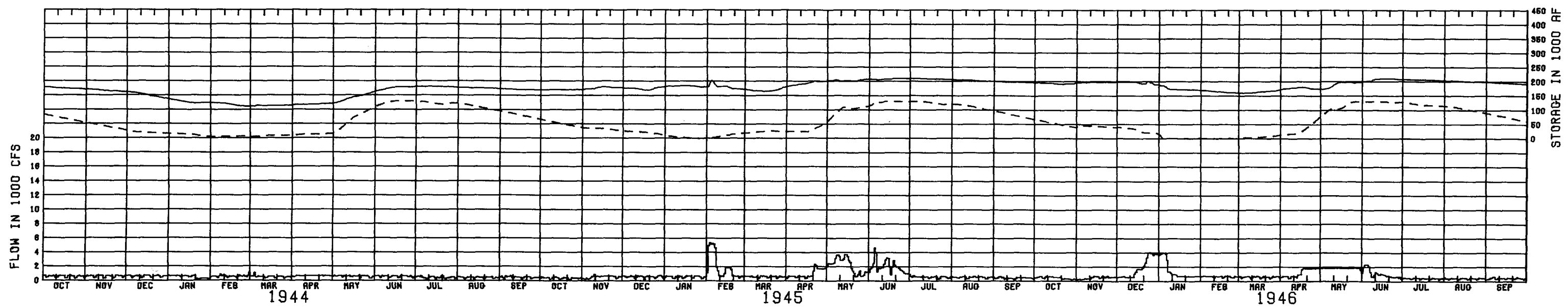
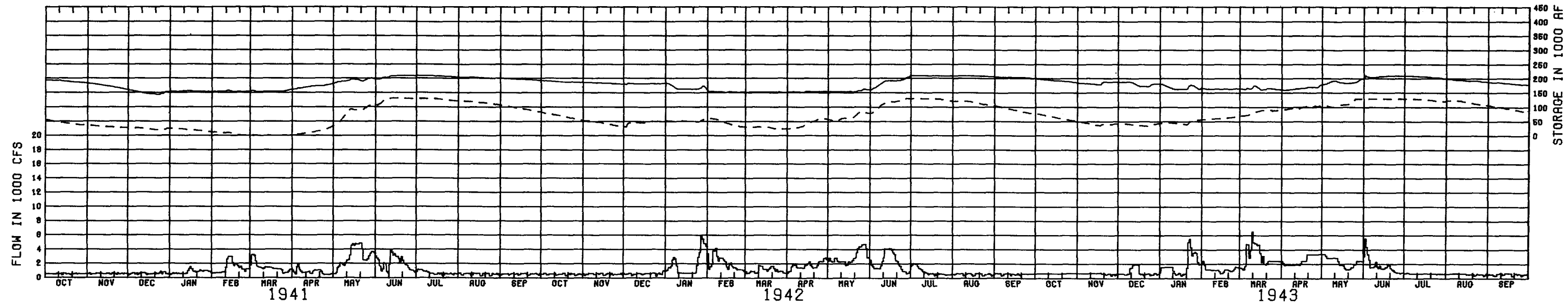
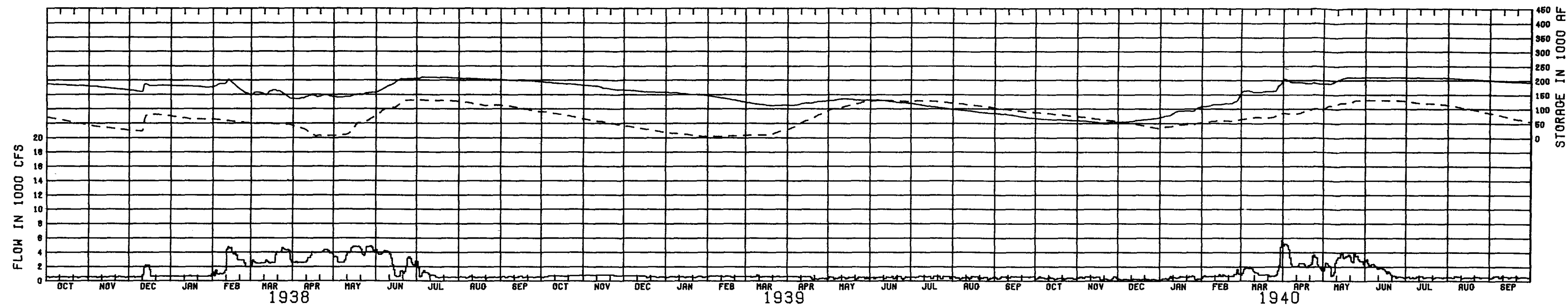
- - - - SALT SPRINGS RESERVOIR STORAGE.

▬▬▬ MOKELUMNE RIVER NEAR CLEMENTS.

GAMACHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

HISTORIC OPERATION
MOKELUMNE RIVER BASIN
RESERVOIRS

CORPS OF ENGINEERS, SACRAMENTO, CA.
PREPARED: DJH.TGK DATE: AUGUST 1980
DRAWN: TGK



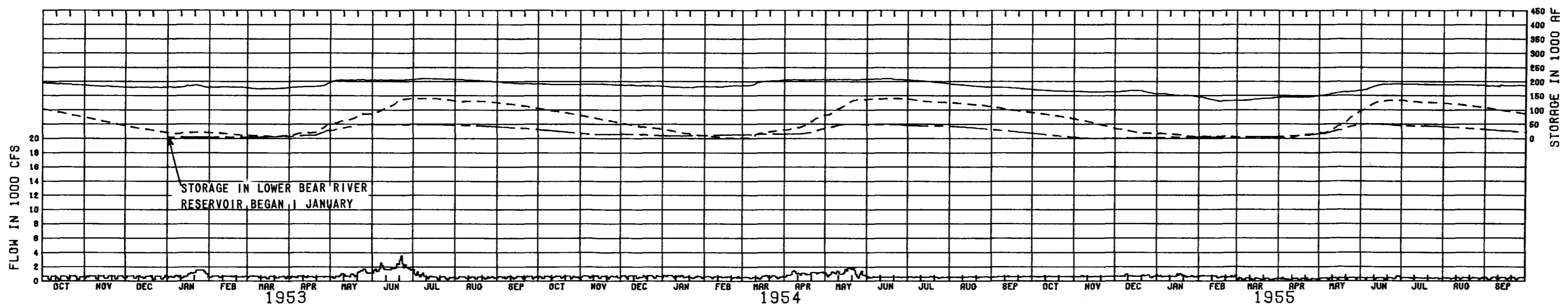
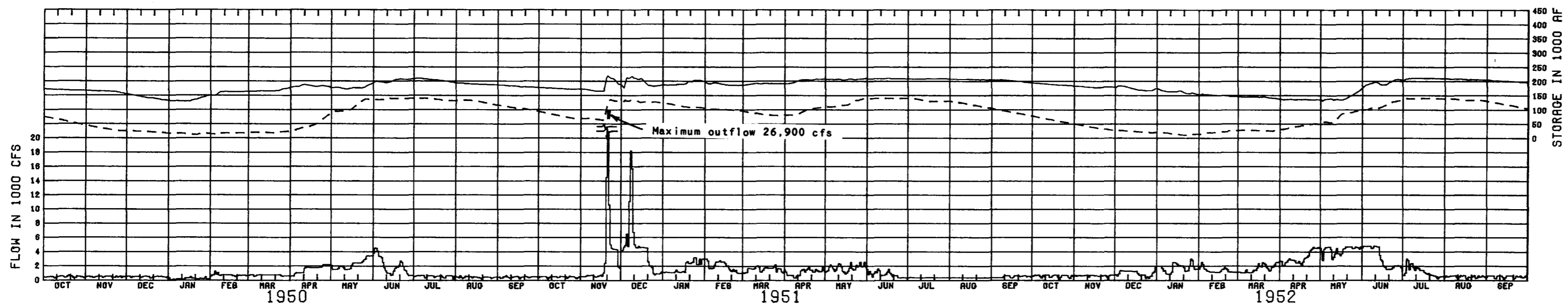
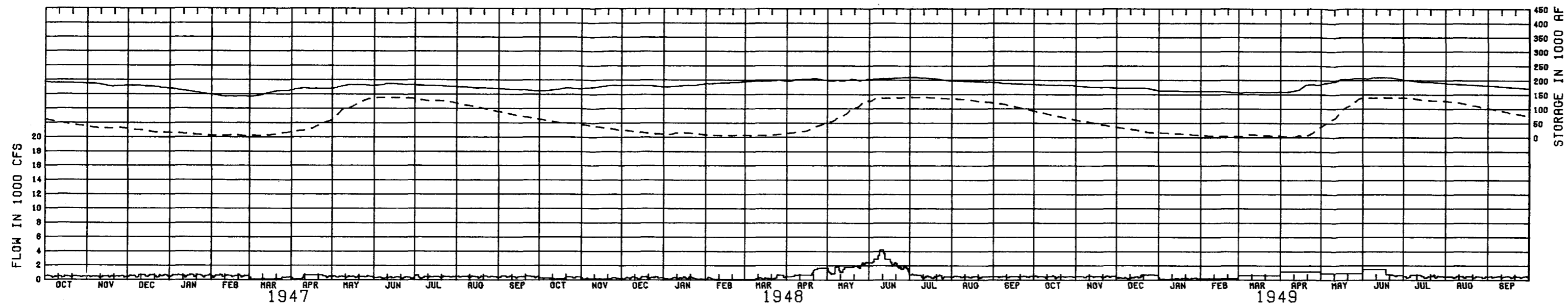
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- PARDEE RESERVOIR STORAGE.
- - - - - SALT SPRINGS RESERVOIR STORAGE.
- ▬▬▬▬▬ MOKELUMNE RIVER NEAR CLEMENTS.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**HISTORIC OPERATION
MOKELUMNE RIVER BASIN
RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CA.
PREPARED: DJH.TOK DATE: AUGUST 1980
DRAWN: TOK



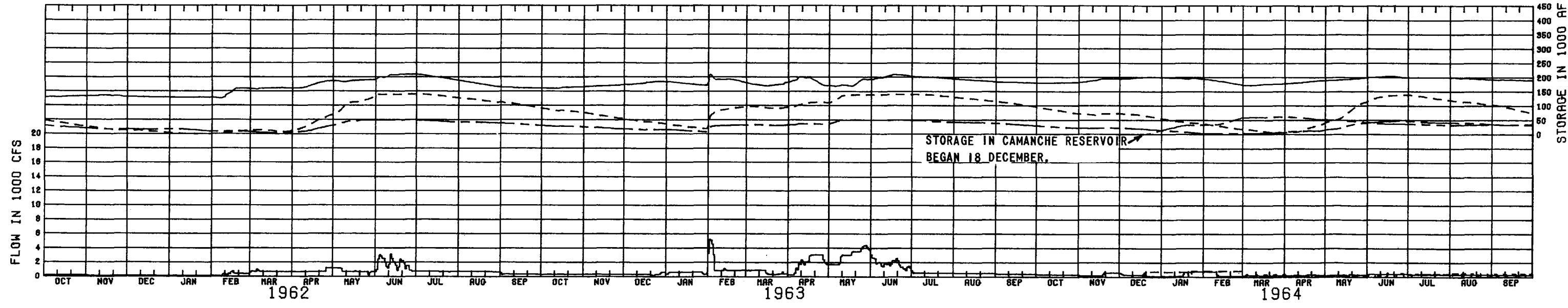
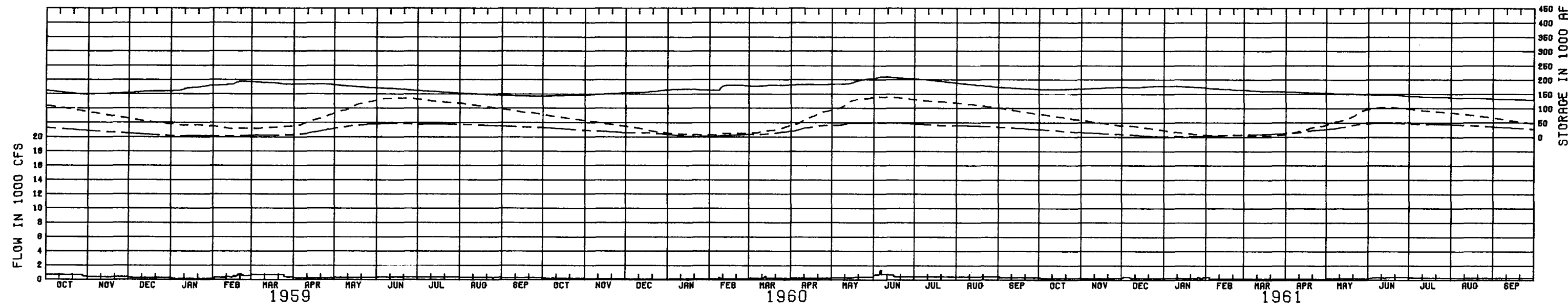
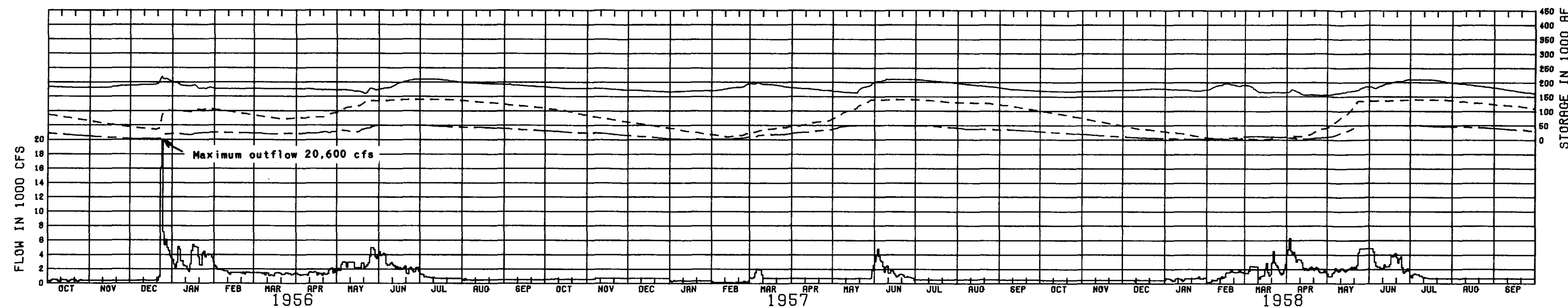
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- - - LOWER BEAR RIVER RESERVOIR STORAGE.
- · - · SALT SPRINGS RESERVOIR STORAGE.
- ▬ MOKELUMNE RIVER NEAR CLEMENTS.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**HISTORIC OPERATION
MOKELUMNE RIVER BASIN
RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CA.
PREPARED: DJH, TOK DATE: AUGUST 1980
DRAWN: TOK

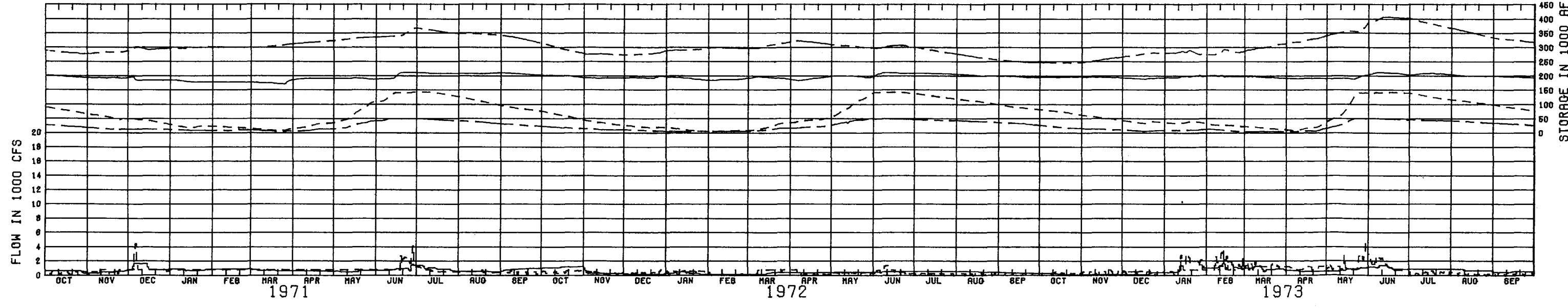
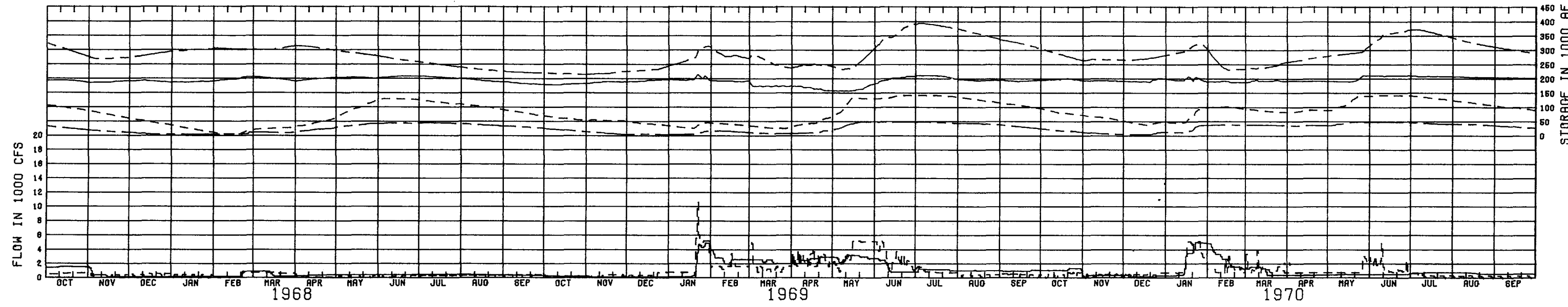
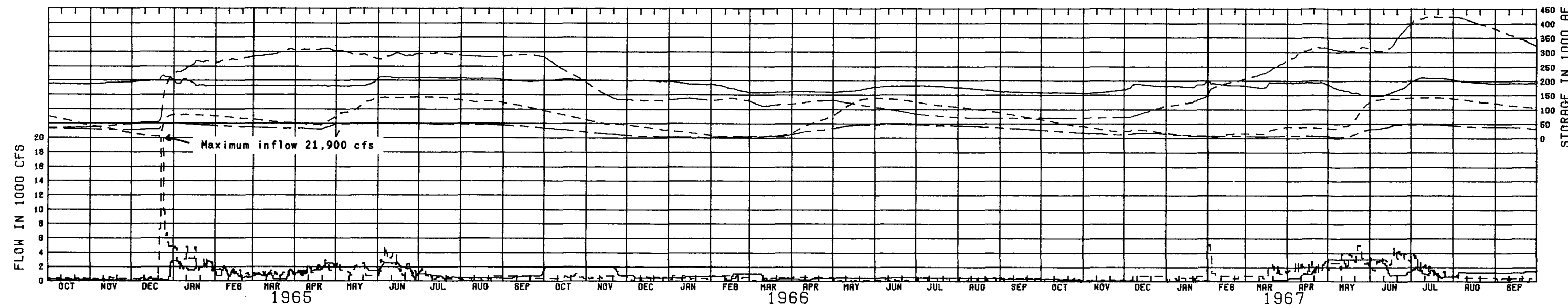


- LEGEND :**
- CAMANCHE RESERVOIR STORAGE.
 - PARDEE RESERVOIR STORAGE.
 - LOWER BEAR RIVER RESERVOIR STORAGE.
 - SALT SPRINGS RESERVOIR STORAGE.
 - ▬▬▬▬ MOKELUMNE RIVER BELOW CAMANCHE DAM.
 - ▬▬▬▬ CAMANCHE INFLOW.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**HISTORIC OPERATION
MOKELUMNE RIVER BASIN
RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CA.
 PREPARED: DJH.TOK DATE: AUGUST 1980
 DRAWN: TOK

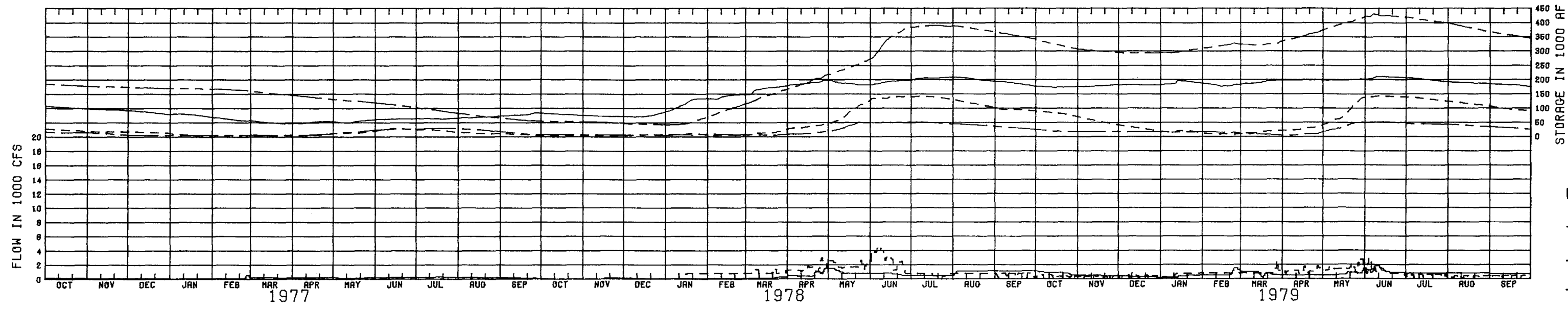
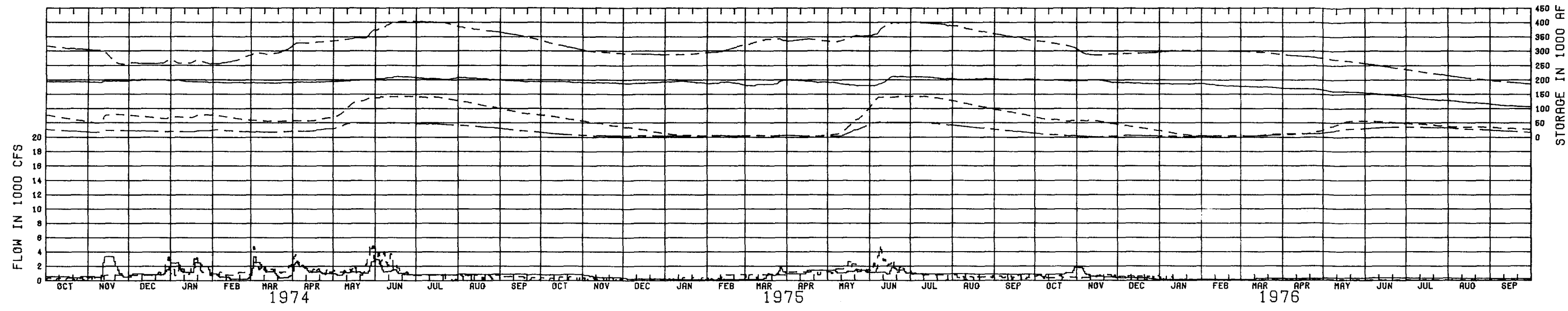


- LEGEND:
- CAMANCHE RESERVOIR STORAGE.
 - _____ PARDEE RESERVOIR STORAGE.
 - LOWER BEAR RIVER RESERVOIR STORAGE.
 - SALT SPRINGS RESERVOIR STORAGE.
 - ▬▬▬▬▬▬▬▬ CAMANCHE INFLOW.
 - ▬▬▬▬▬▬▬▬ CAMANCHE OUTFLOW.

CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA

**HISTORIC OPERATION
 MOKELUMNE RIVER BASIN
 RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CA.
 PREPARED: DJH.TOK DATE: AUGUST 1980
 DRAWN: TOK



- LEGEND:
- — — — — CAMANCHE RESERVOIR STORAGE.
 - — — — — PARDEE RESERVOIR STORAGE.
 - — — — — LOWER BEAR RIVER RESERVOIR STORAGE.
 - — — — — SALT SPRINGS RESERVOIR STORAGE.
 - — — — — CAMANCHE INFLOW.
 - — — — — CAMANCHE OUTFLOW.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**HISTORIC OPERATION
MOKELUMNE RIVER BASIN
RESERVOIRS**

CORPS OF ENGINEERS, SACRAMENTO, CA.
 PREPARED: DJH, TOK DATE: AUGUST 1980
 DRAWN: TQK

**CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

WATER CONTROL MANUAL

AUGUST 1981

EXHIBIT A

**STANDING INSTRUCTIONS TO DAMTENDERS
FOR
CAMANCHE RESERVOIR**

**Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California**



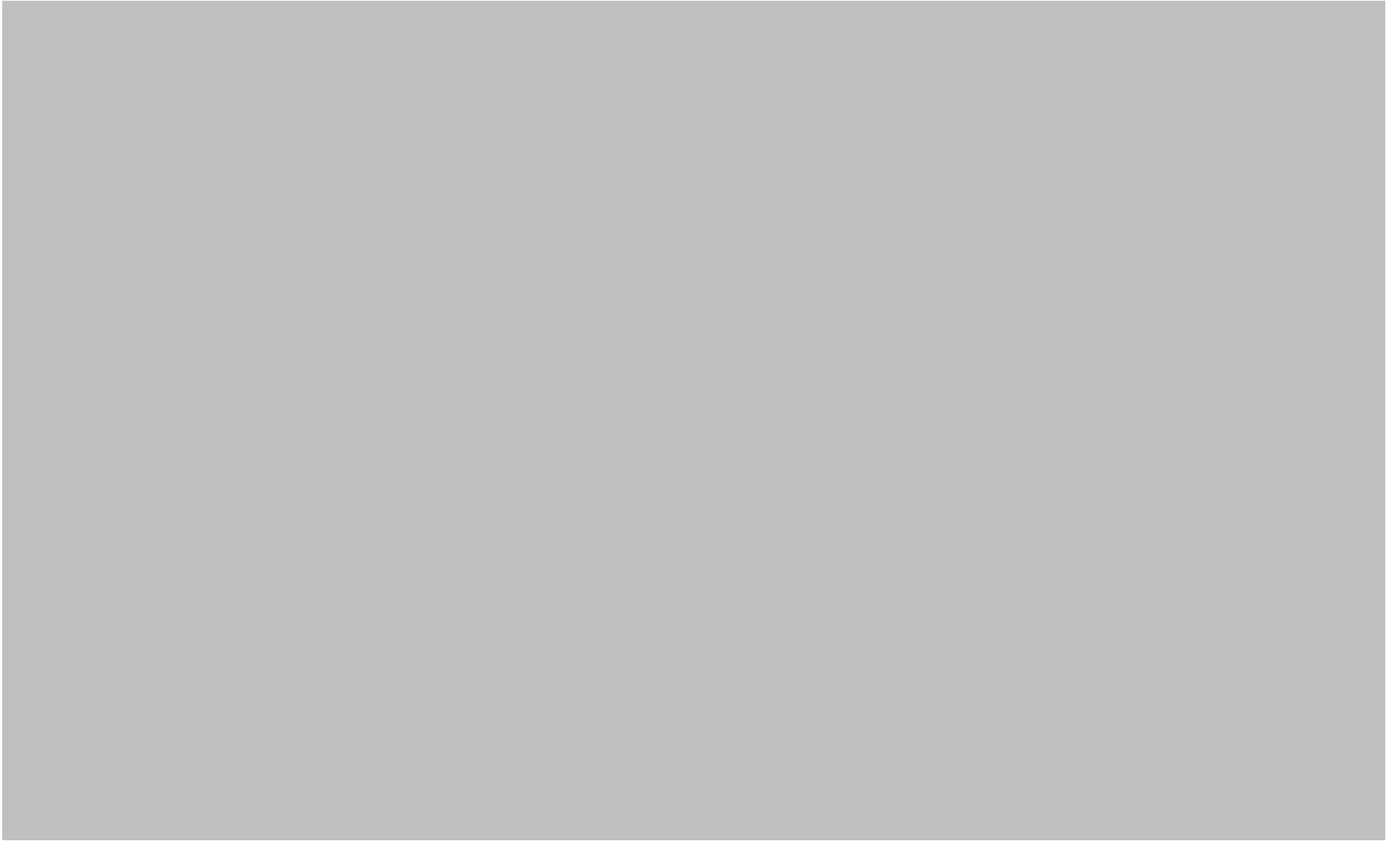




EXHIBIT A
STANDING OPERATING INSTRUCTIONS
FOR
CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

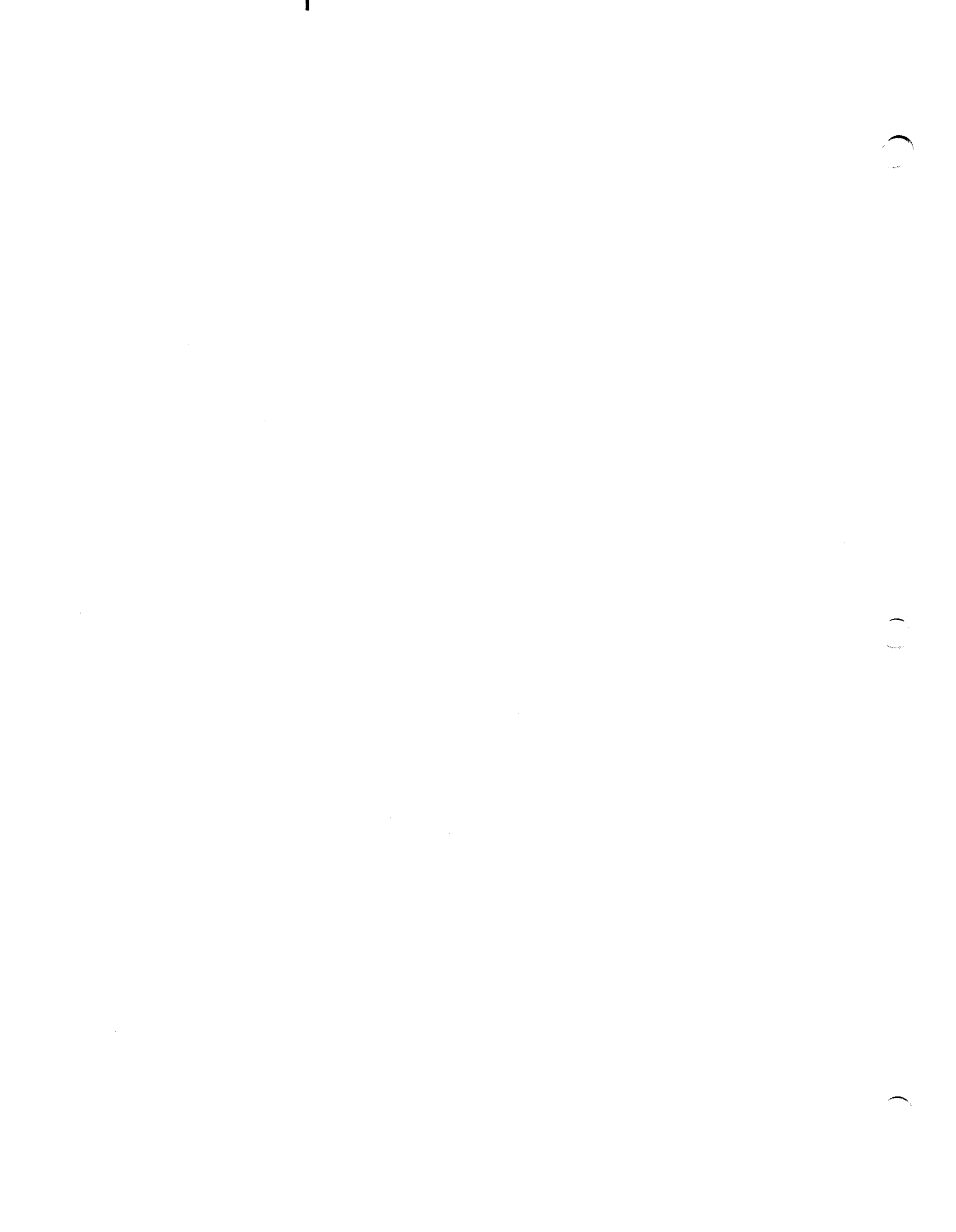
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Operation of Camanche Reservoir**

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3	Limitations on Storage	A-2
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**CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA
WATER CONTROL MANUAL**

STANDING INSTRUCTIONS TO DAMTENDERS

1. GENERAL

This exhibit to "Camanche Dam and Reservoir, Mokelumne River, California Water Control Manual" was prepared in accordance with instructions EM 1110-2-3600, paragraph 4-07 (Standing Instructions to Damtenders), and pertains to duties and responsibilities of the damtender in operating Camanche Dam and reporting required hydrologic data.

Operational instructions to the damtender are briefly outlined with specific emphasis on the damtender's duties and responsibilities during flood emergencies when communication between him and the operating office may have been disrupted. It is designed to be used independently as an emergency guide or, as published, in conjunction with the water control manual. To facilitate independent use of this exhibit, charts required for emergency flood control operation of Camanche Dam are included.

2. FLOOD CONTROL OPERATION REQUIREMENTS

Camanche Dam will be operated for flood control according to regulations prescribed by the Code of Federal Regulations, Title 33, Part 208.11 and the Field Working Agreement for Camanche Dam and Reservoir, Exhibits B and C, respectively. Accompanying this Exhibit is the Flood Control Diagram, which defines the requirements for flood control operation of Camanche Dam. The flood control objectives for Camanche Dam and Reservoir are:

- a. To minimize flood damage downstream from the dam and, insofar as practicable, to avoid causing damage that would not have occurred without the project.
- b. To permit use of the maximum practical amount of storage space by the East Bay Municipal Utility District in conjunction with Pardee Reservoir for conservation, power and other purposes without impairing the flood control function.

Storage space in Camanche Reservoir shall be reserved on the basis of the Flood Control Diagram, Chart A-12. Whenever encroachment into the flood control storage reservation occurs, water should be released as rapidly as possible without causing flows in the Mokelumne River at the gaging station below Camanche Dam to exceed the controlling rates shown on the flood control diagram and outlined in paragraph 4.

Required flood control storage reservation is determined from Chart A-12, which indicates the storage reservation required at any time from 15 September to 1 August. The diagram requires:

- a. Flood control space increases from zero on 15 September to a maximum of 200,000 acre-feet on 5 November and is required until 15 March.

b. A conditional flood control space up to a maximum 200,000 acre-feet is required from 15 March to 1 August; the space required varies according to predicted snowmelt runoff. Space not required for flood control may be filled for conservation purposes to allow more efficient operation of the project.

The flood control operation each day consists of determining the required flood control reservation and scheduling releases to provide the required space by the end of the day, whenever possible.

3. LIMITATIONS OF STORAGE

Operational limitations on storage in Camanche Reservoir are specified in paragraph 2 of this Exhibit and on the Flood Control Diagram Chart A-12. There are no legal limitations on storage, as the project boundary is above the maximum operating level. Normal tailwater elevation at Pardee powerhouse is elevation 240.0, which is 4.5 feet above gross pool of Lake Camanche. Physical limitations on storage are as follows:

STORAGE (Acre-Feet)	WATER SURFACE ELEVATION (Feet)	FLOW OVER SPILLWAY (cfs)	REMARKS
4,300	119.0	0	Inactive pool
430,880	235.5	0	Gross pool
641,000	260.1	182,000	Spillway design flood pool

The flood control space requirement may be divided in any proportion between Camanche and Pardee Reservoirs. The flood control space requirement for Camanche-Pardee Reservoirs can be reduced when empty space is available in upstream reservoirs (Salt Springs and Lower Bear River), but only to the extent that such space can be depended upon to be filled by the time Camanche Reservoir fills. If use of such space is not fully effective for flood control, space requirements at Camanche Reservoir cannot be reduced. Criteria for allowable space reduction are contained on Flood Control Diagram Chart A-12.

4. LIMITATIONS ON RELEASE

Except during spillway operation described below, releases from Camanche Reservoir will be limited insofar as possible to 5,000 cfs (see Chart A-12). A stage-discharge curve for the Mokelumne River below Camanche Dam is shown on Chart A-11. It is not anticipated that this release will be significantly augmented by local inflow from the area below Camanche Dam, since no appreciable amount of runoff is contributed by that area. Except for flows in public utility conduits (primarily the East Bay Aqueduct) which bypass Camanche Reservoir, there is no significant diversion above the critical reaches downstream of Camanche Dam.

[REDACTED]
[REDACTED]. Outlet rating curves and rating curves for outlet valves are shown on Charts A-7 and A-8, respectively.

If the reservoir level rises above the spillway crest elevation of 235.5 feet, outlets will be closed progressively to maintain the total outflow, including water passing over the spillway, equal to the desired outflow of 5,000 cfs for as long as possible. A rating curve for the spillway is shown on Chart A-5. When the reservoir pool is above elevation 237.8, close the main valves (see Chart A-10). The valves will remain closed between elevations 237.8 and 248.0. When the pool exceeds elevation 248.0 feet, outlet valves will be opened at the rate of two valves each hour until all valves are fully open. The valves will remain open until a total release of 5,000 cfs is reached or the reservoir stage has receded to gross pool elevation, 235.5 feet. Once the reservoir stage has receded to gross pool elevation 235.5, a release rate of not to exceed 5,000 cfs will be maintained until the pool has receded to the bottom of the required flood control space.

5. STANDING INSTRUCTIONS DURING FLOOD EMERGENCY

The functional operation of Camanche Dam and Reservoir is under the direction of the General Manager, East Bay Municipal Utility District. [REDACTED]

[REDACTED] Detailed operation instructions for flood control will be issued from the East Bay Municipal District Office in Oakland under the responsibility of the Manager, Water Operations Department. During flood periods close contact will be maintained between the damtender at Pardee (or operating personnel) and the District Office in Oakland. The following are suggested instructions for emergency operation of Camanche Dam if communication between operating personnel and the District Office is broken during a flood emergency.

a. Continue release in accordance with the last instructions from the District Office, and make every attempt to reestablish communication.

b. If communication cannot be reestablished, make release mode in accordance with the Flood Control Diagram (Chart A-12).

6. OPERATIONAL RESPONSIBILITIES

Responsibilities for flood control operation of Camanche Dam are summarized below. A list of personnel involved in the operation of the reservoir for flood control are contained at the front of the exhibit.

a. The District Engineer, Sacramento District Corps of Engineers, is responsible for:

(1) Approving or disapproving deviations from the prescribed flood control criteria on Chart A-12.

(2) Advising operating agencies and the Chief of Engineers of any departure from the flood control regulations.

(3) Preparing monthly operation and other special reports relative to operation of the reservoir required by the Office, Chief of Engineers.

(4) Preparing revisions to the flood control criterion found herein.

b. The East Bay Municipal Utility District is responsible for:

(1) Accomplishing the physical operation of the reservoir and associated facilities in accordance with the official regulations.

(2) Advising the District Engineer, Sacramento District, Corps of Engineers, of any deviation from the flood control operation.

(3) Reporting to the District Engineer, Sacramento District, Corps of Engineers, any unusual condition in the reservoir or along downstream channels that might interfere with planned flood control operation of reservoir.

(4) Taking reasonable steps to inform the public of significant changes in flood control releases.

(5) Reporting by telephone to the Reservoir Control Section, Sacramento District Corps of Engineers, data as outlined in paragraph 7a and other data that may be required from time to time.

(6) Keeping informed of the rules and regulations contained in the water control manual and bringing to the attention of the District Engineer, Sacramento District, Corps of Engineers any features of the manual that may require clarification or revision.

(7) Keeping the District Engineer, Sacramento District, Corps of Engineers advised of any inaccuracies contained in the manual or that may develop as a consequence of changing conditions.

(8) Immediately after the end of each month, transmitting to the Reservoir Control Section, Sacramento District, Corps of Engineers data specified in paragraph 7b.

7. OPERATION REPORTS

a. [REDACTED] the dam operator or operating agency will report by telephone to the Reservoir Control Section, Sacramento District, Corps of Engineers, the following information:

(1) The amount of flood control space required by the regulations.

(2) Storages and outflows at Camanche and Pardee Reservoirs, and storages at Salt Springs and Lower Bear Reservoir; inflow to Pardee Reservoir; and anticipated outflow change at Camanche Reservoir.

(3) Precipitation at the dam and at reporting stations in or adjacent to the drainage basin.

Data obtained on non-work days will be furnished on the following work day.

b. Immediately after the end of each month, the operating agency will dispatch to the Reservoir Control Section, Sacramento District, Corps of Engineers, a summary of the following operation data:

(1) Daily inflow at Pardee Reservoir and outflow at Pardee and Camanche Reservoirs.

(2) Daily storage at Salt Springs, Lower Bear, Pardee and Camanche Reservoirs.

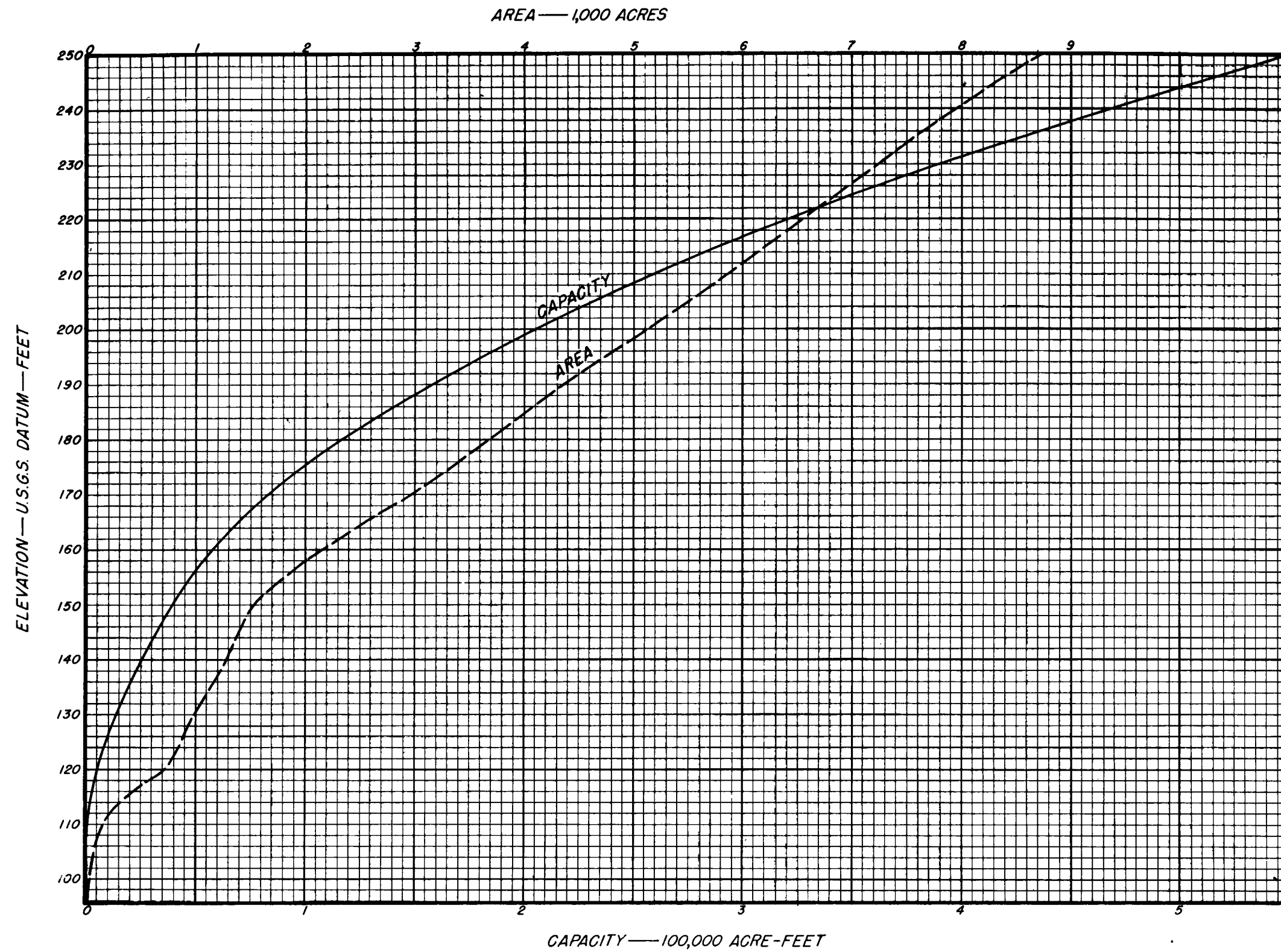
(3) Daily requirements of flood control space.

8. MODIFICATIONS OF REGULATIONS

The official regulations are subject to temporary modification during flood emergencies by the District Engineer, Sacramento District, Corps of Engineers. The flood control criteria will be revised by the Corps of Engineers, as necessary, to reflect changed conditions that come to bear upon flood control operation of the reservoir. Permanent revisions of the flood control criteria are subject to prior approval of the Chief of Engineers or his duly authorized representative.

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NOTE:
Data furnished by East Bay
Municipal Utility District.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA
CAMANCHE RESERVOIR
AREA AND CAPACITY
CURVE

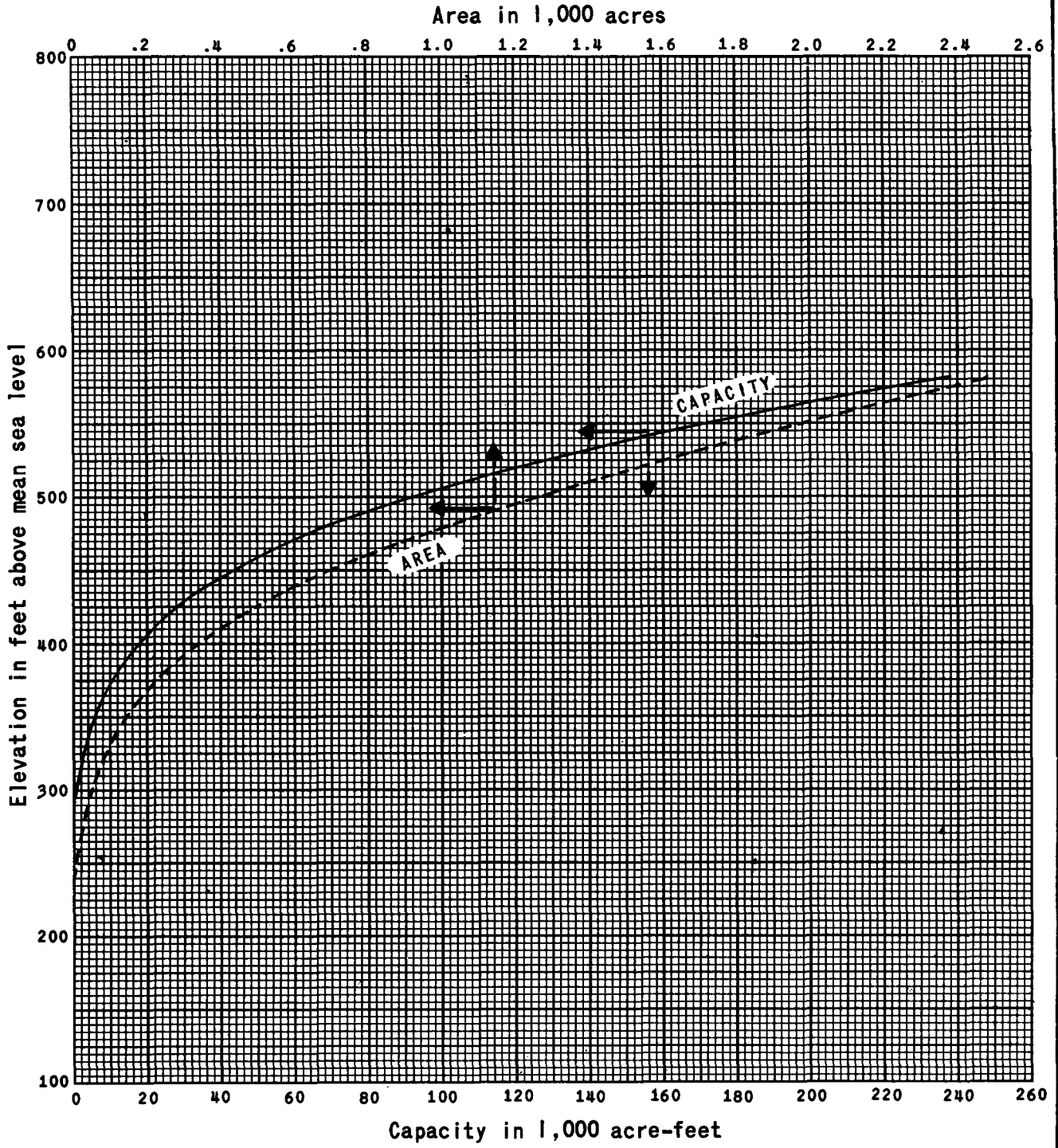
CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: C.J.H.

Date: AUGUST 1980

Drawn: A.L.H.

CHART A-1



NOTE:

Data furnished by East Bay
Municipal Utility District.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**PARDEE RESERVOIR
AREA AND CAPACITY CURVES**

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: T.G.K.

Date: AUGUST 1980

Drawn: C.J.H., T.G.K.

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
100.0	224	45	105.0	492	69
100.1	228	45	105.1	499	70
100.2	233	45	105.2	506	71
100.3	237	46	105.3	514	72
100.4	242	46	105.4	521	73
100.5	246	46	105.5	529	75
100.6	251	46	105.6	536	76
100.7	256	46	105.7	544	77
100.8	260	47	105.8	551	78
100.9	265	47	105.9	559	79
101.0	270	47	106.0	567	80
101.1	275	47	106.1	575	81
101.2	279	48	106.2	584	83
101.3	284	48	106.3	592	84
101.4	289	48	106.4	601	86
101.5	293	49	106.5	609	87
101.6	298	49	106.6	618	88
101.7	303	49	106.7	627	90
101.8	308	49	106.8	636	91
101.9	313	50	106.9	645	93
102.0	318	50	107.0	654	94
102.1	323	50	107.1	664	96
102.2	328	51	107.2	674	98
102.3	333	51	107.3	684	99
102.4	338	52	107.4	694	101
102.5	343	52	107.5	704	103
102.6	349	52	107.6	714	105
102.7	354	53	107.7	724	107
102.8	359	53	107.8	735	108
102.9	365	54	107.9	745	110
103.0	370	54	108.0	756	112
103.1	376	55	108.1	768	114
103.2	381	55	108.2	779	116
103.3	387	56	108.3	791	118
103.4	393	57	108.4	803	120
103.5	398	58	108.5	815	123
103.6	404	58	108.6	828	125
103.7	410	59	108.7	840	127
103.8	416	60	108.8	853	129
103.9	422	60	108.9	865	131
104.0	428	61	109.0	878	133
104.1	434	62	109.1	892	136
104.2	440	63	109.2	906	138
104.3	447	63	109.3	920	141
104.4	453	64	109.4	934	143
104.5	459	65	109.5	948	146
104.6	466	66	109.6	963	148
104.7	472	67	109.7	978	151
104.8	479	67	109.8	993	153
104.9	485	68	109.9	1,008	156

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
110.0	1,023	158	115.0	2,260	323
110.1	1,039	161	115.1	2,297	327
110.2	1,056	164	115.2	2,335	330
110.3	1,073	167	115.3	2,373	334
110.4	1,090	170	115.4	2,412	338
110.5	1,107	173	115.5	2,451	342
110.6	1,124	175	115.6	2,490	345
110.7	1,142	178	115.7	2,530	349
110.8	1,160	181	115.8	2,571	353
110.9	1,178	184	115.9	2,612	356
111.0	1,196	187	116.0	2,654	360
111.1	1,215	190	116.1	2,698	364
111.2	1,235	193	116.2	2,743	367
111.3	1,255	196	116.3	2,788	371
111.4	1,275	199	116.4	2,834	375
111.5	1,295	203	116.5	2,880	379
111.6	1,315	206	116.6	2,927	382
111.7	1,336	209	116.7	2,975	386
111.8	1,357	212	116.8	3,023	390
111.9	1,378	215	116.9	3,072	393
112.0	1,400	218	117.0	3,122	397
112.1	1,423	221	117.1	3,173	401
112.2	1,446	225	117.2	3,225	404
112.3	1,469	228	117.3	3,277	408
112.4	1,493	231	117.4	3,330	411
112.5	1,517	235	117.5	3,384	415
112.6	1,542	238	117.6	3,439	419
112.7	1,566	241	117.7	3,494	422
112.8	1,591	244	117.8	3,550	426
112.9	1,616	248	117.9	3,607	429
113.0	1,642	251	118.0	3,664	433
113.1	1,669	255	118.1	3,722	437
113.2	1,696	258	118.2	3,781	440
113.3	1,724	262	118.3	3,841	444
113.4	1,752	265	118.4	3,901	447
113.5	1,780	269	118.5	3,963	451
113.6	1,809	272	118.6	4,025	454
113.7	1,838	276	118.7	4,088	458
113.8	1,867	279	118.8	4,151	461
113.9	1,897	283	118.9	4,216	465
114.0	1,927	286	119.0	4,281	468
114.1	1,958	290	119.1	4,346	471
114.2	1,990	293	119.2	4,412	475
114.3	2,023	297	119.3	4,478	478
114.4	2,055	301	119.4	4,546	482
114.5	2,088	305	119.5	4,614	485
114.6	2,122	308	119.6	4,683	488
114.7	2,156	312	119.7	4,753	492
114.8	2,190	316	119.8	4,824	495
114.9	2,225	319	119.9	4,896	499

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
120.0	4,968	502	125.0	8,990	663
120.1	5,038	505	125.1	9,058	666
120.2	5,110	509	125.2	9,125	670
120.3	5,182	512	125.3	9,194	673
120.4	5,255	515	125.4	9,262	677
120.5	5,328	519	125.5	9,331	680
120.6	5,403	522	125.6	9,400	683
120.7	5,478	525	125.7	9,470	687
120.8	5,554	528	125.8	9,540	690
120.9	5,631	532	125.9	9,610	694
121.0	5,709	535	126.0	9,681	697
121.1	5,783	538	126.1	9,753	701
121.2	5,859	541	126.2	9,825	705
121.3	5,934	545	126.3	9,898	708
121.4	6,011	548	126.4	9,971	712
121.5	6,089	551	126.5	10,044	716
121.6	6,167	554	126.6	10,118	720
121.7	6,246	557	126.7	10,192	724
121.8	6,326	561	126.8	10,266	727
121.9	6,407	564	126.9	10,341	731
122.0	6,488	567	127.0	10,416	735
122.1	6,566	570	127.1	10,491	739
122.2	6,644	573	127.2	10,567	742
122.3	6,723	576	127.3	10,643	746
122.4	6,803	579	127.4	10,720	749
122.5	6,883	583	127.5	10,797	753
122.6	6,965	586	127.6	10,874	757
122.7	7,047	589	127.7	10,952	760
122.8	7,129	592	127.8	11,030	764
122.9	7,213	595	127.9	11,108	767
123.0	7,297	598	128.0	11,187	771
123.1	7,377	601	128.1	11,266	774
123.2	7,459	604	128.2	11,345	778
123.3	7,540	607	128.3	11,425	781
123.4	7,623	610	128.4	11,504	785
123.5	7,706	614	128.5	11,585	788
123.6	7,790	617	128.6	11,665	791
123.7	7,874	620	128.7	11,747	795
123.8	7,959	623	128.8	11,828	798
123.9	8,045	626	128.9	11,910	802
124.0	8,132	629	129.0	11,992	805
124.1	8,215	632	129.1	12,074	808
124.2	8,298	636	129.2	12,157	812
124.3	8,383	639	129.3	12,239	815
124.4	8,467	643	129.4	12,323	818
124.5	8,553	646	129.5	12,406	822
124.6	8,639	649	129.6	12,490	825
124.7	8,726	653	129.7	12,575	828
124.8	8,813	656	129.8	12,659	831
124.9	8,901	660	129.9	12,744	835

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
130.0	12,830	838	135.0	17,540	1,001
130.1	12,916	842	135.1	17,641	1,004
130.2	13,002	845	135.2	17,743	1,007
130.3	13,088	849	135.3	17,845	1,009
130.4	13,175	852	135.4	17,947	1,012
130.5	13,262	856	135.5	18,050	1,015
130.6	13,350	860	135.6	18,153	1,018
130.7	13,438	863	135.7	18,256	1,021
130.8	13,526	867	135.8	18,360	1,023
130.9	13,615	870	135.9	18,464	1,026
131.0	13,704	874	136.0	18,569	1,029
131.1	13,794	878	136.1	18,673	1,032
131.2	13,884	882	136.2	18,778	1,035
131.3	13,974	886	136.3	18,883	1,038
131.4	14,065	890	136.4	18,988	1,041
131.5	14,156	894	136.5	19,094	1,045
131.6	14,248	898	136.6	19,200	1,048
131.7	14,340	902	136.7	19,307	1,051
131.8	14,432	906	136.8	19,414	1,054
131.9	14,525	910	136.9	19,521	1,057
132.0	14,618	914	137.0	19,629	1,060
132.1	14,711	917	137.1	19,737	1,063
132.2	14,804	920	137.2	19,845	1,067
132.3	14,898	924	137.3	19,953	1,070
132.4	14,992	927	137.4	20,062	1,073
132.5	15,086	930	137.5	20,171	1,077
132.6	15,181	933	137.6	20,280	1,080
132.7	15,276	936	137.7	20,390	1,083
132.8	15,372	940	137.8	20,500	1,086
132.9	15,468	943	137.9	20,611	1,090
133.0	15,564	946	138.0	20,722	1,093
133.1	15,660	949	138.1	20,833	1,096
133.2	15,756	952	138.2	20,944	1,100
133.3	15,852	955	138.3	21,056	1,103
133.4	15,949	958	138.4	21,168	1,106
133.5	16,047	961	138.5	21,280	1,110
133.6	16,144	963	138.6	21,393	1,113
133.7	16,242	966	138.7	21,506	1,116
133.8	16,341	969	138.8	21,620	1,119
133.9	16,440	972	138.9	21,734	1,123
134.0	16,539	975	139.0	21,848	1,126
134.1	16,637	978	139.1	21,962	1,129
134.2	16,736	980	139.2	22,076	1,132
134.3	16,835	983	139.3	22,191	1,135
134.4	16,935	985	139.4	22,306	1,138
134.5	17,035	988	139.5	22,422	1,142
134.6	17,135	991	139.6	22,538	1,145
134.7	17,236	993	139.7	22,654	1,148
134.8	17,337	996	139.8	22,771	1,151
134.9	17,438	998	139.9	22,888	1,154

East Bay Municipal Utility District
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ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
140.0	23,005	1,157	145.0	29,270	1,328
140.1	23,122	1,160	145.1	29,405	1,332
140.2	23,239	1,163	145.2	29,541	1,336
140.3	23,356	1,165	145.3	29,677	1,341
140.4	23,474	1,168	145.4	29,813	1,345
140.5	23,593	1,171	145.5	29,950	1,349
140.6	23,711	1,174	145.6	30,087	1,353
140.7	23,830	1,177	145.7	30,225	1,357
140.8	23,950	1,179	145.8	30,363	1,362
140.9	24,070	1,182	145.9	30,501	1,366
141.0	24,190	1,185	146.0	30,640	1,370
141.1	24,310	1,188	146.1	30,779	1,374
141.2	24,430	1,191	146.2	30,919	1,379
141.3	24,550	1,194	146.3	31,060	1,383
141.4	24,671	1,197	146.4	31,200	1,388
141.5	24,793	1,201	146.5	31,341	1,392
141.6	24,914	1,204	146.6	31,483	1,396
141.7	25,036	1,207	146.7	31,625	1,401
141.8	25,159	1,210	146.8	31,767	1,405
141.9	25,282	1,213	146.9	31,910	1,410
142.0	25,405	1,216	147.0	32,053	1,414
142.1	25,528	1,219	147.1	32,197	1,418
142.2	25,652	1,223	147.2	32,341	1,423
142.3	25,776	1,226	147.3	32,486	1,427
142.4	25,900	1,229	147.4	32,631	1,432
142.5	26,025	1,233	147.5	32,777	1,436
142.6	26,150	1,236	147.6	32,923	1,440
142.7	26,276	1,239	147.7	33,069	1,445
142.8	26,402	1,242	147.8	33,216	1,449
142.9	26,528	1,246	147.9	33,363	1,454
143.0	26,655	1,249	148.0	33,511	1,458
143.1	26,782	1,253	148.1	33,659	1,462
143.2	26,909	1,257	148.2	33,808	1,467
143.3	27,037	1,261	148.3	33,957	1,471
143.4	27,165	1,265	148.4	34,107	1,476
143.5	27,294	1,269	148.5	34,257	1,480
143.6	27,423	1,272	148.6	34,407	1,484
143.7	27,552	1,276	148.7	34,558	1,489
143.8	27,681	1,280	148.8	34,709	1,493
143.9	27,812	1,284	148.9	34,861	1,498
144.0	27,942	1,288	149.0	35,013	1,502
144.1	28,073	1,292	149.1	35,165	1,506
144.2	28,204	1,296	149.2	35,318	1,510
144.3	28,336	1,300	149.3	35,471	1,514
144.4	28,468	1,304	149.4	35,625	1,518
144.5	28,601	1,308	149.5	35,779	1,522
144.6	28,734	1,312	149.6	35,933	1,526
144.7	28,867	1,316	149.7	36,088	1,530
144.8	29,001	1,320	149.8	36,243	1,534
144.9	29,135	1,324	149.9	36,399	1,538

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
150.0	36,555	1,542	155.0	44,880	1,747
150.1	36,711	1,546	155.1	45,057	1,751
150.2	36,868	1,550	155.2	45,234	1,755
150.3	37,026	1,555	155.3	45,412	1,760
150.4	37,183	1,559	155.4	45,590	1,764
150.5	37,342	1,563	155.5	45,768	1,768
150.6	37,500	1,567	155.6	45,947	1,772
150.7	37,659	1,571	155.7	46,127	1,776
150.8	37,819	1,576	155.8	46,307	1,781
150.9	37,979	1,580	155.9	46,487	1,785
151.0	38,139	1,584	156.0	46,668	1,789
151.1	38,299	1,588	156.1	46,849	1,793
151.2	38,460	1,592	156.2	47,030	1,797
151.3	38,621	1,596	156.3	47,212	1,801
151.4	38,783	1,600	156.4	47,394	1,805
151.5	38,945	1,604	156.5	47,577	1,809
151.6	39,108	1,607	156.6	47,760	1,813
151.7	39,271	1,611	156.7	47,944	1,817
151.8	39,434	1,615	156.8	48,128	1,821
151.9	39,598	1,619	156.9	48,312	1,825
152.0	39,762	1,623	157.0	48,497	1,829
152.1	39,927	1,627	157.1	48,682	1,833
152.2	40,092	1,631	157.2	48,868	1,837
152.3	40,257	1,636	157.3	49,054	1,842
152.4	40,423	1,640	157.4	49,240	1,846
152.5	40,589	1,644	157.5	49,427	1,850
152.6	40,756	1,648	157.6	49,615	1,854
152.7	40,923	1,652	157.7	49,803	1,858
152.8	41,090	1,657	157.8	49,991	1,863
152.9	41,259	1,661	157.9	50,180	1,867
153.0	41,427	1,665	158.0	50,369	1,871
153.1	41,596	1,669	158.1	50,559	1,876
153.2	41,765	1,673	158.2	50,749	1,880
153.3	41,934	1,677	158.3	50,939	1,885
153.4	42,104	1,681	158.4	51,130	1,889
153.5	42,274	1,686	158.5	51,321	1,894
153.6	42,445	1,690	158.6	51,513	1,898
153.7	42,617	1,694	158.7	51,705	1,903
153.8	42,788	1,698	158.8	51,898	1,907
153.9	42,960	1,702	158.9	52,091	1,912
154.0	43,133	1,706	159.0	52,285	1,916
154.1	43,306	1,710	159.1	52,479	1,921
154.2	43,479	1,714	159.2	52,674	1,925
154.3	43,652	1,718	159.3	52,868	1,930
154.4	43,826	1,722	159.4	53,064	1,934
154.5	44,001	1,727	159.5	53,260	1,939
154.6	44,176	1,731	159.6	53,456	1,943
154.7	44,351	1,735	159.7	53,653	1,948
154.8	44,527	1,739	159.8	53,850	1,952
154.9	44,703	1,743	159.9	54,048	1,957

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
160.0	54,246	1,961	165.0	64,861	2,248
160.1	54,445	1,966	165.1	65,090	2,255
160.2	54,644	1,970	165.2	65,320	2,262
160.3	54,844	1,975	165.3	65,551	2,269
160.4	55,044	1,980	165.4	65,781	2,276
160.5	55,244	1,985	165.5	66,013	2,283
160.6	55,445	1,989	165.6	66,245	2,290
160.7	55,647	1,994	165.7	66,477	2,297
160.8	55,849	1,999	165.8	66,710	2,304
160.9	56,051	2,003	165.9	66,944	2,311
161.0	56,254	2,008	166.0	67,178	2,318
161.1	56,458	2,013	166.1	67,415	2,326
161.2	56,662	2,018	166.2	67,652	2,333
161.3	56,867	2,024	166.3	67,890	2,341
161.4	57,072	2,029	166.4	68,129	2,348
161.5	57,278	2,034	166.5	68,368	2,356
161.6	57,484	2,039	166.6	68,608	2,364
161.7	57,690	2,044	166.7	68,848	2,371
161.8	57,897	2,050	166.8	69,089	2,379
161.9	58,105	2,055	166.9	69,330	2,386
162.0	58,313	2,060	167.0	69,572	2,394
162.1	58,523	2,066	167.1	69,817	2,402
162.2	58,733	2,072	167.2	70,062	2,409
162.3	58,943	2,077	167.3	70,307	2,417
162.4	59,154	2,083	167.4	70,554	2,425
162.5	59,366	2,089	167.5	70,800	2,433
162.6	59,578	2,095	167.6	71,048	2,440
162.7	59,791	2,101	167.7	71,296	2,448
162.8	60,004	2,106	167.8	71,544	2,456
162.9	60,217	2,112	167.9	71,793	2,463
163.0	60,431	2,118	168.0	72,043	2,471
163.1	60,647	2,124	168.1	72,295	2,479
163.2	60,863	2,131	168.2	72,548	2,486
163.3	61,080	2,137	168.3	72,801	2,494
163.4	61,298	2,143	168.4	73,055	2,501
163.5	61,516	2,150	168.5	73,309	2,509
163.6	61,734	2,156	168.6	73,564	2,517
163.7	61,953	2,162	168.7	73,820	2,524
163.8	62,173	2,168	168.8	74,076	2,532
163.9	62,393	2,175	168.9	74,333	2,539
164.0	62,613	2,181	169.0	74,590	2,547
164.1	62,836	2,188	169.1	74,850	2,555
164.2	63,059	2,194	169.2	75,110	2,562
164.3	63,282	2,201	169.3	75,371	2,570
164.4	63,506	2,208	169.4	75,632	2,578
164.5	63,731	2,215	169.5	75,895	2,586
164.6	63,956	2,221	169.6	76,157	2,593
164.7	64,181	2,228	169.7	76,421	2,601
164.8	64,407	2,235	169.8	76,684	2,609
164.9	64,634	2,241	169.9	76,949	2,616

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
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ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
170.0	77,214	2,624	175.0	91,528	3,023
170.1	77,481	2,632	175.1	91,836	3,032
170.2	77,749	2,640	175.2	92,144	3,040
170.3	78,018	2,648	175.3	92,454	3,049
170.4	78,287	2,656	175.4	92,764	3,058
170.5	78,557	2,664	175.5	93,074	3,067
170.6	78,828	2,671	175.6	93,386	3,075
170.7	79,099	2,679	175.7	93,698	3,084
170.8	79,371	2,687	175.8	94,010	3,093
170.9	79,643	2,695	175.9	94,324	3,101
171.0	79,916	2,703	176.0	94,638	3,110
171.1	80,192	2,711	176.1	94,954	3,118
171.2	80,468	2,719	176.2	95,271	3,126
171.3	80,745	2,728	176.3	95,588	3,135
171.4	81,023	2,736	176.4	95,906	3,143
171.5	81,301	2,744	176.5	96,225	3,151
171.6	81,580	2,752	176.6	96,545	3,159
171.7	81,860	2,760	176.7	96,865	3,167
171.8	82,140	2,769	176.8	97,186	3,176
171.9	82,421	2,777	176.9	97,508	3,184
172.0	82,702	2,785	177.0	97,830	3,192
172.1	82,985	2,793	177.1	98,154	3,200
172.2	83,269	2,800	177.2	98,478	3,208
172.3	83,554	2,808	177.3	98,804	3,216
172.4	83,839	2,816	177.4	99,130	3,224
172.5	84,125	2,824	177.5	99,456	3,232
172.6	84,411	2,831	177.6	99,784	3,240
172.7	84,699	2,839	177.7	100,112	3,248
172.8	84,986	2,847	177.8	100,441	3,256
172.9	85,275	2,854	177.9	100,771	3,264
173.0	85,564	2,862	178.0	101,101	3,272
173.1	85,855	2,870	178.1	101,433	3,280
173.2	86,147	2,878	178.2	101,766	3,288
173.3	86,439	2,886	178.3	102,099	3,296
173.4	86,732	2,894	178.4	102,433	3,304
173.5	87,026	2,902	178.5	102,768	3,312
173.6	87,321	2,909	178.6	103,103	3,320
173.7	87,616	2,917	178.7	103,440	3,328
173.8	87,911	2,925	178.8	103,777	3,336
173.9	88,208	2,933	178.9	104,114	3,344
174.0	88,505	2,941	179.0	104,453	3,352
174.1	88,804	2,949	179.1	104,793	3,360
174.2	89,104	2,957	179.2	105,134	3,368
174.3	89,405	2,966	179.3	105,475	3,377
174.4	89,706	2,974	179.4	105,818	3,385
174.5	90,008	2,982	179.5	106,161	3,393
174.6	90,311	2,990	179.6	106,504	3,401
174.7	90,614	2,998	179.7	106,849	3,409
174.8	90,918	3,007	179.8	107,194	3,418
174.9	91,223	3,015	179.9	107,540	3,426

East Bay Municipal Utility District
CAMANCHE RESERVOIR
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ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
180.0	107,887	3,434	185.0	126,296	3,846
180.1	108,236	3,442	185.1	126,686	3,854
180.2	108,586	3,451	185.2	127,076	3,862
180.3	108,936	3,459	185.3	127,467	3,870
180.4	109,287	3,468	185.4	127,859	3,878
180.5	109,639	3,476	185.5	128,252	3,887
180.6	109,991	3,484	185.6	128,645	3,895
180.7	110,343	3,493	185.7	129,038	3,903
180.8	110,697	3,501	185.8	129,433	3,911
180.9	111,051	3,510	185.9	129,827	3,919
181.0	111,405	3,518	186.0	130,223	3,927
181.1	111,762	3,526	186.1	130,621	3,935
181.2	112,120	3,534	186.2	131,019	3,943
181.3	112,478	3,542	186.3	131,418	3,951
181.4	112,837	3,550	186.4	131,818	3,959
181.5	113,197	3,558	186.5	132,218	3,967
181.6	113,557	3,566	186.6	132,619	3,974
181.7	113,917	3,574	186.7	133,020	3,982
181.8	114,279	3,582	186.8	133,423	3,990
181.9	114,641	3,590	186.9	133,826	3,998
182.0	115,003	3,598	187.0	134,229	4,006
182.1	115,369	3,607	187.1	134,635	4,014
182.2	115,735	3,615	187.2	135,041	4,022
182.3	116,102	3,624	187.3	135,448	4,030
182.4	116,469	3,632	187.4	135,855	4,038
182.5	116,837	3,641	187.5	136,263	4,046
182.6	117,206	3,649	187.6	136,672	4,053
182.7	117,575	3,658	187.7	137,082	4,061
182.8	117,945	3,666	187.8	137,492	4,069
182.9	118,315	3,675	187.9	137,903	4,077
183.0	118,686	3,683	188.0	138,314	4,085
183.1	119,060	3,691	188.1	138,727	4,092
183.2	119,434	3,699	188.2	139,140	4,100
183.3	119,809	3,707	188.3	139,555	4,107
183.4	120,184	3,715	188.4	139,969	4,114
183.5	120,560	3,724	188.5	140,385	4,122
183.6	120,937	3,732	188.6	140,801	4,129
183.7	121,314	3,740	188.7	141,218	4,136
183.8	121,692	3,748	188.8	141,635	4,143
183.9	122,071	3,756	188.9	142,053	4,151
184.0	122,450	3,764	189.0	142,472	4,158
184.1	122,832	3,772	189.1	142,892	4,165
184.2	123,214	3,780	189.2	143,313	4,173
184.3	123,597	3,789	189.3	143,734	4,180
184.4	123,981	3,797	189.4	144,156	4,187
184.5	124,365	3,805	189.5	144,579	4,195
184.6	124,750	3,813	189.6	145,003	4,202
184.7	125,136	3,821	189.7	145,427	4,209
184.8	125,522	3,830	189.8	145,852	4,216
184.9	125,909	3,838	189.9	146,277	4,224

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
190.0	146,703	4,231	195.0	168,979	4,609
190.1	147,130	4,238	195.1	169,444	4,617
190.2	147,558	4,246	195.2	169,910	4,624
190.3	147,987	4,253	195.3	170,377	4,632
190.4	148,417	4,260	195.4	170,844	4,639
190.5	148,847	4,268	195.5	171,312	4,647
190.6	149,277	4,275	195.6	171,781	4,654
190.7	149,709	4,282	195.7	172,251	4,662
190.8	150,141	4,289	195.8	172,721	4,669
190.9	150,574	4,297	195.9	173,191	4,677
191.0	151,007	4,304	196.0	173,663	4,684
191.1	151,442	4,312	196.1	174,136	4,692
191.2	151,877	4,319	196.2	174,610	4,699
191.3	152,314	4,327	196.3	175,084	4,707
191.4	152,751	4,334	196.4	175,559	4,715
191.5	153,188	4,342	196.5	176,035	4,723
191.6	153,626	4,349	196.6	176,511	4,730
191.7	154,065	4,357	196.7	176,988	4,738
191.8	154,505	4,364	196.8	177,466	4,746
191.9	154,945	4,372	196.9	177,945	4,753
192.0	155,386	4,379	197.0	178,424	4,761
192.1	155,828	4,386	197.1	178,905	4,769
192.2	156,271	4,394	197.2	179,386	4,777
192.3	156,715	4,401	197.3	179,868	4,784
192.4	157,159	4,408	197.4	180,351	4,792
192.5	157,604	4,416	197.5	180,835	4,800
192.6	158,049	4,423	197.6	181,319	4,808
192.7	158,495	4,430	197.7	181,804	4,816
192.8	158,942	4,437	197.8	182,290	4,823
192.9	159,390	4,445	197.9	182,776	4,831
193.0	159,838	4,452	198.0	183,263	4,839
193.1	160,288	4,460	198.1	183,752	4,847
193.2	160,739	4,468	198.2	184,241	4,855
193.3	161,190	4,476	198.3	184,731	4,862
193.4	161,643	4,484	198.4	185,221	4,870
193.5	162,095	4,492	198.5	185,713	4,878
193.6	162,549	4,500	198.6	186,205	4,886
193.7	163,003	4,508	198.7	186,697	4,894
193.8	163,458	4,516	198.8	187,191	4,901
193.9	163,914	4,524	198.9	187,685	4,909
194.0	164,370	4,532	199.0	188,180	4,917
194.1	164,828	4,540	199.1	188,676	4,925
194.2	165,286	4,547	199.2	189,174	4,933
194.3	165,745	4,555	199.3	189,671	4,941
194.4	166,205	4,563	199.4	190,170	4,949
194.5	166,666	4,571	199.5	190,669	4,957
194.6	167,127	4,578	199.6	191,169	4,964
194.7	167,589	4,586	199.7	191,670	4,972
194.8	168,052	4,594	199.8	192,171	4,980
194.9	168,515	4,601	199.9	192,673	4,988

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
200.0	193,176	4,996	205.0	219,265	5,368
200.1	193,680	5,004	205.1	219,806	5,376
200.2	194,185	5,011	205.2	220,348	5,383
200.3	194,690	5,019	205.3	220,890	5,391
200.4	195,196	5,026	205.4	221,433	5,398
200.5	195,703	5,034	205.5	221,977	5,406
200.6	196,210	5,041	205.6	222,522	5,413
200.7	196,718	5,049	205.7	223,067	5,421
200.8	197,227	5,056	205.8	223,614	5,428
200.9	197,737	5,064	205.9	224,160	5,436
201.0	198,247	5,071	206.0	224,708	5,443
201.1	198,758	5,078	206.1	225,256	5,450
201.2	199,270	5,085	206.2	225,806	5,458
201.3	199,782	5,093	206.3	226,355	5,465
201.4	200,296	5,100	206.4	226,906	5,473
201.5	200,810	5,107	206.5	227,457	5,480
201.6	201,324	5,114	206.6	228,009	5,487
201.7	201,840	5,121	206.7	228,562	5,495
201.8	202,356	5,129	206.8	229,116	5,502
201.9	202,872	5,136	206.9	229,670	5,510
202.0	203,390	5,143	207.0	230,225	5,517
202.1	203,908	5,150	207.1	230,781	5,524
202.2	204,427	5,158	207.2	231,337	5,532
202.3	204,947	5,165	207.3	231,895	5,539
202.4	205,468	5,172	207.4	232,453	5,547
202.5	205,989	5,180	207.5	233,011	5,554
202.6	206,511	5,187	207.6	233,571	5,561
202.7	207,034	5,194	207.7	234,131	5,569
202.8	207,557	5,201	207.8	234,692	5,576
202.9	208,081	5,209	207.9	235,254	5,584
203.0	208,606	5,216	208.0	235,816	5,591
203.1	209,132	5,224	208.1	236,380	5,599
203.2	209,658	5,231	208.2	236,944	5,607
203.3	210,186	5,239	208.3	237,509	5,614
203.4	210,714	5,246	208.4	238,075	5,622
203.5	211,243	5,254	208.5	238,641	5,630
203.6	211,772	5,261	208.6	239,209	5,638
203.7	212,302	5,269	208.7	239,777	5,646
203.8	212,833	5,276	208.8	240,345	5,653
203.9	213,365	5,284	208.9	240,915	5,661
204.0	213,897	5,291	209.0	241,485	5,669
204.1	214,431	5,299	209.1	242,056	5,677
204.2	214,965	5,306	209.2	242,628	5,684
204.3	215,500	5,314	209.3	243,201	5,692
204.4	216,036	5,322	209.4	243,775	5,700
204.5	216,572	5,330	209.5	244,349	5,708
204.6	217,109	5,337	209.6	244,924	5,715
204.7	217,647	5,345	209.7	245,499	5,723
204.8	218,186	5,353	209.8	246,076	5,731
204.9	218,725	5,360	209.9	246,653	5,738

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
210.0	247,231	5,746	215.0	277,111	6,123
210.1	247,810	5,754	215.1	277,727	6,130
210.2	248,390	5,762	215.2	278,343	6,137
210.3	248,970	5,769	215.3	278,960	6,143
210.4	249,552	5,777	215.4	279,578	6,150
210.5	250,134	5,785	215.5	280,197	6,157
210.6	250,717	5,793	215.6	280,817	6,164
210.7	251,300	5,801	215.7	281,437	6,171
210.8	251,884	5,808	215.8	282,058	6,177
210.9	252,469	5,816	215.9	282,680	6,184
211.0	253,055	5,824	216.0	283,302	6,191
211.1	253,642	5,832	216.1	283,925	6,198
211.2	254,229	5,839	216.2	284,548	6,205
211.3	254,818	5,847	216.3	285,172	6,212
211.4	255,407	5,855	216.4	285,797	6,219
211.5	255,996	5,863	216.5	286,423	6,226
211.6	256,587	5,870	216.6	287,049	6,232
211.7	257,178	5,878	216.7	287,676	6,239
211.8	257,770	5,886	216.8	288,304	6,246
211.9	258,363	5,893	216.9	288,933	6,253
212.0	258,956	5,901	217.0	289,562	6,260
212.1	259,551	5,909	217.1	290,192	6,267
212.2	260,146	5,917	217.2	290,822	6,274
212.3	260,742	5,925	217.3	291,453	6,281
212.4	261,339	5,933	217.4	292,085	6,288
212.5	261,937	5,941	217.5	292,717	6,295
212.6	262,535	5,948	217.6	293,350	6,301
212.7	263,134	5,956	217.7	293,984	6,308
212.8	263,734	5,964	217.8	294,619	6,315
212.9	264,335	5,972	217.9	295,255	6,322
213.0	264,936	5,980	218.0	295,891	6,329
213.1	265,538	5,987	218.1	296,527	6,336
213.2	266,140	5,994	218.2	297,164	6,342
213.3	266,744	6,002	218.3	297,801	6,349
213.4	267,348	6,009	218.4	298,440	6,355
213.5	267,953	6,016	218.5	299,079	6,362
213.6	268,558	6,023	218.6	299,718	6,368
213.7	269,165	6,030	218.7	300,359	6,375
213.8	269,772	6,038	218.8	301,000	6,381
213.9	270,379	6,045	218.9	301,642	6,388
214.0	270,988	6,052	219.0	302,285	6,394
214.1	271,597	6,059	219.1	302,928	6,401
214.2	272,207	6,066	219.2	303,571	6,407
214.3	272,817	6,073	219.3	304,215	6,414
214.4	273,428	6,080	219.4	304,860	6,420
214.5	274,040	6,088	219.5	305,505	6,427
214.6	274,653	6,095	219.6	306,152	6,433
214.7	275,266	6,102	219.7	306,799	6,440
214.8	275,880	6,109	219.8	307,446	6,446
214.9	276,495	6,116	219.9	308,095	6,453

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
220.0	308,744	6,459	225.0	342,010	6,781
220.1	309,393	6,466	225.1	342,691	6,787
220.2	310,043	6,472	225.2	343,373	6,793
220.3	310,693	6,479	225.3	344,055	6,800
220.4	311,345	6,485	225.4	344,738	6,806
220.5	311,997	6,492	225.5	345,422	6,812
220.6	312,650	6,498	225.6	346,107	6,818
220.7	313,303	6,505	225.7	346,792	6,824
220.8	313,957	6,511	225.8	347,479	6,831
220.9	314,612	6,518	225.9	348,165	6,837
221.0	315,268	6,524	226.0	348,853	6,843
221.1	315,924	6,531	226.1	349,540	6,849
221.2	316,580	6,537	226.2	350,228	6,855
221.3	317,237	6,544	226.3	350,917	6,862
221.4	317,895	6,550	226.4	351,606	6,868
221.5	318,554	6,557	226.5	352,296	6,874
221.6	319,213	6,564	226.6	352,987	6,880
221.7	319,873	6,570	226.7	353,679	6,886
221.8	320,534	6,577	226.8	354,371	6,893
221.9	321,196	6,583	226.9	355,064	6,899
222.0	321,858	6,590	227.0	355,758	6,905
222.1	322,520	6,596	227.1	356,452	6,911
222.2	323,183	6,603	227.2	357,146	6,918
222.3	323,846	6,609	227.3	357,841	6,924
222.4	324,511	6,616	227.4	358,537	6,931
222.5	325,176	6,622	227.5	359,233	6,937
222.6	325,842	6,628	227.6	359,931	6,943
222.7	326,508	6,635	227.7	360,629	6,950
222.8	327,175	6,641	227.8	361,327	6,956
222.9	327,843	6,648	227.9	362,027	6,963
223.0	328,512	6,654	228.0	362,727	6,969
223.1	329,180	6,660	228.1	363,427	6,976
223.2	329,850	6,667	228.2	364,128	6,982
223.3	330,519	6,673	228.3	364,830	6,989
223.4	331,190	6,679	228.4	365,532	6,995
223.5	331,861	6,686	228.5	366,235	7,002
223.6	332,533	6,692	228.6	366,939	7,009
223.7	333,206	6,698	228.7	367,644	7,015
223.8	333,880	6,704	228.8	368,349	7,022
223.9	334,554	6,711	228.9	369,055	7,028
224.0	335,229	6,717	229.0	369,762	7,035
224.1	335,904	6,723	229.1	370,469	7,042
224.2	336,579	6,730	229.2	371,176	7,048
224.3	337,256	6,736	229.3	371,885	7,055
224.4	337,933	6,743	229.4	372,594	7,061
224.5	338,610	6,749	229.5	373,303	7,068
224.6	339,289	6,755	229.6	374,014	7,075
224.7	339,968	6,762	229.7	374,725	7,081
224.8	340,648	6,768	229.8	375,437	7,088
224.9	341,329	6,775	229.9	376,150	7,094

East Bay Municipal Utility District
CAMANCHE RESERVOIR
ELEVATION-CAPACITY-AREA
 1989 SURVEY

ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)	ELEVATION (Feet)	CAPACITY (Ac-Ft)	AREA (Acres)
230.0	376,863	7,101	235.0	413,383	7,439
230.1	377,577	7,108	235.1	414,130	7,445
230.2	378,291	7,114	235.2	414,877	7,451
230.3	379,006	7,121	235.3	415,625	7,457
230.4	379,722	7,128	235.4	416,374	7,463
230.5	380,438	7,135	235.5 spill	417,124	7,470
230.6	381,155	7,141	235.6	417,874	7,476
230.7	381,873	7,148	235.7	418,625	7,482
230.8	382,592	7,155	235.8	419,377	7,488
230.9	383,311	7,161	235.9	420,130	7,494
231.0	384,031	7,168	236.0	420,883	7,500
231.1	384,751	7,175	236.1	421,636	7,506
231.2	385,472	7,181	236.2	422,390	7,513
231.3	386,194	7,188	236.3	423,144	7,519
231.4	386,916	7,195	236.4	423,900	7,525
231.5	387,639	7,202	236.5	424,656	7,532
231.6	388,363	7,208	236.6	425,412	7,538
231.7	389,088	7,215	236.7	426,170	7,544
231.8	389,813	7,222	236.8	426,928	7,550
231.9	390,539	7,228	236.9	427,686	7,557
232.0	391,266	7,235	237.0	428,446	7,563
232.1	391,993	7,242	237.1	429,205	7,569
232.2	392,721	7,249	237.2	429,965	7,576
232.3	393,450	7,256	237.3	430,726	7,582
232.4	394,179	7,263	237.4	431,488	7,588
232.5	394,909	7,270	237.5	432,250	7,595
232.6	395,640	7,276	237.6	433,013	7,601
232.7	396,371	7,283	237.7	433,777	7,607
232.8	397,103	7,290	237.8	434,541	7,613
232.9	397,836	7,297	237.9	435,306	7,620
233.0	398,570	7,304	238.0	436,072	7,626
233.1	399,304	7,311	238.1	436,838	7,632
233.2	400,039	7,318	238.2	437,604	7,638
233.3	400,775	7,325	238.3	438,371	7,645
233.4	401,511	7,332	238.4	439,139	7,651
233.5	402,248	7,339	238.5	439,907	7,657
233.6	402,986	7,346	238.6	440,676	7,663
233.7	403,724	7,353	238.7	441,446	7,669
233.8	404,463	7,360	238.8	442,217	7,676
233.9	405,203	7,367	238.9	442,988	7,682
234.0	405,944	7,374	239.0	443,760	7,688
234.1	406,685	7,381	239.1	444,532	7,694
234.2	407,426	7,387	239.2	445,304	7,700
234.3	408,168	7,394	239.3	446,077	7,706
234.4	408,911	7,400	239.4	446,851	7,712
234.5	409,654	7,407	239.5	447,626	7,719
234.6	410,399	7,413	239.6	448,401	7,725
234.7	411,144	7,420	239.7	449,177	7,731
234.8	411,889	7,426	239.8	449,953	7,737
234.9	412,636	7,433	239.9	450,731	7,743

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
100.0	224 45	224 45	225 45	225 45	226 45	226 45	226 45	227 45	227 45	228 45
100.1	228 45	228 45	229 45	230 45	230 45	230 45	231 45	232 45	232 45	232 45
100.2	233 45	233 45	234 45	234 45	235 45	235 46	235 46	236 46	236 46	237 46
100.3	237 46	238 46	238 46	238 46	239 46	240 46	240 46	240 46	241 46	242 46
100.4	242 46	242 46	243 46	243 46	244 46	244 46	244 46	245 46	245 46	246 46
100.5	246 46	246 46	247 46	248 46	248 46	248 46	249 46	250 46	250 46	250 46
100.6	251 46	252 46	252 46	252 46	253 46	254 46	254 46	254 46	255 46	256 46
100.7	256 46	256 46	257 46	257 46	258 46	258 47	258 47	259 47	259 47	260 47
100.8	260 47	260 47	261 47	262 47	262 47	262 47	263 47	264 47	264 47	264 47
100.9	265 47	266 47	266 47	266 47	267 47	268 47	268 47	268 47	269 47	270 47
101.0	270 47	270 47	271 47	272 47	272 47	272 47	273 47	274 47	274 47	274 47
101.1	275 47	275 47	276 47	276 47	277 47	277 48	277 48	278 48	278 48	279 48
101.2	279 48	280 48	280 48	280 48	281 48	282 48	282 48	282 48	283 48	284 48
101.3	284 48	284 48	285 48	286 48	286 48	286 48	287 48	288 48	288 48	288 48
101.4	289 48	289 48	290 48	290 48	291 48	291 49	291 49	292 49	292 49	293 49
101.5	293 49	294 49	294 49	294 49	295 49	296 49	296 49	296 49	297 49	298 49
101.6	298 49	298 49	299 49	300 49	300 49	300 49	301 49	302 49	302 49	302 49
101.7	303 49	304 49	304 49	304 49	305 49	306 49	306 49	306 49	307 49	308 49
101.8	308 49	308 49	309 49	310 49	310 49	310 50	311 50	312 50	312 50	312 50
101.9	313 50	314 50	314 50	314 50	315 50	316 50	316 50	316 50	317 50	318 50
102.0	318 50	318 50	319 50	320 50	320 50	320 50	321 50	322 50	322 50	322 50

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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102.1	323 50	324 50	324 50	324 50	325 50	326 51	326 51	326 51	327 51	328 51
102.2	328 51	328 51	329 51	330 51	330 51	330 51	331 51	332 51	332 51	332 51
102.3	333 51	334 51	334 51	334 51	335 51	336 52	336 52	336 52	337 52	338 52
102.4	338 52	338 52	339 52	340 52	340 52	340 52	341 52	342 52	342 52	342 52
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102.5	343 52	344 52	344 52	345 52	345 52	346 52	347 52	347 52	348 52	348 52
102.6	349 52	350 52	350 52	350 52	351 52	352 53	352 53	352 53	353 53	354 53
102.7	354 53	354 53	355 53	356 53	356 53	356 53	357 53	358 53	358 53	358 53
102.8	359 53	360 53	360 53	361 53	361 53	362 54	363 54	363 54	364 54	364 54
102.9	365 54	366 54	366 54	366 54	367 54	368 54	368 54	368 54	369 54	370 54
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103.0	370 54	371 54	371 54	372 54	372 54	373 55	374 55	374 55	375 55	375 55
103.1	376 55	376 55	377 55	378 55	378 55	378 55	379 55	380 55	380 55	380 55
103.2	381 55	382 55	382 55	383 55	383 55	384 56	385 56	385 56	386 56	386 56
103.3	387 56	388 56	388 56	389 56	389 56	390 57	391 57	391 57	392 57	392 57
103.4	393 57	394 57	394 57	394 57	395 57	396 58	396 58	396 58	397 58	398 58
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103.5	398 58	399 58	399 58	400 58	400 58	401 58	402 58	402 58	403 58	403 58
103.6	404 58	405 58	405 58	406 58	406 58	407 59	408 59	408 59	409 59	409 59
103.7	410 59	411 59	411 59	412 59	412 59	413 60	414 60	414 60	415 60	415 60
103.8	416 60	417 60	417 60	418 60	418 60	419 60	420 60	420 60	421 60	421 60
103.9	422 60	423 60	423 60	424 60	424 60	425 61	426 61	426 61	427 61	427 61
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104.0	428 61	429 61	429 61	430 61	430 61	431 62	432 62	432 62	433 62	433 62
104.1	434 62	435 62	435 62	436 62	436 62	437 63	438 63	438 63	439 63	439 63

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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104.2	440 63	441 63	441 63	442 63	443 63	443 63	444 63	445 63	446 63	446 63
104.3	447 63	448 63	448 63	449 63	449 63	450 64	451 64	451 64	452 64	452 64
104.4	453 64	454 64	454 64	455 64	455 64	456 64	457 65	457 65	458 65	458 65
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104.5	459 65	460 65	460 65	461 65	462 65	462 65	463 66	464 66	465 66	465 66
104.6	466 66	467 66	467 66	468 66	468 66	469 66	470 67	470 67	471 67	471 67
104.7	472 67	473 67	473 67	474 67	475 67	475 67	476 67	477 67	478 67	478 67
104.8	479 67	480 67	480 67	481 67	481 67	482 67	483 68	483 68	484 68	484 68
104.9	485 68	486 68	486 68	487 68	488 68	488 68	489 69	490 69	491 69	491 69
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105.0	492 69	493 69	493 69	494 69	495 69	495 69	496 70	497 70	498 70	498 70
105.1	499 70	500 70	500 70	501 70	502 70	502 70	503 71	504 71	505 71	505 71
105.2	506 71	507 71	508 71	508 71	509 71	510 71	511 72	512 72	512 72	513 72
105.3	514 72	515 72	515 72	516 72	517 72	518 72	518 73	519 73	520 73	520 73
105.4	521 73	522 73	523 73	523 74	524 74	525 74	526 74	527 74	527 75	528 75
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105.5	529 75	530 75	530 75	531 75	532 75	533 75	533 76	534 76	535 76	535 76
105.6	536 76	537 76	538 76	538 76	539 76	540 76	541 77	542 77	542 77	543 77
105.7	544 77	545 77	545 77	546 77	547 77	548 77	548 78	549 78	550 78	550 78
105.8	551 78	552 78	553 78	553 78	554 78	555 78	556 79	557 79	557 79	558 79
105.9	559 79	560 79	561 79	561 79	562 79	563 79	564 80	565 80	565 80	566 80
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106.0	567 80	568 80	569 80	569 80	570 80	571 80	572 81	573 81	573 81	574 81
106.1	575 81	576 81	577 81	578 82	579 82	579 82	580 82	581 82	582 83	583 83
106.2	584 83	585 83	586 83	586 83	587 83	588 83	589 84	590 84	590 84	591 84

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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106.3	592 84	593 84	594 84	595 85	596 85	596 85	597 85	598 85	599 86	600 86
106.4	601 86	602 86	603 86	603 86	604 86	605 86	606 87	607 87	607 87	608 87
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106.5	609 87	610 87	611 87	612 87	613 87	613 87	614 88	615 88	616 88	617 88
106.6	618 88	619 88	620 88	621 89	622 89	622 89	623 89	624 89	625 90	626 90
106.7	627 90	628 90	629 90	630 90	631 90	631 90	632 91	633 91	634 91	635 91
106.8	636 91	637 91	638 91	639 92	640 92	640 92	641 92	642 92	643 93	644 93
106.9	645 93	646 93	647 93	648 93	649 93	649 93	650 94	651 94	652 94	653 94
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107.0	654 94	655 94	656 94	657 95	658 95	659 95	660 95	661 95	662 96	663 96
107.1	664 96	665 96	666 96	667 97	668 97	669 97	670 97	671 97	672 98	673 98
107.2	674 98	675 98	676 98	677 98	678 98	679 98	680 99	681 99	682 99	683 99
107.3	684 99	685 99	686 99	687 100	688 100	689 100	690 100	691 100	692 101	693 101
107.4	694 101	695 101	696 101	697 102	698 102	699 102	700 102	701 102	702 103	703 103
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107.5	704 103	705 103	706 103	707 104	708 104	709 104	710 104	711 104	712 105	713 105
107.6	714 105	715 105	716 105	717 106	718 106	719 106	720 106	721 106	722 107	723 107
107.7	724 107	725 107	726 107	727 107	728 107	730 107	731 108	732 108	733 108	734 108
107.8	735 108	736 108	737 108	738 109	739 109	740 109	741 109	742 109	743 110	744 110
107.9	745 110	746 110	747 110	748 111	749 111	751 111	752 111	753 111	754 112	755 112
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108.0	756 112	757 112	758 112	760 113	761 113	762 113	763 113	764 113	766 114	767 114
108.1	768 114	769 114	770 114	771 115	772 115	774 115	775 115	776 115	777 116	778 116
108.2	779 116	780 116	781 116	783 117	784 117	785 117	786 117	787 117	789 118	790 118
108.3	791 118	792 118	793 118	795 119	796 119	797 119	798 119	799 119	801 120	802 120

Camanche Dam and Reservoir, Mokelumne River, California
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 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
108.4	803 120	804 120	805 121	807 121	808 121	809 121	810 122	811 122	813 122	814 123
108.5	815 123	816 123	818 123	819 124	820 124	821 124	823 124	824 124	825 125	827 125
108.6	828 125	829 125	830 125	832 126	833 126	834 126	835 126	836 126	838 127	839 127
108.7	840 127	841 127	843 127	844 128	845 128	846 128	848 128	849 128	850 129	852 129
108.8	853 129	854 129	855 129	857 130	858 130	859 130	860 130	861 130	863 131	864 131
108.9	865 131	866 131	868 131	869 132	870 132	871 132	873 132	874 132	875 133	877 133
109.0	878 133	879 133	881 134	882 134	884 134	885 135	886 135	888 135	889 135	891 136
109.1	892 136	893 136	895 136	896 137	898 137	899 137	900 137	902 137	903 138	905 138
109.2	906 138	907 138	909 139	910 139	912 139	913 140	914 140	916 140	917 140	919 141
109.3	920 141	921 141	923 141	924 142	926 142	927 142	928 142	930 142	931 143	933 143
109.4	934 143	935 143	937 144	938 144	940 144	941 145	942 145	944 145	945 145	947 146
109.5	948 146	950 146	951 146	952 147	954 147	956 147	957 147	958 147	960 148	962 148
109.6	963 148	964 148	966 149	968 149	969 149	970 150	972 150	974 150	975 150	976 151
109.7	978 151	980 151	981 151	982 152	984 152	986 152	987 152	988 152	990 153	992 153
109.8	993 153	994 153	996 154	998 154	999 154	1000 155	1002 155	1004 155	1005 155	1006 156
109.9	1008 156	1010 156	1011 156	1012 157	1014 157	1016 157	1017 157	1018 157	1020 158	1022 158
110.0	1023 158	1025 158	1026 159	1028 159	1029 159	1031 160	1033 160	1034 160	1036 160	1037 161
110.1	1039 161	1041 161	1042 162	1044 162	1046 162	1048 163	1049 163	1051 163	1053 163	1054 164
110.2	1056 164	1058 164	1059 165	1061 165	1063 165	1065 166	1066 166	1068 166	1070 166	1071 167
110.3	1073 167	1075 167	1076 168	1078 168	1080 168	1082 169	1083 169	1085 169	1087 169	1088 170
110.4	1090 170	1092 170	1093 171	1095 171	1097 171	1099 172	1100 172	1102 172	1104 172	1105 173

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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110.5	1107 173	1109 173	1110 173	1112 174	1114 174	1116 174	1117 174	1119 174	1121 175	1122 175
110.6	1124 175	1126 175	1128 176	1129 176	1131 176	1133 177	1135 177	1137 177	1138 177	1140 178
110.7	1142 178	1144 178	1146 179	1147 179	1149 179	1151 180	1153 180	1155 180	1156 180	1158 181
110.8	1160 181	1162 181	1164 182	1165 182	1167 182	1169 183	1171 183	1173 183	1174 183	1176 184
110.9	1178 184	1180 184	1182 185	1183 185	1185 185	1187 186	1189 186	1191 186	1192 186	1194 187
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111.0	1196 187	1198 187	1200 188	1202 188	1204 188	1206 189	1207 189	1209 189	1211 189	1213 190
111.1	1215 190	1217 190	1219 191	1221 191	1223 191	1225 192	1227 192	1229 192	1231 192	1233 193
111.2	1235 193	1237 193	1239 194	1241 194	1243 194	1245 195	1247 195	1249 195	1251 195	1253 196
111.3	1255 196	1257 196	1259 197	1261 197	1263 197	1265 198	1267 198	1269 198	1271 198	1273 199
111.4	1275 199	1277 199	1279 200	1281 200	1283 201	1285 201	1287 201	1289 202	1291 202	1293 203
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111.5	1295 203	1297 203	1299 204	1301 204	1303 204	1305 205	1307 205	1309 205	1311 205	1313 206
111.6	1315 206	1317 206	1319 207	1321 207	1323 207	1325 208	1328 208	1330 208	1332 208	1334 209
111.7	1336 209	1338 209	1340 210	1342 210	1344 210	1346 211	1349 211	1351 211	1353 211	1355 212
111.8	1357 212	1359 212	1361 213	1363 213	1365 213	1367 214	1370 214	1372 214	1374 214	1376 215
111.9	1378 215	1380 215	1382 216	1385 216	1387 216	1389 217	1391 217	1393 217	1396 217	1398 218
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112.0	1400 218	1402 218	1405 219	1407 219	1409 219	1411 220	1414 220	1416 220	1418 220	1421 221
112.1	1423 221	1425 221	1428 222	1430 222	1432 223	1434 223	1437 223	1439 224	1441 224	1444 225
112.2	1446 225	1448 225	1451 226	1453 226	1455 226	1457 227	1460 227	1462 227	1464 227	1467 228
112.3	1469 228	1471 228	1474 229	1476 229	1479 229	1481 230	1483 230	1486 230	1488 230	1491 231
112.4	1493 231	1495 231	1498 232	1500 232	1503 233	1505 233	1507 233	1510 234	1512 234	1515 235
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112.5	1517 235	1520 235	1522 236	1524 236	1527 236	1530 237	1532 237	1534 237	1537 237	1540 238

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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112.6	1542 238	1544 238	1547 239	1549 239	1552 239	1554 240	1556 240	1559 240	1561 240	1564 241
112.7	1566 241	1568 241	1571 242	1574 242	1576 242	1578 243	1581 243	1584 243	1586 243	1588 244
112.8	1591 244	1594 244	1596 245	1598 245	1601 246	1604 246	1606 246	1608 247	1611 247	1614 248
112.9	1616 248	1619 248	1621 249	1624 249	1626 249	1629 250	1632 250	1634 250	1637 250	1639 251
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113.0	1642 251	1645 251	1647 252	1650 252	1653 253	1656 253	1658 253	1661 254	1664 254	1666 255
113.1	1669 255	1672 255	1674 256	1677 256	1680 256	1683 257	1685 257	1688 257	1691 257	1693 258
113.2	1696 258	1699 258	1702 259	1704 259	1707 260	1710 260	1713 260	1716 261	1718 261	1721 262
113.3	1724 262	1727 262	1730 263	1732 263	1735 263	1738 264	1741 264	1744 264	1746 264	1749 265
113.4	1752 265	1755 265	1758 266	1760 266	1763 267	1766 267	1769 267	1772 268	1774 268	1777 269
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113.5	1780 269	1783 269	1786 270	1789 270	1792 270	1795 271	1797 271	1800 271	1803 271	1806 272
113.6	1809 272	1812 272	1815 273	1818 273	1821 274	1824 274	1826 274	1829 275	1832 275	1835 276
113.7	1838 276	1841 276	1844 277	1847 277	1850 277	1853 278	1855 278	1858 278	1861 278	1864 279
113.8	1867 279	1870 279	1873 280	1876 280	1879 281	1882 281	1885 281	1888 282	1891 282	1894 283
113.9	1897 283	1900 283	1903 284	1906 284	1909 284	1912 285	1915 285	1918 285	1921 285	1924 286
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114.0	1927 286	1930 286	1933 287	1936 287	1939 288	1942 288	1946 288	1949 289	1952 289	1955 290
114.1	1958 290	1961 290	1964 291	1968 291	1971 291	1974 292	1977 292	1980 292	1984 292	1987 293
114.2	1990 293	1993 293	1997 294	2000 294	2003 295	2006 295	2010 295	2013 296	2016 296	2020 297
114.3	2023 297	2026 297	2029 298	2033 298	2036 299	2039 299	2042 299	2045 300	2049 300	2052 301
114.4	2055 301	2058 301	2062 302	2065 302	2068 303	2072 303	2075 303	2078 304	2081 304	2085 305
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114.5	2088 305	2091 305	2095 306	2098 306	2102 306	2105 307	2108 307	2112 307	2115 307	2119 308
114.6	2122 308	2125 308	2129 309	2132 309	2136 310	2139 310	2142 310	2146 311	2149 311	2153 312

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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114.7	2156 312	2159 312	2163 313	2166 313	2170 314	2173 314	2176 314	2180 315	2183 315	2187 316
114.8	2190 316	2194 316	2197 317	2200 317	2204 317	2208 318	2211 318	2214 318	2218 318	2222 319
114.9	2225 319	2228 319	2232 320	2236 320	2239 321	2242 321	2246 321	2250 322	2253 322	2256 323
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115.0	2260 323	2264 323	2267 324	2271 324	2275 325	2278 325	2282 325	2286 326	2290 326	2293 327
115.1	2297 327	2301 327	2305 328	2308 328	2312 328	2316 329	2320 329	2324 329	2327 329	2331 330
115.2	2335 330	2339 330	2343 331	2346 331	2350 332	2354 332	2358 332	2362 333	2365 333	2369 334
115.3	2373 334	2377 334	2381 335	2385 335	2389 336	2393 336	2396 336	2400 337	2404 337	2408 338
115.4	2412 338	2416 338	2420 339	2424 339	2428 340	2432 340	2435 340	2439 341	2443 341	2447 342
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115.5	2451 342	2455 342	2459 343	2463 343	2467 343	2471 344	2474 344	2478 344	2482 344	2486 345
115.6	2490 345	2494 345	2498 346	2502 346	2506 347	2510 347	2514 347	2518 348	2522 348	2526 349
115.7	2530 349	2534 349	2538 350	2542 350	2546 351	2550 351	2555 351	2559 352	2563 352	2567 353
115.8	2571 353	2575 353	2579 354	2583 354	2587 354	2591 355	2596 355	2600 355	2604 355	2608 356
115.9	2612 356	2616 356	2620 357	2625 357	2629 358	2633 358	2637 358	2641 359	2646 359	2650 360
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116.0	2654 360	2658 360	2663 361	2667 361	2672 362	2676 362	2680 362	2685 363	2689 363	2694 364
116.1	2698 364	2702 364	2707 365	2712 365	2716 365	2720 366	2725 366	2730 366	2734 366	2738 367
116.2	2743 367	2748 367	2752 368	2756 368	2761 369	2766 369	2770 369	2774 370	2779 370	2784 371
116.3	2788 371	2793 371	2797 372	2802 372	2806 373	2811 373	2816 373	2820 374	2825 374	2829 375
116.4	2834 375	2839 375	2843 376	2848 376	2852 377	2857 377	2862 377	2866 378	2871 378	2875 379
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116.5	2880 379	2885 379	2889 380	2894 380	2899 380	2903 381	2908 381	2913 381	2918 381	2922 382
116.6	2927 382	2932 382	2937 383	2941 383	2946 384	2951 384	2956 384	2961 385	2965 385	2970 386
116.7	2975 386	2980 386	2985 387	2989 387	2994 388	2999 388	3004 388	3009 389	3013 389	3018 390

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
116.8	3023 390	3028 390	3033 391	3038 391	3043 391	3048 392	3052 392	3057 392	3062 392	3067 393
116.9	3072 393	3077 393	3082 394	3087 394	3092 395	3097 395	3102 395	3107 396	3112 396	3117 397
117.0	3122 397	3127 397	3132 398	3137 398	3142 399	3147 399	3153 399	3158 400	3163 400	3168 401
117.1	3173 401	3178 401	3183 402	3189 402	3194 402	3199 403	3204 403	3209 403	3215 403	3220 404
117.2	3225 404	3230 404	3235 405	3241 405	3246 406	3251 406	3256 406	3261 407	3267 407	3272 408
117.3	3277 408	3282 408	3288 409	3293 409	3298 409	3304 410	3309 410	3314 410	3319 410	3325 411
117.4	3330 411	3335 411	3341 412	3346 412	3352 413	3357 413	3362 413	3368 414	3373 414	3379 415
117.5	3384 415	3390 415	3395 416	3400 416	3406 417	3412 417	3417 417	3422 418	3428 418	3434 419
117.6	3439 419	3444 419	3450 420	3456 420	3461 420	3466 421	3472 421	3478 421	3483 421	3488 422
117.7	3494 422	3500 422	3505 423	3511 423	3516 424	3522 424	3528 424	3533 425	3539 425	3544 426
117.8	3550 426	3556 426	3561 427	3567 427	3573 427	3578 428	3584 428	3590 428	3596 428	3601 429
117.9	3607 429	3613 429	3618 430	3624 430	3630 431	3635 431	3641 431	3647 432	3653 432	3658 433
118.0	3664 433	3670 433	3676 434	3681 434	3687 435	3693 435	3699 435	3705 436	3710 436	3716 437
118.1	3722 437	3728 437	3734 438	3740 438	3746 438	3752 439	3757 439	3763 439	3769 439	3775 440
118.2	3781 440	3787 440	3793 441	3799 441	3805 442	3811 442	3817 442	3823 443	3829 443	3835 444
118.3	3841 444	3847 444	3853 445	3859 445	3865 445	3871 446	3877 446	3883 446	3889 446	3895 447
118.4	3901 447	3907 447	3913 448	3920 448	3926 449	3932 449	3938 449	3944 450	3951 450	3957 451
118.5	3963 451	3969 451	3975 452	3982 452	3988 452	3994 453	4000 453	4006 453	4013 453	4019 454
118.6	4025 454	4031 454	4038 455	4044 455	4050 456	4057 456	4063 456	4069 457	4075 457	4082 458
118.7	4088 458	4094 458	4101 459	4107 459	4113 459	4120 460	4126 460	4132 460	4138 460	4145 461
118.8	4151 461	4158 461	4164 462	4170 462	4177 463	4184 463	4190 463	4196 464	4203 464	4210 465

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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118.9	4216 465	4222 465	4229 466	4236 466	4242 466	4248 467	4255 467	4262 467	4268 467	4274 468
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119.0	4281 468	4288 468	4294 469	4300 469	4307 469	4314 470	4320 470	4326 470	4333 470	4340 471
119.1	4346 471	4353 471	4359 472	4366 472	4372 473	4379 473	4386 473	4392 474	4399 474	4405 475
119.2	4412 475	4419 475	4425 476	4432 476	4438 476	4445 477	4452 477	4458 477	4465 477	4471 478
119.3	4478 478	4485 478	4492 479	4498 479	4505 480	4512 480	4519 480	4526 481	4532 481	4539 482
119.4	4546 482	4553 482	4560 483	4566 483	4573 483	4580 484	4587 484	4594 484	4600 484	4607 485
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119.5	4614 485	4621 485	4628 486	4635 486	4642 486	4648 487	4655 487	4662 487	4669 487	4676 488
119.6	4683 488	4690 488	4697 489	4704 489	4711 490	4718 490	4725 490	4732 491	4739 491	4746 492
119.7	4753 492	4760 492	4767 493	4774 493	4781 493	4789 494	4796 494	4803 494	4810 494	4817 495
119.8	4824 495	4831 495	4838 496	4846 496	4853 497	4860 497	4867 497	4874 498	4882 498	4889 499
119.9	4896 499	4903 499	4910 500	4918 500	4925 500	4932 501	4939 501	4946 501	4954 501	4961 502
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120.0	4968 502	4975 502	4982 503	4989 503	4996 503	5003 504	5010 504	5017 504	5024 504	5031 505
120.1	5038 505	5045 505	5052 506	5060 506	5067 507	5074 507	5081 507	5088 508	5096 508	5103 509
120.2	5110 509	5117 509	5124 510	5132 510	5139 510	5146 511	5153 511	5160 511	5168 511	5175 512
120.3	5182 512	5189 512	5197 513	5204 513	5211 513	5219 513	5226 514	5233 514	5240 514	5248 515
120.4	5255 515	5262 515	5270 516	5277 516	5284 517	5292 517	5299 517	5306 518	5313 518	5321 519
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120.5	5328 519	5336 519	5343 520	5350 520	5358 520	5366 520	5373 521	5380 521	5388 521	5396 522
120.6	5403 522	5410 522	5418 523	5426 523	5433 523	5440 523	5448 524	5456 524	5463 524	5470 525
120.7	5478 525	5486 525	5493 526	5501 526	5508 526	5516 526	5524 527	5531 527	5539 527	5546 528
120.8	5554 528	5562 528	5569 529	5577 529	5585 530	5592 530	5600 530	5608 531	5616 531	5623 532

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
----- 120.9	5631 532	5639 532	5647 533	5654 533	5662 533	5670 533	5678 534	5686 534	5693 534	5701 535
----- 121.0	5709 535	5716 535	5724 536	5731 536	5739 536	5746 536	5753 537	5761 537	5768 537	5776 538
121.1	5783 538	5791 538	5798 539	5806 539	5813 539	5821 539	5829 540	5836 540	5844 540	5851 541
121.2	5859 541	5866 541	5874 542	5882 542	5889 543	5896 543	5904 543	5912 544	5919 544	5926 545
121.3	5934 545	5942 545	5949 546	5957 546	5965 546	5972 546	5980 547	5988 547	5996 547	6003 548
121.4	6011 548	6019 548	6027 549	6034 549	6042 549	6050 549	6058 550	6066 550	6073 550	6081 551
----- 121.5	6089 551	6097 551	6105 552	6112 552	6120 552	6128 552	6136 553	6144 553	6151 553	6159 554
121.6	6167 554	6175 554	6183 555	6191 555	6199 555	6206 555	6214 556	6222 556	6230 556	6238 557
121.7	6246 557	6254 557	6262 558	6270 558	6278 559	6286 559	6294 559	6302 560	6310 560	6318 561
121.8	6326 561	6334 561	6342 562	6350 562	6358 562	6367 562	6375 563	6383 563	6391 563	6399 564
121.9	6407 564	6415 564	6423 565	6431 565	6439 565	6448 565	6456 566	6464 566	6472 566	6480 567
----- 122.0	6488 567	6496 567	6504 568	6511 568	6519 568	6527 568	6535 569	6543 569	6550 569	6558 570
122.1	6566 570	6574 570	6582 571	6589 571	6597 571	6605 571	6613 572	6621 572	6628 572	6636 573
122.2	6644 573	6652 573	6660 574	6668 574	6676 574	6683 574	6691 575	6699 575	6707 575	6715 576
122.3	6723 576	6731 576	6739 577	6747 577	6755 577	6763 577	6771 578	6779 578	6787 578	6795 579
122.4	6803 579	6811 579	6819 580	6827 580	6835 581	6843 581	6851 581	6859 582	6867 582	6875 583
----- 122.5	6883 583	6891 583	6899 584	6908 584	6916 584	6924 584	6932 585	6940 585	6949 585	6957 586
122.6	6965 586	6973 586	6981 587	6990 587	6998 587	7006 587	7014 588	7022 588	7031 588	7039 589
122.7	7047 589	7055 589	7063 590	7072 590	7080 590	7088 590	7096 591	7104 591	7113 591	7121 592
122.8	7129 592	7137 592	7146 593	7154 593	7163 593	7171 593	7179 594	7188 594	7196 594	7205 595
122.9	7213 595	7221 595	7230 596	7238 596	7247 596	7255 596	7263 597	7272 597	7280 597	7289 598
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Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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123.0	7297 598	7305 598	7313 599	7321 599	7329 599	7337 599	7345 600	7353 600	7361 600	7369 601
123.1	7377 601	7385 601	7393 602	7402 602	7410 602	7418 602	7426 603	7434 603	7443 603	7451 604
123.2	7459 604	7467 604	7475 605	7483 605	7491 605	7500 605	7508 606	7516 606	7524 606	7532 607
123.3	7540 607	7548 607	7557 608	7565 608	7573 608	7582 608	7590 609	7598 609	7606 609	7615 610
123.4	7623 610	7631 610	7640 611	7648 611	7656 612	7665 612	7673 612	7681 613	7689 613	7698 614
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123.5	7706 614	7714 614	7723 615	7731 615	7740 615	7748 615	7756 616	7765 616	7773 616	7782 617
123.6	7790 617	7798 617	7807 618	7815 618	7824 618	7832 618	7840 619	7849 619	7857 619	7866 620
123.7	7874 620	7882 620	7891 621	7900 621	7908 621	7916 621	7925 622	7934 622	7942 622	7950 623
123.8	7959 623	7968 623	7976 624	7985 624	7993 624	8002 624	8011 625	8019 625	8028 625	8036 626
123.9	8045 626	8054 626	8062 627	8071 627	8080 627	8088 627	8097 628	8106 628	8115 628	8123 629
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124.0	8132 629	8140 629	8149 630	8157 630	8165 630	8174 630	8182 631	8190 631	8198 631	8207 632
124.1	8215 632	8223 632	8232 633	8240 633	8248 634	8256 634	8265 634	8273 635	8281 635	8290 636
124.2	8298 636	8306 636	8315 637	8324 637	8332 637	8340 637	8349 638	8358 638	8366 638	8374 639
124.3	8383 639	8391 639	8400 640	8408 640	8417 641	8425 641	8433 641	8442 642	8450 642	8459 643
124.4	8467 643	8476 643	8484 644	8493 644	8501 644	8510 644	8519 645	8527 645	8536 645	8544 646
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124.5	8553 646	8562 646	8570 647	8579 647	8587 647	8596 647	8605 648	8613 648	8622 648	8630 649
124.6	8639 649	8648 649	8656 650	8665 650	8674 651	8683 651	8691 651	8700 652	8709 652	8717 653
124.7	8726 653	8735 653	8743 654	8752 654	8761 654	8770 654	8778 655	8787 655	8796 655	8804 656
124.8	8813 656	8822 656	8831 657	8839 657	8848 658	8857 658	8866 658	8875 659	8883 659	8892 660
124.9	8901 660	8910 660	8919 661	8928 661	8937 661	8945 661	8954 662	8963 662	8972 662	8981 663
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125.0	8990 663	8997 663	9004 664	9010 664	9017 664	9024 664	9031 665	9038 665	9044 665	9051 666

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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125.1	9058 666	9065 666	9071 667	9078 667	9085 668	9092 668	9098 668	9105 669	9112 669	9118 670
125.2	9125 670	9132 670	9139 671	9146 671	9153 671	9159 671	9166 672	9173 672	9180 672	9187 673
125.3	9194 673	9201 673	9208 674	9214 674	9221 675	9228 675	9235 675	9242 676	9248 676	9255 677
125.4	9262 677	9269 677	9276 678	9283 678	9290 678	9296 678	9303 679	9310 679	9317 679	9324 680
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125.5	9331 680	9338 680	9345 681	9352 681	9359 681	9365 681	9372 682	9379 682	9386 682	9393 683
125.6	9400 683	9407 683	9414 684	9421 684	9428 685	9435 685	9442 685	9449 686	9456 686	9463 687
125.7	9470 687	9477 687	9484 688	9491 688	9498 688	9505 688	9512 689	9519 689	9526 689	9533 690
125.8	9540 690	9547 690	9554 691	9561 691	9568 692	9575 692	9582 692	9589 693	9596 693	9603 694
125.9	9610 694	9617 694	9624 695	9631 695	9638 695	9646 695	9653 696	9660 696	9667 696	9674 697
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126.0	9681 697	9688 697	9695 698	9703 698	9710 699	9717 699	9724 699	9731 700	9739 700	9746 701
126.1	9753 701	9760 701	9767 702	9775 702	9782 703	9789 703	9796 703	9803 704	9811 704	9818 705
126.2	9825 705	9832 705	9840 706	9847 706	9854 706	9861 706	9869 707	9876 707	9883 707	9891 708
126.3	9898 708	9905 708	9913 709	9920 709	9927 710	9934 710	9942 710	9949 711	9956 711	9964 712
126.4	9971 712	9978 712	9986 713	9993 713	10000 714	10007 714	10015 714	10022 715	10029 715	10037 716
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126.5	10044 716	10051 716	10059 717	10066 717	10074 718	10081 718	10088 718	10096 719	10103 719	10111 720
126.6	10118 720	10125 720	10133 721	10140 721	10148 722	10155 722	10162 722	10170 723	10177 723	10185 724
126.7	10192 724	10199 724	10207 725	10214 725	10222 725	10229 725	10236 726	10244 726	10251 726	10259 727
126.8	10266 727	10274 727	10281 728	10288 728	10296 729	10304 729	10311 729	10318 730	10326 730	10334 731
126.9	10341 731	10348 731	10356 732	10364 732	10371 733	10378 733	10386 733	10394 734	10401 734	10408 735
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127.0	10416 735	10424 735	10431 736	10438 736	10446 737	10454 737	10461 737	10468 738	10476 738	10484 739
127.1	10491 739	10499 739	10506 740	10514 740	10521 740	10529 740	10537 741	10544 741	10552 741	10559 742

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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127.2	10567 742	10575 742	10582 743	10590 743	10597 744	10605 744	10613 744	10620 745	10628 745	10635 746
127.3	10643 746	10651 746	10658 747	10666 747	10674 747	10682 747	10689 748	10697 748	10705 748	10712 749
127.4	10720 749	10728 749	10735 750	10743 750	10751 751	10759 751	10766 751	10774 752	10782 752	10789 753
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127.5	10797 753	10805 753	10812 754	10820 754	10828 755	10836 755	10843 755	10851 756	10859 756	10866 757
127.6	10874 757	10882 757	10890 758	10897 758	10905 758	10913 758	10921 759	10929 759	10936 759	10944 760
127.7	10952 760	10960 760	10968 761	10975 761	10983 762	10991 762	10999 762	11007 763	11014 763	11022 764
127.8	11030 764	11038 764	11046 765	11053 765	11061 765	11069 765	11077 766	11085 766	11092 766	11100 767
127.9	11108 767	11116 767	11124 768	11132 768	11140 769	11147 769	11155 769	11163 770	11171 770	11179 771
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128.0	11187 771	11195 771	11203 772	11211 772	11219 772	11226 772	11234 773	11242 773	11250 773	11258 774
128.1	11266 774	11274 774	11282 775	11290 775	11298 776	11305 776	11313 776	11321 777	11329 777	11337 778
128.2	11345 778	11353 778	11361 779	11369 779	11377 779	11385 779	11393 780	11401 780	11409 780	11417 781
128.3	11425 781	11433 781	11441 782	11449 782	11457 783	11464 783	11472 783	11480 784	11488 784	11496 785
128.4	11504 785	11512 785	11520 786	11528 786	11536 786	11545 786	11553 787	11561 787	11569 787	11577 788
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128.5	11585 788	11593 788	11601 789	11609 789	11617 789	11625 789	11633 790	11641 790	11649 790	11657 791
128.6	11665 791	11673 791	11681 792	11690 792	11698 793	11706 793	11714 793	11722 794	11731 794	11739 795
128.7	11747 795	11755 795	11763 796	11771 796	11779 796	11788 796	11796 797	11804 797	11812 797	11820 798
128.8	11828 798	11836 798	11844 799	11853 799	11861 800	11869 800	11877 800	11885 801	11894 801	11902 802
128.9	11910 802	11918 802	11926 803	11935 803	11943 803	11951 803	11959 804	11967 804	11976 804	11984 805
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129.0	11992 805	12000 805	12008 806	12017 806	12025 806	12033 806	12041 807	12049 807	12058 807	12066 808
129.1	12074 808	12082 808	12091 809	12099 809	12107 810	12115 810	12124 810	12132 811	12140 811	12149 812

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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129.2	12157 812	12165 812	12173 813	12182 813	12190 813	12198 813	12206 814	12214 814	12223 814	12231 815
129.3	12239 815	12247 815	12256 816	12264 816	12273 816	12281 816	12289 817	12298 817	12306 817	12315 818
129.4	12323 818	12331 818	12340 819	12348 819	12356 820	12364 820	12373 820	12381 821	12389 821	12398 822
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129.5	12406 822	12414 822	12423 823	12431 823	12440 823	12448 823	12456 824	12465 824	12473 824	12482 825
129.6	12490 825	12498 825	12507 826	12516 826	12524 826	12532 826	12541 827	12550 827	12558 827	12566 828
129.7	12575 828	12583 828	12592 829	12600 829	12609 829	12617 829	12625 830	12634 830	12642 830	12651 831
129.8	12659 831	12668 831	12676 832	12684 832	12693 833	12702 833	12710 833	12718 834	12727 834	12736 835
129.9	12744 835	12753 835	12761 836	12770 836	12778 836	12787 836	12796 837	12804 837	12813 837	12821 838
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130.0	12830 838	12839 838	12847 839	12856 839	12864 840	12873 840	12882 840	12890 841	12899 841	12907 842
130.1	12916 842	12925 842	12933 843	12942 843	12950 843	12959 843	12968 844	12976 844	12985 844	12993 845
130.2	13002 845	13011 845	13019 846	13028 846	13036 847	13045 847	13054 847	13062 848	13071 848	13079 849
130.3	13088 849	13097 849	13105 850	13114 850	13123 850	13132 850	13140 851	13149 851	13158 851	13166 852
130.4	13175 852	13184 852	13192 853	13201 853	13210 854	13219 854	13227 854	13236 855	13245 855	13253 856
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130.5	13262 856	13271 856	13280 857	13288 857	13297 858	13306 858	13315 858	13324 859	13332 859	13341 860
130.6	13350 860	13359 860	13368 861	13376 861	13385 861	13394 861	13403 862	13412 862	13420 862	13429 863
130.7	13438 863	13447 863	13456 864	13464 864	13473 865	13482 865	13491 865	13500 866	13508 866	13517 867
130.8	13526 867	13535 867	13544 868	13553 868	13562 868	13570 868	13579 869	13588 869	13597 869	13606 870
130.9	13615 870	13624 870	13633 871	13642 871	13651 872	13659 872	13668 872	13677 873	13686 873	13695 874
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131.0	13704 874	13713 874	13722 875	13731 875	13740 876	13749 876	13758 876	13767 877	13776 877	13785 878
131.1	13794 878	13803 878	13812 879	13821 879	13830 880	13839 880	13848 880	13857 881	13866 881	13875 882
131.2	13884 882	13893 882	13902 883	13911 883	13920 884	13929 884	13938 884	13947 885	13956 885	13965 886

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
131.3	13974 886	13983 886	13992 887	14001 887	14010 888	14020 888	14029 888	14038 889	14047 889	14056 890
131.4	14065 890	14074 890	14083 891	14092 891	14101 892	14111 892	14120 892	14129 893	14138 893	14147 894
131.5	14156 894	14165 894	14174 895	14184 895	14193 896	14202 896	14211 896	14220 897	14230 897	14239 898
131.6	14248 898	14257 898	14266 899	14276 899	14285 900	14294 900	14303 900	14312 901	14322 901	14331 902
131.7	14340 902	14349 902	14358 903	14368 903	14377 904	14386 904	14395 904	14404 905	14414 905	14423 906
131.8	14432 906	14441 906	14451 907	14460 907	14469 908	14478 908	14488 908	14497 909	14506 909	14516 910
131.9	14525 910	14534 910	14544 911	14553 911	14562 912	14571 912	14581 912	14590 913	14599 913	14609 914
132.0	14618 914	14627 914	14637 915	14646 915	14655 915	14664 915	14674 916	14683 916	14692 916	14702 917
132.1	14711 917	14720 917	14730 918	14739 918	14748 918	14757 918	14767 919	14776 919	14785 919	14795 920
132.2	14804 920	14813 920	14823 921	14832 921	14842 922	14851 922	14860 922	14870 923	14879 923	14889 924
132.3	14898 924	14907 924	14917 925	14926 925	14936 925	14945 925	14954 926	14964 926	14973 926	14983 927
132.4	14992 927	15001 927	15011 928	15020 928	15030 928	15039 928	15048 929	15058 929	15067 929	15077 930
132.5	15086 930	15096 930	15105 931	15114 931	15124 931	15134 931	15143 932	15152 932	15162 932	15172 933
132.6	15181 933	15190 933	15200 934	15210 934	15219 934	15228 934	15238 935	15248 935	15257 935	15266 936
132.7	15276 936	15286 936	15295 937	15305 937	15314 938	15324 938	15334 938	15343 939	15353 939	15362 940
132.8	15372 940	15382 940	15391 941	15401 941	15410 941	15420 941	15430 942	15439 942	15449 942	15458 943
132.9	15468 943	15478 943	15487 944	15497 944	15506 944	15516 944	15526 945	15535 945	15545 945	15554 946
133.0	15564 946	15574 946	15583 947	15593 947	15602 947	15612 947	15622 948	15631 948	15641 948	15650 949
133.1	15660 949	15670 949	15679 950	15689 950	15698 950	15708 950	15718 951	15727 951	15737 951	15746 952
133.2	15756 952	15766 952	15775 953	15785 953	15794 953	15804 953	15814 954	15823 954	15833 954	15842 955
133.3	15852 955	15862 955	15871 956	15881 956	15891 956	15901 956	15910 957	15920 957	15930 957	15939 958

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
133.4	15949 958	15959 958	15969 959	15978 959	15988 959	15998 959	16008 960	16018 960	16027 960	16037 961
133.5	16047 961	16057 961	16066 961	16076 962	16086 962	16096 962	16105 962	16115 962	16125 963	16134 963
133.6	16144 963	16154 963	16164 964	16173 964	16183 964	16193 964	16203 965	16213 965	16222 965	16232 966
133.7	16242 966	16252 966	16262 967	16272 967	16282 967	16291 967	16301 968	16311 968	16321 968	16331 969
133.8	16341 969	16351 969	16361 970	16371 970	16381 970	16390 970	16400 971	16410 971	16420 971	16430 972
133.9	16440 972	16450 972	16460 973	16470 973	16480 973	16490 973	16499 974	16509 974	16519 974	16529 975
134.0	16539 975	16549 975	16559 976	16568 976	16578 976	16588 976	16598 977	16608 977	16617 977	16627 978
134.1	16637 978	16647 978	16657 978	16667 979	16677 979	16687 979	16696 979	16706 979	16716 980	16726 980
134.2	16736 980	16746 980	16756 981	16766 981	16776 981	16786 981	16795 982	16805 982	16815 982	16825 983
134.3	16835 983	16845 983	16855 983	16865 984	16875 984	16885 984	16895 984	16905 984	16915 985	16925 985
134.4	16935 985	16945 985	16955 986	16965 986	16975 986	16985 986	16995 987	17005 987	17015 987	17025 988
134.5	17035 988	17045 988	17055 989	17065 989	17075 989	17085 989	17095 990	17105 990	17115 990	17125 991
134.6	17135 991	17145 991	17155 991	17165 992	17175 992	17185 992	17196 992	17206 992	17216 993	17226 993
134.7	17236 993	17246 993	17256 994	17266 994	17276 994	17286 994	17297 995	17307 995	17317 995	17327 996
134.8	17337 996	17347 996	17357 996	17367 997	17377 997	17387 997	17398 997	17408 997	17418 998	17428 998
134.9	17438 998	17448 998	17458 999	17469 999	17479 999	17489 999	17499 1000	17509 1000	17520 1000	17530 1001
135.0	17540 1001	17550 1001	17560 1002	17570 1002	17580 1002	17590 1002	17601 1003	17611 1003	17621 1003	17631 1004
135.1	17641 1004	17651 1004	17661 1005	17672 1005	17682 1005	17692 1005	17702 1006	17712 1006	17723 1006	17733 1007
135.2	17743 1007	17753 1007	17763 1007	17774 1008	17784 1008	17794 1008	17804 1008	17814 1008	17825 1009	17835 1009
135.3	17845 1009	17855 1009	17865 1010	17876 1010	17886 1010	17896 1010	17906 1011	17916 1011	17927 1011	17937 1012
135.4	17947 1012	17957 1012	17968 1013	17978 1013	17988 1013	17998 1013	18009 1014	18019 1014	18029 1014	18040 1015

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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135.5	18050 1015	18060 1015	18071 1016	18081 1016	18091 1016	18101 1016	18112 1017	18122 1017	18132 1017	18143 1018
135.6	18153 1018	18163 1018	18174 1019	18184 1019	18194 1019	18204 1019	18215 1020	18225 1020	18235 1020	18246 1021
135.7	18256 1021	18266 1021	18277 1021	18287 1022	18298 1022	18308 1022	18318 1022	18329 1022	18339 1023	18350 1023
135.8	18360 1023	18370 1023	18381 1024	18391 1024	18402 1024	18412 1024	18422 1025	18433 1025	18443 1025	18454 1026
135.9	18464 1026	18474 1026	18485 1027	18496 1027	18506 1027	18516 1027	18527 1028	18538 1028	18548 1028	18558 1029
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136.0	18569 1029	18579 1029	18590 1030	18600 1030	18611 1030	18621 1030	18631 1031	18642 1031	18652 1031	18663 1032
136.1	18673 1032	18684 1032	18694 1033	18704 1033	18715 1033	18726 1033	18736 1034	18746 1034	18757 1034	18768 1035
136.2	18778 1035	18788 1035	18799 1036	18810 1036	18820 1036	18830 1036	18841 1037	18852 1037	18862 1037	18872 1038
136.3	18883 1038	18894 1038	18904 1039	18914 1039	18925 1039	18936 1039	18946 1040	18956 1040	18967 1040	18978 1041
136.4	18988 1041	18999 1041	19009 1042	19020 1042	19030 1043	19041 1043	19052 1043	19062 1044	19073 1044	19083 1045
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136.5	19094 1045	19105 1045	19115 1046	19126 1046	19136 1046	19147 1046	19158 1047	19168 1047	19179 1047	19189 1048
136.6	19200 1048	19211 1048	19221 1049	19232 1049	19243 1049	19254 1049	19264 1050	19275 1050	19286 1050	19296 1051
136.7	19307 1051	19318 1051	19328 1052	19339 1052	19350 1052	19361 1052	19371 1053	19382 1053	19393 1053	19403 1054
136.8	19414 1054	19425 1054	19435 1055	19446 1055	19457 1055	19468 1055	19478 1056	19489 1056	19500 1056	19510 1057
136.9	19521 1057	19532 1057	19543 1058	19553 1058	19564 1058	19575 1058	19586 1059	19597 1059	19607 1059	19618 1060
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137.0	19629 1060	19640 1060	19651 1061	19661 1061	19672 1061	19683 1061	19694 1062	19705 1062	19715 1062	19726 1063
137.1	19737 1063	19748 1063	19759 1064	19769 1064	19780 1065	19791 1065	19802 1065	19813 1066	19823 1066	19834 1067
137.2	19845 1067	19856 1067	19867 1068	19877 1068	19888 1068	19899 1068	19910 1069	19921 1069	19931 1069	19942 1070
137.3	19953 1070	19964 1070	19975 1071	19986 1071	19997 1071	20008 1071	20018 1072	20029 1072	20040 1072	20051 1073
137.4	20062 1073	20073 1073	20084 1074	20095 1074	20106 1075	20117 1075	20127 1075	20138 1076	20149 1076	20160 1077
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137.5	20171 1077	20182 1077	20193 1078	20204 1078	20215 1078	20226 1078	20236 1079	20247 1079	20258 1079	20269 1080

Camanche Dam and Reservoir, Mokelumne River, California
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Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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137.6	20280 1080	20291 1080	20302 1081	20313 1081	20324 1081	20335 1081	20346 1082	20357 1082	20368 1082	20379 1083
137.7	20390 1083	20401 1083	20412 1084	20423 1084	20434 1084	20445 1084	20456 1085	20467 1085	20478 1085	20489 1086
137.8	20500 1086	20511 1086	20522 1087	20533 1087	20544 1088	20555 1088	20567 1088	20578 1089	20589 1089	20600 1090
137.9	20611 1090	20622 1090	20633 1091	20644 1091	20655 1091	20666 1091	20678 1092	20689 1092	20700 1092	20711 1093
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138.0	20722 1093	20733 1093	20744 1094	20755 1094	20766 1094	20777 1094	20789 1095	20800 1095	20811 1095	20822 1096
138.1	20833 1096	20844 1096	20855 1097	20866 1097	20877 1098	20888 1098	20900 1098	20911 1099	20922 1099	20933 1100
138.2	20944 1100	20955 1100	20966 1101	20978 1101	20989 1101	21000 1101	21011 1102	21022 1102	21034 1102	21045 1103
138.3	21056 1103	21067 1103	21078 1104	21090 1104	21101 1104	21112 1104	21123 1105	21134 1105	21146 1105	21157 1106
138.4	21168 1106	21179 1106	21190 1107	21202 1107	21213 1108	21224 1108	21235 1108	21246 1109	21258 1109	21269 1110
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138.5	21280 1110	21291 1110	21303 1111	21314 1111	21325 1111	21336 1111	21348 1112	21359 1112	21370 1112	21382 1113
138.6	21393 1113	21404 1113	21416 1114	21427 1114	21438 1114	21449 1114	21461 1115	21472 1115	21483 1115	21495 1116
138.7	21506 1116	21517 1116	21529 1117	21540 1117	21552 1117	21563 1117	21574 1118	21586 1118	21597 1118	21609 1119
138.8	21620 1119	21631 1119	21643 1120	21654 1120	21666 1121	21677 1121	21688 1121	21700 1122	21711 1122	21723 1123
138.9	21734 1123	21745 1123	21757 1124	21768 1124	21780 1124	21791 1124	21802 1125	21814 1125	21825 1125	21837 1126
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139.0	21848 1126	21859 1126	21871 1127	21882 1127	21894 1127	21905 1127	21916 1128	21928 1128	21939 1128	21951 1129
139.1	21962 1129	21973 1129	21985 1130	21996 1130	22008 1130	22019 1130	22030 1131	22042 1131	22053 1131	22065 1132
139.2	22076 1132	22088 1132	22099 1133	22110 1133	22122 1133	22134 1133	22145 1134	22156 1134	22168 1134	22180 1135
139.3	22191 1135	22202 1135	22214 1136	22226 1136	22237 1136	22248 1136	22260 1137	22272 1137	22283 1137	22294 1138
139.4	22306 1138	22318 1138	22329 1139	22341 1139	22352 1140	22364 1140	22376 1140	22387 1141	22399 1141	22410 1142
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139.5	22422 1142	22434 1142	22445 1143	22457 1143	22468 1143	22480 1143	22492 1144	22503 1144	22515 1144	22526 1145
139.6	22538 1145	22550 1145	22561 1146	22573 1146	22584 1146	22596 1146	22608 1147	22619 1147	22631 1147	22642 1148

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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139.7	22654 1148	22666 1148	22677 1149	22689 1149	22701 1149	22713 1149	22724 1150	22736 1150	22748 1150	22759 1151
139.8	22771 1151	22783 1151	22794 1152	22806 1152	22818 1152	22830 1152	22841 1153	22853 1153	22865 1153	22876 1154
139.9	22888 1154	22900 1154	22911 1155	22923 1155	22935 1155	22947 1155	22958 1156	22970 1156	22982 1156	22993 1157
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140.0	23005 1157	23017 1157	23028 1158	23040 1158	23052 1158	23064 1158	23075 1159	23087 1159	23099 1159	23110 1160
140.1	23122 1160	23134 1160	23145 1161	23157 1161	23169 1161	23181 1161	23192 1162	23204 1162	23216 1162	23227 1163
140.2	23239 1163	23251 1163	23262 1163	23274 1164	23286 1164	23298 1164	23309 1164	23321 1164	23333 1165	23344 1165
140.3	23356 1165	23368 1165	23380 1166	23391 1166	23403 1166	23415 1166	23427 1167	23439 1167	23450 1167	23462 1168
140.4	23474 1168	23486 1168	23498 1169	23510 1169	23522 1169	23534 1169	23545 1170	23557 1170	23569 1170	23581 1171
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140.5	23593 1171	23605 1171	23617 1172	23628 1172	23640 1172	23652 1172	23664 1173	23676 1173	23687 1173	23699 1174
140.6	23711 1174	23723 1174	23735 1175	23747 1175	23759 1175	23771 1175	23782 1176	23794 1176	23806 1176	23818 1177
140.7	23830 1177	23842 1177	23854 1177	23866 1178	23878 1178	23890 1178	23902 1178	23914 1178	23926 1179	23938 1179
140.8	23950 1179	23962 1179	23974 1180	23986 1180	23998 1180	24010 1180	24022 1181	24034 1181	24046 1181	24058 1182
140.9	24070 1182	24082 1182	24094 1183	24106 1183	24118 1183	24130 1183	24142 1184	24154 1184	24166 1184	24178 1185
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141.0	24190 1185	24202 1185	24214 1186	24226 1186	24238 1186	24250 1186	24262 1187	24274 1187	24286 1187	24298 1188
141.1	24310 1188	24322 1188	24334 1189	24346 1189	24358 1189	24370 1189	24382 1190	24394 1190	24406 1190	24418 1191
141.2	24430 1191	24442 1191	24454 1192	24466 1192	24478 1192	24490 1192	24502 1193	24514 1193	24526 1193	24538 1194
141.3	24550 1194	24562 1194	24574 1195	24586 1195	24598 1195	24610 1195	24623 1196	24635 1196	24647 1196	24659 1197
141.4	24671 1197	24683 1197	24695 1198	24708 1198	24720 1199	24732 1199	24744 1199	24756 1200	24769 1200	24781 1201
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141.5	24793 1201	24805 1201	24817 1202	24829 1202	24841 1202	24853 1202	24866 1203	24878 1203	24890 1203	24902 1204
141.6	24914 1204	24926 1204	24938 1205	24951 1205	24963 1205	24975 1205	24987 1206	24999 1206	25012 1206	25024 1207

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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141.7	25036 1207	25048 1207	25061 1208	25073 1208	25085 1208	25097 1208	25110 1209	25122 1209	25134 1209	25147 1210
141.8	25159 1210	25171 1210	25184 1211	25196 1211	25208 1211	25220 1211	25233 1212	25245 1212	25257 1212	25270 1213
141.9	25282 1213	25294 1213	25307 1214	25319 1214	25331 1214	25343 1214	25356 1215	25368 1215	25380 1215	25393 1216
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142.0	25405 1216	25417 1216	25430 1217	25442 1217	25454 1217	25466 1217	25479 1218	25491 1218	25503 1218	25516 1219
142.1	25528 1219	25540 1219	25553 1220	25565 1220	25578 1221	25590 1221	25602 1221	25615 1222	25627 1222	25640 1223
142.2	25652 1223	25664 1223	25677 1224	25689 1224	25702 1224	25714 1224	25726 1225	25739 1225	25751 1225	25764 1226
142.3	25776 1226	25788 1226	25801 1227	25813 1227	25826 1227	25838 1227	25850 1228	25863 1228	25875 1228	25888 1229
142.4	25900 1229	25912 1229	25925 1230	25938 1230	25950 1231	25962 1231	25975 1231	25988 1232	26000 1232	26012 1233
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142.5	26025 1233	26038 1233	26050 1234	26062 1234	26075 1234	26088 1234	26100 1235	26112 1235	26125 1235	26138 1236
142.6	26150 1236	26163 1236	26175 1237	26188 1237	26200 1237	26213 1237	26226 1238	26238 1238	26251 1238	26263 1239
142.7	26276 1239	26289 1239	26301 1240	26314 1240	26326 1240	26339 1240	26352 1241	26364 1241	26377 1241	26389 1242
142.8	26402 1242	26415 1242	26427 1243	26440 1243	26452 1244	26465 1244	26478 1244	26490 1245	26503 1245	26515 1246
142.9	26528 1246	26541 1246	26553 1247	26566 1247	26579 1247	26592 1247	26604 1248	26617 1248	26630 1248	26642 1249
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143.0	26655 1249	26668 1249	26680 1250	26693 1250	26706 1251	26719 1251	26731 1251	26744 1252	26757 1252	26769 1253
143.1	26782 1253	26795 1253	26807 1254	26820 1254	26833 1255	26846 1255	26858 1255	26871 1256	26884 1256	26896 1257
143.2	26909 1257	26922 1257	26935 1258	26947 1258	26960 1259	26973 1259	26986 1259	26999 1260	27011 1260	27024 1261
143.3	27037 1261	27050 1261	27063 1262	27075 1262	27088 1263	27101 1263	27114 1263	27127 1264	27139 1264	27152 1265
143.4	27165 1265	27178 1265	27191 1266	27204 1266	27217 1267	27230 1267	27242 1267	27255 1268	27268 1268	27281 1269
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143.5	27294 1269	27307 1269	27320 1270	27333 1270	27346 1270	27359 1270	27371 1271	27384 1271	27397 1271	27410 1272
143.6	27423 1272	27436 1272	27449 1273	27462 1273	27475 1274	27488 1274	27500 1274	27513 1275	27526 1275	27539 1276
143.7	27552 1276	27565 1276	27578 1277	27591 1277	27604 1278	27617 1278	27629 1278	27642 1279	27655 1279	27668 1280

Camanche Dam and Reservoir, Mokelumne River, California
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 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
143.8	27681 1280	27694 1280	27707 1281	27720 1281	27733 1282	27746 1282	27760 1282	27773 1283	27786 1283	27799 1284
143.9	27812 1284	27825 1284	27838 1285	27851 1285	27864 1286	27877 1286	27890 1286	27903 1287	27916 1287	27929 1288
144.0	27942 1288	27955 1288	27968 1289	27981 1289	27994 1290	28007 1290	28021 1290	28034 1291	28047 1291	28060 1292
144.1	28073 1292	28086 1292	28099 1293	28112 1293	28125 1294	28138 1294	28152 1294	28165 1295	28178 1295	28191 1296
144.2	28204 1296	28217 1296	28230 1297	28244 1297	28257 1298	28270 1298	28283 1298	28296 1299	28310 1299	28323 1300
144.3	28336 1300	28349 1300	28362 1301	28376 1301	28389 1302	28402 1302	28415 1302	28428 1303	28442 1303	28455 1304
144.4	28468 1304	28481 1304	28495 1305	28508 1305	28521 1306	28534 1306	28548 1306	28561 1307	28574 1307	28588 1308
144.5	28601 1308	28614 1308	28628 1309	28641 1309	28654 1310	28667 1310	28681 1310	28694 1311	28707 1311	28721 1312
144.6	28734 1312	28747 1312	28761 1313	28774 1313	28787 1314	28800 1314	28814 1314	28827 1315	28840 1315	28854 1316
144.7	28867 1316	28880 1316	28894 1317	28907 1317	28921 1318	28934 1318	28947 1318	28961 1319	28974 1319	28988 1320
144.8	29001 1320	29014 1320	29028 1321	29041 1321	29055 1322	29068 1322	29081 1322	29095 1323	29108 1323	29122 1324
144.9	29135 1324	29148 1324	29162 1325	29176 1325	29189 1326	29202 1326	29216 1326	29230 1327	29243 1327	29256 1328
145.0	29270 1328	29284 1328	29297 1329	29310 1329	29324 1330	29338 1330	29351 1330	29364 1331	29378 1331	29392 1332
145.1	29405 1332	29419 1332	29432 1333	29446 1333	29459 1334	29473 1334	29487 1334	29500 1335	29514 1335	29527 1336
145.2	29541 1336	29555 1336	29568 1337	29582 1338	29595 1338	29609 1338	29623 1339	29636 1340	29650 1340	29663 1340
145.3	29677 1341	29691 1341	29704 1342	29718 1342	29731 1343	29745 1343	29759 1343	29772 1344	29786 1344	29799 1345
145.4	29813 1345	29827 1345	29840 1346	29854 1346	29868 1347	29882 1347	29895 1347	29909 1348	29923 1348	29936 1349
145.5	29950 1349	29964 1349	29977 1350	29991 1350	30005 1351	30019 1351	30032 1351	30046 1352	30060 1352	30073 1353
145.6	30087 1353	30101 1353	30115 1354	30128 1354	30142 1355	30156 1355	30170 1355	30184 1356	30197 1356	30211 1357
145.7	30225 1357	30239 1358	30253 1358	30266 1358	30280 1359	30294 1360	30308 1360	30322 1360	30335 1361	30349 1362
145.8	30363 1362	30377 1362	30391 1363	30404 1363	30418 1364	30432 1364	30446 1364	30460 1365	30473 1365	30487 1366

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
145.9	30501 1366	30515 1366	30529 1367	30543 1367	30557 1368	30571 1368	30584 1368	30598 1369	30612 1369	30626 1370
146.0	30640 1370	30654 1370	30668 1371	30682 1371	30696 1372	30710 1372	30723 1372	30737 1373	30751 1373	30765 1374
146.1	30779 1374	30793 1374	30807 1375	30821 1376	30835 1376	30849 1376	30863 1377	30877 1378	30891 1378	30905 1378
146.2	30919 1379	30933 1379	30947 1380	30961 1380	30975 1381	30989 1381	31004 1381	31018 1382	31032 1382	31046 1383
146.3	31060 1383	31074 1384	31088 1384	31102 1384	31116 1385	31130 1386	31144 1386	31158 1386	31172 1387	31186 1388
146.4	31200 1388	31214 1388	31228 1389	31242 1389	31256 1390	31270 1390	31285 1390	31299 1391	31313 1391	31327 1392
146.5	31341 1392	31355 1392	31369 1393	31384 1393	31398 1394	31412 1394	31426 1394	31440 1395	31455 1395	31469 1396
146.6	31483 1396	31497 1396	31511 1397	31526 1398	31540 1398	31554 1398	31568 1399	31582 1400	31597 1400	31611 1400
146.7	31625 1401	31639 1401	31653 1402	31668 1402	31682 1403	31696 1403	31710 1403	31724 1404	31739 1404	31753 1405
146.8	31767 1405	31781 1406	31796 1406	31810 1406	31824 1407	31838 1408	31853 1408	31867 1408	31881 1409	31896 1410
146.9	31910 1410	31924 1410	31939 1411	31953 1411	31967 1412	31981 1412	31996 1412	32010 1413	32024 1413	32039 1414
147.0	32053 1414	32067 1414	32082 1415	32096 1415	32111 1416	32125 1416	32139 1416	32154 1417	32168 1417	32183 1418
147.1	32197 1418	32211 1418	32226 1419	32240 1420	32255 1420	32269 1420	32283 1421	32298 1422	32312 1422	32327 1422
147.2	32341 1423	32356 1423	32370 1424	32384 1424	32399 1425	32414 1425	32428 1425	32442 1426	32457 1426	32472 1427
147.3	32486 1427	32500 1428	32515 1428	32530 1428	32544 1429	32558 1430	32573 1430	32588 1430	32602 1431	32616 1432
147.4	32631 1432	32646 1432	32660 1433	32675 1433	32689 1434	32704 1434	32719 1434	32733 1435	32748 1435	32762 1436
147.5	32777 1436	32792 1436	32806 1437	32821 1437	32835 1438	32850 1438	32865 1438	32879 1439	32894 1439	32908 1440
147.6	32923 1440	32938 1440	32952 1441	32967 1442	32981 1442	32996 1442	33011 1443	33025 1444	33040 1444	33054 1444
147.7	33069 1445	33084 1445	33098 1446	33113 1446	33128 1447	33142 1447	33157 1447	33172 1448	33187 1448	33201 1449
147.8	33216 1449	33231 1450	33245 1450	33260 1450	33275 1451	33289 1452	33304 1452	33319 1452	33334 1453	33348 1454
147.9	33363 1454	33378 1454	33393 1455	33407 1455	33422 1456	33437 1456	33452 1456	33467 1457	33481 1457	33496 1458

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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148.0	33511 1458	33526 1458	33541 1459	33555 1459	33570 1460	33585 1460	33600 1460	33615 1461	33629 1461	33644 1462
148.1	33659 1462	33674 1462	33689 1463	33704 1464	33719 1464	33734 1464	33748 1465	33763 1466	33778 1466	33793 1466
148.2	33808 1467	33823 1467	33838 1468	33853 1468	33868 1469	33883 1469	33897 1469	33912 1470	33927 1470	33942 1471
148.3	33957 1471	33972 1472	33987 1472	34002 1472	34017 1473	34032 1474	34047 1474	34062 1474	34077 1475	34092 1476
148.4	34107 1476	34122 1476	34137 1477	34152 1477	34167 1478	34182 1478	34197 1478	34212 1479	34227 1479	34242 1480
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148.5	34257 1480	34272 1480	34287 1481	34302 1481	34317 1482	34332 1482	34347 1482	34362 1483	34377 1483	34392 1484
148.6	34407 1484	34422 1484	34437 1485	34452 1486	34467 1486	34482 1486	34498 1487	34513 1488	34528 1488	34543 1488
148.7	34558 1489	34573 1489	34588 1490	34603 1490	34618 1491	34633 1491	34649 1491	34664 1492	34679 1492	34694 1493
148.8	34709 1493	34724 1494	34739 1494	34755 1494	34770 1495	34785 1496	34800 1496	34815 1496	34831 1497	34846 1498
148.9	34861 1498	34876 1498	34891 1499	34907 1499	34922 1500	34937 1500	34952 1500	34967 1501	34983 1501	34998 1502
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149.0	35013 1502	35028 1502	35043 1503	35059 1503	35074 1504	35089 1504	35104 1504	35119 1505	35135 1505	35150 1506
149.1	35165 1506	35180 1506	35196 1507	35211 1507	35226 1508	35242 1508	35257 1508	35272 1509	35287 1509	35303 1510
149.2	35318 1510	35333 1510	35349 1511	35364 1511	35379 1512	35395 1512	35410 1512	35425 1513	35440 1513	35456 1514
149.3	35471 1514	35486 1514	35502 1515	35517 1515	35533 1516	35548 1516	35563 1516	35579 1517	35594 1517	35610 1518
149.4	35625 1518	35640 1518	35656 1519	35671 1519	35687 1520	35702 1520	35717 1520	35733 1521	35748 1521	35764 1522
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149.5	35779 1522	35794 1522	35810 1523	35825 1523	35841 1524	35856 1524	35871 1524	35887 1525	35902 1525	35918 1526
149.6	35933 1526	35948 1526	35964 1527	35980 1527	35995 1528	36010 1528	36026 1528	36042 1529	36057 1529	36072 1530
149.7	36088 1530	36104 1530	36119 1531	36134 1531	36150 1532	36166 1532	36181 1532	36196 1533	36212 1533	36228 1534
149.8	36243 1534	36259 1534	36274 1535	36290 1535	36305 1536	36321 1536	36337 1536	36352 1537	36368 1537	36383 1538
149.9	36399 1538	36415 1538	36430 1539	36446 1539	36461 1540	36477 1540	36493 1540	36508 1541	36524 1541	36539 1542
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150.0	36555 1542	36571 1542	36586 1543	36602 1543	36617 1544	36633 1544	36649 1544	36664 1545	36680 1545	36695 1546

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
150.1	36711 1546	36727 1546	36742 1547	36758 1547	36774 1548	36789 1548	36805 1548	36821 1549	36837 1549	36852 1550
150.2	36868 1550	36884 1550	36900 1551	36915 1552	36931 1552	36947 1552	36963 1553	36979 1554	36994 1554	37010 1554
150.3	37026 1555	37042 1555	37057 1556	37073 1556	37089 1557	37104 1557	37120 1557	37136 1558	37152 1558	37167 1559
150.4	37183 1559	37199 1559	37215 1560	37231 1560	37247 1561	37263 1561	37278 1561	37294 1562	37310 1562	37326 1563
150.5	37342 1563	37358 1563	37374 1564	37389 1564	37405 1565	37421 1565	37437 1565	37453 1566	37468 1566	37484 1567
150.6	37500 1567	37516 1567	37532 1568	37548 1568	37564 1569	37580 1569	37595 1569	37611 1570	37627 1570	37643 1571
150.7	37659 1571	37675 1572	37691 1572	37707 1572	37723 1573	37739 1574	37755 1574	37771 1574	37787 1575	37803 1576
150.8	37819 1576	37835 1576	37851 1577	37867 1577	37883 1578	37899 1578	37915 1578	37931 1579	37947 1579	37963 1580
150.9	37979 1580	37995 1580	38011 1581	38027 1581	38043 1582	38059 1582	38075 1582	38091 1583	38107 1583	38123 1584
151.0	38139 1584	38155 1584	38171 1585	38187 1585	38203 1586	38219 1586	38235 1586	38251 1587	38267 1587	38283 1588
151.1	38299 1588	38315 1588	38331 1589	38347 1589	38363 1590	38379 1590	38396 1590	38412 1591	38428 1591	38444 1592
151.2	38460 1592	38476 1592	38492 1593	38508 1593	38524 1594	38540 1594	38557 1594	38573 1595	38589 1595	38605 1596
151.3	38621 1596	38637 1596	38653 1597	38670 1597	38686 1598	38702 1598	38718 1598	38734 1599	38751 1599	38767 1600
151.4	38783 1600	38799 1600	38815 1601	38832 1601	38848 1602	38864 1602	38880 1602	38896 1603	38913 1603	38929 1604
151.5	38945 1604	38961 1604	38978 1605	38994 1605	39010 1605	39027 1605	39043 1606	39059 1606	39075 1606	39092 1607
151.6	39108 1607	39124 1607	39141 1608	39157 1608	39173 1609	39190 1609	39206 1609	39222 1610	39238 1610	39255 1611
151.7	39271 1611	39287 1611	39304 1612	39320 1612	39336 1613	39353 1613	39369 1613	39385 1614	39401 1614	39418 1615
151.8	39434 1615	39450 1615	39467 1616	39483 1616	39500 1617	39516 1617	39532 1617	39549 1618	39565 1618	39582 1619
151.9	39598 1619	39614 1619	39631 1620	39647 1620	39664 1621	39680 1621	39696 1621	39713 1622	39729 1622	39746 1623
152.0	39762 1623	39778 1623	39795 1624	39812 1624	39828 1625	39844 1625	39861 1625	39878 1626	39894 1626	39910 1627
152.1	39927 1627	39944 1627	39960 1628	39976 1628	39993 1629	40010 1629	40026 1629	40042 1630	40059 1630	40076 1631

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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152.2	40092 1631	40108 1632	40125 1632	40142 1632	40158 1633	40174 1634	40191 1634	40208 1634	40224 1635	40240 1636
152.3	40257 1636	40274 1636	40290 1637	40307 1637	40323 1638	40340 1638	40357 1638	40373 1639	40390 1639	40406 1640
152.4	40423 1640	40440 1640	40456 1641	40473 1641	40489 1642	40506 1642	40523 1642	40539 1643	40556 1643	40572 1644
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152.5	40589 1644	40606 1644	40622 1645	40639 1645	40656 1646	40672 1646	40689 1646	40706 1647	40723 1647	40739 1648
152.6	40756 1648	40773 1648	40789 1649	40806 1649	40823 1650	40839 1650	40856 1650	40873 1651	40890 1651	40906 1652
152.7	40923 1652	40940 1652	40956 1653	40973 1654	40990 1654	41006 1654	41023 1655	41040 1656	41057 1656	41073 1656
152.8	41090 1657	41107 1657	41124 1658	41141 1658	41158 1659	41175 1659	41191 1659	41208 1660	41225 1660	41242 1661
152.9	41259 1661	41276 1661	41293 1662	41309 1662	41326 1663	41343 1663	41360 1663	41377 1664	41393 1664	41410 1665
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153.0	41427 1665	41444 1665	41461 1666	41478 1666	41495 1667	41512 1667	41528 1667	41545 1668	41562 1668	41579 1669
153.1	41596 1669	41613 1669	41630 1670	41647 1670	41664 1671	41681 1671	41697 1671	41714 1672	41731 1672	41748 1673
153.2	41765 1673	41782 1673	41799 1674	41816 1674	41833 1675	41850 1675	41866 1675	41883 1676	41900 1676	41917 1677
153.3	41934 1677	41951 1677	41968 1678	41985 1678	42002 1679	42019 1679	42036 1679	42053 1680	42070 1680	42087 1681
153.4	42104 1681	42121 1682	42138 1682	42155 1682	42172 1683	42189 1684	42206 1684	42223 1684	42240 1685	42257 1686
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153.5	42274 1686	42291 1686	42308 1687	42325 1687	42342 1688	42359 1688	42377 1688	42394 1689	42411 1689	42428 1690
153.6	42445 1690	42462 1690	42479 1691	42497 1691	42514 1692	42531 1692	42548 1692	42565 1693	42583 1693	42600 1694
153.7	42617 1694	42634 1694	42651 1695	42668 1695	42685 1696	42702 1696	42720 1696	42737 1697	42754 1697	42771 1698
153.8	42788 1698	42805 1698	42822 1699	42840 1699	42857 1700	42874 1700	42891 1700	42908 1701	42926 1701	42943 1702
153.9	42960 1702	42977 1702	42995 1703	43012 1703	43029 1704	43047 1704	43064 1704	43081 1705	43098 1705	43116 1706
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154.0	43133 1706	43150 1706	43168 1707	43185 1707	43202 1708	43220 1708	43237 1708	43254 1709	43271 1709	43289 1710
154.1	43306 1710	43323 1710	43341 1711	43358 1711	43375 1712	43393 1712	43410 1712	43427 1713	43444 1713	43462 1714
154.2	43479 1714	43496 1714	43514 1715	43531 1715	43548 1716	43566 1716	43583 1716	43600 1717	43617 1717	43635 1718

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
154.3	43652 1718	43669 1718	43687 1719	43704 1719	43722 1720	43739 1720	43756 1720	43774 1721	43791 1721	43809 1722
154.4	43826 1722	43844 1722	43861 1723	43878 1724	43896 1724	43914 1724	43931 1725	43948 1726	43966 1726	43984 1726
154.5	44001 1727	44018 1727	44036 1728	44054 1728	44071 1729	44088 1729	44106 1729	44124 1730	44141 1730	44158 1731
154.6	44176 1731	44194 1731	44211 1732	44228 1732	44246 1733	44264 1733	44281 1733	44298 1734	44316 1734	44334 1735
154.7	44351 1735	44369 1735	44386 1736	44404 1736	44421 1737	44439 1737	44457 1737	44474 1738	44492 1738	44509 1739
154.8	44527 1739	44545 1739	44562 1740	44580 1740	44597 1741	44615 1741	44633 1741	44650 1742	44668 1742	44685 1743
154.9	44703 1743	44721 1743	44738 1744	44756 1744	44774 1745	44791 1745	44809 1745	44827 1746	44845 1746	44862 1747
155.0	44880 1747	44898 1747	44915 1748	44933 1748	44951 1749	44968 1749	44986 1749	45004 1750	45022 1750	45039 1751
155.1	45057 1751	45075 1751	45092 1752	45110 1752	45128 1753	45145 1753	45163 1753	45181 1754	45199 1754	45216 1755
155.2	45234 1755	45252 1756	45270 1756	45287 1756	45305 1757	45323 1758	45341 1758	45359 1758	45376 1759	45394 1760
155.3	45412 1760	45430 1760	45448 1761	45465 1761	45483 1762	45501 1762	45519 1762	45537 1763	45554 1763	45572 1764
155.4	45590 1764	45608 1764	45626 1765	45643 1765	45661 1766	45679 1766	45697 1766	45715 1767	45732 1767	45750 1768
155.5	45768 1768	45786 1768	45804 1769	45822 1769	45840 1770	45858 1770	45875 1770	45893 1771	45911 1771	45929 1772
155.6	45947 1772	45965 1772	45983 1773	46001 1773	46019 1774	46037 1774	46055 1774	46073 1775	46091 1775	46109 1776
155.7	46127 1776	46145 1776	46163 1777	46181 1778	46199 1778	46217 1778	46235 1779	46253 1780	46271 1780	46289 1780
155.8	46307 1781	46325 1781	46343 1782	46361 1782	46379 1783	46397 1783	46415 1783	46433 1784	46451 1784	46469 1785
155.9	46487 1785	46505 1785	46523 1786	46541 1786	46559 1787	46577 1787	46596 1787	46614 1788	46632 1788	46650 1789
156.0	46668 1789	46686 1789	46704 1790	46722 1790	46740 1791	46758 1791	46777 1791	46795 1792	46813 1792	46831 1793
156.1	46849 1793	46867 1793	46885 1794	46903 1794	46921 1795	46939 1795	46958 1795	46976 1796	46994 1796	47012 1797
156.2	47030 1797	47048 1797	47066 1798	47085 1798	47103 1799	47121 1799	47139 1799	47157 1800	47176 1800	47194 1801
156.3	47212 1801	47230 1801	47248 1802	47267 1802	47285 1803	47303 1803	47321 1803	47339 1804	47358 1804	47376 1805

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
156.4	47394 1805	47412 1805	47431 1806	47449 1806	47467 1807	47486 1807	47504 1807	47522 1808	47540 1808	47559 1809
156.5	47577 1809	47595 1809	47614 1810	47632 1810	47650 1811	47669 1811	47687 1811	47705 1812	47723 1812	47742 1813
156.6	47760 1813	47778 1813	47797 1814	47815 1814	47834 1815	47852 1815	47870 1815	47889 1816	47907 1816	47926 1817
156.7	47944 1817	47962 1817	47981 1818	47999 1818	48018 1819	48036 1819	48054 1819	48073 1820	48091 1820	48110 1821
156.8	48128 1821	48146 1821	48165 1822	48183 1822	48202 1823	48220 1823	48238 1823	48257 1824	48275 1824	48294 1825
156.9	48312 1825	48330 1825	48349 1826	48368 1826	48386 1827	48404 1827	48423 1827	48442 1828	48460 1828	48478 1829
157.0	48497 1829	48516 1829	48534 1830	48552 1830	48571 1831	48590 1831	48608 1831	48626 1832	48645 1832	48664 1833
157.1	48682 1833	48701 1833	48719 1834	48738 1834	48756 1835	48775 1835	48794 1835	48812 1836	48831 1836	48849 1837
157.2	48868 1837	48887 1838	48905 1838	48924 1838	48942 1839	48961 1840	48980 1840	48998 1840	49017 1841	49035 1842
157.3	49054 1842	49073 1842	49091 1843	49110 1843	49128 1844	49147 1844	49166 1844	49184 1845	49203 1845	49221 1846
157.4	49240 1846	49259 1846	49277 1847	49296 1847	49315 1848	49333 1848	49352 1848	49371 1849	49390 1849	49408 1850
157.5	49427 1850	49446 1850	49465 1851	49483 1851	49502 1852	49521 1852	49540 1852	49559 1853	49577 1853	49596 1854
157.6	49615 1854	49634 1854	49653 1855	49671 1855	49690 1856	49709 1856	49728 1856	49747 1857	49765 1857	49784 1858
157.7	49803 1858	49822 1858	49841 1859	49859 1860	49878 1860	49897 1860	49916 1861	49935 1862	49953 1862	49972 1862
157.8	49991 1863	50010 1863	50029 1864	50048 1864	50067 1865	50086 1865	50104 1865	50123 1866	50142 1866	50161 1867
157.9	50180 1867	50199 1867	50218 1868	50237 1868	50256 1869	50275 1869	50293 1869	50312 1870	50331 1870	50350 1871
158.0	50369 1871	50388 1872	50407 1872	50426 1872	50445 1873	50464 1874	50483 1874	50502 1874	50521 1875	50540 1876
158.1	50559 1876	50578 1876	50597 1877	50616 1877	50635 1878	50654 1878	50673 1878	50692 1879	50711 1879	50730 1880
158.2	50749 1880	50768 1880	50787 1881	50806 1882	50825 1882	50844 1882	50863 1883	50882 1884	50901 1884	50920 1884
158.3	50939 1885	50958 1885	50977 1886	50996 1886	51015 1887	51034 1887	51054 1887	51073 1888	51092 1888	51111 1889
158.4	51130 1889	51149 1890	51168 1890	51187 1890	51206 1891	51225 1892	51245 1892	51264 1892	51283 1893	51302 1894

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
158.5	51321 1894	51340 1894	51359 1895	51379 1895	51398 1896	51417 1896	51436 1896	51455 1897	51475 1897	51494 1898
158.6	51513 1898	51532 1898	51551 1899	51571 1900	51590 1900	51609 1900	51628 1901	51647 1902	51667 1902	51686 1902
158.7	51705 1903	51724 1903	51744 1904	51763 1904	51782 1905	51802 1905	51821 1905	51840 1906	51859 1906	51879 1907
158.8	51898 1907	51917 1908	51937 1908	51956 1908	51975 1909	51995 1910	52014 1910	52033 1910	52052 1911	52072 1912
158.9	52091 1912	52110 1912	52130 1913	52149 1913	52169 1914	52188 1914	52207 1914	52227 1915	52246 1915	52266 1916
159.0	52285 1916	52304 1916	52324 1917	52343 1918	52363 1918	52382 1918	52401 1919	52421 1920	52440 1920	52460 1920
159.1	52479 1921	52498 1921	52518 1922	52538 1922	52557 1923	52576 1923	52596 1923	52616 1924	52635 1924	52654 1925
159.2	52674 1925	52693 1926	52713 1926	52732 1926	52752 1927	52771 1928	52790 1928	52810 1928	52829 1929	52849 1930
159.3	52868 1930	52888 1930	52907 1931	52927 1931	52946 1932	52966 1932	52986 1932	53005 1933	53025 1933	53044 1934
159.4	53064 1934	53084 1934	53103 1935	53123 1936	53142 1936	53162 1936	53182 1937	53201 1938	53221 1938	53240 1938
159.5	53260 1939	53280 1939	53299 1940	53319 1940	53338 1941	53358 1941	53378 1941	53397 1942	53417 1942	53436 1943
159.6	53456 1943	53476 1944	53495 1944	53515 1944	53535 1945	53554 1946	53574 1946	53594 1946	53614 1947	53633 1948
159.7	53653 1948	53673 1948	53692 1949	53712 1949	53732 1950	53751 1950	53771 1950	53791 1951	53811 1951	53830 1952
159.8	53850 1952	53870 1952	53890 1953	53909 1954	53929 1954	53949 1954	53969 1955	53989 1956	54008 1956	54028 1956
159.9	54048 1957	54068 1957	54088 1958	54107 1958	54127 1959	54147 1959	54167 1959	54187 1960	54206 1960	54226 1961
160.0	54246 1961	54266 1962	54286 1962	54306 1962	54326 1963	54346 1964	54365 1964	54385 1964	54405 1965	54425 1966
160.1	54445 1966	54465 1966	54485 1967	54505 1967	54525 1968	54545 1968	54564 1968	54584 1969	54604 1969	54624 1970
160.2	54644 1970	54664 1970	54684 1971	54704 1972	54724 1972	54744 1972	54764 1973	54784 1974	54804 1974	54824 1974
160.3	54844 1975	54864 1976	54884 1976	54904 1976	54924 1977	54944 1978	54964 1978	54984 1978	55004 1979	55024 1980
160.4	55044 1980	55064 1980	55084 1981	55104 1982	55124 1982	55144 1982	55164 1983	55184 1984	55204 1984	55224 1984
160.5	55244 1985	55264 1985	55284 1986	55304 1986	55324 1987	55344 1987	55365 1987	55385 1988	55405 1988	55425 1989

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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160.6	55445 1989	55465 1990	55485 1990	55506 1990	55526 1991	55546 1992	55566 1992	55586 1992	55607 1993	55627 1994
160.7	55647 1994	55667 1994	55687 1995	55708 1996	55728 1996	55748 1996	55768 1997	55788 1998	55809 1998	55829 1998
160.8	55849 1999	55869 1999	55889 2000	55910 2000	55930 2001	55950 2001	55970 2001	55990 2002	56011 2002	56031 2003
160.9	56051 2003	56071 2004	56092 2004	56112 2004	56132 2005	56153 2006	56173 2006	56193 2006	56213 2007	56234 2008
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161.0	56254 2008	56274 2008	56295 2009	56315 2010	56336 2010	56356 2010	56376 2011	56397 2012	56417 2012	56438 2012
161.1	56458 2013	56478 2014	56499 2014	56519 2014	56540 2015	56560 2016	56580 2016	56601 2016	56621 2017	56642 2018
161.2	56662 2018	56682 2019	56703 2019	56724 2020	56744 2020	56764 2021	56785 2022	56806 2022	56826 2023	56846 2023
161.3	56867 2024	56888 2024	56908 2025	56928 2026	56949 2026	56970 2026	56990 2027	57010 2028	57031 2028	57052 2028
161.4	57072 2029	57093 2030	57113 2030	57134 2030	57154 2031	57175 2032	57196 2032	57216 2032	57237 2033	57257 2034
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161.5	57278 2034	57299 2034	57319 2035	57340 2036	57360 2036	57381 2036	57402 2037	57422 2038	57443 2038	57463 2038
161.6	57484 2039	57505 2040	57525 2040	57546 2040	57566 2041	57587 2042	57608 2042	57628 2042	57649 2043	57669 2044
161.7	57690 2044	57711 2045	57731 2045	57752 2046	57773 2046	57793 2047	57814 2048	57835 2048	57856 2049	57876 2049
161.8	57897 2050	57918 2050	57939 2051	57959 2052	57980 2052	58001 2052	58022 2053	58043 2054	58063 2054	58084 2054
161.9	58105 2055	58126 2056	58147 2056	58167 2056	58188 2057	58209 2058	58230 2058	58251 2058	58271 2059	58292 2060
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162.0	58313 2060	58334 2061	58355 2061	58376 2062	58397 2062	58418 2063	58439 2064	58460 2064	58481 2065	58502 2065
162.1	58523 2066	58544 2067	58565 2067	58586 2068	58607 2068	58628 2069	58649 2070	58670 2070	58691 2071	58712 2071
162.2	58733 2072	58754 2072	58775 2073	58796 2074	58817 2074	58838 2074	58859 2075	58880 2076	58901 2076	58922 2076
162.3	58943 2077	58964 2078	58985 2078	59006 2079	59027 2079	59048 2080	59070 2081	59091 2081	59112 2082	59133 2082
162.4	59154 2083	59175 2084	59196 2084	59218 2085	59239 2085	59260 2086	59281 2087	59302 2087	59324 2088	59345 2088
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162.5	59366 2089	59387 2090	59408 2090	59430 2091	59451 2091	59472 2092	59493 2093	59514 2093	59536 2094	59557 2094

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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162.6	59578 2095	59599 2096	59621 2096	59642 2097	59663 2097	59685 2098	59706 2099	59727 2099	59748 2100	59770 2100
162.7	59791 2101	59812 2102	59834 2102	59855 2102	59876 2103	59898 2104	59919 2104	59940 2104	59961 2105	59983 2106
162.8	60004 2106	60025 2107	60047 2107	60068 2108	60089 2108	60111 2109	60132 2110	60153 2110	60174 2111	60196 2111
162.9	60217 2112	60238 2113	60260 2113	60281 2114	60303 2114	60324 2115	60345 2116	60367 2116	60388 2117	60410 2117
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163.0	60431 2118	60453 2119	60474 2119	60496 2120	60517 2120	60539 2121	60561 2122	60582 2122	60604 2123	60625 2123
163.1	60647 2124	60669 2125	60690 2125	60712 2126	60733 2127	60755 2127	60777 2128	60798 2129	60820 2130	60841 2130
163.2	60863 2131	60885 2132	60906 2132	60928 2133	60950 2133	60971 2134	60993 2135	61015 2135	61037 2136	61058 2136
163.3	61080 2137	61102 2138	61124 2138	61145 2139	61167 2139	61189 2140	61211 2141	61233 2141	61254 2142	61276 2142
163.4	61298 2143	61320 2144	61342 2144	61363 2145	61385 2146	61407 2146	61429 2147	61451 2148	61472 2149	61494 2149
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163.5	61516 2150	61538 2151	61560 2151	61581 2152	61603 2152	61625 2153	61647 2154	61669 2154	61690 2155	61712 2155
163.6	61734 2156	61756 2157	61778 2157	61800 2158	61822 2158	61844 2159	61865 2160	61887 2160	61909 2161	61931 2161
163.7	61953 2162	61975 2163	61997 2163	62019 2164	62041 2164	62063 2165	62085 2166	62107 2166	62129 2167	62151 2167
163.8	62173 2168	62195 2169	62217 2169	62239 2170	62261 2171	62283 2171	62305 2172	62327 2173	62349 2174	62371 2174
163.9	62393 2175	62415 2176	62437 2176	62459 2177	62481 2177	62503 2178	62525 2179	62547 2179	62569 2180	62591 2180
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164.0	62613 2181	62635 2182	62658 2182	62680 2183	62702 2184	62725 2184	62747 2185	62769 2186	62791 2187	62814 2187
164.1	62836 2188	62858 2189	62881 2189	62903 2190	62925 2190	62948 2191	62970 2192	62992 2192	63014 2193	63037 2193
164.2	63059 2194	63081 2195	63104 2195	63126 2196	63148 2197	63171 2197	63193 2198	63215 2199	63237 2200	63260 2200
164.3	63282 2201	63304 2202	63327 2202	63349 2203	63372 2204	63394 2204	63416 2205	63439 2206	63461 2207	63484 2207
164.4	63506 2208	63528 2209	63551 2209	63574 2210	63596 2211	63618 2211	63641 2212	63664 2213	63686 2214	63708 2214
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164.5	63731 2215	63754 2216	63776 2216	63798 2217	63821 2217	63844 2218	63866 2219	63888 2219	63911 2220	63934 2220
164.6	63956 2221	63978 2222	64001 2222	64024 2223	64046 2224	64068 2224	64091 2225	64114 2226	64136 2227	64158 2227

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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164.7	64181 2228	64204 2229	64226 2229	64249 2230	64271 2231	64294 2231	64317 2232	64339 2233	64362 2234	64384 2234
164.8	64407 2235	64430 2236	64452 2236	64475 2237	64498 2237	64520 2238	64543 2239	64566 2239	64589 2240	64611 2240
164.9	64634 2241	64657 2242	64679 2242	64702 2243	64725 2244	64747 2244	64770 2245	64793 2246	64816 2247	64838 2247
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165.0	64861 2248	64884 2249	64907 2249	64930 2250	64953 2251	64976 2251	64998 2252	65021 2253	65044 2254	65067 2254
165.1	65090 2255	65113 2256	65136 2256	65159 2257	65182 2258	65205 2258	65228 2259	65251 2260	65274 2261	65297 2261
165.2	65320 2262	65343 2263	65366 2263	65389 2264	65412 2265	65435 2265	65459 2266	65482 2267	65505 2268	65528 2268
165.3	65551 2269	65574 2270	65597 2270	65620 2271	65643 2272	65666 2272	65689 2273	65712 2274	65735 2275	65758 2275
165.4	65781 2276	65804 2277	65827 2277	65851 2278	65874 2279	65897 2279	65920 2280	65943 2281	65967 2282	65990 2282
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165.5	66013 2283	66036 2284	66059 2284	66083 2285	66106 2286	66129 2286	66152 2287	66175 2288	66199 2289	66222 2289
165.6	66245 2290	66268 2291	66291 2291	66315 2292	66338 2293	66361 2293	66384 2294	66407 2295	66431 2296	66454 2296
165.7	66477 2297	66500 2298	66524 2298	66547 2299	66570 2300	66594 2300	66617 2301	66640 2302	66663 2303	66687 2303
165.8	66710 2304	66733 2305	66757 2305	66780 2306	66804 2307	66827 2307	66850 2308	66874 2309	66897 2310	66921 2310
165.9	66944 2311	66967 2312	66991 2312	67014 2313	67038 2314	67061 2314	67084 2315	67108 2316	67131 2317	67155 2317
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166.0	67178 2318	67202 2319	67225 2320	67249 2320	67273 2321	67296 2322	67320 2323	67344 2324	67368 2324	67391 2325
166.1	67415 2326	67439 2327	67462 2327	67486 2328	67510 2329	67533 2329	67557 2330	67581 2331	67605 2332	67628 2332
166.2	67652 2333	67676 2334	67700 2335	67723 2335	67747 2336	67771 2337	67795 2338	67819 2339	67842 2339	67866 2340
166.3	67890 2341	67914 2342	67938 2342	67962 2343	67986 2344	68009 2344	68033 2345	68057 2346	68081 2347	68105 2347
166.4	68129 2348	68153 2349	68177 2350	68201 2350	68225 2351	68248 2352	68272 2353	68296 2354	68320 2354	68344 2355
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166.5	68368 2356	68392 2357	68416 2358	68440 2358	68464 2359	68488 2360	68512 2361	68536 2362	68560 2362	68584 2363
166.6	68608 2364	68632 2365	68656 2365	68680 2366	68704 2367	68728 2367	68752 2368	68776 2369	68800 2370	68824 2370
166.7	68848 2371	68872 2372	68896 2373	68920 2373	68944 2374	68969 2375	68993 2376	69017 2377	69041 2377	69065 2378

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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166.8	69089 2379	69113 2380	69137 2380	69161 2381	69185 2382	69210 2382	69234 2383	69258 2384	69282 2385	69306 2385
166.9	69330 2386	69354 2387	69378 2388	69403 2388	69427 2389	69451 2390	69475 2391	69499 2392	69524 2392	69548 2393
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167.0	69572 2394	69596 2395	69621 2396	69646 2396	69670 2397	69694 2398	69719 2399	69744 2400	69768 2400	69792 2401
167.1	69817 2402	69842 2403	69866 2403	69890 2404	69915 2405	69940 2405	69964 2406	69988 2407	70013 2408	70038 2408
167.2	70062 2409	70086 2410	70111 2411	70136 2411	70160 2412	70184 2413	70209 2414	70234 2415	70258 2415	70282 2416
167.3	70307 2417	70332 2418	70356 2419	70381 2419	70406 2420	70430 2421	70455 2422	70480 2423	70505 2423	70529 2424
167.4	70554 2425	70579 2426	70603 2427	70628 2427	70652 2428	70677 2429	70702 2430	70726 2431	70751 2431	70775 2432
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167.5	70800 2433	70825 2434	70850 2434	70874 2435	70899 2436	70924 2436	70949 2437	70974 2438	70998 2439	71023 2439
167.6	71048 2440	71073 2441	71098 2442	71122 2442	71147 2443	71172 2444	71197 2445	71222 2446	71246 2446	71271 2447
167.7	71296 2448	71321 2449	71346 2450	71370 2450	71395 2451	71420 2452	71445 2453	71470 2454	71494 2454	71519 2455
167.8	71544 2456	71569 2457	71594 2457	71619 2458	71644 2459	71668 2459	71693 2460	71718 2461	71743 2462	71768 2462
167.9	71793 2463	71818 2464	71843 2465	71868 2465	71893 2466	71918 2467	71943 2468	71968 2469	71993 2469	72018 2470
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168.0	72043 2471	72068 2472	72093 2473	72119 2473	72144 2474	72169 2475	72194 2476	72219 2477	72245 2477	72270 2478
168.1	72295 2479	72320 2480	72346 2480	72371 2481	72396 2482	72422 2482	72447 2483	72472 2484	72497 2485	72523 2485
168.2	72548 2486	72573 2487	72599 2488	72624 2488	72649 2489	72675 2490	72700 2491	72725 2492	72750 2492	72776 2493
168.3	72801 2494	72826 2495	72852 2495	72877 2496	72903 2497	72928 2497	72953 2498	72979 2499	73004 2500	73030 2500
168.4	73055 2501	73080 2502	73106 2503	73131 2503	73157 2504	73182 2505	73207 2506	73233 2507	73258 2507	73284 2508
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168.5	73309 2509	73334 2510	73360 2511	73386 2511	73411 2512	73436 2513	73462 2514	73488 2515	73513 2515	73538 2516
168.6	73564 2517	73590 2518	73615 2518	73641 2519	73666 2520	73692 2520	73718 2521	73743 2522	73769 2523	73794 2523
168.7	73820 2524	73846 2525	73871 2526	73897 2526	73922 2527	73948 2528	73974 2529	73999 2530	74025 2530	74050 2531
168.8	74076 2532	74102 2533	74127 2533	74153 2534	74179 2535	74204 2535	74230 2536	74256 2537	74282 2538	74307 2538

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
168.9	74333 2539	74359 2540	74384 2541	74410 2541	74436 2542	74461 2543	74487 2544	74513 2545	74539 2545	74564 2546
169.0	74590 2547	74616 2548	74642 2549	74668 2549	74694 2550	74720 2551	74746 2552	74772 2553	74798 2553	74824 2554
169.1	74850 2555	74876 2556	74902 2556	74928 2557	74954 2558	74980 2558	75006 2559	75032 2560	75058 2561	75084 2561
169.2	75110 2562	75136 2563	75162 2564	75188 2564	75214 2565	75241 2566	75267 2567	75293 2568	75319 2568	75345 2569
169.3	75371 2570	75397 2571	75423 2572	75449 2572	75475 2573	75502 2574	75528 2575	75554 2576	75580 2576	75606 2577
169.4	75632 2578	75658 2579	75685 2580	75711 2580	75737 2581	75764 2582	75790 2583	75816 2584	75842 2584	75869 2585
169.5	75895 2586	75921 2587	75947 2587	75974 2588	76000 2589	76026 2589	76052 2590	76078 2591	76105 2592	76131 2592
169.6	76157 2593	76183 2594	76210 2595	76236 2595	76263 2596	76289 2597	76315 2598	76342 2599	76368 2599	76395 2600
169.7	76421 2601	76447 2602	76474 2603	76500 2603	76526 2604	76553 2605	76579 2606	76605 2607	76631 2607	76658 2608
169.8	76684 2609	76710 2610	76737 2610	76764 2611	76790 2612	76816 2612	76843 2613	76870 2614	76896 2615	76922 2615
169.9	76949 2616	76976 2617	77002 2618	77028 2618	77055 2619	77082 2620	77108 2621	77134 2622	77161 2622	77188 2623
170.0	77214 2624	77241 2625	77267 2626	77294 2626	77321 2627	77347 2628	77374 2629	77401 2630	77428 2630	77454 2631
170.1	77481 2632	77508 2633	77535 2634	77561 2634	77588 2635	77615 2636	77642 2637	77669 2638	77695 2638	77722 2639
170.2	77749 2640	77776 2641	77803 2642	77830 2642	77857 2643	77883 2644	77910 2645	77937 2646	77964 2646	77991 2647
170.3	78018 2648	78045 2649	78072 2650	78099 2650	78126 2651	78152 2652	78179 2653	78206 2654	78233 2654	78260 2655
170.4	78287 2656	78314 2657	78341 2658	78368 2658	78395 2659	78422 2660	78449 2661	78476 2662	78503 2662	78530 2663
170.5	78557 2664	78584 2665	78611 2665	78638 2666	78665 2667	78693 2667	78720 2668	78747 2669	78774 2670	78801 2670
170.6	78828 2671	78855 2672	78882 2673	78909 2673	78936 2674	78964 2675	78991 2676	79018 2677	79045 2677	79072 2678
170.7	79099 2679	79126 2680	79153 2681	79181 2681	79208 2682	79235 2683	79262 2684	79289 2685	79317 2685	79344 2686
170.8	79371 2687	79398 2688	79425 2689	79453 2689	79480 2690	79507 2691	79534 2692	79561 2693	79589 2693	79616 2694
170.9	79643 2695	79670 2696	79698 2697	79725 2697	79752 2698	79780 2699	79807 2700	79834 2701	79861 2701	79889 2702

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
171.0	79916 2703	79944 2704	79971 2705	79999 2705	80026 2706	80054 2707	80082 2708	80109 2709	80137 2709	80164 2710
171.1	80192 2711	80220 2712	80247 2713	80275 2713	80302 2714	80330 2715	80358 2716	80385 2717	80413 2717	80440 2718
171.2	80468 2719	80496 2720	80523 2721	80551 2722	80579 2723	80606 2724	80634 2724	80662 2725	80690 2726	80717 2727
171.3	80745 2728	80773 2729	80801 2730	80828 2730	80856 2731	80884 2732	80912 2733	80940 2734	80967 2734	80995 2735
171.4	81023 2736	81051 2737	81079 2738	81106 2738	81134 2739	81162 2740	81190 2741	81218 2742	81245 2742	81273 2743
171.5	81301 2744	81329 2745	81357 2746	81385 2746	81413 2747	81440 2748	81468 2749	81496 2750	81524 2750	81552 2751
171.6	81580 2752	81608 2753	81636 2754	81664 2754	81692 2755	81720 2756	81748 2757	81776 2758	81804 2758	81832 2759
171.7	81860 2760	81888 2761	81916 2762	81944 2763	81972 2764	82000 2765	82028 2765	82056 2766	82084 2767	82112 2768
171.8	82140 2769	82168 2770	82196 2771	82224 2771	82252 2772	82281 2773	82309 2774	82337 2775	82365 2775	82393 2776
171.9	82421 2777	82449 2778	82477 2779	82505 2779	82533 2780	82562 2781	82590 2782	82618 2783	82646 2783	82674 2784
172.0	82702 2785	82730 2786	82759 2787	82787 2787	82815 2788	82844 2789	82872 2790	82900 2791	82928 2791	82957 2792
172.1	82985 2793	83013 2794	83042 2794	83070 2795	83099 2796	83127 2796	83155 2797	83184 2798	83212 2799	83241 2799
172.2	83269 2800	83298 2801	83326 2802	83354 2802	83383 2803	83412 2804	83440 2805	83468 2806	83497 2806	83526 2807
172.3	83554 2808	83582 2809	83611 2810	83640 2810	83668 2811	83696 2812	83725 2813	83754 2814	83782 2814	83810 2815
172.4	83839 2816	83868 2817	83896 2818	83925 2818	83953 2819	83982 2820	84011 2821	84039 2822	84068 2822	84096 2823
172.5	84125 2824	84154 2825	84182 2825	84211 2826	84239 2827	84268 2827	84297 2828	84325 2829	84354 2830	84382 2830
172.6	84411 2831	84440 2832	84469 2833	84497 2833	84526 2834	84555 2835	84584 2836	84613 2837	84641 2837	84670 2838
172.7	84699 2839	84728 2840	84756 2841	84785 2841	84814 2842	84842 2843	84871 2844	84900 2845	84929 2845	84957 2846
172.8	84986 2847	85015 2848	85044 2848	85073 2849	85102 2850	85130 2850	85159 2851	85188 2852	85217 2853	85246 2853
172.9	85275 2854	85304 2855	85333 2856	85362 2856	85391 2857	85419 2858	85448 2859	85477 2860	85506 2860	85535 2861
173.0	85564 2862	85593 2863	85622 2864	85651 2864	85680 2865	85710 2866	85739 2867	85768 2868	85797 2868	85826 2869

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
173.1	85855 2870	85884 2871	85913 2872	85943 2872	85972 2873	86001 2874	86030 2875	86059 2876	86089 2876	86118 2877
173.2	86147 2878	86176 2879	86205 2880	86235 2880	86264 2881	86293 2882	86322 2883	86351 2884	86381 2884	86410 2885
173.3	86439 2886	86468 2887	86498 2888	86527 2888	86556 2889	86586 2890	86615 2891	86644 2892	86673 2892	86703 2893
173.4	86732 2894	86761 2895	86791 2896	86820 2896	86850 2897	86879 2898	86908 2899	86938 2900	86967 2900	86997 2901
173.5	87026 2902	87056 2903	87085 2903	87114 2904	87144 2905	87174 2905	87203 2906	87232 2907	87262 2908	87292 2908
173.6	87321 2909	87350 2910	87380 2911	87410 2911	87439 2912	87468 2913	87498 2914	87528 2915	87557 2915	87586 2916
173.7	87616 2917	87646 2918	87675 2919	87704 2919	87734 2920	87764 2921	87793 2922	87822 2923	87852 2923	87882 2924
173.8	87911 2925	87941 2926	87970 2927	88000 2927	88030 2928	88059 2929	88089 2930	88119 2931	88149 2931	88178 2932
173.9	88208 2933	88238 2934	88267 2935	88297 2935	88327 2936	88356 2937	88386 2938	88416 2939	88446 2939	88475 2940
174.0	88505 2941	88535 2942	88565 2943	88595 2943	88625 2944	88654 2945	88684 2946	88714 2947	88744 2947	88774 2948
174.1	88804 2949	88834 2950	88864 2951	88894 2951	88924 2952	88954 2953	88984 2954	89014 2955	89044 2955	89074 2956
174.2	89104 2957	89134 2958	89164 2959	89194 2960	89224 2961	89255 2962	89285 2962	89315 2963	89345 2964	89375 2965
174.3	89405 2966	89435 2967	89465 2968	89495 2968	89525 2969	89556 2970	89586 2971	89616 2972	89646 2972	89676 2973
174.4	89706 2974	89736 2975	89766 2976	89797 2976	89827 2977	89857 2978	89887 2979	89917 2980	89948 2980	89978 2981
174.5	90008 2982	90038 2983	90069 2984	90099 2984	90129 2985	90160 2986	90190 2987	90220 2988	90250 2988	90281 2989
174.6	90311 2990	90341 2991	90372 2992	90402 2992	90432 2993	90463 2994	90493 2995	90523 2996	90553 2996	90584 2997
174.7	90614 2998	90644 2999	90675 3000	90705 3001	90736 3002	90766 3003	90796 3003	90827 3004	90857 3005	90888 3006
174.8	90918 3007	90948 3008	90979 3009	91010 3009	91040 3010	91070 3011	91101 3012	91132 3013	91162 3013	91192 3014
174.9	91223 3015	91254 3016	91284 3017	91314 3017	91345 3018	91376 3019	91406 3020	91436 3021	91467 3021	91498 3022
175.0	91528 3023	91559 3024	91590 3025	91620 3026	91651 3027	91682 3028	91713 3028	91744 3029	91774 3030	91805 3031
175.1	91836 3032	91867 3033	91898 3034	91928 3034	91959 3035	91990 3036	92021 3037	92052 3038	92082 3038	92113 3039

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175.2	92144 3040	92175 3041	92206 3042	92237 3043	92268 3044	92299 3045	92330 3045	92361 3046	92392 3047	92423 3048
175.3	92454 3049	92485 3050	92516 3051	92547 3052	92578 3053	92609 3054	92640 3054	92671 3055	92702 3056	92733 3057
175.4	92764 3058	92795 3059	92826 3060	92857 3061	92888 3062	92919 3063	92950 3063	92981 3064	93012 3065	93043 3066
175.5	93074 3067	93105 3068	93136 3069	93168 3069	93199 3070	93230 3071	93261 3072	93292 3073	93324 3073	93355 3074
175.6	93386 3075	93417 3076	93448 3077	93480 3078	93511 3079	93542 3080	93573 3080	93604 3081	93636 3082	93667 3083
175.7	93698 3084	93729 3085	93760 3086	93792 3087	93823 3088	93854 3089	93885 3089	93916 3090	93948 3091	93979 3092
175.8	94010 3093	94041 3094	94073 3095	94104 3095	94136 3096	94167 3097	94198 3098	94230 3099	94261 3099	94293 3100
175.9	94324 3101	94355 3102	94387 3103	94418 3104	94450 3105	94481 3106	94512 3106	94544 3107	94575 3108	94607 3109
176.0	94638 3110	94670 3111	94701 3112	94733 3112	94764 3113	94796 3114	94828 3115	94859 3116	94891 3116	94922 3117
176.1	94954 3118	94986 3119	95017 3120	95049 3120	95081 3121	95112 3122	95144 3123	95176 3124	95208 3124	95239 3125
176.2	95271 3126	95303 3127	95334 3128	95366 3129	95398 3130	95429 3131	95461 3131	95493 3132	95525 3133	95556 3134
176.3	95588 3135	95620 3136	95652 3137	95683 3137	95715 3138	95747 3139	95779 3140	95811 3141	95842 3141	95874 3142
176.4	95906 3143	95938 3144	95970 3145	96002 3145	96034 3146	96065 3147	96097 3148	96129 3149	96161 3149	96193 3150
176.5	96225 3151	96257 3152	96289 3153	96321 3153	96353 3154	96385 3155	96417 3156	96449 3157	96481 3157	96513 3158
176.6	96545 3159	96577 3160	96609 3161	96641 3161	96673 3162	96705 3163	96737 3164	96769 3165	96801 3165	96833 3166
176.7	96865 3167	96897 3168	96929 3169	96961 3170	96993 3171	97026 3172	97058 3172	97090 3173	97122 3174	97154 3175
176.8	97186 3176	97218 3177	97250 3178	97283 3178	97315 3179	97347 3180	97379 3181	97411 3182	97444 3182	97476 3183
176.9	97508 3184	97540 3185	97572 3186	97605 3186	97637 3187	97669 3188	97701 3189	97733 3190	97766 3190	97798 3191
177.0	97830 3192	97862 3193	97895 3194	97927 3194	97960 3195	97992 3196	98024 3197	98057 3198	98089 3198	98122 3199
177.1	98154 3200	98186 3201	98219 3202	98251 3202	98284 3203	98316 3204	98348 3205	98381 3206	98413 3206	98446 3207
177.2	98478 3208	98511 3209	98543 3210	98576 3210	98608 3211	98641 3212	98674 3213	98706 3214	98739 3214	98771 3215

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
177.3	98804 3216	98837 3217	98869 3218	98902 3218	98934 3219	98967 3220	99000 3221	99032 3222	99065 3222	99097 3223
177.4	99130 3224	99163 3225	99195 3226	99228 3226	99260 3227	99293 3228	99326 3229	99358 3230	99391 3230	99423 3231
177.5	99456 3232	99489 3233	99522 3234	99554 3234	99587 3235	99620 3236	99653 3237	99686 3238	99718 3238	99751 3239
177.6	99784 3240	99817 3241	99850 3242	99882 3242	99915 3243	99948 3244	99981 3245	100014 3246	100046 3246	100079 3247
177.7	100112 3248	100145 3249	100178 3250	100211 3250	100244 3251	100276 3252	100309 3253	100342 3254	100375 3254	100408 3255
177.8	100441 3256	100474 3257	100507 3258	100540 3258	100573 3259	100606 3260	100639 3261	100672 3262	100705 3262	100738 3263
177.9	100771 3264	100804 3265	100837 3266	100870 3266	100903 3267	100936 3268	100969 3269	101002 3270	101035 3270	101068 3271
178.0	101101 3272	101134 3273	101167 3274	101201 3274	101234 3275	101267 3276	101300 3277	101333 3278	101367 3278	101400 3279
178.1	101433 3280	101466 3281	101500 3282	101533 3282	101566 3283	101600 3284	101633 3285	101666 3286	101699 3286	101733 3287
178.2	101766 3288	101799 3289	101833 3290	101866 3290	101899 3291	101933 3292	101966 3293	101999 3294	102032 3294	102066 3295
178.3	102099 3296	102132 3297	102166 3298	102199 3298	102233 3299	102266 3300	102299 3301	102333 3302	102366 3302	102400 3303
178.4	102433 3304	102466 3305	102500 3306	102534 3306	102567 3307	102600 3308	102634 3309	102668 3310	102701 3310	102734 3311
178.5	102768 3312	102802 3313	102835 3314	102868 3314	102902 3315	102936 3316	102969 3317	103002 3318	103036 3318	103070 3319
178.6	103103 3320	103137 3321	103170 3322	103204 3322	103238 3323	103271 3324	103305 3325	103339 3326	103373 3326	103406 3327
178.7	103440 3328	103474 3329	103507 3330	103541 3330	103575 3331	103608 3332	103642 3333	103676 3334	103710 3334	103743 3335
178.8	103777 3336	103811 3337	103844 3338	103878 3338	103912 3339	103945 3340	103979 3341	104013 3342	104047 3342	104080 3343
178.9	104114 3344	104148 3345	104182 3346	104216 3346	104250 3347	104283 3348	104317 3349	104351 3350	104385 3350	104419 3351
179.0	104453 3352	104487 3353	104521 3354	104555 3354	104589 3355	104623 3356	104657 3357	104691 3358	104725 3358	104759 3359
179.1	104793 3360	104827 3361	104861 3362	104895 3362	104929 3363	104964 3364	104998 3365	105032 3366	105066 3366	105100 3367
179.2	105134 3368	105168 3369	105202 3370	105236 3371	105270 3372	105305 3373	105339 3373	105373 3374	105407 3375	105441 3376
179.3	105475 3377	105509 3378	105544 3379	105578 3379	105612 3380	105647 3381	105681 3382	105715 3383	105749 3383	105784 3384

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
179.4	105818 3385	105852 3386	105887 3387	105921 3387	105955 3388	105990 3389	106024 3390	106058 3391	106092 3391	106127 3392
179.5	106161 3393	106195 3394	106230 3395	106264 3395	106298 3396	106333 3397	106367 3398	106401 3399	106435 3399	106470 3400
179.6	106504 3401	106538 3402	106573 3403	106608 3403	106642 3404	106676 3405	106711 3406	106746 3407	106780 3407	106814 3408
179.7	106849 3409	106884 3410	106918 3411	106952 3412	106987 3413	107022 3414	107056 3414	107090 3415	107125 3416	107160 3417
179.8	107194 3418	107229 3419	107263 3420	107298 3420	107332 3421	107367 3422	107402 3423	107436 3424	107471 3424	107505 3425
179.9	107540 3426	107575 3427	107609 3428	107644 3428	107679 3429	107713 3430	107748 3431	107783 3432	107818 3432	107852 3433
180.0	107887 3434	107922 3435	107957 3436	107992 3436	108027 3437	108061 3438	108096 3439	108131 3440	108166 3440	108201 3441
180.1	108236 3442	108271 3443	108306 3444	108341 3445	108376 3446	108411 3447	108446 3447	108481 3448	108516 3449	108551 3450
180.2	108586 3451	108621 3452	108656 3453	108691 3453	108726 3454	108761 3455	108796 3456	108831 3457	108866 3457	108901 3458
180.3	108936 3459	108971 3460	109006 3461	109041 3462	109076 3463	109112 3464	109147 3464	109182 3465	109217 3466	109252 3467
180.4	109287 3468	109322 3469	109357 3470	109393 3470	109428 3471	109463 3472	109498 3473	109533 3474	109569 3474	109604 3475
180.5	109639 3476	109674 3477	109709 3478	109745 3478	109780 3479	109815 3480	109850 3481	109885 3482	109921 3482	109956 3483
180.6	109991 3484	110026 3485	110061 3486	110097 3487	110132 3488	110167 3489	110202 3489	110237 3490	110273 3491	110308 3492
180.7	110343 3493	110378 3494	110414 3495	110449 3495	110485 3496	110520 3497	110555 3498	110591 3499	110626 3499	110662 3500
180.8	110697 3501	110732 3502	110768 3503	110803 3504	110839 3505	110874 3506	110909 3506	110945 3507	110980 3508	111016 3509
180.9	111051 3510	111086 3511	111122 3512	111157 3512	111193 3513	111228 3514	111263 3515	111299 3516	111334 3516	111370 3517
181.0	111405 3518	111441 3519	111476 3520	111512 3520	111548 3521	111583 3522	111619 3523	111655 3524	111691 3524	111726 3525
181.1	111762 3526	111798 3527	111834 3528	111869 3528	111905 3529	111941 3530	111977 3531	112013 3532	112048 3532	112084 3533
181.2	112120 3534	112156 3535	112192 3536	112227 3536	112263 3537	112299 3538	112335 3539	112371 3540	112406 3540	112442 3541
181.3	112478 3542	112514 3543	112550 3544	112586 3544	112622 3545	112657 3546	112693 3547	112729 3548	112765 3548	112801 3549
181.4	112837 3550	112873 3551	112909 3552	112945 3552	112981 3553	113017 3554	113053 3555	113089 3556	113125 3556	113161 3557

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
181.5	113197 3558	113233 3559	113269 3560	113305 3560	113341 3561	113377 3562	113413 3563	113449 3564	113485 3564	113521 3565
181.6	113557 3566	113593 3567	113629 3568	113665 3568	113701 3569	113737 3570	113773 3571	113809 3572	113845 3572	113881 3573
181.7	113917 3574	113953 3575	113989 3576	114026 3576	114062 3577	114098 3578	114134 3579	114170 3580	114207 3580	114243 3581
181.8	114279 3582	114315 3583	114351 3584	114388 3584	114424 3585	114460 3586	114496 3587	114532 3588	114569 3588	114605 3589
181.9	114641 3590	114677 3591	114713 3592	114750 3592	114786 3593	114822 3594	114858 3595	114894 3596	114931 3596	114967 3597
182.0	115003 3598	115040 3599	115076 3600	115113 3601	115149 3602	115186 3603	115223 3603	115259 3604	115296 3605	115332 3606
182.1	115369 3607	115406 3608	115442 3609	115479 3609	115515 3610	115552 3611	115589 3612	115625 3613	115662 3613	115698 3614
182.2	115735 3615	115772 3616	115808 3617	115845 3618	115882 3619	115918 3620	115955 3620	115992 3621	116029 3622	116065 3623
182.3	116102 3624	116139 3625	116175 3626	116212 3626	116249 3627	116285 3628	116322 3629	116359 3630	116396 3630	116432 3631
182.4	116469 3632	116506 3633	116543 3634	116579 3635	116616 3636	116653 3637	116690 3637	116727 3638	116763 3639	116800 3640
182.5	116837 3641	116874 3642	116911 3643	116948 3643	116985 3644	117021 3645	117058 3646	117095 3647	117132 3647	117169 3648
182.6	117206 3649	117243 3650	117280 3651	117317 3652	117354 3653	117390 3654	117427 3654	117464 3655	117501 3656	117538 3657
182.7	117575 3658	117612 3659	117649 3660	117686 3660	117723 3661	117760 3662	117797 3663	117834 3664	117871 3664	117908 3665
182.8	117945 3666	117982 3667	118019 3668	118056 3669	118093 3670	118130 3671	118167 3671	118204 3672	118241 3673	118278 3674
182.9	118315 3675	118352 3676	118389 3677	118426 3677	118463 3678	118501 3679	118538 3680	118575 3681	118612 3681	118649 3682
183.0	118686 3683	118723 3684	118761 3685	118798 3685	118836 3686	118873 3687	118910 3688	118948 3689	118985 3689	119023 3690
183.1	119060 3691	119097 3692	119135 3693	119172 3693	119210 3694	119247 3695	119284 3696	119322 3697	119359 3697	119397 3698
183.2	119434 3699	119472 3700	119509 3701	119546 3701	119584 3702	119622 3703	119659 3704	119696 3705	119734 3705	119772 3706
183.3	119809 3707	119846 3708	119884 3709	119922 3709	119959 3710	119996 3711	120034 3712	120072 3713	120109 3713	120146 3714
183.4	120184 3715	120222 3716	120259 3717	120297 3718	120334 3719	120372 3720	120410 3720	120447 3721	120485 3722	120522 3723

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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183.5	120560 3724	120598 3725	120635 3726	120673 3726	120711 3727	120748 3728	120786 3729	120824 3730	120862 3730	120899 3731
183.6	120937 3732	120975 3733	121012 3734	121050 3734	121088 3735	121125 3736	121163 3737	121201 3738	121239 3738	121276 3739
183.7	121314 3740	121352 3741	121390 3742	121427 3742	121465 3743	121503 3744	121541 3745	121579 3746	121616 3746	121654 3747
183.8	121692 3748	121730 3749	121768 3750	121806 3750	121844 3751	121881 3752	121919 3753	121957 3754	121995 3754	122033 3755
183.9	122071 3756	122109 3757	122147 3758	122185 3758	122223 3759	122260 3760	122298 3761	122336 3762	122374 3762	122412 3763
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184.0	122450 3764	122488 3765	122526 3766	122565 3766	122603 3767	122641 3768	122679 3769	122717 3770	122756 3770	122794 3771
184.1	122832 3772	122870 3773	122908 3774	122947 3774	122985 3775	123023 3776	123061 3777	123099 3778	123138 3778	123176 3779
184.2	123214 3780	123252 3781	123291 3782	123329 3783	123367 3784	123406 3785	123444 3785	123482 3786	123520 3787	123559 3788
184.3	123597 3789	123635 3790	123674 3791	123712 3791	123751 3792	123789 3793	123827 3794	123866 3795	123904 3795	123943 3796
184.4	123981 3797	124019 3798	124058 3799	124096 3799	124135 3800	124173 3801	124211 3802	124250 3803	124288 3803	124327 3804
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184.5	124365 3805	124404 3806	124442 3807	124480 3807	124519 3808	124558 3809	124596 3810	124634 3811	124673 3811	124712 3812
184.6	124750 3813	124789 3814	124827 3815	124866 3815	124904 3816	124943 3817	124982 3818	125020 3819	125059 3819	125097 3820
184.7	125136 3821	125175 3822	125213 3823	125252 3824	125290 3825	125329 3826	125368 3826	125406 3827	125445 3828	125483 3829
184.8	125522 3830	125561 3831	125599 3832	125638 3832	125677 3833	125715 3834	125754 3835	125793 3836	125832 3836	125870 3837
184.9	125909 3838	125948 3839	125986 3840	126025 3840	126064 3841	126102 3842	126141 3843	126180 3844	126219 3844	126257 3845
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185.0	126296 3846	126335 3847	126374 3848	126413 3848	126452 3849	126491 3850	126530 3851	126569 3852	126608 3852	126647 3853
185.1	126686 3854	126725 3855	126764 3856	126803 3856	126842 3857	126881 3858	126920 3859	126959 3860	126998 3860	127037 3861
185.2	127076 3862	127115 3863	127154 3864	127193 3864	127232 3865	127272 3866	127311 3867	127350 3868	127389 3868	127428 3869
185.3	127467 3870	127506 3871	127545 3872	127585 3872	127624 3873	127663 3874	127702 3875	127741 3876	127781 3876	127820 3877
185.4	127859 3878	127898 3879	127938 3880	127977 3881	128016 3882	128056 3883	128095 3883	128134 3884	128173 3885	128213 3886
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185.5	128252 3887	128291 3888	128331 3889	128370 3889	128409 3890	128449 3891	128488 3892	128527 3893	128566 3893	128606 3894

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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185.6	128645 3895	128684 3896	128724 3897	128763 3897	128802 3898	128842 3899	128881 3900	128920 3901	128959 3901	128999 3902
185.7	129038 3903	129078 3904	129117 3905	129156 3905	129196 3906	129236 3907	129275 3908	129314 3909	129354 3909	129394 3910
185.8	129433 3911	129472 3912	129512 3913	129551 3913	129591 3914	129630 3915	129669 3916	129709 3917	129748 3917	129788 3918
185.9	129827 3919	129867 3920	129906 3921	129946 3921	129985 3922	130025 3923	130065 3924	130104 3925	130144 3925	130183 3926
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186.0	130223 3927	130263 3928	130303 3929	130342 3929	130382 3930	130422 3931	130462 3932	130502 3933	130541 3933	130581 3934
186.1	130621 3935	130661 3936	130701 3937	130740 3937	130780 3938	130820 3939	130860 3940	130900 3941	130939 3941	130979 3942
186.2	131019 3943	131059 3944	131099 3945	131139 3945	131179 3946	131218 3947	131258 3948	131298 3949	131338 3949	131378 3950
186.3	131418 3951	131458 3952	131498 3953	131538 3953	131578 3954	131618 3955	131658 3956	131698 3957	131738 3957	131778 3958
186.4	131818 3959	131858 3960	131898 3961	131938 3961	131978 3962	132018 3963	132058 3964	132098 3965	132138 3965	132178 3966
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186.5	132218 3967	132258 3968	132298 3968	132338 3969	132378 3970	132419 3970	132459 3971	132499 3972	132539 3973	132579 3973
186.6	132619 3974	132659 3975	132699 3976	132739 3976	132779 3977	132820 3978	132860 3979	132900 3980	132940 3980	132980 3981
186.7	133020 3982	133060 3983	133101 3984	133141 3984	133181 3985	133221 3986	133262 3987	133302 3988	133342 3988	133383 3989
186.8	133423 3990	133463 3991	133504 3992	133544 3992	133584 3993	133624 3994	133665 3995	133705 3996	133745 3996	133786 3997
186.9	133826 3998	133866 3999	133907 4000	133947 4000	133987 4001	134027 4002	134068 4003	134108 4004	134148 4004	134189 4005
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187.0	134229 4006	134270 4007	134310 4008	134351 4008	134391 4009	134432 4010	134473 4011	134513 4012	134554 4012	134594 4013
187.1	134635 4014	134676 4015	134716 4016	134757 4016	134797 4017	134838 4018	134879 4019	134919 4020	134960 4020	135000 4021
187.2	135041 4022	135082 4023	135122 4024	135163 4024	135204 4025	135245 4026	135285 4027	135326 4028	135367 4028	135407 4029
187.3	135448 4030	135489 4031	135529 4032	135570 4032	135611 4033	135652 4034	135692 4035	135733 4036	135774 4036	135814 4037
187.4	135855 4038	135896 4039	135937 4040	135977 4040	136018 4041	136059 4042	136100 4043	136141 4044	136181 4044	136222 4045
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187.5	136263 4046	136304 4047	136345 4047	136386 4048	136427 4049	136467 4049	136508 4050	136549 4051	136590 4052	136631 4052
187.6	136672 4053	136713 4054	136754 4055	136795 4055	136836 4056	136877 4057	136918 4058	136959 4059	137000 4059	137041 4060

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
187.7	137082 4061	137123 4062	137164 4063	137205 4063	137246 4064	137287 4065	137328 4066	137369 4067	137410 4067	137451 4068
187.8	137492 4069	137533 4070	137574 4071	137615 4071	137656 4072	137698 4073	137739 4074	137780 4075	137821 4075	137862 4076
187.9	137903 4077	137944 4078	137985 4079	138026 4079	138067 4080	138109 4081	138150 4082	138191 4083	138232 4083	138273 4084
188.0	138314 4085	138355 4086	138397 4086	138438 4087	138479 4088	138520 4088	138562 4089	138603 4090	138644 4091	138686 4091
188.1	138727 4092	138768 4093	138810 4094	138851 4094	138892 4095	138933 4096	138975 4097	139016 4098	139057 4098	139099 4099
188.2	139140 4100	139182 4101	139223 4101	139264 4102	139306 4103	139348 4103	139389 4104	139430 4105	139472 4106	139514 4106
188.3	139555 4107	139596 4108	139638 4108	139679 4109	139721 4110	139762 4110	139803 4111	139845 4112	139886 4113	139928 4113
188.4	139969 4114	140011 4115	140052 4116	140094 4116	140135 4117	140177 4118	140219 4119	140260 4120	140302 4120	140343 4121
188.5	140385 4122	140427 4123	140468 4123	140510 4124	140551 4125	140593 4125	140635 4126	140676 4127	140718 4128	140759 4128
188.6	140801 4129	140843 4130	140884 4130	140926 4131	140968 4132	141010 4132	141051 4133	141093 4134	141135 4135	141176 4135
188.7	141218 4136	141260 4137	141301 4137	141343 4138	141385 4139	141427 4139	141468 4140	141510 4141	141552 4142	141593 4142
188.8	141635 4143	141677 4144	141719 4145	141760 4145	141802 4146	141844 4147	141886 4148	141928 4149	141969 4149	142011 4150
188.9	142053 4151	142095 4152	142137 4152	142179 4153	142221 4154	142262 4154	142304 4155	142346 4156	142388 4157	142430 4157
189.0	142472 4158	142514 4159	142556 4159	142598 4160	142640 4161	142682 4161	142724 4162	142766 4163	142808 4164	142850 4164
189.1	142892 4165	142934 4166	142976 4167	143018 4167	143060 4168	143103 4169	143145 4170	143187 4171	143229 4171	143271 4172
189.2	143313 4173	143355 4174	143397 4174	143439 4175	143481 4176	143524 4176	143566 4177	143608 4178	143650 4179	143692 4179
189.3	143734 4180	143776 4181	143818 4181	143861 4182	143903 4183	143945 4183	143987 4184	144029 4185	144072 4186	144114 4186
189.4	144156 4187	144198 4188	144241 4189	144283 4189	144325 4190	144367 4191	144410 4192	144452 4193	144494 4193	144537 4194
189.5	144579 4195	144621 4196	144664 4196	144706 4197	144749 4198	144791 4198	144833 4199	144876 4200	144918 4201	144961 4201
189.6	145003 4202	145045 4203	145088 4203	145130 4204	145173 4205	145215 4205	145257 4206	145300 4207	145342 4208	145385 4208
189.7	145427 4209	145470 4210	145512 4210	145554 4211	145597 4212	145640 4212	145682 4213	145724 4214	145767 4215	145810 4215

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
189.8	145852 4216	145894 4217	145937 4218	145980 4218	146022 4219	146064 4220	146107 4221	146150 4222	146192 4222	146234 4223
189.9	146277 4224	146320 4225	146362 4225	146405 4226	146447 4227	146490 4227	146533 4228	146575 4229	146618 4230	146660 4230
190.0	146703 4231	146746 4232	146788 4232	146831 4233	146874 4234	146917 4234	146959 4235	147002 4236	147045 4237	147087 4237
190.1	147130 4238	147173 4239	147216 4240	147258 4240	147301 4241	147344 4242	147387 4243	147430 4244	147472 4244	147515 4245
190.2	147558 4246	147601 4247	147644 4247	147687 4248	147730 4249	147772 4249	147815 4250	147858 4251	147901 4252	147944 4252
190.3	147987 4253	148030 4254	148073 4254	148116 4255	148159 4256	148202 4256	148245 4257	148288 4258	148331 4259	148374 4259
190.4	148417 4260	148460 4261	148503 4262	148546 4262	148589 4263	148632 4264	148675 4265	148718 4266	148761 4266	148804 4267
190.5	148847 4268	148890 4269	148933 4269	148976 4270	149019 4271	149062 4271	149105 4272	149148 4273	149191 4274	149234 4274
190.6	149277 4275	149320 4276	149363 4276	149407 4277	149450 4278	149493 4278	149536 4279	149579 4280	149623 4281	149666 4281
190.7	149709 4282	149752 4283	149795 4283	149839 4284	149882 4285	149925 4285	149968 4286	150011 4287	150055 4288	150098 4288
190.8	150141 4289	150184 4290	150228 4291	150271 4291	150314 4292	150357 4293	150401 4294	150444 4295	150487 4295	150531 4296
190.9	150574 4297	150617 4298	150661 4298	150704 4299	150747 4300	150790 4300	150834 4301	150877 4302	150920 4303	150964 4303
191.0	151007 4304	151050 4305	151094 4306	151138 4306	151181 4307	151224 4308	151268 4309	151312 4310	151355 4310	151398 4311
191.1	151442 4312	151486 4313	151529 4313	151572 4314	151616 4315	151660 4315	151703 4316	151746 4317	151790 4318	151834 4318
191.2	151877 4319	151921 4320	151964 4321	152008 4321	152052 4322	152096 4323	152139 4324	152183 4325	152227 4325	152270 4326
191.3	152314 4327	152358 4328	152401 4328	152445 4329	152489 4330	152533 4330	152576 4331	152620 4332	152664 4333	152707 4333
191.4	152751 4334	152795 4335	152838 4336	152882 4336	152926 4337	152970 4338	153013 4339	153057 4340	153101 4340	153144 4341
191.5	153188 4342	153232 4343	153276 4343	153319 4344	153363 4345	153407 4345	153451 4346	153495 4347	153538 4348	153582 4348
191.6	153626 4349	153670 4350	153714 4351	153758 4351	153802 4352	153845 4353	153889 4354	153933 4355	153977 4355	154021 4356
191.7	154065 4357	154109 4358	154153 4358	154197 4359	154241 4360	154285 4360	154329 4361	154373 4362	154417 4363	154461 4363

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
191.8	154505 4364	154549 4365	154593 4366	154637 4366	154681 4367	154725 4368	154769 4369	154813 4370	154857 4370	154901 4371
191.9	154945 4372	154989 4373	155033 4373	155077 4374	155121 4375	155166 4375	155210 4376	155254 4377	155298 4378	155342 4378
192.0	155386 4379	155430 4380	155474 4380	155519 4381	155563 4382	155607 4382	155651 4383	155695 4384	155740 4385	155784 4385
192.1	155828 4386	155872 4387	155917 4388	155961 4388	156005 4389	156049 4390	156094 4391	156138 4392	156182 4392	156227 4393
192.2	156271 4394	156315 4395	156360 4395	156404 4396	156449 4397	156493 4397	156537 4398	156582 4399	156626 4400	156671 4400
192.3	156715 4401	156759 4402	156804 4402	156848 4403	156893 4404	156937 4404	156981 4405	157026 4406	157070 4407	157115 4407
192.4	157159 4408	157204 4409	157248 4410	157292 4410	157337 4411	157382 4412	157426 4413	157470 4414	157515 4414	157560 4415
192.5	157604 4416	157648 4417	157693 4417	157738 4418	157782 4419	157826 4419	157871 4420	157916 4421	157960 4422	158004 4422
192.6	158049 4423	158094 4424	158138 4424	158183 4425	158227 4426	158272 4426	158317 4427	158361 4428	158406 4429	158450 4429
192.7	158495 4430	158540 4431	158584 4431	158629 4432	158674 4433	158719 4433	158763 4434	158808 4435	158853 4436	158897 4436
192.8	158942 4437	158987 4438	159032 4439	159076 4439	159121 4440	159166 4441	159211 4442	159256 4443	159300 4443	159345 4444
192.9	159390 4445	159435 4446	159480 4446	159524 4447	159569 4448	159614 4448	159659 4449	159704 4450	159748 4451	159793 4451
193.0	159838 4452	159883 4453	159928 4454	159973 4454	160018 4455	160063 4456	160108 4457	160153 4458	160198 4458	160243 4459
193.1	160288 4460	160333 4461	160378 4462	160423 4462	160468 4463	160514 4464	160559 4465	160604 4466	160649 4466	160694 4467
193.2	160739 4468	160784 4469	160829 4470	160874 4470	160919 4471	160965 4472	161010 4473	161055 4474	161100 4474	161145 4475
193.3	161190 4476	161235 4477	161281 4478	161326 4478	161371 4479	161416 4480	161462 4481	161507 4482	161552 4482	161598 4483
193.4	161643 4484	161688 4485	161733 4486	161779 4486	161824 4487	161869 4488	161914 4489	161959 4490	162005 4490	162050 4491
193.5	162095 4492	162140 4493	162186 4494	162231 4494	162277 4495	162322 4496	162367 4497	162413 4498	162458 4498	162504 4499
193.6	162549 4500	162594 4501	162640 4502	162685 4502	162731 4503	162776 4504	162821 4505	162867 4506	162912 4506	162958 4507
193.7	163003 4508	163048 4509	163094 4510	163140 4510	163185 4511	163230 4512	163276 4513	163322 4514	163367 4514	163412 4515
193.8	163458 4516	163504 4517	163549 4518	163595 4518	163640 4519	163686 4520	163732 4521	163777 4522	163823 4522	163868 4523

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
193.9	163914 4524	163960 4525	164005 4526	164051 4526	164096 4527	164142 4528	164188 4529	164233 4530	164279 4530	164324 4531
194.0	164370 4532	164416 4533	164462 4534	164507 4534	164553 4535	164599 4536	164645 4537	164691 4538	164736 4538	164782 4539
194.1	164828 4540	164874 4541	164920 4541	164965 4542	165011 4543	165057 4543	165103 4544	165149 4545	165194 4546	165240 4546
194.2	165286 4547	165332 4548	165378 4549	165424 4549	165470 4550	165515 4551	165561 4552	165607 4553	165653 4553	165699 4554
194.3	165745 4555	165791 4556	165837 4557	165883 4557	165929 4558	165975 4559	166021 4560	166067 4561	166113 4561	166159 4562
194.4	166205 4563	166251 4564	166297 4565	166343 4565	166389 4566	166436 4567	166482 4568	166528 4569	166574 4569	166620 4570
194.5	166666 4571	166712 4572	166758 4572	166804 4573	166850 4574	166897 4574	166943 4575	166989 4576	167035 4577	167081 4577
194.6	167127 4578	167173 4579	167219 4580	167266 4580	167312 4581	167358 4582	167404 4583	167450 4584	167497 4584	167543 4585
194.7	167589 4586	167635 4587	167682 4588	167728 4588	167774 4589	167820 4590	167867 4591	167913 4592	167959 4592	168006 4593
194.8	168052 4594	168098 4595	168145 4595	168191 4596	168237 4597	168283 4597	168330 4598	168376 4599	168422 4600	168469 4600
194.9	168515 4601	168561 4602	168608 4603	168654 4603	168701 4604	168747 4605	168793 4606	168840 4607	168886 4607	168933 4608
195.0	168979 4609	169026 4610	169072 4611	169118 4611	169165 4612	169212 4613	169258 4614	169304 4615	169351 4615	169398 4616
195.1	169444 4617	169491 4618	169537 4618	169584 4619	169630 4620	169677 4620	169724 4621	169770 4622	169817 4623	169863 4623
195.2	169910 4624	169957 4625	170003 4626	170050 4626	170097 4627	170144 4628	170190 4629	170237 4630	170284 4630	170330 4631
195.3	170377 4632	170424 4633	170470 4633	170517 4634	170564 4635	170611 4635	170657 4636	170704 4637	170751 4638	170797 4638
195.4	170844 4639	170891 4640	170938 4641	170984 4641	171031 4642	171078 4643	171125 4644	171172 4645	171218 4645	171265 4646
195.5	171312 4647	171359 4648	171406 4648	171453 4649	171500 4650	171546 4650	171593 4651	171640 4652	171687 4653	171734 4653
195.6	171781 4654	171828 4655	171875 4656	171922 4656	171969 4657	172016 4658	172063 4659	172110 4660	172157 4660	172204 4661
195.7	172251 4662	172298 4663	172345 4663	172392 4664	172439 4665	172486 4665	172533 4666	172580 4667	172627 4668	172674 4668
195.8	172721 4669	172768 4670	172815 4671	172862 4671	172909 4672	172956 4673	173003 4674	173050 4675	173097 4675	173144 4676
195.9	173191 4677	173238 4678	173285 4678	173333 4679	173380 4680	173427 4680	173474 4681	173521 4682	173569 4683	173616 4683

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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196.0	173663 4684	173710 4685	173758 4686	173805 4686	173852 4687	173899 4688	173947 4689	173994 4690	174041 4690	174089 4691
196.1	174136 4692	174183 4693	174231 4693	174278 4694	174326 4695	174373 4695	174420 4696	174468 4697	174515 4698	174563 4698
196.2	174610 4699	174657 4700	174705 4701	174752 4701	174800 4702	174847 4703	174894 4704	174942 4705	174989 4705	175037 4706
196.3	175084 4707	175132 4708	175179 4709	175226 4709	175274 4710	175322 4711	175369 4712	175416 4713	175464 4713	175512 4714
196.4	175559 4715	175607 4716	175654 4717	175702 4717	175749 4718	175797 4719	175845 4720	175892 4721	175940 4721	175987 4722
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196.5	176035 4723	176083 4724	176130 4724	176178 4725	176225 4726	176273 4726	176321 4727	176368 4728	176416 4729	176463 4729
196.6	176511 4730	176559 4731	176606 4732	176654 4732	176702 4733	176750 4734	176797 4735	176845 4736	176893 4736	176940 4737
196.7	176988 4738	177036 4739	177084 4740	177131 4740	177179 4741	177227 4742	177275 4743	177323 4744	177370 4744	177418 4745
196.8	177466 4746	177514 4747	177562 4747	177610 4748	177658 4749	177705 4749	177753 4750	177801 4751	177849 4752	177897 4752
196.9	177945 4753	177993 4754	178041 4755	178089 4755	178137 4756	178184 4757	178232 4758	178280 4759	178328 4759	178376 4760
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197.0	178424 4761	178472 4762	178520 4763	178568 4763	178616 4764	178665 4765	178713 4766	178761 4767	178809 4767	178857 4768
197.1	178905 4769	178953 4770	179001 4771	179049 4771	179097 4772	179146 4773	179194 4774	179242 4775	179290 4775	179338 4776
197.2	179386 4777	179434 4778	179482 4778	179531 4779	179579 4780	179627 4780	179675 4781	179723 4782	179772 4783	179820 4783
197.3	179868 4784	179916 4785	179965 4786	180013 4786	180061 4787	180109 4788	180158 4789	180206 4790	180254 4790	180303 4791
197.4	180351 4792	180399 4793	180448 4794	180496 4794	180545 4795	180593 4796	180641 4797	180690 4798	180738 4798	180787 4799
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197.5	180835 4800	180883 4801	180932 4802	180980 4802	181029 4803	181077 4804	181125 4805	181174 4806	181222 4806	181271 4807
197.6	181319 4808	181368 4809	181416 4810	181464 4810	181513 4811	181562 4812	181610 4813	181658 4814	181707 4814	181756 4815
197.7	181804 4816	181853 4817	181901 4817	181950 4818	181998 4819	182047 4819	182096 4820	182144 4821	182193 4822	182241 4822
197.8	182290 4823	182339 4824	182387 4825	182436 4825	182484 4826	182533 4827	182582 4828	182630 4829	182679 4829	182727 4830
197.9	182776 4831	182825 4832	182873 4833	182922 4833	182971 4834	183020 4835	183068 4836	183117 4837	183166 4837	183214 4838
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198.0	183263 4839	183312 4840	183361 4841	183410 4841	183459 4842	183507 4843	183556 4844	183605 4845	183654 4845	183703 4846

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
198.1	183752 4847	183801 4848	183850 4849	183899 4849	183948 4850	183996 4851	184045 4852	184094 4853	184143 4853	184192 4854
198.2	184241 4855	184290 4856	184339 4856	184388 4857	184437 4858	184486 4858	184535 4859	184584 4860	184633 4861	184682 4861
198.3	184731 4862	184780 4863	184829 4864	184878 4864	184927 4865	184976 4866	185025 4867	185074 4868	185123 4868	185172 4869
198.4	185221 4870	185270 4871	185319 4872	185369 4872	185418 4873	185467 4874	185516 4875	185565 4876	185615 4876	185664 4877
198.5	185713 4878	185762 4879	185811 4880	185861 4880	185910 4881	185959 4882	186008 4883	186057 4884	186107 4884	186156 4885
198.6	186205 4886	186254 4887	186303 4888	186353 4888	186402 4889	186451 4890	186500 4891	186549 4892	186599 4892	186648 4893
198.7	186697 4894	186746 4895	186796 4895	186845 4896	186895 4897	186944 4897	186993 4898	187043 4899	187092 4900	187142 4900
198.8	187191 4901	187240 4902	187290 4903	187339 4903	187389 4904	187438 4905	187487 4906	187537 4907	187586 4907	187636 4908
198.9	187685 4909	187734 4910	187784 4911	187834 4911	187883 4912	187932 4913	187982 4914	188032 4915	188081 4915	188130 4916
199.0	188180 4917	188230 4918	188279 4919	188329 4919	188378 4920	188428 4921	188478 4922	188527 4923	188577 4923	188626 4924
199.1	188676 4925	188726 4926	188776 4927	188825 4927	188875 4928	188925 4929	188975 4930	189025 4931	189074 4931	189124 4932
199.2	189174 4933	189224 4934	189273 4935	189323 4935	189373 4936	189423 4937	189472 4938	189522 4939	189572 4939	189621 4940
199.3	189671 4941	189721 4942	189771 4943	189821 4943	189871 4944	189920 4945	189970 4946	190020 4947	190070 4947	190120 4948
199.4	190170 4949	190220 4950	190270 4951	190320 4951	190370 4952	190419 4953	190469 4954	190519 4955	190569 4955	190619 4956
199.5	190669 4957	190719 4958	190769 4958	190819 4959	190869 4960	190919 4960	190969 4961	191019 4962	191069 4963	191119 4963
199.6	191169 4964	191219 4965	191269 4966	191319 4966	191369 4967	191420 4968	191470 4969	191520 4970	191570 4970	191620 4971
199.7	191670 4972	191720 4973	191770 4974	191820 4974	191870 4975	191921 4976	191971 4977	192021 4978	192071 4978	192121 4979
199.8	192171 4980	192221 4981	192271 4982	192322 4982	192372 4983	192422 4984	192472 4985	192522 4986	192573 4986	192623 4987
199.9	192673 4988	192723 4989	192774 4990	192824 4990	192874 4991	192924 4992	192975 4993	193025 4994	193075 4994	193126 4995
200.0	193176 4996	193226 4997	193277 4998	193327 4998	193378 4999	193428 5000	193478 5001	193529 5002	193579 5002	193630 5003
200.1	193680 5004	193730 5005	193781 5005	193832 5006	193882 5007	193932 5007	193983 5008	194034 5009	194084 5010	194134 5010

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
200.2	194185 5011	194236 5012	194286 5013	194336 5013	194387 5014	194438 5015	194488 5016	194538 5017	194589 5017	194640 5018
200.3	194690 5019	194741 5020	194791 5020	194842 5021	194892 5022	194943 5022	194994 5023	195044 5024	195095 5025	195145 5025
200.4	195196 5026	195247 5027	195297 5028	195348 5028	195399 5029	195450 5030	195500 5031	195551 5032	195602 5032	195652 5033
200.5	195703 5034	195754 5035	195804 5035	195855 5036	195906 5037	195957 5037	196007 5038	196058 5039	196109 5040	196159 5040
200.6	196210 5041	196261 5042	196312 5043	196362 5043	196413 5044	196464 5045	196515 5046	196566 5047	196616 5047	196667 5048
200.7	196718 5049	196769 5050	196820 5050	196871 5051	196922 5052	196972 5052	197023 5053	197074 5054	197125 5055	197176 5055
200.8	197227 5056	197278 5057	197329 5058	197380 5058	197431 5059	197482 5060	197533 5061	197584 5062	197635 5062	197686 5063
200.9	197737 5064	197788 5065	197839 5065	197890 5066	197941 5067	197992 5067	198043 5068	198094 5069	198145 5070	198196 5070
201.0	198247 5071	198298 5072	198349 5072	198400 5073	198451 5074	198503 5074	198554 5075	198605 5076	198656 5077	198707 5077
201.1	198758 5078	198809 5079	198860 5079	198912 5080	198963 5081	199014 5081	199065 5082	199116 5083	199168 5084	199219 5084
201.2	199270 5085	199321 5086	199372 5087	199424 5087	199475 5088	199526 5089	199577 5090	199628 5091	199680 5091	199731 5092
201.3	199782 5093	199833 5094	199885 5094	199936 5095	199988 5096	200039 5096	200090 5097	200142 5098	200193 5099	200245 5099
201.4	200296 5100	200347 5101	200399 5101	200450 5102	200502 5103	200553 5103	200604 5104	200656 5105	200707 5106	200759 5106
201.5	200810 5107	200861 5108	200913 5108	200964 5109	201016 5110	201067 5110	201118 5111	201170 5112	201221 5113	201273 5113
201.6	201324 5114	201376 5115	201427 5115	201479 5116	201530 5117	201582 5117	201634 5118	201685 5119	201737 5120	201788 5120
201.7	201840 5121	201892 5122	201943 5123	201995 5123	202046 5124	202098 5125	202150 5126	202201 5127	202253 5127	202304 5128
201.8	202356 5129	202408 5130	202459 5130	202511 5131	202562 5132	202614 5132	202666 5133	202717 5134	202769 5135	202820 5135
201.9	202872 5136	202924 5137	202976 5137	203027 5138	203079 5139	203131 5139	203183 5140	203235 5141	203286 5142	203338 5142
202.0	203390 5143	203442 5144	203494 5144	203545 5145	203597 5146	203649 5146	203701 5147	203753 5148	203804 5149	203856 5149
202.1	203908 5150	203960 5151	204012 5152	204064 5152	204116 5153	204167 5154	204219 5155	204271 5156	204323 5156	204375 5157
202.2	204427 5158	204479 5159	204531 5159	204583 5160	204635 5161	204687 5161	204739 5162	204791 5163	204843 5164	204895 5164

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
202.3	204947 5165	204999 5166	205051 5166	205103 5167	205155 5168	205208 5168	205260 5169	205312 5170	205364 5171	205416 5171
202.4	205468 5172	205520 5173	205572 5174	205624 5174	205676 5175	205729 5176	205781 5177	205833 5178	205885 5178	205937 5179
202.5	205989 5180	206041 5181	206093 5181	206146 5182	206198 5183	206250 5183	206302 5184	206354 5185	206407 5186	206459 5186
202.6	206511 5187	206563 5188	206616 5188	206668 5189	206720 5190	206772 5190	206825 5191	206877 5192	206929 5193	206982 5193
202.7	207034 5194	207086 5195	207139 5195	207191 5196	207243 5197	207295 5197	207348 5198	207400 5199	207452 5200	207505 5200
202.8	207557 5201	207609 5202	207662 5203	207714 5203	207767 5204	207819 5205	207871 5206	207924 5207	207976 5207	208029 5208
202.9	208081 5209	208134 5210	208186 5210	208238 5211	208291 5212	208344 5212	208396 5213	208448 5214	208501 5215	208554 5215
203.0	208606 5216	208659 5217	208711 5218	208764 5218	208816 5219	208869 5220	208922 5221	208974 5222	209027 5222	209079 5223
203.1	209132 5224	209185 5225	209237 5225	209290 5226	209342 5227	209395 5227	209448 5228	209500 5229	209553 5230	209605 5230
203.2	209658 5231	209711 5232	209764 5233	209816 5233	209869 5234	209922 5235	209975 5236	210028 5237	210080 5237	210133 5238
203.3	210186 5239	210239 5240	210292 5240	210344 5241	210397 5242	210450 5242	210503 5243	210556 5244	210608 5245	210661 5245
203.4	210714 5246	210767 5247	210820 5248	210873 5248	210926 5249	210978 5250	211031 5251	211084 5252	211137 5252	211190 5253
203.5	211243 5254	211296 5255	211349 5255	211402 5256	211455 5257	211507 5257	211560 5258	211613 5259	211666 5260	211719 5260
203.6	211772 5261	211825 5262	211878 5263	211931 5263	211984 5264	212037 5265	212090 5266	212143 5267	212196 5267	212249 5268
203.7	212302 5269	212355 5270	212408 5270	212461 5271	212514 5272	212568 5272	212621 5273	212674 5274	212727 5275	212780 5275
203.8	212833 5276	212886 5277	212939 5278	212993 5278	213046 5279	213099 5280	213152 5281	213205 5282	213259 5282	213312 5283
203.9	213365 5284	213418 5285	213471 5285	213525 5286	213578 5287	213631 5287	213684 5288	213737 5289	213791 5290	213844 5290
204.0	213897 5291	213950 5292	214004 5293	214057 5293	214111 5294	214164 5295	214217 5296	214271 5297	214324 5297	214378 5298
204.1	214431 5299	214484 5300	214538 5300	214591 5301	214645 5302	214698 5302	214751 5303	214805 5304	214858 5305	214912 5305
204.2	214965 5306	215018 5307	215072 5308	215126 5308	215179 5309	215232 5310	215286 5311	215340 5312	215393 5312	215446 5313

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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204.3	215500 5314	215554 5315	215607 5316	215661 5316	215714 5317	215768 5318	215822 5319	215875 5320	215929 5320	215982 5321
204.4	216036 5322	216090 5323	216143 5324	216197 5324	216250 5325	216304 5326	216358 5327	216411 5328	216465 5328	216518 5329
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204.5	216572 5330	216626 5331	216679 5331	216733 5332	216787 5333	216841 5333	216894 5334	216948 5335	217002 5336	217055 5336
204.6	217109 5337	217163 5338	217217 5339	217270 5339	217324 5340	217378 5341	217432 5342	217486 5343	217539 5343	217593 5344
204.7	217647 5345	217701 5346	217755 5347	217809 5347	217863 5348	217916 5349	217970 5350	218024 5351	218078 5351	218132 5352
204.8	218186 5353	218240 5354	218294 5354	218348 5355	218402 5356	218455 5356	218509 5357	218563 5358	218617 5359	218671 5359
204.9	218725 5360	218779 5361	218833 5362	218887 5362	218941 5363	218995 5364	219049 5365	219103 5366	219157 5366	219211 5367
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205.0	219265 5368	219319 5369	219373 5370	219427 5370	219481 5371	219536 5372	219590 5373	219644 5374	219698 5374	219752 5375
205.1	219806 5376	219860 5377	219914 5377	219969 5378	220023 5379	220077 5379	220131 5380	220185 5381	220240 5382	220294 5382
205.2	220348 5383	220402 5384	220456 5385	220511 5385	220565 5386	220619 5387	220673 5388	220727 5389	220782 5389	220836 5390
205.3	220890 5391	220944 5392	220999 5392	221053 5393	221107 5394	221161 5394	221216 5395	221270 5396	221324 5397	221379 5397
205.4	221433 5398	221487 5399	221542 5400	221596 5400	221651 5401	221705 5402	221759 5403	221814 5404	221868 5404	221923 5405
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205.5	221977 5406	222032 5407	222086 5407	222140 5408	222195 5409	222250 5409	222304 5410	222358 5411	222413 5412	222468 5412
205.6	222522 5413	222576 5414	222631 5415	222686 5415	222740 5416	222794 5417	222849 5418	222904 5419	222958 5419	223012 5420
205.7	223067 5421	223122 5422	223176 5422	223231 5423	223286 5424	223341 5424	223395 5425	223450 5426	223505 5427	223559 5427
205.8	223614 5428	223669 5429	223723 5430	223778 5430	223832 5431	223887 5432	223942 5433	223996 5434	224051 5434	224105 5435
205.9	224160 5436	224215 5437	224270 5437	224324 5438	224379 5439	224434 5439	224489 5440	224544 5441	224598 5442	224653 5442
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206.0	224708 5443	224763 5444	224818 5444	224872 5445	224927 5446	224982 5446	225037 5447	225092 5448	225146 5449	225201 5449
206.1	225256 5450	225311 5451	225366 5452	225421 5452	225476 5453	225531 5454	225586 5455	225641 5456	225696 5456	225751 5457
206.2	225806 5458	225861 5459	225916 5459	225971 5460	226026 5461	226080 5461	226135 5462	226190 5463	226245 5464	226300 5464
206.3	226355 5465	226410 5466	226465 5467	226520 5467	226575 5468	226631 5469	226686 5470	226741 5471	226796 5471	226851 5472

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
206.4	226906 5473	226961 5474	227016 5474	227071 5475	227126 5476	227182 5476	227237 5477	227292 5478	227347 5479	227402 5479
206.5	227457 5480	227512 5481	227567 5481	227623 5482	227678 5483	227733 5483	227788 5484	227843 5485	227899 5486	227954 5486
206.6	228009 5487	228064 5488	228120 5489	228175 5489	228230 5490	228285 5491	228341 5492	228396 5493	228451 5493	228507 5494
206.7	228562 5495	228617 5496	228673 5496	228728 5497	228784 5498	228839 5498	228894 5499	228950 5500	229005 5501	229061 5501
206.8	229116 5502	229171 5503	229227 5504	229282 5504	229338 5505	229393 5506	229448 5507	229504 5508	229559 5508	229615 5509
206.9	229670 5510	229726 5511	229781 5511	229836 5512	229892 5513	229948 5513	230003 5514	230058 5515	230114 5516	230170 5516
207.0	230225 5517	230281 5518	230336 5518	230392 5519	230447 5520	230503 5520	230559 5521	230614 5522	230670 5523	230725 5523
207.1	230781 5524	230837 5525	230892 5526	230948 5526	231003 5527	231059 5528	231115 5529	231170 5530	231226 5530	231281 5531
207.2	231337 5532	231393 5533	231449 5533	231504 5534	231560 5535	231616 5535	231672 5536	231728 5537	231783 5538	231839 5538
207.3	231895 5539	231951 5540	232007 5541	232062 5541	232118 5542	232174 5543	232230 5544	232286 5545	232341 5545	232397 5546
207.4	232453 5547	232509 5548	232565 5548	232620 5549	232676 5550	232732 5550	232788 5551	232844 5552	232899 5553	232955 5553
207.5	233011 5554	233067 5555	233123 5555	233179 5556	233235 5557	233291 5557	233347 5558	233403 5559	233459 5560	233515 5560
207.6	233571 5561	233627 5562	233683 5563	233739 5563	233795 5564	233851 5565	233907 5566	233963 5567	234019 5567	234075 5568
207.7	234131 5569	234187 5570	234243 5570	234299 5571	234355 5572	234412 5572	234468 5573	234524 5574	234580 5575	234636 5575
207.8	234692 5576	234748 5577	234804 5578	234861 5578	234917 5579	234973 5580	235029 5581	235085 5582	235142 5582	235198 5583
207.9	235254 5584	235310 5585	235366 5585	235423 5586	235479 5587	235535 5587	235591 5588	235647 5589	235704 5590	235760 5590
208.0	235816 5591	235872 5592	235929 5593	235985 5593	236042 5594	236098 5595	236154 5596	236211 5597	236267 5597	236324 5598
208.1	236380 5599	236436 5600	236493 5601	236549 5601	236606 5602	236662 5603	236718 5604	236775 5605	236831 5605	236888 5606
208.2	236944 5607	237000 5608	237057 5608	237114 5609	237170 5610	237226 5610	237283 5611	237340 5612	237396 5613	237452 5613
208.3	237509 5614	237566 5615	237622 5616	237679 5616	237735 5617	237792 5618	237849 5619	237905 5620	237962 5620	238018 5621
208.4	238075 5622	238132 5623	238188 5624	238245 5624	238301 5625	238358 5626	238415 5627	238471 5628	238528 5628	238584 5629

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
208.5	238641 5630	238698 5631	238755 5632	238811 5632	238868 5633	238925 5634	238982 5635	239039 5636	239095 5636	239152 5637
208.6	239209 5638	239266 5639	239323 5640	239379 5640	239436 5641	239493 5642	239550 5643	239607 5644	239663 5644	239720 5645
208.7	239777 5646	239834 5647	239891 5647	239947 5648	240004 5649	240061 5649	240118 5650	240175 5651	240231 5652	240288 5652
208.8	240345 5653	240402 5654	240459 5655	240516 5655	240573 5656	240630 5657	240687 5658	240744 5659	240801 5659	240858 5660
208.9	240915 5661	240972 5662	241029 5663	241086 5663	241143 5664	241200 5665	241257 5666	241314 5667	241371 5667	241428 5668
209.0	241485 5669	241542 5670	241599 5671	241656 5671	241713 5672	241771 5673	241828 5674	241885 5675	241942 5675	241999 5676
209.1	242056 5677	242113 5678	242170 5678	242228 5679	242285 5680	242342 5680	242399 5681	242456 5682	242514 5683	242571 5683
209.2	242628 5684	242685 5685	242743 5686	242800 5686	242857 5687	242914 5688	242972 5689	243029 5690	243086 5690	243144 5691
209.3	243201 5692	243258 5693	243316 5694	243373 5694	243431 5695	243488 5696	243545 5697	243603 5698	243660 5698	243718 5699
209.4	243775 5700	243832 5701	243890 5702	243947 5702	244005 5703	244062 5704	244119 5705	244177 5706	244234 5706	244292 5707
209.5	244349 5708	244406 5709	244464 5709	244522 5710	244579 5711	244636 5711	244694 5712	244752 5713	244809 5714	244866 5714
209.6	244924 5715	244982 5716	245039 5717	245096 5717	245154 5718	245212 5719	245269 5720	245326 5721	245384 5721	245442 5722
209.7	245499 5723	245557 5724	245614 5725	245672 5725	245730 5726	245788 5727	245845 5728	245903 5729	245961 5729	246018 5730
209.8	246076 5731	246134 5732	246191 5732	246249 5733	246307 5734	246365 5734	246422 5735	246480 5736	246538 5737	246595 5737
209.9	246653 5738	246711 5739	246769 5740	246826 5740	246884 5741	246942 5742	247000 5743	247058 5744	247115 5744	247173 5745
210.0	247231 5746	247289 5747	247347 5748	247405 5748	247463 5749	247520 5750	247578 5751	247636 5752	247694 5752	247752 5753
210.1	247810 5754	247868 5755	247926 5756	247984 5756	248042 5757	248100 5758	248158 5759	248216 5760	248274 5760	248332 5761
210.2	248390 5762	248448 5763	248506 5763	248564 5764	248622 5765	248680 5765	248738 5766	248796 5767	248854 5768	248912 5768
210.3	248970 5769	249028 5770	249086 5771	249145 5771	249203 5772	249261 5773	249319 5774	249377 5775	249436 5775	249494 5776
210.4	249552 5777	249610 5778	249668 5779	249727 5779	249785 5780	249843 5781	249901 5782	249959 5783	250018 5783	250076 5784
210.5	250134 5785	250192 5786	250251 5787	250309 5787	250367 5788	250425 5789	250484 5790	250542 5791	250600 5791	250659 5792

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
210.6	250717 5793	250775 5794	250834 5795	250892 5795	250950 5796	251008 5797	251067 5798	251125 5799	251183 5799	251242 5800
210.7	251300 5801	251358 5802	251417 5802	251475 5803	251534 5804	251592 5804	251650 5805	251709 5806	251767 5807	251826 5807
210.8	251884 5808	251942 5809	252001 5810	252060 5810	252118 5811	252176 5812	252235 5813	252294 5814	252352 5814	252410 5815
210.9	252469 5816	252528 5817	252586 5818	252645 5818	252703 5819	252762 5820	252821 5821	252879 5822	252938 5822	252996 5823
211.0	253055 5824	253114 5825	253172 5826	253231 5826	253290 5827	253349 5828	253407 5829	253466 5830	253525 5830	253583 5831
211.1	253642 5832	253701 5833	253759 5833	253818 5834	253877 5835	253936 5835	253994 5836	254053 5837	254112 5838	254170 5838
211.2	254229 5839	254288 5840	254347 5841	254406 5841	254465 5842	254523 5843	254582 5844	254641 5845	254700 5845	254759 5846
211.3	254818 5847	254877 5848	254936 5849	254995 5849	255054 5850	255112 5851	255171 5852	255230 5853	255289 5853	255348 5854
211.4	255407 5855	255466 5856	255525 5857	255584 5857	255643 5858	255701 5859	255760 5860	255819 5861	255878 5861	255937 5862
211.5	255996 5863	256055 5864	256114 5864	256173 5865	256232 5866	256292 5866	256351 5867	256410 5868	256469 5869	256528 5869
211.6	256587 5870	256646 5871	256705 5872	256764 5872	256823 5873	256883 5874	256942 5875	257001 5876	257060 5876	257119 5877
211.7	257178 5878	257237 5879	257296 5880	257356 5880	257415 5881	257474 5882	257533 5883	257592 5884	257652 5884	257711 5885
211.8	257770 5886	257829 5887	257889 5887	257948 5888	258007 5889	258066 5889	258126 5890	258185 5891	258244 5892	258304 5892
211.9	258363 5893	258422 5894	258482 5895	258541 5895	258600 5896	258659 5897	258719 5898	258778 5899	258837 5899	258897 5900
212.0	258956 5901	259016 5902	259075 5903	259134 5903	259194 5904	259254 5905	259313 5906	259372 5907	259432 5907	259492 5908
212.1	259551 5909	259610 5910	259670 5911	259730 5911	259789 5912	259848 5913	259908 5914	259968 5915	260027 5915	260086 5916
212.2	260146 5917	260206 5918	260265 5919	260325 5919	260384 5920	260444 5921	260504 5922	260563 5923	260623 5923	260682 5924
212.3	260742 5925	260802 5926	260861 5927	260921 5927	260981 5928	261041 5929	261100 5930	261160 5931	261220 5931	261279 5932
212.4	261339 5933	261399 5934	261459 5935	261518 5935	261578 5936	261638 5937	261698 5938	261758 5939	261817 5939	261877 5940
212.5	261937 5941	261997 5942	262057 5942	262116 5943	262176 5944	262236 5944	262296 5945	262356 5946	262415 5947	262475 5947

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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212.6	262535 5948	262595 5949	262655 5950	262715 5950	262775 5951	262835 5952	262894 5953	262954 5954	263014 5954	263074 5955
212.7	263134 5956	263194 5957	263254 5958	263314 5958	263374 5959	263434 5960	263494 5961	263554 5962	263614 5962	263674 5963
212.8	263734 5964	263794 5965	263854 5966	263914 5966	263974 5967	264034 5968	264095 5969	264155 5970	264215 5970	264275 5971
212.9	264335 5972	264395 5973	264455 5974	264515 5974	264575 5975	264635 5976	264696 5977	264756 5978	264816 5978	264876 5979
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213.0	264936 5980	264996 5981	265056 5981	265117 5982	265177 5983	265237 5983	265297 5984	265357 5985	265418 5986	265478 5986
213.1	265538 5987	265598 5988	265658 5988	265719 5989	265779 5990	265839 5990	265899 5991	265959 5992	266020 5993	266080 5993
213.2	266140 5994	266200 5995	266261 5996	266321 5996	266382 5997	266442 5998	266502 5999	266563 6000	266623 6000	266684 6001
213.3	266744 6002	266804 6003	266865 6003	266925 6004	266986 6005	267046 6005	267106 6006	267167 6007	267227 6008	267288 6008
213.4	267348 6009	267408 6010	267469 6010	267530 6011	267590 6012	267650 6012	267711 6013	267772 6014	267832 6015	267892 6015
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213.5	267953 6016	268014 6017	268074 6017	268134 6018	268195 6019	268256 6019	268316 6020	268376 6021	268437 6022	268498 6022
213.6	268558 6023	268619 6024	268679 6024	268740 6025	268801 6026	268862 6026	268922 6027	268983 6028	269044 6029	269104 6029
213.7	269165 6030	269226 6031	269286 6032	269347 6032	269408 6033	269469 6034	269529 6035	269590 6036	269651 6036	269711 6037
213.8	269772 6038	269833 6039	269893 6039	269954 6040	270015 6041	270076 6041	270136 6042	270197 6043	270258 6044	270318 6044
213.9	270379 6045	270440 6046	270501 6046	270562 6047	270623 6048	270684 6048	270744 6049	270805 6050	270866 6051	270927 6051
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214.0	270988 6052	271049 6053	271110 6053	271171 6054	271232 6055	271293 6055	271353 6056	271414 6057	271475 6058	271536 6058
214.1	271597 6059	271658 6060	271719 6060	271780 6061	271841 6062	271902 6062	271963 6063	272024 6064	272085 6065	272146 6065
214.2	272207 6066	272268 6067	272329 6067	272390 6068	272451 6069	272512 6069	272573 6070	272634 6071	272695 6072	272756 6072
214.3	272817 6073	272878 6074	272939 6074	273000 6075	273061 6076	273122 6076	273184 6077	273245 6078	273306 6079	273367 6079
214.4	273428 6080	273489 6081	273550 6082	273612 6082	273673 6083	273734 6084	273795 6085	273856 6086	273918 6086	273979 6087
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214.5	274040 6088	274101 6089	274163 6089	274224 6090	274285 6091	274346 6091	274408 6092	274469 6093	274530 6094	274592 6094
214.6	274653 6095	274714 6096	274776 6096	274837 6097	274898 6098	274959 6098	275021 6099	275082 6100	275143 6101	275205 6101

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
214.7	275266 6102	275327 6103	275389 6103	275450 6104	275512 6105	275573 6105	275634 6106	275696 6107	275757 6108	275819 6108
214.8	275880 6109	275942 6110	276003 6110	276064 6111	276126 6112	276188 6112	276249 6113	276310 6114	276372 6115	276434 6115
214.9	276495 6116	276557 6117	276618 6117	276680 6118	276741 6119	276803 6119	276865 6120	276926 6121	276988 6122	277049 6122
215.0	277111 6123	277173 6124	277234 6124	277296 6125	277357 6126	277419 6126	277481 6127	277542 6128	277604 6129	277665 6129
215.1	277727 6130	277789 6131	277850 6131	277912 6132	277973 6133	278035 6133	278097 6134	278158 6135	278220 6136	278281 6136
215.2	278343 6137	278405 6138	278466 6138	278528 6139	278590 6139	278652 6140	278713 6141	278775 6141	278837 6142	278898 6142
215.3	278960 6143	279022 6144	279084 6144	279145 6145	279207 6146	279269 6146	279331 6147	279393 6148	279454 6149	279516 6149
215.4	279578 6150	279640 6151	279702 6151	279764 6152	279826 6153	279888 6153	279949 6154	280011 6155	280073 6156	280135 6156
215.5	280197 6157	280259 6158	280321 6158	280383 6159	280445 6160	280507 6160	280569 6161	280631 6162	280693 6163	280755 6163
215.6	280817 6164	280879 6165	280941 6165	281003 6166	281065 6167	281127 6167	281189 6168	281251 6169	281313 6170	281375 6170
215.7	281437 6171	281499 6172	281561 6172	281623 6173	281685 6173	281747 6174	281810 6175	281872 6175	281934 6176	281996 6176
215.8	282058 6177	282120 6178	282182 6178	282245 6179	282307 6180	282369 6180	282431 6181	282493 6182	282556 6183	282618 6183
215.9	282680 6184	282742 6185	282804 6185	282867 6186	282929 6187	282991 6187	283053 6188	283115 6189	283178 6190	283240 6190
216.0	283302 6191	283364 6192	283427 6192	283489 6193	283551 6194	283613 6194	283676 6195	283738 6196	283800 6197	283863 6197
216.1	283925 6198	283987 6199	284050 6199	284112 6200	284174 6201	284236 6201	284299 6202	284361 6203	284423 6204	284486 6204
216.2	284548 6205	284610 6206	284673 6206	284735 6207	284798 6208	284860 6208	284922 6209	284985 6210	285047 6211	285110 6211
216.3	285172 6212	285234 6213	285297 6213	285360 6214	285422 6215	285484 6215	285547 6216	285610 6217	285672 6218	285734 6218
216.4	285797 6219	285860 6220	285922 6220	285985 6221	286047 6222	286110 6222	286173 6223	286235 6224	286298 6225	286360 6225
216.5	286423 6226	286486 6227	286548 6227	286611 6228	286673 6228	286736 6229	286799 6230	286861 6230	286924 6231	286986 6231
216.6	287049 6232	287112 6233	287174 6233	287237 6234	287300 6235	287363 6235	287425 6236	287488 6237	287551 6238	287613 6238
216.7	287676 6239	287739 6240	287802 6240	287864 6241	287927 6242	287990 6242	288053 6243	288116 6244	288178 6245	288241 6245

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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216.8	288304 6246	288367 6247	288430 6247	288493 6248	288556 6249	288619 6249	288681 6250	288744 6251	288807 6252	288870 6252
216.9	288933 6253	288996 6254	289059 6254	289122 6255	289185 6256	289248 6256	289310 6257	289373 6258	289436 6259	289499 6259
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217.0	289562 6260	289625 6261	289688 6261	289751 6262	289814 6263	289877 6263	289940 6264	290003 6265	290066 6266	290129 6266
217.1	290192 6267	290255 6268	290318 6268	290381 6269	290444 6270	290507 6270	290570 6271	290633 6272	290696 6273	290759 6273
217.2	290822 6274	290885 6275	290948 6275	291011 6276	291074 6277	291137 6277	291201 6278	291264 6279	291327 6280	291390 6280
217.3	291453 6281	291516 6282	291579 6282	291643 6283	291706 6284	291769 6284	291832 6285	291895 6286	291959 6287	292022 6287
217.4	292085 6288	292148 6289	292211 6289	292275 6290	292338 6291	292401 6291	292464 6292	292527 6293	292591 6294	292654 6294
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217.5	292717 6295	292780 6296	292844 6296	292907 6297	292970 6297	293033 6298	293097 6299	293160 6299	293223 6300	293287 6300
217.6	293350 6301	293413 6302	293477 6302	293540 6303	293604 6304	293667 6304	293730 6305	293794 6306	293857 6307	293921 6307
217.7	293984 6308	294048 6309	294111 6309	294174 6310	294238 6311	294302 6311	294365 6312	294428 6313	294492 6314	294556 6314
217.8	294619 6315	294683 6316	294746 6316	294810 6317	294873 6318	294937 6318	295001 6319	295064 6320	295128 6321	295191 6321
217.9	295255 6322	295319 6323	295382 6323	295446 6324	295509 6325	295573 6325	295637 6326	295700 6327	295764 6328	295827 6328
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218.0	295891 6329	295955 6330	296018 6330	296082 6331	296145 6332	296209 6332	296273 6333	296336 6334	296400 6335	296463 6335
218.1	296527 6336	296591 6337	296654 6337	296718 6338	296782 6338	296846 6339	296909 6340	296973 6340	297037 6341	297100 6341
218.2	297164 6342	297228 6343	297291 6343	297355 6344	297419 6345	297483 6345	297546 6346	297610 6347	297674 6348	297737 6348
218.3	297801 6349	297865 6350	297929 6350	297993 6351	298057 6351	298121 6352	298184 6353	298248 6353	298312 6354	298376 6354
218.4	298440 6355	298504 6356	298568 6356	298632 6357	298696 6358	298760 6358	298823 6359	298887 6360	298951 6361	299015 6361
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218.5	299079 6362	299143 6363	299207 6363	299271 6364	299335 6364	299399 6365	299462 6366	299526 6366	299590 6367	299654 6367
218.6	299718 6368	299782 6369	299846 6369	299910 6370	299974 6371	300038 6371	300103 6372	300167 6373	300231 6374	300295 6374
218.7	300359 6375	300423 6376	300487 6376	300551 6377	300615 6377	300679 6378	300744 6379	300808 6379	300872 6380	300936 6380
218.8	301000 6381	301064 6382	301128 6382	301193 6383	301257 6384	301321 6384	301385 6385	301449 6386	301514 6387	301578 6387

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
218.9	301642 6388	301706 6389	301771 6389	301835 6390	301899 6390	301963 6391	302028 6392	302092 6392	302156 6393	302221 6393
219.0	302285 6394	302349 6395	302414 6395	302478 6396	302542 6397	302606 6397	302671 6398	302735 6399	302799 6400	302864 6400
219.1	302928 6401	302992 6402	303057 6402	303121 6403	303185 6403	303249 6404	303314 6405	303378 6405	303442 6406	303507 6406
219.2	303571 6407	303635 6408	303700 6408	303764 6409	303829 6410	303893 6410	303957 6411	304022 6412	304086 6413	304151 6413
219.3	304215 6414	304280 6415	304344 6415	304408 6416	304473 6416	304538 6417	304602 6418	304666 6418	304731 6419	304796 6419
219.4	304860 6420	304924 6421	304989 6421	305054 6422	305118 6423	305182 6423	305247 6424	305312 6425	305376 6426	305440 6426
219.5	305505 6427	305570 6428	305634 6428	305699 6429	305764 6429	305829 6430	305893 6431	305958 6431	306023 6432	306087 6432
219.6	306152 6433	306217 6434	306281 6434	306346 6435	306411 6436	306476 6436	306540 6437	306605 6438	306670 6439	306734 6439
219.7	306799 6440	306864 6441	306928 6441	306993 6442	307058 6442	307123 6443	307187 6444	307252 6444	307317 6445	307381 6445
219.8	307446 6446	307511 6447	307576 6447	307641 6448	307706 6449	307771 6449	307835 6450	307900 6451	307965 6452	308030 6452
219.9	308095 6453	308160 6454	308225 6454	308290 6455	308355 6455	308420 6456	308484 6457	308549 6457	308614 6458	308679 6458
220.0	308744 6459	308809 6460	308874 6460	308939 6461	309004 6462	309069 6462	309133 6463	309198 6464	309263 6465	309328 6465
220.1	309393 6466	309458 6467	309523 6467	309588 6468	309653 6468	309718 6469	309783 6470	309848 6470	309913 6471	309978 6471
220.2	310043 6472	310108 6473	310173 6473	310238 6474	310303 6475	310368 6475	310433 6476	310498 6477	310563 6478	310628 6478
220.3	310693 6479	310758 6480	310823 6480	310889 6481	310954 6481	311019 6482	311084 6483	311149 6483	311215 6484	311280 6484
220.4	311345 6485	311410 6486	311475 6486	311541 6487	311606 6488	311671 6488	311736 6489	311801 6490	311867 6491	311932 6491
220.5	311997 6492	312062 6493	312128 6493	312193 6494	312258 6494	312323 6495	312389 6496	312454 6496	312519 6497	312585 6497
220.6	312650 6498	312715 6499	312781 6499	312846 6500	312911 6501	312976 6501	313042 6502	313107 6503	313172 6504	313238 6504
220.7	313303 6505	313368 6506	313434 6506	313499 6507	313565 6507	313630 6508	313695 6509	313761 6509	313826 6510	313892 6510
220.8	313957 6511	314022 6512	314088 6512	314154 6513	314219 6514	314284 6514	314350 6515	314416 6516	314481 6517	314546 6517

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
220.9	314612 6518	314678 6519	314743 6519	314809 6520	314874 6520	314940 6521	315006 6522	315071 6522	315137 6523	315202 6523
221.0	315268 6524	315334 6525	315399 6525	315465 6526	315530 6527	315596 6527	315662 6528	315727 6529	315793 6530	315858 6530
221.1	315924 6531	315990 6532	316055 6532	316121 6533	316186 6533	316252 6534	316318 6535	316383 6535	316449 6536	316514 6536
221.2	316580 6537	316646 6538	316711 6538	316777 6539	316843 6540	316909 6540	316974 6541	317040 6542	317106 6543	317171 6543
221.3	317237 6544	317303 6545	317369 6545	317434 6546	317500 6546	317566 6547	317632 6548	317698 6548	317763 6549	317829 6549
221.4	317895 6550	317961 6551	318027 6551	318093 6552	318159 6553	318225 6553	318290 6554	318356 6555	318422 6556	318488 6556
221.5	318554 6557	318620 6558	318686 6558	318752 6559	318818 6560	318884 6560	318949 6561	319015 6562	319081 6563	319147 6563
221.6	319213 6564	319279 6565	319345 6565	319411 6566	319477 6566	319543 6567	319609 6568	319675 6568	319741 6569	319807 6569
221.7	319873 6570	319939 6571	320005 6571	320071 6572	320137 6573	320203 6573	320270 6574	320336 6575	320402 6576	320468 6576
221.8	320534 6577	320600 6578	320666 6578	320733 6579	320799 6579	320865 6580	320931 6581	320997 6581	321064 6582	321130 6582
221.9	321196 6583	321262 6584	321328 6584	321395 6585	321461 6586	321527 6586	321593 6587	321659 6588	321726 6589	321792 6589
222.0	321858 6590	321924 6591	321990 6591	322057 6592	322123 6592	322189 6593	322255 6594	322321 6594	322388 6595	322454 6595
222.1	322520 6596	322586 6597	322653 6597	322719 6598	322785 6599	322851 6599	322918 6600	322984 6601	323050 6602	323117 6602
222.2	323183 6603	323249 6604	323316 6604	323382 6605	323448 6605	323514 6606	323581 6607	323647 6607	323713 6608	323780 6608
222.3	323846 6609	323912 6610	323979 6610	324046 6611	324112 6612	324178 6612	324245 6613	324312 6614	324378 6615	324444 6615
222.4	324511 6616	324578 6617	324644 6617	324710 6618	324777 6618	324844 6619	324910 6620	324976 6620	325043 6621	325110 6621
222.5	325176 6622	325243 6623	325309 6623	325376 6624	325442 6624	325509 6625	325576 6626	325642 6626	325709 6627	325775 6627
222.6	325842 6628	325909 6629	325975 6629	326042 6630	326108 6631	326175 6631	326242 6632	326308 6633	326375 6634	326441 6634
222.7	326508 6635	326575 6636	326641 6636	326708 6637	326775 6637	326842 6638	326908 6639	326975 6639	327042 6640	327108 6640
222.8	327175 6641	327242 6642	327309 6642	327375 6643	327442 6644	327509 6644	327576 6645	327643 6646	327709 6647	327776 6647
222.9	327843 6648	327910 6649	327977 6649	328044 6650	328111 6650	328178 6651	328244 6652	328311 6652	328378 6653	328445 6653

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
223.0	328512 6654	328579 6655	328646 6655	328712 6656	328779 6656	328846 6657	328913 6658	328980 6658	329046 6659	329113 6659
223.1	329180 6660	329247 6661	329314 6661	329381 6662	329448 6663	329515 6663	329582 6664	329649 6665	329716 6666	329783 6666
223.2	329850 6667	329917 6668	329984 6668	330051 6669	330118 6669	330185 6670	330251 6671	330318 6671	330385 6672	330452 6672
223.3	330519 6673	330586 6674	330653 6674	330720 6675	330787 6675	330854 6676	330922 6677	330989 6677	331056 6678	331123 6678
223.4	331190 6679	331257 6680	331324 6680	331391 6681	331458 6682	331525 6682	331593 6683	331660 6684	331727 6685	331794 6685
223.5	331861 6686	331928 6687	331995 6687	332063 6688	332130 6688	332197 6689	332264 6690	332331 6690	332399 6691	332466 6691
223.6	332533 6692	332600 6693	332668 6693	332735 6694	332802 6694	332869 6695	332937 6696	333004 6696	333071 6697	333139 6697
223.7	333206 6698	333273 6699	333341 6699	333408 6700	333476 6700	333543 6701	333610 6702	333678 6702	333745 6703	333813 6703
223.8	333880 6704	333947 6705	334015 6705	334082 6706	334150 6707	334217 6707	334284 6708	334352 6709	334419 6710	334487 6710
223.9	334554 6711	334622 6712	334689 6712	334756 6713	334824 6713	334892 6714	334959 6715	335026 6715	335094 6716	335162 6716
224.0	335229 6717	335296 6718	335364 6718	335432 6719	335499 6719	335566 6720	335634 6721	335702 6721	335769 6722	335836 6722
224.1	335904 6723	335972 6724	336039 6724	336106 6725	336174 6726	336242 6726	336309 6727	336376 6728	336444 6729	336512 6729
224.2	336579 6730	336647 6731	336714 6731	336782 6732	336850 6732	336918 6733	336985 6734	337053 6734	337121 6735	337188 6735
224.3	337256 6736	337324 6737	337391 6737	337459 6738	337527 6739	337595 6739	337662 6740	337730 6741	337798 6742	337865 6742
224.4	337933 6743	338001 6744	338068 6744	338136 6745	338204 6745	338272 6746	338339 6747	338407 6747	338475 6748	338542 6748
224.5	338610 6749	338678 6750	338746 6750	338814 6751	338882 6751	338950 6752	339017 6753	339085 6753	339153 6754	339221 6754
224.6	339289 6755	339357 6756	339425 6756	339493 6757	339561 6758	339629 6758	339696 6759	339764 6760	339832 6761	339900 6761
224.7	339968 6762	340036 6763	340104 6763	340172 6764	340240 6764	340308 6765	340376 6766	340444 6766	340512 6767	340580 6767
224.8	340648 6768	340716 6769	340784 6769	340852 6770	340920 6771	340988 6771	341057 6772	341125 6773	341193 6774	341261 6774
224.9	341329 6775	341397 6776	341465 6776	341533 6777	341601 6777	341669 6778	341738 6779	341806 6779	341874 6780	341942 6780
225.0	342010 6781	342078 6782	342146 6782	342214 6783	342282 6783	342350 6784	342419 6785	342487 6785	342555 6786	342623 6786

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
225.1	342691 6787	342759 6788	342827 6788	342896 6789	342964 6789	343032 6790	343100 6791	343168 6791	343237 6792	343305 6792
225.2	343373 6793	343441 6794	343509 6794	343578 6795	343646 6796	343714 6796	343782 6797	343850 6798	343919 6799	343987 6799
225.3	344055 6800	344123 6801	344192 6801	344260 6802	344328 6802	344396 6803	344465 6804	344533 6804	344601 6805	344670 6805
225.4	344738 6806	344806 6807	344875 6807	344943 6808	345012 6808	345080 6809	345148 6810	345217 6810	345285 6811	345354 6811
225.5	345422 6812	345490 6813	345559 6813	345628 6814	345696 6814	345764 6815	345833 6816	345902 6816	345970 6817	346038 6817
225.6	346107 6818	346176 6819	346244 6819	346312 6820	346381 6820	346450 6821	346518 6822	346586 6822	346655 6823	346724 6823
225.7	346792 6824	346861 6825	346929 6825	346998 6826	347067 6827	347136 6827	347204 6828	347273 6829	347342 6830	347410 6830
225.8	347479 6831	347548 6832	347616 6832	347685 6833	347753 6833	347822 6834	347891 6835	347959 6835	348028 6836	348096 6836
225.9	348165 6837	348234 6838	348303 6838	348371 6839	348440 6839	348509 6840	348578 6841	348647 6841	348715 6842	348784 6842
226.0	348853 6843	348922 6844	348990 6844	349059 6845	349128 6845	349197 6846	349265 6847	349334 6847	349403 6848	349471 6848
226.1	349540 6849	349609 6850	349678 6850	349746 6851	349815 6851	349884 6852	349953 6853	350022 6853	350090 6854	350159 6854
226.2	350228 6855	350297 6856	350366 6856	350435 6857	350504 6858	350573 6858	350641 6859	350710 6860	350779 6861	350848 6861
226.3	350917 6862	350986 6863	351055 6863	351124 6864	351193 6864	351262 6865	351330 6866	351399 6866	351468 6867	351537 6867
226.4	351606 6868	351675 6869	351744 6869	351813 6870	351882 6870	351951 6871	352020 6872	352089 6872	352158 6873	352227 6873
226.5	352296 6874	352365 6875	352434 6875	352503 6876	352572 6876	352641 6877	352711 6878	352780 6878	352849 6879	352918 6879
226.6	352987 6880	353056 6881	353125 6881	353195 6882	353264 6882	353333 6883	353402 6884	353471 6884	353541 6885	353610 6885
226.7	353679 6886	353748 6887	353817 6887	353887 6888	353956 6889	354025 6889	354094 6890	354163 6891	354233 6892	354302 6892
226.8	354371 6893	354440 6894	354510 6894	354579 6895	354648 6895	354717 6896	354787 6897	354856 6897	354925 6898	354995 6898
226.9	355064 6899	355133 6900	355203 6900	355272 6901	355342 6901	355411 6902	355480 6903	355550 6903	355619 6904	355689 6904
227.0	355758 6905	355827 6906	355897 6906	355966 6907	356036 6907	356105 6908	356174 6909	356244 6909	356313 6910	356383 6910
227.1	356452 6911	356521 6912	356591 6912	356660 6913	356730 6914	356799 6914	356868 6915	356938 6916	357007 6917	357077 6917

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
227.2	357146 6918	357216 6919	357285 6919	357354 6920	357424 6920	357494 6921	357563 6922	357632 6922	357702 6923	357772 6923
227.3	357841 6924	357911 6925	357980 6925	358050 6926	358119 6927	358189 6927	358259 6928	358328 6929	358398 6930	358467 6930
227.4	358537 6931	358607 6932	358676 6932	358746 6933	358815 6933	358885 6934	358955 6935	359024 6935	359094 6936	359163 6936
227.5	359233 6937	359303 6938	359373 6938	359442 6939	359512 6939	359582 6940	359652 6941	359722 6941	359791 6942	359861 6942
227.6	359931 6943	360001 6944	360071 6944	360140 6945	360210 6946	360280 6946	360350 6947	360420 6948	360489 6949	360559 6949
227.7	360629 6950	360699 6951	360769 6951	360838 6952	360908 6952	360978 6953	361048 6954	361118 6954	361187 6955	361257 6955
227.8	361327 6956	361397 6957	361467 6957	361537 6958	361607 6959	361677 6959	361747 6960	361817 6961	361887 6962	361957 6962
227.9	362027 6963	362097 6964	362167 6964	362237 6965	362307 6965	362377 6966	362447 6967	362517 6967	362587 6968	362657 6968
228.0	362727 6969	362797 6970	362867 6970	362937 6971	363007 6972	363077 6972	363147 6973	363217 6974	363287 6975	363357 6975
228.1	363427 6976	363497 6977	363567 6977	363637 6978	363707 6978	363777 6979	363848 6980	363918 6980	363988 6981	364058 6981
228.2	364128 6982	364198 6983	364268 6983	364339 6984	364409 6985	364479 6985	364549 6986	364619 6987	364690 6988	364760 6988
228.3	364830 6989	364900 6990	364970 6990	365041 6991	365111 6991	365181 6992	365251 6993	365321 6993	365392 6994	365462 6994
228.4	365532 6995	365602 6996	365673 6996	365743 6997	365813 6998	365883 6998	365954 6999	366024 7000	366094 7001	366165 7001
228.5	366235 7002	366305 7003	366376 7003	366446 7004	366517 7005	366587 7005	366657 7006	366728 7007	366798 7008	366869 7008
228.6	366939 7009	367010 7010	367080 7010	367150 7011	367221 7011	367292 7012	367362 7013	367432 7013	367503 7014	367574 7014
228.7	367644 7015	367714 7016	367785 7016	367856 7017	367926 7018	367996 7018	368067 7019	368138 7020	368208 7021	368278 7021
228.8	368349 7022	368420 7023	368490 7023	368561 7024	368631 7024	368702 7025	368773 7026	368843 7026	368914 7027	368984 7027
228.9	369055 7028	369126 7029	369196 7029	369267 7030	369338 7031	369409 7031	369479 7032	369550 7033	369621 7034	369691 7034
229.0	369762 7035	369833 7036	369903 7036	369974 7037	370045 7038	370116 7038	370186 7039	370257 7040	370328 7041	370398 7041
229.1	370469 7042	370540 7043	370610 7043	370681 7044	370752 7044	370823 7045	370893 7046	370964 7046	371035 7047	371105 7047
229.2	371176 7048	371247 7049	371318 7049	371389 7050	371460 7051	371531 7051	371601 7052	371672 7053	371743 7054	371814 7054

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
229.3	371885 7055	371956 7056	372027 7056	372098 7057	372169 7057	372240 7058	372310 7059	372381 7059	372452 7060	372523 7060
229.4	372594 7061	372665 7062	372736 7062	372807 7063	372878 7064	372949 7064	373019 7065	373090 7066	373161 7067	373232 7067
229.5	373303 7068	373374 7069	373445 7069	373516 7070	373587 7071	373658 7071	373730 7072	373801 7073	373872 7074	373943 7074
229.6	374014 7075	374085 7076	374156 7076	374227 7077	374298 7077	374369 7078	374441 7079	374512 7079	374583 7080	374654 7080
229.7	374725 7081	374796 7082	374867 7082	374939 7083	375010 7084	375081 7084	375152 7085	375223 7086	375295 7087	375366 7087
229.8	375437 7088	375508 7089	375580 7089	375651 7090	375722 7090	375793 7091	375865 7092	375936 7092	376007 7093	376079 7093
229.9	376150 7094	376221 7095	376293 7095	376364 7096	376435 7097	376506 7097	376578 7098	376649 7099	376720 7100	376792 7100
230.0	376863 7101	376934 7102	377006 7102	377077 7103	377149 7104	377220 7104	377291 7105	377363 7106	377434 7107	377506 7107
230.1	377577 7108	377648 7109	377720 7109	377791 7110	377863 7110	377934 7111	378005 7112	378077 7112	378148 7113	378220 7113
230.2	378291 7114	378362 7115	378434 7115	378506 7116	378577 7117	378648 7117	378720 7118	378792 7119	378863 7120	378934 7120
230.3	379006 7121	379078 7122	379149 7122	379221 7123	379292 7124	379364 7124	379436 7125	379507 7126	379579 7127	379650 7127
230.4	379722 7128	379794 7129	379865 7129	379937 7130	380008 7131	380080 7131	380152 7132	380223 7133	380295 7134	380366 7134
230.5	380438 7135	380510 7136	380581 7136	380653 7137	380725 7137	380797 7138	380868 7139	380940 7139	381012 7140	381083 7140
230.6	381155 7141	381227 7142	381299 7142	381370 7143	381442 7144	381514 7144	381586 7145	381658 7146	381729 7147	381801 7147
230.7	381873 7148	381945 7149	382017 7149	382089 7150	382161 7151	382233 7151	382304 7152	382376 7153	382448 7154	382520 7154
230.8	382592 7155	382664 7156	382736 7156	382808 7157	382880 7157	382952 7158	383023 7159	383095 7159	383167 7160	383239 7160
230.9	383311 7161	383383 7162	383455 7162	383527 7163	383599 7164	383671 7164	383743 7165	383815 7166	383887 7167	383959 7167
231.0	384031 7168	384103 7169	384175 7169	384247 7170	384319 7171	384391 7171	384463 7172	384535 7173	384607 7174	384679 7174
231.1	384751 7175	384823 7176	384895 7176	384967 7177	385039 7177	385111 7178	385184 7179	385256 7179	385328 7180	385400 7180
231.2	385472 7181	385544 7182	385616 7182	385689 7183	385761 7184	385833 7184	385905 7185	385977 7186	386050 7187	386122 7187
231.3	386194 7188	386266 7189	386338 7189	386411 7190	386483 7191	386555 7191	386627 7192	386699 7193	386772 7194	386844 7194

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
231.4	386916 7195	386988 7196	387061 7196	387133 7197	387205 7198	387277 7198	387350 7199	387422 7200	387494 7201	387567 7201
231.5	387639 7202	387711 7203	387784 7203	387856 7204	387929 7204	388001 7205	388073 7206	388146 7206	388218 7207	388291 7207
231.6	388363 7208	388436 7209	388508 7209	388580 7210	388653 7211	388726 7211	388798 7212	388870 7213	388943 7214	389016 7214
231.7	389088 7215	389160 7216	389233 7216	389306 7217	389378 7218	389450 7218	389523 7219	389596 7220	389668 7221	389740 7221
231.8	389813 7222	389886 7223	389958 7223	390031 7224	390103 7224	390176 7225	390249 7226	390321 7226	390394 7227	390466 7227
231.9	390539 7228	390612 7229	390684 7229	390757 7230	390830 7231	390903 7231	390975 7232	391048 7233	391121 7234	391193 7234
232.0	391266 7235	391339 7236	391411 7236	391484 7237	391557 7238	391630 7238	391702 7239	391775 7240	391848 7241	391920 7241
232.1	391993 7242	392066 7243	392139 7243	392211 7244	392284 7245	392357 7245	392430 7246	392503 7247	392575 7248	392648 7248
232.2	392721 7249	392794 7250	392867 7250	392940 7251	393013 7252	393086 7252	393158 7253	393231 7254	393304 7255	393377 7255
232.3	393450 7256	393523 7257	393596 7257	393669 7258	393742 7259	393815 7259	393887 7260	393960 7261	394033 7262	394106 7262
232.4	394179 7263	394252 7264	394325 7264	394398 7265	394471 7266	394544 7266	394617 7267	394690 7268	394763 7269	394836 7269
232.5	394909 7270	394982 7271	395055 7271	395128 7272	395201 7272	395274 7273	395348 7274	395421 7274	395494 7275	395567 7275
232.6	395640 7276	395713 7277	395786 7277	395859 7278	395932 7279	396005 7279	396079 7280	396152 7281	396225 7282	396298 7282
232.7	396371 7283	396444 7284	396517 7284	396591 7285	396664 7286	396737 7286	396810 7287	396883 7288	396957 7289	397030 7289
232.8	397103 7290	397176 7291	397250 7291	397323 7292	397396 7293	397469 7293	397543 7294	397616 7295	397689 7296	397763 7296
232.9	397836 7297	397909 7298	397983 7298	398056 7299	398130 7300	398203 7300	398276 7301	398350 7302	398423 7303	398497 7303
233.0	398570 7304	398643 7305	398717 7305	398790 7306	398864 7307	398937 7307	399010 7308	399084 7309	399157 7310	399231 7310
233.1	399304 7311	399378 7312	399451 7312	399524 7313	399598 7314	399672 7314	399745 7315	399818 7316	399892 7317	399966 7317
233.2	400039 7318	400113 7319	400186 7319	400260 7320	400333 7321	400407 7321	400481 7322	400554 7323	400628 7324	400701 7324
233.3	400775 7325	400849 7326	400922 7326	400996 7327	401069 7328	401143 7328	401217 7329	401290 7330	401364 7331	401437 7331
233.4	401511 7332	401585 7333	401658 7333	401732 7334	401806 7335	401880 7335	401953 7336	402027 7337	402101 7338	402174 7338

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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233.5	402248 7339	402322 7340	402396 7340	402469 7341	402543 7342	402617 7342	402691 7343	402765 7344	402838 7345	402912 7345
233.6	402986 7346	403060 7347	403134 7347	403207 7348	403281 7349	403355 7349	403429 7350	403503 7351	403576 7352	403650 7352
233.7	403724 7353	403798 7354	403872 7354	403946 7355	404020 7356	404094 7356	404167 7357	404241 7358	404315 7359	404389 7359
233.8	404463 7360	404537 7361	404611 7361	404685 7362	404759 7363	404833 7363	404907 7364	404981 7365	405055 7366	405129 7366
233.9	405203 7367	405277 7368	405351 7368	405425 7369	405499 7370	405573 7370	405648 7371	405722 7372	405796 7373	405870 7373
234.0	405944 7374	406018 7375	406092 7375	406166 7376	406240 7377	406314 7377	406389 7378	406463 7379	406537 7380	406611 7380
234.1	406685 7381	406759 7382	406833 7382	406907 7383	406981 7383	407055 7384	407130 7385	407204 7385	407278 7386	407352 7386
234.2	407426 7387	407500 7388	407574 7388	407649 7389	407723 7390	407797 7390	407871 7391	407945 7392	408020 7393	408094 7393
234.3	408168 7394	408242 7395	408317 7395	408391 7396	408465 7396	408539 7397	408614 7398	408688 7398	408762 7399	408837 7399
234.4	408911 7400	408985 7401	409060 7401	409134 7402	409208 7403	409282 7403	409357 7404	409431 7405	409505 7406	409580 7406
234.5	409654 7407	409728 7408	409803 7408	409878 7409	409952 7409	410026 7410	410101 7411	410176 7411	410250 7412	410324 7412
234.6	410399 7413	410474 7414	410548 7414	410622 7415	410697 7416	410772 7416	410846 7417	410920 7418	410995 7419	411070 7419
234.7	411144 7420	411218 7421	411293 7421	411368 7422	411442 7422	411516 7423	411591 7424	411666 7424	411740 7425	411814 7425
234.8	411889 7426	411964 7427	412038 7427	412113 7428	412188 7429	412263 7429	412337 7430	412412 7431	412487 7432	412561 7432
234.9	412636 7433	412711 7434	412785 7434	412860 7435	412935 7435	413010 7436	413084 7437	413159 7437	413234 7438	413308 7438
235.0	413383 7439	413458 7440	413532 7440	413607 7441	413682 7441	413757 7442	413831 7443	413906 7443	413981 7444	414055 7444
235.1	414130 7445	414205 7446	414279 7446	414354 7447	414429 7447	414504 7448	414578 7449	414653 7449	414728 7450	414802 7450
235.2	414877 7451	414952 7452	415027 7452	415101 7453	415176 7453	415251 7454	415326 7455	415401 7455	415475 7456	415550 7456
235.3	415625 7457	415700 7458	415775 7458	415850 7459	415925 7459	416000 7460	416074 7461	416149 7461	416224 7462	416299 7462
235.4	416374 7463	416449 7464	416524 7464	416599 7465	416674 7466	416749 7466	416824 7467	416899 7468	416974 7469	417049 7469
235.5	417124 7470	417199 7471	417274 7471	417349 7472	417424 7472	417499 7473	417574 7474	417649 7474	417724 7475	417799 7475

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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
235.6	417874 7476	417949 7477	418024 7477	418099 7478	418174 7478	418249 7479	418325 7480	418400 7480	418475 7481	418550 7481
235.7	418625 7482	418700 7483	418775 7483	418851 7484	418926 7484	419001 7485	419076 7486	419151 7486	419227 7487	419302 7487
235.8	419377 7488	419452 7489	419528 7489	419603 7490	419678 7490	419753 7491	419829 7492	419904 7492	419979 7493	420055 7493
235.9	420130 7494	420205 7495	420281 7495	420356 7496	420431 7496	420506 7497	420582 7498	420657 7498	420732 7499	420808 7499
236.0	420883 7500	420958 7501	421034 7501	421109 7502	421184 7502	421259 7503	421335 7504	421410 7504	421485 7505	421561 7505
236.1	421636 7506	421711 7507	421787 7507	421862 7508	421938 7509	422013 7509	422088 7510	422164 7511	422239 7512	422315 7512
236.2	422390 7513	422465 7514	422541 7514	422616 7515	422692 7515	422767 7516	422842 7517	422918 7517	422993 7518	423069 7518
236.3	423144 7519	423220 7520	423295 7520	423371 7521	423446 7521	423522 7522	423598 7523	423673 7523	423749 7524	423824 7524
236.4	423900 7525	423976 7526	424051 7526	424127 7527	424202 7528	424278 7528	424354 7529	424429 7530	424505 7531	424580 7531
236.5	424656 7532	424732 7533	424807 7533	424883 7534	424958 7534	425034 7535	425110 7536	425185 7536	425261 7537	425336 7537
236.6	425412 7538	425488 7539	425564 7539	425639 7540	425715 7540	425791 7541	425867 7542	425943 7542	426018 7543	426094 7543
236.7	426170 7544	426246 7545	426322 7545	426397 7546	426473 7546	426549 7547	426625 7548	426701 7548	426776 7549	426852 7549
236.8	426928 7550	427004 7551	427080 7551	427155 7552	427231 7553	427307 7553	427383 7554	427459 7555	427534 7556	427610 7556
236.9	427686 7557	427762 7558	427838 7558	427914 7559	427990 7559	428066 7560	428142 7561	428218 7561	428294 7562	428370 7562
237.0	428446 7563	428522 7564	428598 7564	428674 7565	428750 7565	428826 7566	428901 7567	428977 7567	429053 7568	429129 7568
237.1	429205 7569	429281 7570	429357 7570	429433 7571	429509 7572	429585 7572	429661 7573	429737 7574	429813 7575	429889 7575
237.2	429965 7576	430041 7577	430117 7577	430193 7578	430269 7578	430345 7579	430422 7580	430498 7580	430574 7581	430650 7581
237.3	430726 7582	430802 7583	430878 7583	430955 7584	431031 7584	431107 7585	431183 7586	431259 7586	431336 7587	431412 7587
237.4	431488 7588	431564 7589	431640 7589	431717 7590	431793 7591	431869 7591	431945 7592	432021 7593	432098 7594	432174 7594
237.5	432250 7595	432326 7596	432403 7596	432479 7597	432555 7597	432631 7598	432708 7599	432784 7599	432860 7600	432937 7600
237.6	433013 7601	433089 7602	433166 7602	433242 7603	433319 7603	433395 7604	433471 7605	433548 7605	433624 7606	433701 7606

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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237.7	433777 7607	433853 7608	433930 7608	434006 7609	434083 7609	434159 7610	434235 7611	434312 7611	434388 7612	434465 7612
237.8	434541 7613	434618 7614	434694 7614	434770 7615	434847 7616	434924 7616	435000 7617	435076 7618	435153 7619	435230 7619
237.9	435306 7620	435383 7621	435459 7621	435536 7622	435612 7622	435689 7623	435766 7624	435842 7624	435919 7625	435995 7625
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238.0	436072 7626	436149 7627	436225 7627	436302 7628	436378 7628	436455 7629	436532 7630	436608 7630	436685 7631	436761 7631
238.1	436838 7632	436915 7633	436991 7633	437068 7634	437144 7634	437221 7635	437298 7636	437374 7636	437451 7637	437527 7637
238.2	437604 7638	437681 7639	437757 7639	437834 7640	437911 7641	437988 7641	438064 7642	438141 7643	438218 7644	438294 7644
238.3	438371 7645	438448 7646	438525 7646	438601 7647	438678 7647	438755 7648	438832 7649	438909 7649	438985 7650	439062 7650
238.4	439139 7651	439216 7652	439293 7652	439369 7653	439446 7653	439523 7654	439600 7655	439677 7655	439753 7656	439830 7656
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238.5	439907 7657	439984 7658	440061 7658	440138 7659	440215 7659	440292 7660	440368 7661	440445 7661	440522 7662	440599 7662
238.6	440676 7663	440753 7664	440830 7664	440907 7665	440984 7665	441061 7666	441138 7667	441215 7667	441292 7668	441369 7668
238.7	441446 7669	441523 7670	441600 7670	441677 7671	441754 7672	441831 7672	441909 7673	441986 7674	442063 7675	442140 7675
238.8	442217 7676	442294 7677	442371 7677	442448 7678	442525 7678	442602 7679	442680 7680	442757 7680	442834 7681	442911 7681
238.9	442988 7682	443065 7683	443142 7683	443220 7684	443297 7684	443374 7685	443451 7686	443528 7686	443606 7687	443683 7687
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239.0	443760 7688	443837 7689	443914 7689	443992 7690	444069 7690	444146 7691	444223 7692	444300 7692	444378 7693	444455 7693
239.1	444532 7694	444609 7695	444686 7695	444764 7696	444841 7696	444918 7697	444995 7698	445072 7698	445150 7699	445227 7699
239.2	445304 7700	445381 7701	445459 7701	445536 7702	445613 7702	445690 7703	445768 7704	445845 7704	445922 7705	446000 7705
239.3	446077 7706	446154 7707	446232 7707	446309 7708	446387 7708	446464 7709	446541 7710	446619 7710	446696 7711	446774 7711
239.4	446851 7712	446928 7713	447006 7713	447084 7714	447161 7715	447238 7715	447316 7716	447394 7717	447471 7718	447548 7718
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239.5	447626 7719	447704 7720	447781 7720	447858 7721	447936 7721	448014 7722	448091 7723	448168 7723	448246 7724	448324 7724
239.6	448401 7725	448479 7726	448556 7726	448634 7727	448711 7727	448789 7728	448867 7729	448944 7729	449022 7730	449099 7730
239.7	449177 7731	449255 7732	449332 7732	449410 7733	449487 7733	449565 7734	449643 7735	449720 7735	449798 7736	449875 7736

Camanche Dam and Reservoir, Mokelumne River, California
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
239.8	449953 7737	450031 7738	450109 7738	450186 7739	450264 7739	450342 7740	450420 7741	450498 7741	450575 7742	450653 7742
239.9	450731 7743	450809 7744	450887 7744	450964 7745	451042 7745	451120 7746	451198 7747	451276 7747	451353 7748	451431 7748
240.0	451509 7749	451587 7750	451665 7750	451742 7751	451820 7751	451898 7752	451976 7753	452054 7753	452131 7754	452209 7754
240.1	452287 7755	452365 7756	452443 7756	452521 7757	452599 7758	452677 7758	452754 7759	452832 7760	452910 7761	452988 7761
240.2	453066 7762	453144 7763	453222 7763	453300 7764	453378 7764	453456 7765	453533 7766	453611 7766	453689 7767	453767 7767
240.3	453845 7768	453923 7769	454001 7769	454079 7770	454157 7770	454235 7771	454313 7772	454391 7772	454469 7773	454547 7773
240.4	454625 7774	454703 7775	454781 7775	454859 7776	454937 7777	455015 7777	455094 7778	455172 7779	455250 7780	455328 7780
240.5	455406 7781	455484 7782	455562 7782	455641 7783	455719 7783	455797 7784	455875 7785	455953 7785	456032 7786	456110 7786
240.6	456188 7787	456266 7788	456344 7788	456423 7789	456501 7789	456579 7790	456657 7791	456735 7791	456814 7792	456892 7792
240.7	456970 7793	457048 7794	457127 7794	457205 7795	457283 7795	457361 7796	457440 7797	457518 7797	457596 7798	457675 7798
240.8	457753 7799	457831 7800	457910 7800	457988 7801	458067 7802	458145 7802	458223 7803	458302 7804	458380 7805	458459 7805
240.9	458537 7806	458615 7807	458694 7807	458772 7808	458851 7808	458929 7809	459007 7810	459086 7810	459164 7811	459243 7811
241.0	459321 7812	459400 7813	459478 7813	459556 7814	459635 7815	459714 7815	459792 7816	459870 7817	459949 7818	460028 7818
241.1	460106 7819	460184 7820	460263 7820	460342 7821	460420 7821	460498 7822	460577 7823	460656 7823	460734 7824	460812 7824
241.2	460891 7825	460970 7826	461048 7826	461127 7827	461205 7828	461284 7828	461363 7829	461441 7830	461520 7831	461598 7831
241.3	461677 7832	461756 7833	461834 7833	461913 7834	461991 7834	462070 7835	462149 7836	462227 7836	462306 7837	462384 7837
241.4	462463 7838	462542 7839	462621 7839	462699 7840	462778 7841	462857 7841	462936 7842	463015 7843	463093 7844	463172 7844
241.5	463251 7845	463330 7846	463409 7846	463487 7847	463566 7847	463645 7848	463724 7849	463803 7849	463881 7850	463960 7850
241.6	464039 7851	464118 7852	464197 7852	464275 7853	464354 7854	464433 7854	464512 7855	464591 7856	464669 7857	464748 7857
241.7	464827 7858	464906 7859	464985 7859	465064 7860	465143 7860	465222 7861	465301 7862	465380 7862	465459 7863	465538 7863
241.8	465617 7864	465696 7865	465775 7865	465854 7866	465933 7867	466012 7867	466091 7868	466170 7869	466249 7870	466328 7870

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
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Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
241.9	466407 7871	466486 7872	466565 7872	466644 7873	466723 7873	466802 7874	466882 7875	466961 7875	467040 7876	467119 7876
242.0	467198 7877	467277 7878	467356 7878	467435 7879	467514 7880	467593 7880	467673 7881	467752 7882	467831 7883	467910 7883
242.1	467989 7884	468068 7885	468147 7885	468227 7886	468306 7886	468385 7887	468464 7888	468543 7888	468623 7889	468702 7889
242.2	468781 7890	468860 7891	468940 7891	469019 7892	469098 7893	469177 7893	469257 7894	469336 7895	469415 7896	469495 7896
242.3	469574 7897	469653 7898	469733 7898	469812 7899	469891 7900	469970 7900	470050 7901	470129 7902	470208 7903	470288 7903
242.4	470367 7904	470446 7905	470526 7905	470605 7906	470685 7907	470764 7907	470843 7908	470923 7909	471002 7910	471082 7910
242.5	471161 7911	471240 7912	471320 7912	471400 7913	471479 7913	471558 7914	471638 7915	471718 7915	471797 7916	471876 7916
242.6	471956 7917	472036 7918	472115 7918	472194 7919	472274 7920	472354 7920	472433 7921	472512 7922	472592 7923	472672 7923
242.7	472751 7924	472831 7925	472910 7925	472990 7926	473070 7927	473150 7927	473229 7928	473309 7929	473389 7930	473468 7930
242.8	473548 7931	473628 7932	473707 7932	473787 7933	473866 7933	473946 7934	474026 7935	474105 7935	474185 7936	474264 7936
242.9	474344 7937	474424 7938	474504 7938	474583 7939	474663 7940	474743 7940	474823 7941	474903 7942	474982 7943	475062 7943
243.0	475142 7944	475222 7945	475302 7945	475381 7946	475461 7947	475541 7947	475621 7948	475701 7949	475780 7950	475860 7950
243.1	475940 7951	476020 7952	476100 7952	476180 7953	476260 7954	476340 7954	476419 7955	476499 7956	476579 7957	476659 7957
243.2	476739 7958	476819 7959	476899 7959	476979 7960	477059 7960	477139 7961	477218 7962	477298 7962	477378 7963	477458 7963
243.3	477538 7964	477618 7965	477698 7965	477778 7966	477858 7967	477938 7967	478018 7968	478098 7969	478178 7970	478258 7970
243.4	478338 7971	478418 7972	478498 7972	478578 7973	478658 7974	478738 7974	478819 7975	478899 7976	478979 7977	479059 7977
243.5	479139 7978	479219 7979	479299 7979	479380 7980	479460 7981	479540 7981	479620 7982	479700 7983	479781 7984	479861 7984
243.6	479941 7985	480021 7986	480101 7986	480182 7987	480262 7988	480342 7988	480422 7989	480502 7990	480583 7991	480663 7991
243.7	480743 7992	480823 7993	480904 7993	480984 7994	481064 7994	481144 7995	481225 7996	481305 7996	481385 7997	481466 7997
243.8	481546 7998	481626 7999	481707 7999	481787 8000	481868 8001	481948 8001	482028 8002	482109 8003	482189 8004	482270 8004

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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243.9	482350 8005	482430 8006	482511 8006	482591 8007	482672 8008	482752 8008	482832 8009	482913 8010	482993 8011	483074 8011
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244.0	483154 8012	483234 8013	483315 8013	483396 8014	483476 8015	483556 8015	483637 8016	483718 8017	483798 8018	483878 8018
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244.1	483959 8019	484040 8020	484120 8020	484200 8021	484281 8021	484362 8022	484442 8023	484522 8023	484603 8024	484684 8024
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244.2	484764 8025	484845 8026	484925 8026	485006 8027	485086 8028	485167 8028	485248 8029	485328 8030	485409 8031	485489 8031
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244.3	485570 8032	485651 8033	485731 8033	485812 8034	485893 8035	485974 8035	486054 8036	486135 8037	486216 8038	486296 8038
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244.4	486377 8039	486458 8040	486539 8040	486619 8041	486700 8042	486781 8042	486862 8043	486943 8044	487023 8045	487104 8045
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244.5	487185 8046	487266 8047	487347 8047	487427 8048	487508 8048	487589 8049	487670 8050	487751 8050	487831 8051	487912 8051
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244.6	487993 8052	488074 8053	488155 8053	488236 8054	488317 8055	488398 8055	488478 8056	488559 8057	488640 8058	488721 8058
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244.7	488802 8059	488883 8060	488964 8060	489045 8061	489126 8062	489207 8062	489288 8063	489369 8064	489450 8065	489531 8065
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244.8	489612 8066	489693 8067	489774 8067	489855 8068	489936 8068	490017 8069	490098 8070	490179 8070	490260 8071	490341 8071
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244.9	490422 8072	490503 8073	490584 8073	490665 8074	490746 8075	490827 8075	490909 8076	490990 8077	491071 8078	491152 8078
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245.0	491233 8079	491314 8080	491395 8080	491476 8081	491557 8082	491638 8082	491720 8083	491801 8084	491882 8085	491963 8085
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245.1	492044 8086	492125 8087	492207 8087	492288 8088	492369 8088	492450 8089	492532 8090	492613 8090	492694 8091	492776 8091
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245.2	492857 8092	492938 8093	493019 8093	493101 8094	493182 8095	493263 8095	493344 8096	493425 8097	493507 8098	493588 8098
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245.3	493669 8099	493750 8100	493832 8100	493913 8101	493995 8102	494076 8102	494157 8103	494239 8104	494320 8105	494402 8105
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245.4	494483 8106	494564 8107	494646 8107	494727 8108	494809 8109	494890 8109	494971 8110	495053 8111	495134 8112	495216 8112
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245.5	495297 8113	495378 8114	495460 8114	495542 8115	495623 8115	495704 8116	495786 8117	495868 8117	495949 8118	496030 8118
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245.6	496112 8119	496194 8120	496275 8120	496357 8121	496438 8122	496520 8122	496602 8123	496683 8124	496765 8125	496846 8125
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245.7	496928 8126	497010 8127	497091 8127	497173 8128	497254 8129	497336 8129	497418 8130	497499 8131	497581 8132	497662 8132
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245.8	497744 8133	497826 8134	497907 8134	497989 8135	498071 8135	498153 8136	498234 8137	498316 8137	498398 8138	498479 8138
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245.9	498561 8139	498643 8140	498725 8140	498806 8141	498888 8142	498970 8142	499052 8143	499134 8144	499215 8145	499297 8145
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Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
246.0	499379 8146	499461 8147	499543 8147	499625 8148	499707 8149	499789 8149	499870 8150	499952 8151	500034 8152	500116 8152
246.1	500198 8153	500280 8154	500362 8155	500444 8155	500526 8156	500608 8157	500689 8158	500771 8159	500853 8159	500935 8160
246.2	501017 8161	501099 8162	501181 8162	501263 8163	501345 8164	501427 8164	501509 8165	501591 8166	501673 8167	501755 8167
246.3	501837 8168	501919 8169	502001 8169	502083 8170	502165 8171	502247 8171	502330 8172	502412 8173	502494 8174	502576 8174
246.4	502658 8175	502740 8176	502822 8177	502905 8177	502987 8178	503069 8179	503151 8180	503233 8181	503316 8181	503398 8182
246.5	503480 8183	503562 8184	503644 8184	503727 8185	503809 8186	503891 8186	503973 8187	504055 8188	504138 8189	504220 8189
246.6	504302 8190	504384 8191	504467 8191	504549 8192	504631 8193	504713 8194	504796 8194	504878 8195	504960 8196	505043 8196
246.7	505125 8197	505207 8198	505290 8198	505372 8199	505455 8200	505537 8201	505619 8201	505702 8202	505784 8203	505867 8203
246.8	505949 8204	506031 8205	506114 8206	506196 8206	506279 8207	506361 8208	506443 8209	506526 8210	506608 8210	506691 8211
246.9	506773 8212	506856 8213	506938 8213	507020 8214	507103 8215	507186 8216	507268 8216	507350 8217	507433 8218	507516 8218
247.0	507598 8219	507681 8220	507763 8220	507846 8221	507928 8222	508011 8223	508094 8223	508176 8224	508259 8225	508341 8225
247.1	508424 8226	508507 8227	508589 8227	508672 8228	508754 8229	508837 8230	508920 8230	509002 8231	509085 8232	509167 8232
247.2	509250 8233	509333 8234	509416 8234	509498 8235	509581 8236	509664 8237	509747 8237	509830 8238	509912 8239	509995 8239
247.3	510078 8240	510161 8241	510243 8241	510326 8242	510409 8243	510492 8244	510574 8244	510657 8245	510740 8246	510822 8246
247.4	510905 8247	510988 8248	511071 8249	511154 8249	511237 8250	511320 8251	511402 8252	511485 8253	511568 8253	511651 8254
247.5	511734 8255	511817 8256	511900 8256	511983 8257	512066 8258	512149 8259	512231 8259	512314 8260	512397 8261	512480 8261
247.6	512563 8262	512646 8263	512729 8263	512812 8264	512895 8265	512978 8266	513062 8266	513145 8267	513228 8268	513311 8268
247.7	513394 8269	513477 8270	513560 8270	513643 8271	513726 8272	513809 8273	513892 8273	513975 8274	514058 8275	514141 8275
247.8	514224 8276	514307 8277	514390 8277	514474 8278	514557 8279	514640 8280	514723 8280	514806 8281	514890 8282	514973 8282
247.9	515056 8283	515139 8284	515222 8284	515306 8285	515389 8286	515472 8287	515555 8287	515638 8288	515722 8289	515805 8289
248.0	515888 8290	515971 8291	516055 8291	516138 8292	516221 8293	516304 8294	516388 8294	516471 8295	516554 8296	516638 8296

Camanche Dam and Reservoir, Mokelumne River, California
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 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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248.1	516721 8297	516804 8298	516888 8298	516971 8299	517055 8300	517138 8301	517221 8301	517305 8302	517388 8303	517472 8303
248.2	517555 8304	517638 8305	517722 8306	517805 8306	517889 8307	517972 8308	518055 8309	518139 8310	518222 8310	518306 8311
248.3	518389 8312	518472 8313	518556 8313	518640 8314	518723 8315	518806 8316	518890 8316	518974 8317	519057 8318	519140 8318
248.4	519224 8319	519308 8320	519391 8320	519475 8321	519558 8322	519642 8323	519726 8323	519809 8324	519893 8325	519976 8325
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248.5	520060 8326	520144 8327	520227 8327	520311 8328	520395 8329	520479 8330	520562 8330	520646 8331	520730 8332	520813 8332
248.6	520897 8333	520981 8334	521064 8334	521148 8335	521232 8336	521316 8337	521399 8337	521483 8338	521567 8339	521650 8339
248.7	521734 8340	521818 8341	521902 8342	521985 8342	522069 8343	522153 8344	522237 8345	522321 8346	522404 8346	522488 8347
248.8	522572 8348	522656 8349	522740 8349	522824 8350	522908 8351	522992 8352	523075 8352	523159 8353	523243 8354	523327 8354
248.9	523411 8355	523495 8356	523579 8356	523663 8357	523747 8358	523831 8359	523914 8359	523998 8360	524082 8361	524166 8361
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249.0	524250 8362	524334 8363	524418 8363	524502 8364	524586 8365	524670 8366	524754 8366	524838 8367	524922 8368	525006 8368
249.1	525090 8369	525174 8370	525258 8370	525342 8371	525426 8372	525510 8373	525594 8373	525678 8374	525762 8375	525846 8375
249.2	525930 8376	526014 8377	526098 8377	526183 8378	526267 8378	526351 8379	526435 8380	526519 8380	526604 8381	526688 8381
249.3	526772 8382	526856 8383	526940 8383	527024 8384	527108 8385	527192 8386	527277 8386	527361 8387	527445 8388	527529 8388
249.4	527613 8389	527697 8390	527782 8390	527866 8391	527950 8392	528035 8393	528119 8393	528203 8394	528287 8395	528372 8395
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249.5	528456 8396	528540 8397	528625 8397	528709 8398	528793 8399	528878 8400	528962 8400	529046 8401	529130 8402	529215 8402
249.6	529299 8403	529384 8404	529468 8404	529552 8405	529637 8406	529722 8407	529806 8407	529890 8408	529975 8409	530060 8409
249.7	530144 8410	530228 8411	530313 8411	530397 8412	530482 8412	530566 8413	530650 8414	530735 8414	530819 8415	530904 8415
249.8	530988 8416	531073 8417	531157 8417	531242 8418	531326 8419	531411 8420	531496 8420	531580 8421	531665 8422	531749 8422
249.9	531834 8423	531919 8424	532003 8424	532088 8425	532172 8426	532257 8427	532342 8427	532426 8428	532511 8429	532595 8429
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250.0	532680 8430	532765 8431	532849 8431	532934 8432	533019 8433	533103 8434	533188 8434	533273 8435	533358 8436	533442 8436
250.1	533527 8437	533612 8438	533696 8438	533781 8439	533866 8440	533950 8441	534035 8441	534120 8442	534205 8443	534289 8443

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
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250.2	534374 8444	534459 8445	534544 8445	534629 8446	534714 8447	534799 8448	534883 8448	534968 8449	535053 8450	535138 8450
250.3	535223 8451	535308 8452	535393 8452	535477 8453	535562 8454	535647 8455	535732 8455	535817 8456	535901 8457	535986 8457
250.4	536071 8458	536156 8459	536241 8459	536326 8460	536411 8461	536496 8462	536581 8462	536666 8463	536751 8464	536836 8464
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250.5	536921 8465	537006 8466	537091 8466	537176 8467	537261 8468	537346 8469	537431 8469	537516 8470	537601 8471	537686 8471
250.6	537771 8472	537856 8473	537941 8473	538027 8474	538112 8475	538197 8476	538282 8476	538367 8477	538453 8478	538538 8478
250.7	538623 8479	538708 8480	538793 8480	538878 8481	538963 8482	539048 8483	539134 8483	539219 8484	539304 8485	539389 8485
250.8	539474 8486	539559 8487	539645 8487	539730 8488	539815 8489	539901 8490	539986 8490	540071 8491	540156 8492	540242 8492
250.9	540327 8493	540412 8494	540498 8494	540583 8495	540668 8496	540754 8497	540839 8497	540924 8498	541009 8499	541095 8499
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251.0	541180 8500	541265 8501	541351 8501	541436 8502	541522 8503	541607 8504	541692 8504	541778 8505	541863 8506	541949 8506
251.1	542034 8507	542119 8508	542205 8508	542290 8509	542376 8510	542461 8511	542546 8511	542632 8512	542717 8513	542803 8513
251.2	542888 8514	542974 8515	543059 8515	543144 8516	543230 8517	543316 8518	543401 8518	543486 8519	543572 8520	543658 8520
251.3	543743 8521	543829 8522	543914 8522	544000 8523	544085 8524	544171 8525	544257 8525	544342 8526	544428 8527	544513 8527
251.4	544599 8528	544685 8529	544770 8529	544856 8530	544942 8531	545027 8532	545113 8532	545199 8533	545285 8534	545370 8534
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251.5	545456 8535	545542 8536	545627 8536	545713 8537	545799 8537	545884 8538	545970 8539	546056 8539	546142 8540	546227 8540
251.6	546313 8541	546399 8542	546485 8542	546570 8543	546656 8544	546742 8545	546828 8545	546914 8546	546999 8547	547085 8547
251.7	547171 8548	547257 8549	547343 8549	547428 8550	547514 8551	547600 8552	547686 8552	547772 8553	547857 8554	547943 8554
251.8	548029 8555	548115 8556	548201 8556	548287 8557	548373 8558	548459 8559	548545 8559	548631 8560	548717 8561	548803 8561
251.9	548889 8562	548975 8563	549061 8563	549147 8564	549233 8565	549319 8566	549405 8566	549491 8567	549577 8568	549663 8568
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252.0	549749 8569	549835 8570	549921 8570	550007 8571	550093 8572	550179 8573	550266 8573	550352 8574	550438 8575	550524 8575
252.1	550610 8576	550696 8577	550782 8577	550868 8578	550954 8579	551040 8580	551127 8580	551213 8581	551299 8582	551385 8582
252.2	551471 8583	551557 8584	551644 8584	551730 8585	551816 8586	551903 8587	551989 8587	552075 8588	552161 8589	552248 8589

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
252.3	552334 8590	552420 8591	552506 8591	552593 8592	552679 8593	552765 8594	552851 8594	552937 8595	553024 8596	553110 8596
252.4	553196 8597	553282 8598	553369 8599	553455 8599	553542 8600	553628 8601	553714 8602	553801 8603	553887 8603	553974 8604
252.5	554060 8605	554146 8606	554233 8606	554319 8607	554406 8608	554492 8609	554578 8609	554665 8610	554751 8611	554838 8611
252.6	554924 8612	555011 8613	555097 8613	555184 8614	555270 8615	555357 8616	555444 8616	555530 8617	555617 8618	555703 8618
252.7	555790 8619	555876 8620	555963 8620	556050 8621	556136 8622	556222 8623	556309 8623	556396 8624	556482 8625	556568 8625
252.8	556655 8626	556742 8627	556828 8627	556915 8628	557002 8629	557088 8630	557175 8630	557262 8631	557349 8632	557435 8632
252.9	557522 8633	557609 8634	557695 8634	557782 8635	557869 8636	557955 8637	558042 8637	558129 8638	558216 8639	558302 8639
253.0	558389 8640	558476 8641	558563 8641	558649 8642	558736 8643	558823 8644	558910 8644	558997 8645	559083 8646	559170 8646
253.1	559257 8647	559344 8648	559431 8649	559518 8649	559605 8650	559692 8651	559778 8652	559865 8653	559952 8653	560039 8654
253.2	560126 8655	560213 8656	560300 8656	560387 8657	560474 8658	560561 8659	560647 8659	560734 8660	560821 8661	560908 8661
253.3	560995 8662	561082 8663	561169 8663	561256 8664	561343 8665	561430 8666	561518 8666	561605 8667	561692 8668	561779 8668
253.4	561866 8669	561953 8670	562040 8671	562127 8671	562214 8672	562301 8673	562389 8674	562476 8675	562563 8675	562650 8676
253.5	562737 8677	562824 8678	562911 8678	562998 8679	563085 8680	563172 8681	563260 8681	563347 8682	563434 8683	563521 8683
253.6	563608 8684	563695 8685	563783 8685	563870 8686	563957 8687	564045 8688	564132 8688	564219 8689	564306 8690	564394 8690
253.7	564481 8691	564568 8692	564656 8692	564743 8693	564830 8694	564918 8695	565005 8695	565092 8696	565179 8697	565267 8697
253.8	565354 8698	565441 8699	565529 8700	565616 8700	565703 8701	565791 8702	565878 8703	565965 8704	566052 8704	566140 8705
253.9	566227 8706	566314 8707	566402 8707	566490 8708	566577 8709	566664 8710	566752 8710	566840 8711	566927 8712	567014 8712
254.0	567102 8713	567190 8714	567277 8714	567364 8715	567452 8716	567540 8717	567627 8717	567714 8718	567802 8719	567890 8719
254.1	567977 8720	568065 8721	568152 8721	568240 8722	568327 8723	568415 8724	568503 8724	568590 8725	568678 8726	568765 8726
254.2	568853 8727	568941 8728	569028 8729	569116 8729	569204 8730	569291 8731	569379 8732	569467 8733	569555 8733	569642 8734
254.3	569730 8735	569818 8736	569905 8736	569993 8737	570081 8738	570168 8739	570256 8739	570344 8740	570432 8741	570519 8741

Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
254.4	570607 8742	570695 8743	570783 8743	570871 8744	570959 8745	571047 8746	571134 8746	571222 8747	571310 8748	571398 8748
254.5	571486 8749	571574 8750	571662 8750	571749 8751	571837 8752	571925 8753	572013 8753	572101 8754	572188 8755	572276 8755
254.6	572364 8756	572452 8757	572540 8757	572628 8758	572716 8759	572804 8760	572892 8760	572980 8761	573068 8762	573156 8762
254.7	573244 8763	573332 8764	573420 8765	573508 8765	573596 8766	573684 8767	573772 8768	573860 8769	573948 8769	574036 8770
254.8	574124 8771	574212 8772	574300 8772	574388 8773	574476 8774	574564 8775	574653 8775	574741 8776	574829 8777	574917 8777
254.9	575005 8778	575093 8779	575181 8779	575270 8780	575358 8781	575446 8782	575534 8782	575622 8783	575711 8784	575799 8784
255.0	575887 8785	575975 8786	576064 8786	576152 8787	576240 8788	576329 8789	576417 8789	576505 8790	576593 8791	576682 8791
255.1	576770 8792	576858 8793	576947 8794	577035 8794	577123 8795	577212 8796	577300 8797	577388 8798	577476 8798	577565 8799
255.2	577653 8800	577741 8801	577830 8801	577918 8802	578007 8803	578095 8804	578183 8804	578272 8805	578360 8806	578449 8806
255.3	578537 8807	578626 8808	578714 8808	578802 8809	578891 8810	578980 8811	579068 8811	579156 8812	579245 8813	579334 8813
255.4	579422 8814	579510 8815	579599 8816	579688 8816	579776 8817	579864 8818	579953 8819	580042 8820	580130 8820	580218 8821
255.5	580307 8822	580396 8823	580484 8823	580573 8824	580661 8825	580750 8826	580839 8826	580927 8827	581016 8828	581104 8828
255.6	581193 8829	581282 8830	581370 8830	581459 8831	581548 8832	581636 8833	581725 8833	581814 8834	581903 8835	581991 8835
255.7	582080 8836	582169 8837	582258 8837	582346 8838	582435 8839	582524 8840	582613 8840	582702 8841	582790 8842	582879 8842
255.8	582968 8843	583057 8844	583146 8845	583234 8845	583323 8846	583412 8847	583501 8848	583590 8849	583678 8849	583767 8850
255.9	583856 8851	583945 8852	584034 8852	584123 8853	584212 8854	584301 8855	584389 8855	584478 8856	584567 8857	584656 8857
256.0	584745 8858	584834 8859	584923 8859	585012 8860	585101 8861	585190 8862	585278 8862	585367 8863	585456 8864	585545 8864
256.1	585634 8865	585723 8866	585812 8866	585901 8867	585990 8867	586079 8868	586168 8869	586257 8869	586346 8870	586435 8870
256.2	586524 8871	586613 8872	586702 8872	586791 8873	586880 8874	586969 8875	587058 8875	587147 8876	587236 8877	587325 8877
256.3	587414 8878	587503 8879	587592 8879	587682 8880	587771 8880	587860 8881	587949 8882	588038 8882	588128 8883	588217 8883
256.4	588306 8884	588395 8885	588484 8885	588574 8886	588663 8887	588752 8888	588841 8888	588930 8889	589020 8890	589109 8890

Camanche Dam and Reservoir, Mokelumne River, California
 Area - Capacity Table
 Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
256.5	589198 8891	589287 8892	589376 8892	589466 8893	589555 8893	589644 8894	589733 8895	589822 8895	589912 8896	590001 8896
256.6	590090 8897	590179 8898	590269 8898	590358 8899	590448 8900	590537 8901	590626 8901	590716 8902	590805 8903	590895 8903
256.7	590984 8904	591073 8905	591163 8905	591252 8906	591342 8906	591431 8907	591520 8908	591610 8908	591699 8909	591789 8909
256.8	591878 8910	591967 8911	592057 8911	592146 8912	592236 8913	592325 8914	592414 8914	592504 8915	592593 8916	592683 8916
256.9	592772 8917	592862 8918	592951 8918	593041 8919	593130 8919	593220 8920	593310 8921	593399 8921	593489 8922	593578 8922
257.0	593668 8923	593758 8924	593847 8924	593936 8925	594026 8925	594116 8926	594205 8927	594294 8927	594384 8928	594474 8928
257.1	594563 8929	594653 8930	594742 8930	594832 8931	594922 8932	595011 8933	595101 8933	595191 8934	595281 8935	595370 8935
257.2	595460 8936	595550 8937	595639 8937	595729 8938	595819 8938	595908 8939	595998 8940	596088 8940	596178 8941	596267 8941
257.3	596357 8942	596447 8943	596536 8943	596626 8944	596716 8945	596805 8946	596895 8946	596985 8947	597075 8948	597164 8948
257.4	597254 8949	597344 8950	597434 8950	597524 8951	597614 8951	597704 8952	597793 8953	597883 8953	597973 8954	598063 8954
257.5	598153 8955	598243 8956	598333 8956	598423 8957	598513 8957	598603 8958	598692 8959	598782 8959	598872 8960	598962 8960
257.6	599052 8961	599142 8962	599232 8962	599322 8963	599412 8964	599502 8965	599591 8965	599681 8966	599771 8967	599861 8967
257.7	599951 8968	600041 8969	600131 8969	600221 8970	600311 8970	600401 8971	600492 8972	600582 8972	600672 8973	600762 8973
257.8	600852 8974	600942 8975	601032 8975	601122 8976	601212 8977	601302 8978	601393 8978	601483 8979	601573 8980	601663 8980
257.9	601753 8981	601843 8982	601933 8982	602024 8983	602114 8983	602204 8984	602294 8985	602384 8985	602475 8986	602565 8986
258.0	602655 8987	602745 8988	602835 8988	602926 8989	603016 8989	603106 8990	603196 8991	603286 8991	603377 8992	603467 8992
258.1	603557 8993	603647 8994	603737 8994	603828 8995	603918 8996	604008 8997	604098 8997	604188 8998	604279 8999	604369 8999
258.2	604459 9000	604549 9001	604640 9001	604730 9002	604821 9002	604911 9003	605001 9004	605092 9004	605182 9005	605273 9005
258.3	605363 9006	605453 9007	605544 9007	605634 9008	605725 9009	605815 9010	605905 9010	605996 9011	606086 9012	606177 9012
258.4	606267 9013	606358 9014	606448 9014	606538 9015	606629 9015	606720 9016	606810 9017	606900 9017	606991 9018	607082 9018
258.5	607172 9019	607262 9020	607353 9020	607444 9021	607534 9021	607624 9022	607715 9023	607806 9023	607896 9024	607986 9024

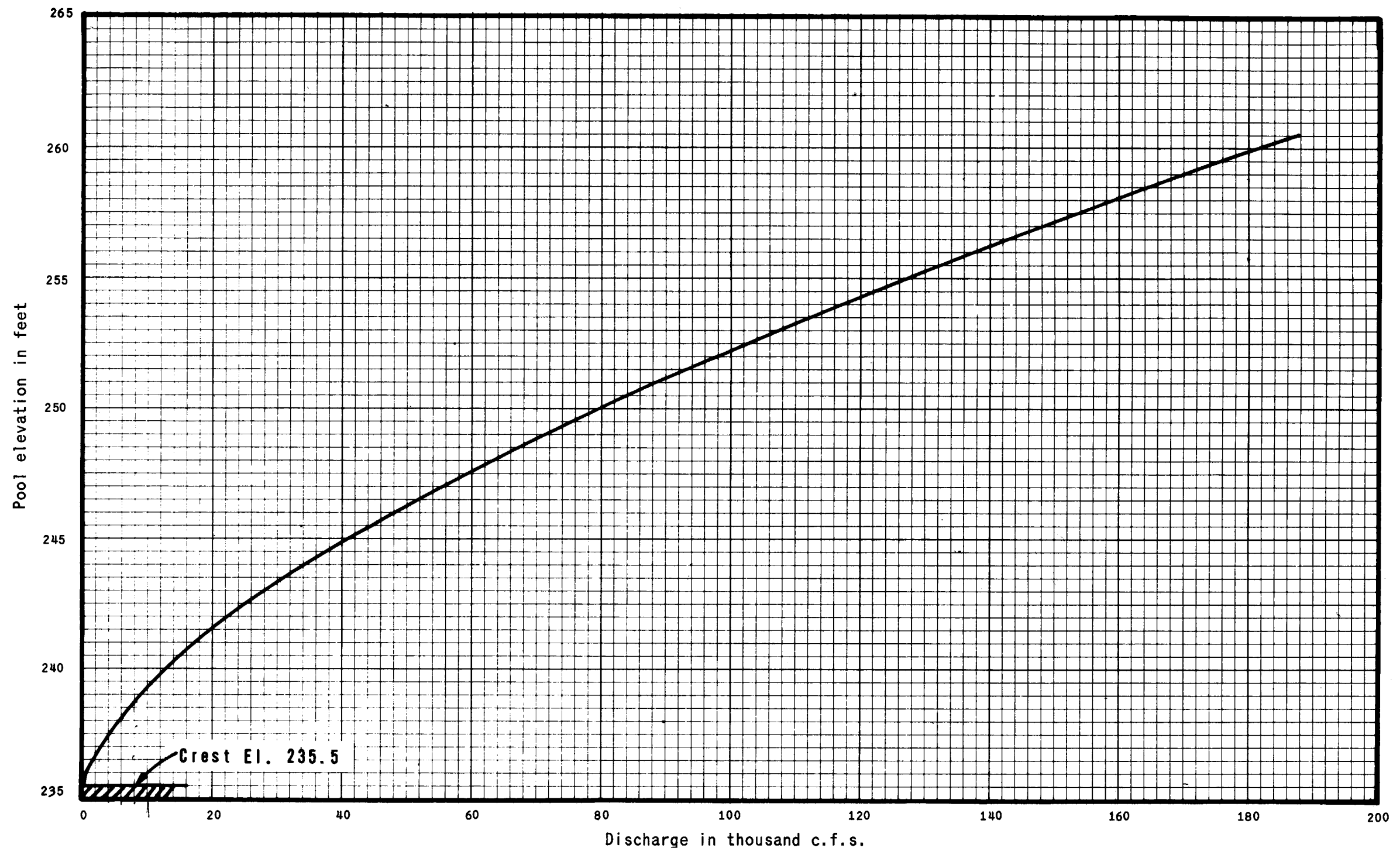
Camanche Dam and Reservoir, Mokelumne River, California
Area - Capacity Table
Surveyed April 1964, Revised 1989

Elev	CAP AREA .00	CAP AREA .01	CAP AREA .02	CAP AREA .03	CAP AREA .04	CAP AREA .05	CAP AREA .06	CAP AREA .07	CAP AREA .08	CAP AREA .09
258.6	608077 9025	608168 9026	608258 9026	608349 9027	608439 9028	608530 9029	608621 9029	608711 9030	608802 9031	608892 9031
258.7	608983 9032	609074 9033	609164 9033	609255 9034	609346 9034	609436 9035	609527 9036	609618 9036	609709 9037	609799 9037
258.8	609890 9038	609981 9039	610072 9039	610162 9040	610253 9041	610344 9042	610435 9042	610526 9043	610616 9044	610707 9044
258.9	610798 9045	610889 9046	610980 9046	611070 9047	611161 9047	611252 9048	611343 9049	611434 9049	611524 9050	611615 9050
259.0	611706 9051	611797 9052	611887 9052	611978 9052	612069 9053	612159 9054	612250 9054	612341 9054	612432 9055	612522 9056
259.1	612613 9056	612704 9056	612795 9057	612885 9058	612976 9058	613067 9058	613158 9059	613249 9060	613339 9060	613430 9060
259.2	613521 9061	613612 9062	613703 9062	613793 9062	613884 9063	613975 9064	614066 9064	614157 9064	614247 9065	614338 9066
259.3	614429 9066	614520 9066	614611 9067	614702 9068	614793 9068	614884 9068	614974 9069	615065 9070	615156 9070	615247 9070
259.4	615338 9071	615429 9072	615520 9072	615611 9072	615702 9073	615793 9074	615884 9074	615975 9074	616066 9075	616157 9076
259.5	616248 9076	616339 9076	616430 9077	616521 9078	616612 9078	616703 9078	616794 9079	616885 9080	616976 9080	617067 9080
259.6	617158 9081	617249 9082	617340 9082	617431 9082	617522 9083	617613 9084	617705 9084	617796 9084	617887 9085	617978 9086
259.7	618069 9086	618160 9086	618251 9087	618343 9088	618434 9088	618525 9088	618616 9089	618707 9090	618799 9090	618890 9090
259.8	618981 9091	619072 9092	619164 9092	619255 9092	619346 9093	619438 9094	619529 9094	619620 9094	619711 9095	619803 9096
259.9	619894 9096	619985 9096	620077 9097	620168 9098	620259 9098	620351 9098	620442 9099	620533 9100	620624 9100	620716 9100
260.0	620807 9101									

Example: Elev .00 .01

 145.7 30225 30239 ← This is the capacity in ac-ft at elev 145.71
 1357 1358 ← This is the corresponding area in acres

NOTE: Table developed from data provided by EBMUD.



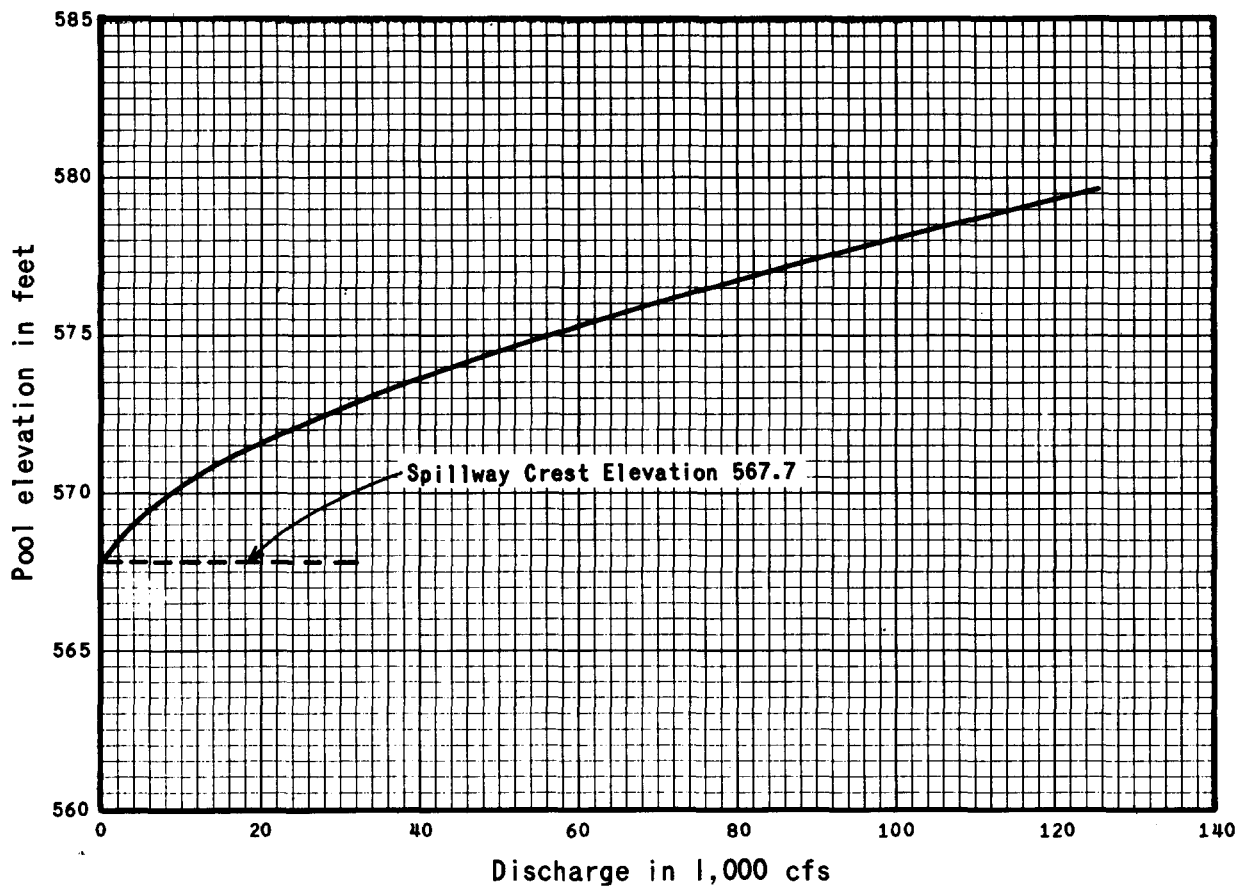
NOTE:
Curve furnished by Bechtel Corporation.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

CAMANCHE DAM
SPILLWAY
RATING CURVE

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: C.J.H. Date: AUGUST 1980
Drawn: C.J.H.



CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA

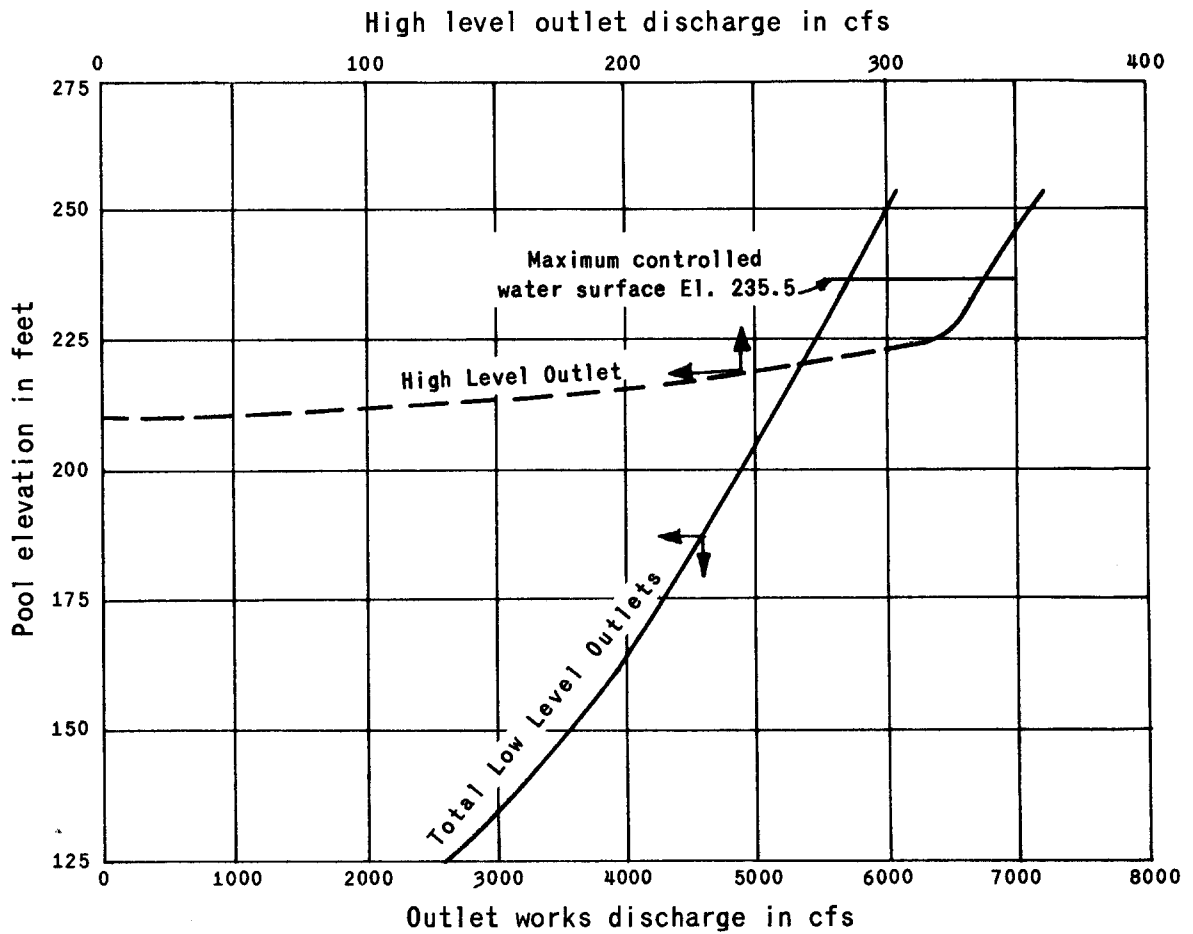
**PARDEE DAM
 SPILLWAY RATING CURVE**

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: C.J.H.

Date: AUGUST 1980

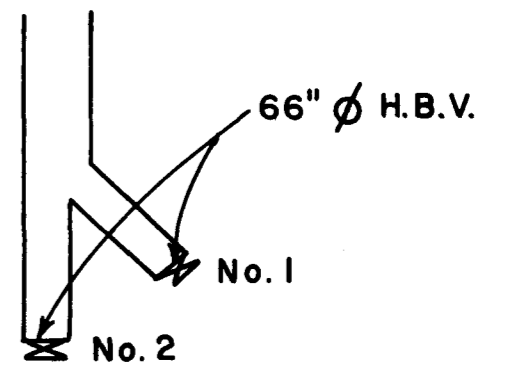
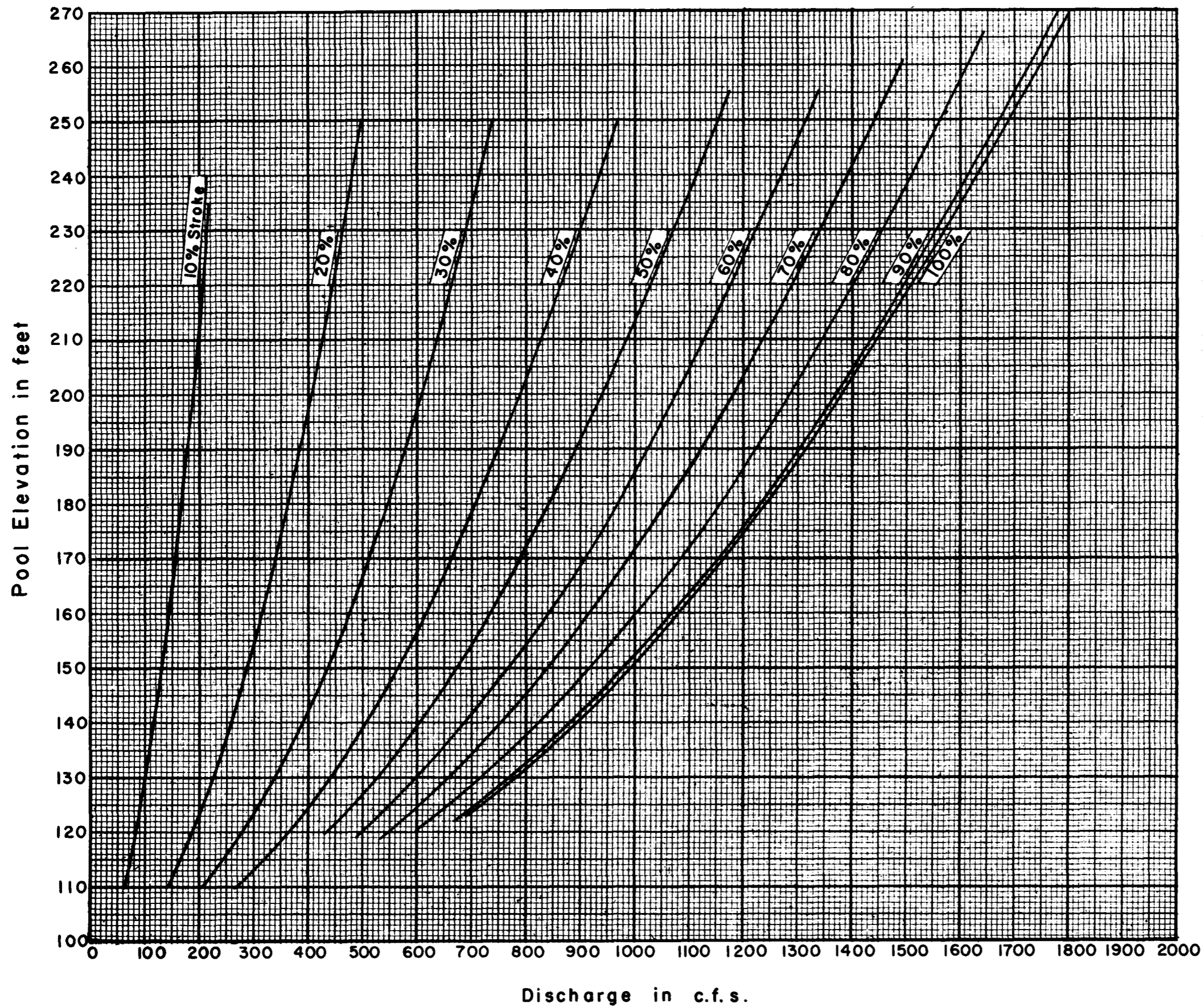
Drawn: C.J.H.



NOTES:

1. Curves furnished by Bechtel Corporation.
2. Low level outlet, 4 - 66 inch diameter fixed cone type valves.
3. High level outlet, 1 - 30 inch diameter fixed cone type valves.

CAMANCHE RESERVOIR MOKELUMNE RIVER, CALIFORNIA	
CAMANCHE DAM OUTLET RATING CURVES	
CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA	
Prepared: T.G.K.	Date: AUGUST 1980
Drawn: C.J.H.	



NOTES:

Valve No. 1
 Valve No. 2 closed.
 Discharge Coefficients from
 C. of E.
 "Hydraulic Design Criteria"

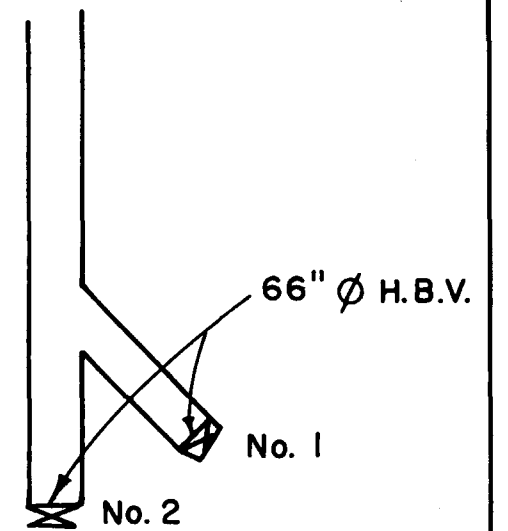
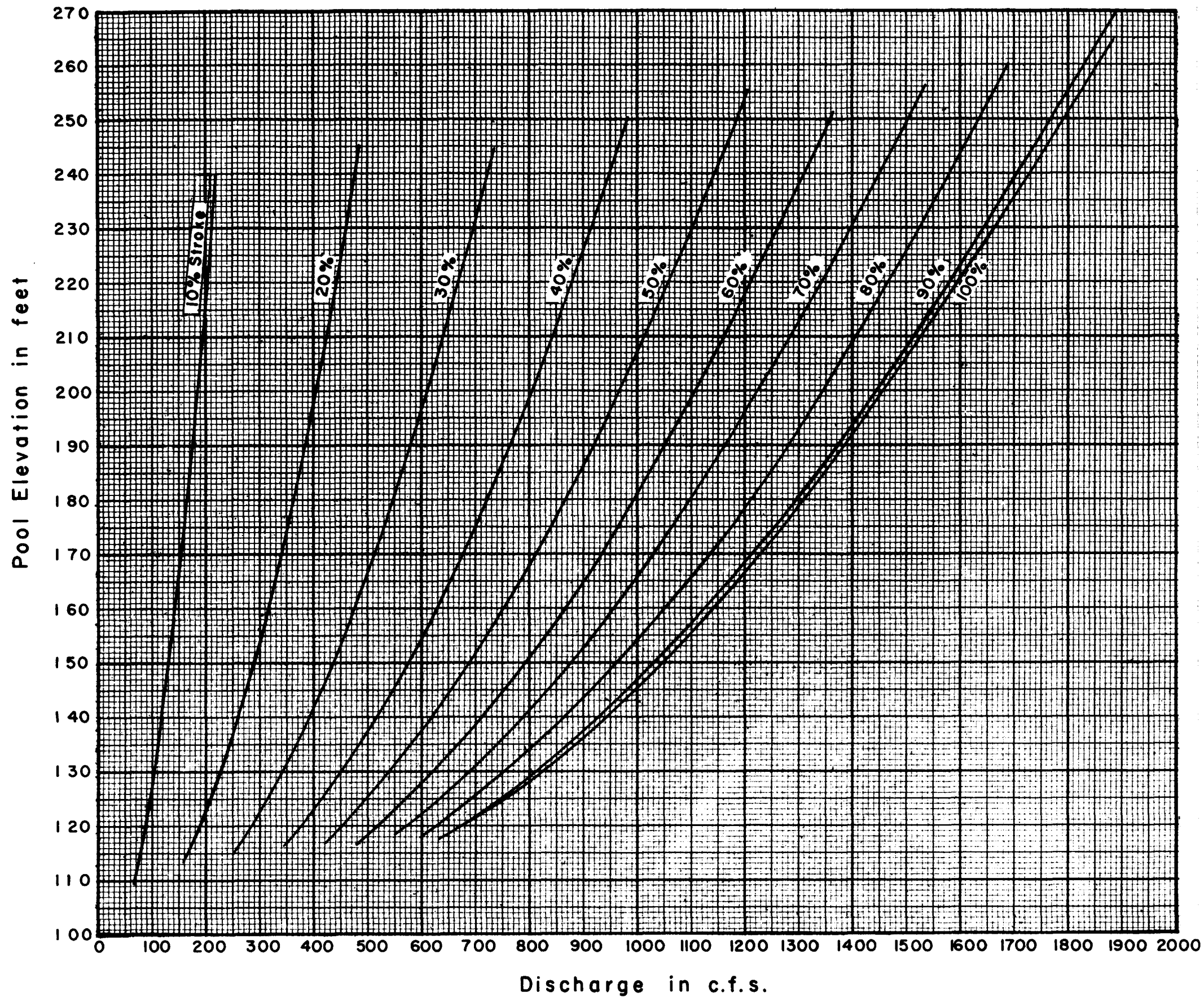
Drawing furnished by Bechtel Corporation

CAMANCHE RESERVOIR
 MOKELUMNE RIVER, CALIFORNIA

CAMANCHE DAM
 OUTLET VALVE
 RATING CURVES

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: T.G.K. Date: AUGUST 1980
 Drawn: C.J.H.

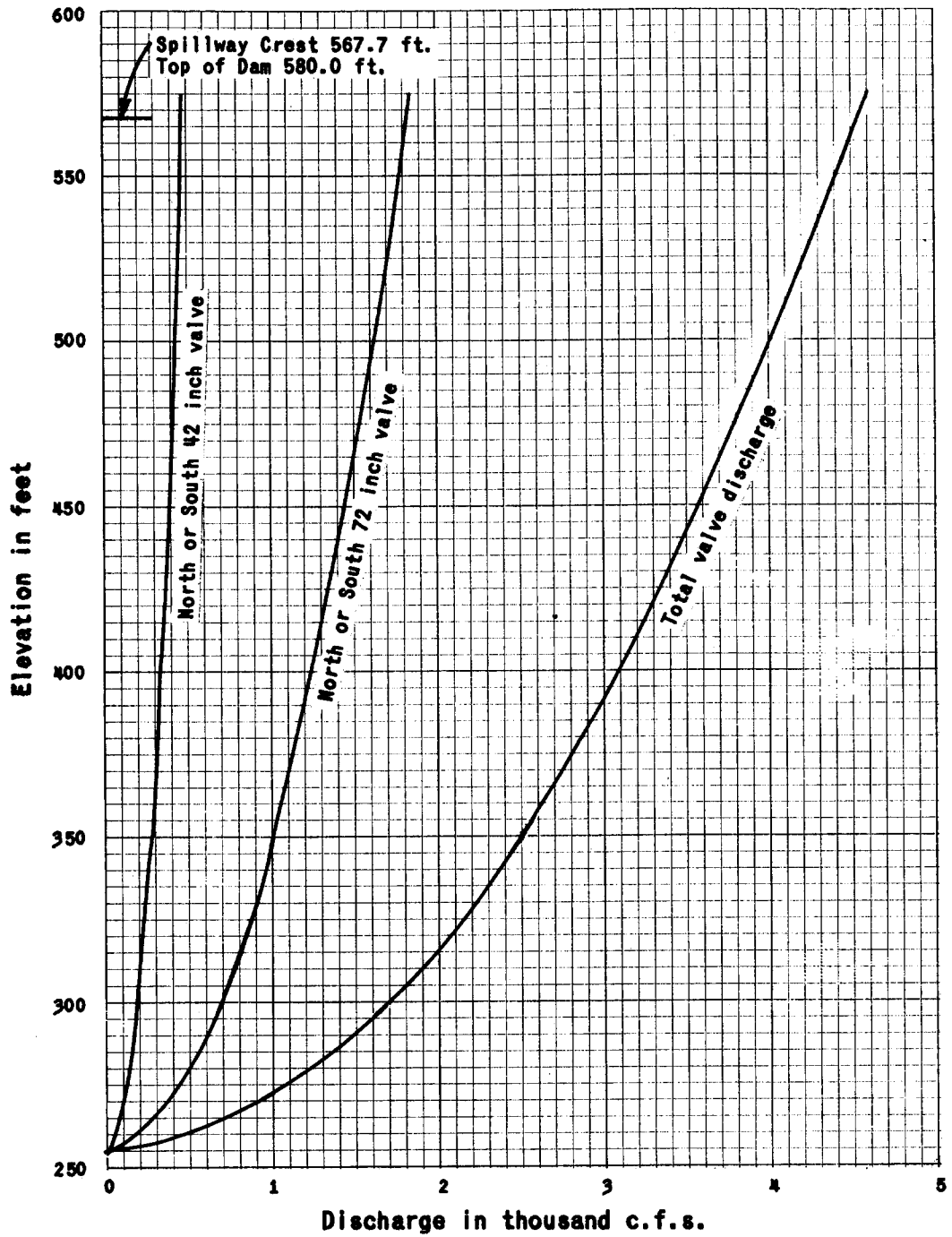


NOTES:

Valve No. 2
 Valve No. 1 closed.
 Discharge Coefficients from
 C. of E.
 "Hydraulic Design Criteria"

Drawing furnished by Bechtel Corporation

CAMANCHE RESERVOIR MOKELUMNE RIVER, CALIFORNIA	
CAMANCHE DAM OUTLET VALVE RATING CURVES	
CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA	
Prepared: T.G.K.	Date: AUGUST 1980
Drawn: C.J.H.	



CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

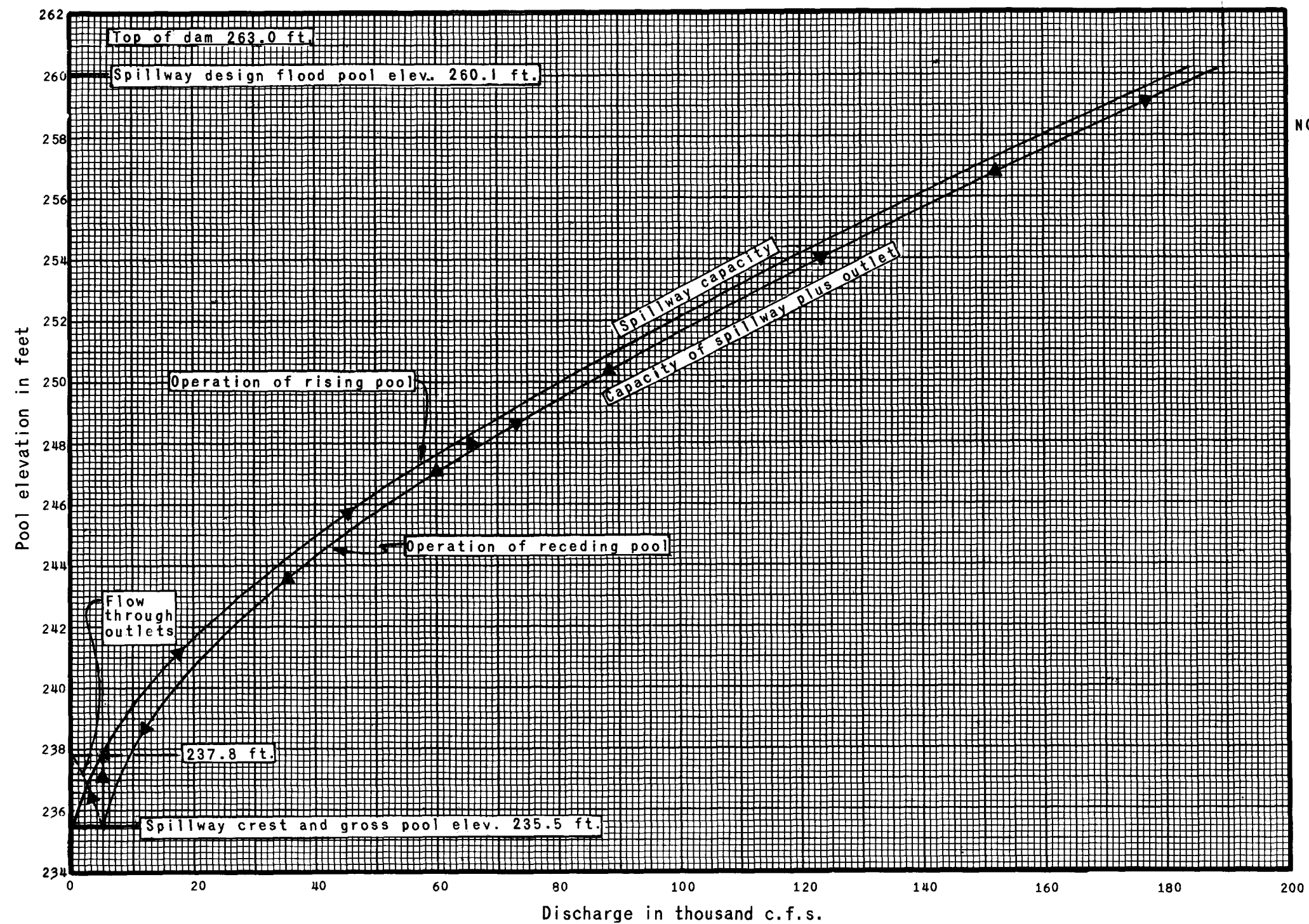
**PARDEE DAM
OUTLET VALVE
RATING CURVE**

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: C.J.H.

Date: AUGUST 1980

Drawn: T.A.V.



NOTES:

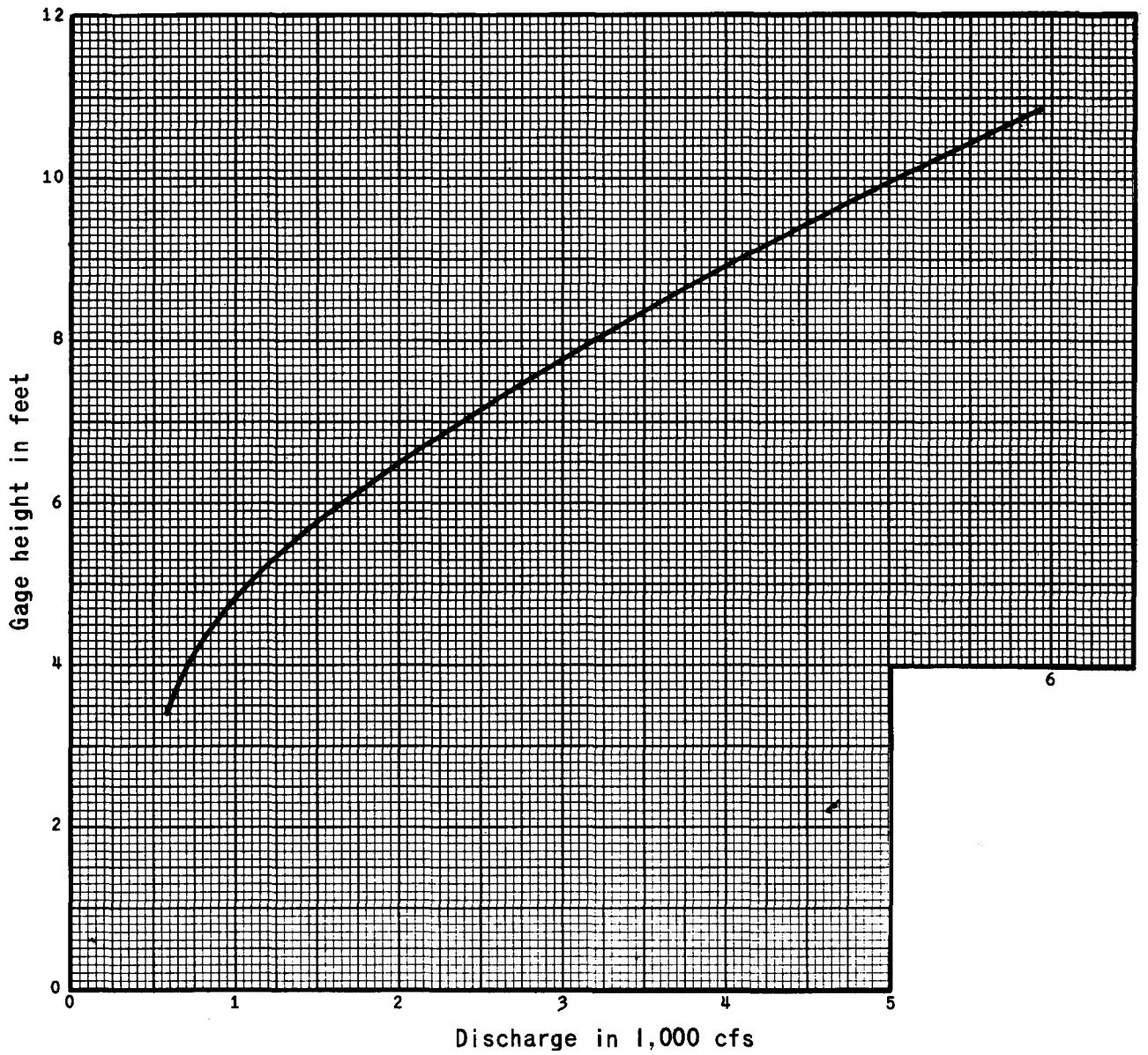
1. Operation for flood control at Camanche Reservoir is determined by the use of Chart A-12. As soon as water is stored within the flood control reservation indicated thereon, releases will be made in accordance with the Release Schedule.
2. During large floods in which flows over the spillway occur, the main valves will be gradually closed as the pool rises above gross pool elevation (235.5 feet), to control total outflow from spillway and outlets to 5,000 cfs as long as possible.
3. If the pool rises above elevation 248.0 feet, outlet valves will be opened at the rate of two valves each hour.
4. For a receding pool, valve openings will remain constant until a total release of 5,000 cfs is reached or the reservoir stage has receded to gross pool elevation 235.5, below which a release rate of not to exceed 5,000 cfs will be maintained.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

CAMANCHE DAM
OPERATION OF OUTLET GATES
FOR FLOOD CONTROL

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: C.J.H. Date: AUGUST 1980
Drawn: C.J.H., T.G.K.



Datum of Gage: 82.91 ft. m.s.l.

CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

DISCHARGE RATING CURVE

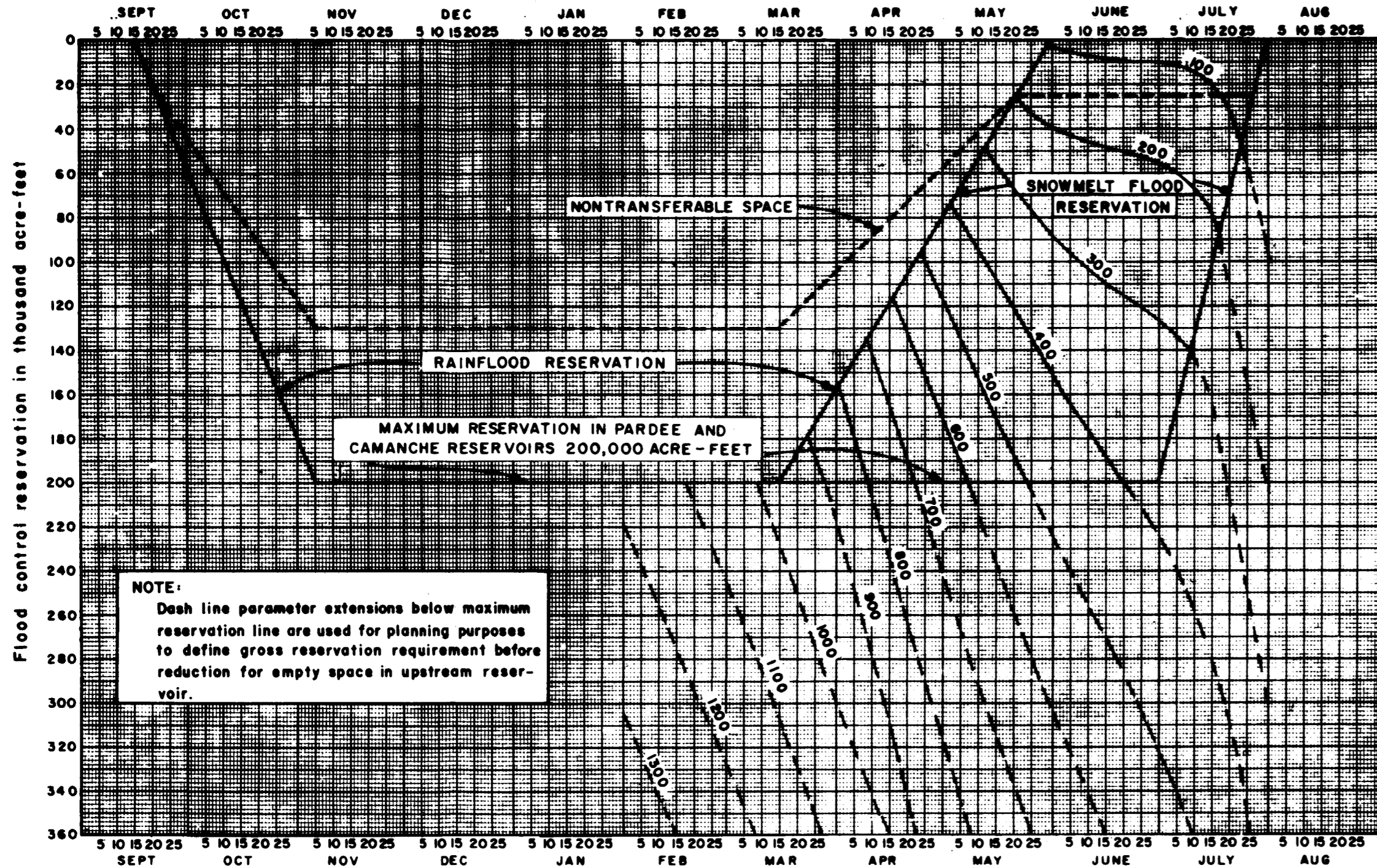
MOKELUMNE RIVER BELOW
CAMANCHE DAM

CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA

Prepared: T.G.K.

Date: AUGUST 1980

Drawn: C.J.H.



NOTE:
Dash line parameter extensions below maximum reservation line are used for planning purposes to define gross reservation requirement before reduction for empty space in upstream reservoir.

NOTES:

1. Camanche Reservoir shall be operated for flood control in accordance with this Flood Control Diagram.
2. Flood Control reservation increases uniformly at a rate of 3,922 acre-feet per day from zero requirement on 15 September to a maximum reservation of 200,000 acre-feet by 5 November. The reservation is maintained at 200,000 acre-feet through 15 March after which, unless additional reservation is indicated by the snowmelt parameter, it will decrease uniformly at a rate of 2,597 acre-feet per day to zero requirement on 31 May.
3. Gross flood control reservation is the total storage required for flood control operations within the Mokelumne River reservoir system.
4. Nontransferable space is that portion of gross flood control reservation that must be provided in Camanche and Pardee Reservoirs, and may be divided in any portion between them.
5. Transferable space is that amount of space the gross flood control reservation can be reduced by available space in upstream reservoirs - Salt Springs and Lower Bear. The amount of available upstream space that can be credited to transferable space is discussed in the USE OF DIAGRAM.

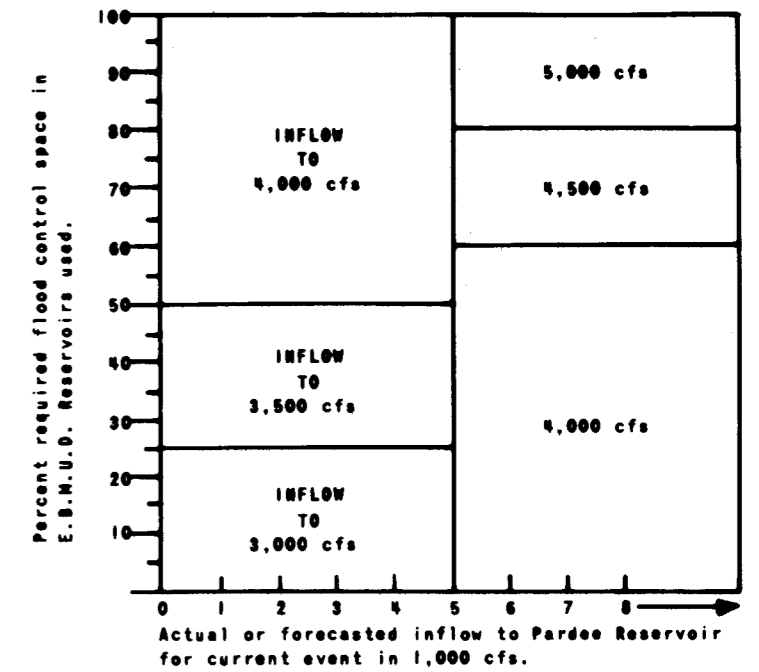
USE OF DIAGRAM

1. Read gross reservation indicated by rain flood reservation line, or parameter within snowmelt flood reservation, whichever is larger. Gross reservation will not, however, be more than 200,000 acre-feet. Parameter value is the forecasted natural runoff in thousand acre-feet into Camanche Reservoir between the given date and 31 July.
2. Subtract nontransferable space to obtain transferable space.
3. Rain Flood Reservation.
 - a. The amount of creditable rain flood transfer space in Salt Springs Reservoir is computed by taking the smaller of:
 - (1) 90,000 acre-feet minus the present storage at Salt Springs when the present storage does not exceed 90,000 acre-feet; or
 - (2) 75% of the total transferable space within the Rain Flood Reservation.
 - b. The amount of creditable rain flood transfer space in Lower Bear is computed by taking the smaller of:
 - (1) 34,000 acre-feet minus the present storage at Lower Bear when the present storage does not exceed 34,000 acre-feet; or
 - (2) 25% of the total transferable space within the Rain Flood Reservation.
 - c. Creditable rain flood transfer space within the rain flood reservation is equal to summation of items 3a and 3b.
4. Snowmelt Flood Reservation.

The amount of creditable transfer space for that portion of the gross reservation within the snowmelt flood reservation is computed as follows:

 - a. The amount of creditable snowmelt transfer space in Salt Springs Reservoir is computed by taking the smaller of:
 - (1) 80% of the quantity (140,000 acre-feet minus the sum of the present storage and creditable rain flood transfer space in Salt Springs Reservoir); or
 - (2) 75% of the gross reservation within the snowmelt flood reservation.
 - b. The amount of creditable snowmelt transfer space in Lower Bear Reservoir is computed by taking the smaller of:
 - (1) 80% of the quantity (52,000 acre-feet minus the sum of the present storage and creditable rain flood transfer space in Lower Bear Reservoir); or
 - (2) 25% of the gross reservation within the snowmelt flood reservation.
 - c. Creditable snowmelt transfer space is equal to the summation of items 4a and 4b.
5. Total creditable transfer space is equal to the summation of items 3c and 4c.
6. Flood control requirement in East Bay Municipal Utility District Reservoirs (Pardee and Camanche) is equal to the gross reservation minus the total creditable transfer space.
7. Required space in Camanche Reservoir is equal to Flood Control requirement for EBMUD Reservoirs minus available space in Pardee Reservoir.
8. When space available for flood control is less than required, as determined above, water shall be released from Camanche Reservoir as rapidly as possible, subject to the following conditions:
 - a. That releases are made according to the **RELEASE SCHEDULE** hereon.
 - b. That flows in Mokelumne River below Camanche Dam do not exceed 5,000 cfs.
 - c. Between 1 November and 12 November, the maximum releases may be limited to less than indicated by **RELEASE SCHEDULE**, provided that no more than 10,000 acre-feet of water is stored in the required flood control space of EBMUD Reservoirs.
 - d. That rate of change in releases shall not exceed 1,000 cfs per 2-hour interval.

RELEASE SCHEDULE



CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA

**FLOOD CONTROL DIAGRAM
CAMANCHE RESERVOIR**

Prepared pursuant to Flood Control Regulations for
Camanche Dam and Reservoir in accordance with Code
of Federal Regulations Title 33 Part 209.11

APPROVED:

APPROVED:

Effective Date: 1-26-1962 File No. 5-26-127

**CAMANCHE RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

WATER CONTROL MANUAL

AUGUST 1981

**EXHIBIT B
CODE OF FEDERAL REGULATIONS
TITLE 33, PAR 208.11**

**Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California**



absence of any indication that further public comment would shed any new light on the matter, OSHA concludes that no change in the standard is warranted. Accordingly, the ground-fault protection standard at 29 CFR 1910.309(c) and 29 CFR 1926.400(h), as promulgated on December 21, 1976, is hereby reaffirmed.

(Secs. 6(b) and 8(c), Pub. L. 91-596, 84 Stat. 1593, 1599 (29 U.S.C. 655, 657); sec. 107, Pub. L. 91-54, 83 Stat. 98 (40 U.S.C. 333); Secretary of Labor's Order No. 8-76 (41 FR 25059); 29 CFR Part 1911.)

Signed at Washington, D.C., this 3d day of October 1978.

EULA BINGHAM,
Assistant Secretary of Labor.

[FR Doc. 78-28687 Filed 10-12-78; 8:45 am]

[3710-92-M]

Title 33—Navigation and Navigable Waters

**CHAPTER II—CORPS OF ENGINEERS,
DEPARTMENT OF THE ARMY**

[ER 1110-2-241]

**PART 208—FLOOD CONTROL
REGULATIONS**

Use of Storage Allocated for Flood Control and Navigation Purposes

AGENCY: U.S. Army Corps of Engineers, DOD.

ACTION: Final rule.

SUMMARY: This revision of 33 CFR 208.11 regulations prescribes the policy and procedure for regulating reservoir projects capable of regulation for flood control or navigation and the use of storage allocated for such purposes and provided on the basis of flood control and navigation. The revised regulations are applicable to dam and reservoir projects licensed, maintained, and operated under provisions of the Federal Power Act (41 Stat. 1063 (16 U.S.C. 791(A))), Pub. L. 83-436, and other similar authorizing legislation; as well as to reservoir projects constructed wholly or in part with Federal funds as directed by section 7 of the Flood Control Act of 1944. These regulations are intended to establish an understanding between project owners, operating agencies and the Corps of Engineers with regard to certain activities and responsibilities concerning water control management throughout the Nation in the interest of flood control and navigation. Interested persons were given until November 2, 1977 (42 FR 57141) to submit comments. No written comments were received.

DATES: This regulation is effective on October 15, 1978.

ADDRESSES: HQDA (DAEN-CWE-HY) Washington, D.C. 20314.

FOR FURTHER INFORMATION CONTACT:

Mr. Edgar P. Story, Engineering Division, Civil Works Directorate, Office of the Chief of Engineers, Washington, D.C. 20314 202-693-7330.

SUPPLEMENTARY INFORMATION: This final regulation is essentially the same as the proposed rule (42 FR 53637), however, certain reordering has been done of the reference material presented in § 208.11(b). Specifically, excerpts from sections 4(e), 10(a), and 10(c) of the Federal Power Act have been added for improved clarity. Also Federal Power Commission order No. 540 issued October 31, 1975, and published November 7, 1975 (40 FR 51998), amending § 2.9 of the Commission's general policy and interpretations which prescribed standardized conditions (Forms) for inclusion in preliminary permits and licenses issued under part I of the Federal Power Act has been cited and appropriately excerpted. Reference to and citation from article 33 of Federal Power Commission license No. 2009 have been deleted in lieu thereof.

In addition to the proposed action, certain project names and pertinent data are added to and deleted from the list of projects shown in § 208.11(e), list of projects (42 FR 53637). The following projects are added to the list of projects:

- (a) U.S. Army Corps of Engineers, Missouri River Division area: Webster Dam and Lake.
- (b) U.S. Army Corps of Engineers, New England Division area:
 - (i) Bear Swamp Pumped Storage Project.
 - (ii) Turners Falls Reservoir.
- (c) U.S. Army Corps of Engineers, North Pacific Division area:
 - (i) American Falls Dam and Reservoir.
 - (ii) Anderson Ranch Dam and Reservoir.
 - (iii) Arrowrock Dam and Reservoir.
 - (iv) Brownlee Dam and Reservoir.
 - (v) Grand Coulee Dam and Franklin D. Roosevelt Lake.
 - (vi) Heils Canyon Dam and Reservoir.
 - (vii) Kerr Dam and Flathead Lake.
 - (viii) Mayfield Dam and Reservoir.
 - (ix) Mossyrock Dam and Davison Lake.
 - (x) Oxbow Dam and Reservoir.
 - (xi) Priest Rapids Dam and Reservoir.
 - (xii) Ririe Dam and Reservoir.
 - (xiii) Rocky Reach Dam and Lake Entiat.
 - (xiv) Ross Dam and Reservoir.
 - (xv) Upper Baker Dam and Baker Lake.

(xvi) Wanapum Dam and Reservoir.
(xvii) Wells Dam and Lake Pateros.

(d) U.S. Army Corps of Engineers, South Atlantic Division area: Lewis M. Smith Dam and Reservoir.

(e) U.S. Army Corps of Engineers, South Pacific Division area:

- (i) Indian Valley Dam and Reservoir.
- (ii) Lemon Dam and Reservoir.
- (iii) Navajo Dam and Reservoir.
- (iv) Paolina Dam and Reservoir.
- (v) Vallecito Dam and Reservoir.

The following projects are deleted from the list of projects:

(a) U.S. Army Corps of Engineers, South Atlantic Division area: H. Neely Henry Dam and Reservoir.

(b) U.S. Army Corps of Engineers, South Pacific Division area:

- (i) Causey Dam and Reservoir.
- (ii) Devil Creek Dam and Reservoir.

NOTE.—The Chief of Engineers has determined that this rule does not contain a major proposal requiring preparation of an inflation impact statement under Executive Order 11821 and OMB Circular A-107 (Statutory Authority Pub. L. 90-483).

Dated: October 10, 1978.

CHARLES I. MCGINNIS,
Major General, USA,
Director of Civil Works.

Section 208.11 is revised to read as follows:

§ 208.11 Regulations for use of storage allocated for flood control or navigation and/or project operation at reservoirs subject to prescription of rules and regulations by the Secretary of the Army in the interest of flood control and navigation.

(a) *Purpose.* This regulation prescribes the responsibilities and general procedures for regulating reservoir projects capable of regulation for flood control or navigation and the use of storage allocated for such purposes and provided on the basis of flood control and navigation, except projects owned and operated by the Corps of Engineers; the International Boundary and Water Commission, United States and Mexico; and those under the jurisdiction of the International Joint Commission, United States, and Canada, and the Columbia River Treaty. The intent of this regulation is to establish an understanding between project owners, operating agencies, and the Corps of Engineers.

(b) *Responsibilities.* The basic responsibilities of the Corps of Engineers regarding project operation are set out in the cited authority and described in the following paragraphs:

(1) Section 7 of the Flood Control Act of 1944 (58 Stat. 890, 33 U.S.C. 709) directs the Secretary of the Army to prescribe regulations for flood control and navigation in the following manner:

Hereafter, it shall be the duty of the Secretary of War to prescribe regulations for the use of storage allocated for flood control or navigation at all reservoirs constructed wholly or in part with Federal funds provided on the basis of such purposes, and the operation of any such project shall be in accordance with such regulations: *Provided*, That this section shall not apply to the Tennessee Valley Authority, except that in case of danger from floods on the lower Ohio and Mississippi Rivers the Tennessee Valley Authority is directed to regulate the release of water from the Tennessee River into the Ohio River in accordance with such instructions as may be issued by the War Department.

(2) Federal Energy Regulatory Commission (formerly Federal Power Commission (FPC)) licenses.

(i) Responsibilities of the Secretary of the Army and/or the Chief of Engineers in Federal Energy Regulatory Commission (FERC) licensing actions are set out in the Federal Power Act. Pertinent sections of that Act are cited herein. The Commission may also stipulate, as part of license conditions, that the licensee enter into an agreement with the Department of the Army providing for operation of the project during flood times, in accordance with rules and regulations prescribed by the Secretary of the Army.

(A) Section 4(e) of the Federal Power Act requires approval by the Chief of Engineers and the Secretary of the Army of plans of dams or other structures affecting the navigable capacity of any navigable waters of the United States, prior to issuance of a license by the Commission as follows:

The Commission is hereby authorized and empowered to issue licenses to citizens * * * for the purpose of constructing, operating, and maintaining dams, water conduits, reservoirs, powerhouses, transmission lines, or other project works necessary or convenient for the development and improvement of navigation and for the development, transmission, and utilization of power across, along, from or in any of the streams or other bodies of water over which Congress has jurisdiction * * * *Provided further*, That no license affecting the navigable capacity of any navigable waters of the United States shall be issued until the plans of the dam or other structures affecting navigation have been approved by the Chief of Engineers and the Secretary of the Army.

(B) Sections 10(a) and 10(c) of the Federal Power Act specify conditions of project licenses including the following:

(1) Section 10(a). That the project adopted * * * shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use of benefit of interstate or foreign commerce, for the improvement and utilization of waterpower development, and for other beneficial public use * * *.

(2) Section 10(c). That the licensee shall * * * so maintain and operate said works as

not to impair navigation, and shall conform to such rules and regulations as the Commission may from time to time prescribe for the protection of life, health, and property. * * *

(C) Section 18 of the Federal Power Act directs the operation of any navigation facilities built under the provision of that act, be controlled by rules and regulations prescribed by the Secretary of the Army as follows:

The operation of any navigation facilities which may be constructed as part of or in connection with any dam or diversion structure built under the provisions of this Act, whether at the expense of a licensee hereunder or of the United States, shall at all times be controlled by such reasonable rules and regulations in the interest of navigation; including the control of the pool caused by such dam or diversion structure as may be made from time to time by the Secretary of the Army. * * *

(ii) Federal Power Commission order No. 540 issued October 31, 1975, and published November 7, 1975 (40 FR 51998), amending section 2.9 of the Commission's general policy and interpretations prescribed standardized conditions (forms) for inclusion in preliminary permits and licenses issued under part I of the Federal Power Act. As an example, article 12 of standard form L-3, titled: "Terms and Conditions of License for Constructed Major Projects Affecting Navigable Waters of the United States," sets out the Commission's interpretation of appropriate sections of the Act, which deal with navigation aspects, and attendant responsibilities of the Secretary of the Army in licensing actions as follows:

The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operation of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property. * * *, and the Licensee shall release water from the project reservoir at such rate * * *, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

(3) Section 9 of Public Law 436, 83d Congress (68 Stat. 303) provides for the development of the Coosa River, Ala. and Ga., and directs the Secretary of the Army to prescribe rules and regulations for project operation in the interest of flood control and navigation as follows:

The operation and maintenance of the dams shall be subject to reasonable rules and regulations of the Secretary of the Army in the interest of flood control and navigation.

NOTE.—This Regulation will also be applicable to dam and reservoir projects operated under provisions of future legislative acts wherein the Secretary of the Army is directed to prescribe rules and regulations in the interest of flood control and navigation. The Chief of Engineers, U.S. Army Corps of Engineers, is designated the duly authorized representative of the Secretary of the Army to exercise the authority set out in the congressional acts. This regulation will normally be implemented by letters of understanding between the Corps of Engineers and project owner and will incorporate the provisions of such letters of understanding prior to the time construction renders the project capable of significant impoundment of water. A water control agreement signed by both parties will follow when deliberate impoundment first begins or at such time as the responsibilities of any corps-owned projects may be transferred to another entity. Promulgation of this regulation for a given project will occur at such time as the name of the project appears in the FEDERAL REGISTER in accordance with the requirements of § 208.11(d)(11). When agreement on a water control plan cannot be reached between the corps and the project owner after coordination with all interested parties, the project name will be entered in the FEDERAL REGISTER and the Corps of Engineers plan will be the official water control plan until such time as differences can be resolved.

(c) *Scope and terminology.* This regulation applies to Federal authorized flood control and/or navigation storage projects, and to non-Federal projects which require the Secretary of the Army to prescribe regulations as a condition of the license, permit or legislation, during the planning, design and construction phases, and throughout the life of the project. In compliance with the authority cited above, this regulation defines certain activities and responsibilities concerning water control management throughout the Nation in the interest of flood control and navigation. In carrying out the conditions of this regulation, the owner and/or operating agency will comply with applicable provisions of Pub. L. 85-624, the Fish and Wildlife Coordination Act of 1958, and Pub. L. 92-500, the Federal Water Pollution Control Act Amendments of 1972. This regulation does not apply to local flood protection works governed by § 208.10, or to navigation facilities and associated structures which are otherwise covered by part 207 (Navigation Regulations) of title 33 of the code. Small reservoirs, containing less than 12,500 acre-feet of flood control or navigation storage, may be excluded from this regulation and covered under § 208.10, unless specifically required by law or conditions of the license or permit.

(1) The terms "reservoir" and "project" as used herein include all water resource impoundment projects constructed or modified, including natural lakes, that are subject to this regulation.

(2) The term "project owner" refers to the entity responsible for maintenance, physical operation, and safety of the project, and for carrying out the water control plan in the interest of flood control and/or navigation as prescribed by the Corps of Engineers. Special arrangements may be made by the project owner for "operating agencies" to perform these tasks.

(3) The term "letter of understanding" as used herein includes statements which consummate this regulation for any given project and define the general provisions or conditions of the local sponsor, or owner, cooperation agreed to in the authorizing legislative document, and the requirements for compliance with section 7 of the 1944 Flood Control Act, the Federal Power Act or other special congressional act. This information will be specified in the water control plan and manual. The letter of understanding will be signed by a duly authorized representative of the Chief of Engineers and the project owner. A "field working agreement" may be substituted for a letter of understanding, provided that the specified minimum requirements of the latter, as stated above, are met.

(4) The term "water control agreement" refers to a compilation of water control criteria, guidelines, diagrams, release schedules, rule curves and specifications that basically govern the use of reservoir storage space allocated for flood control or navigation and/or release functions of a water control project for these purposes. In general, they indicate controlling or limiting rates of discharge and storage space required for flood control and/or navigation, based on the runoff potential during various seasons of the year.

(5) For the purpose of this regulation, the term "water control plan" is limited to the plan of regulation for a water resources project in the interest of flood control and/or navigation. The water control plan must conform with proposed allocations of storage capacity and downstream conditions or other requirements to meet all functional objectives of the particular project, acting separately or in combination with other projects in a system.

(6) The term "real-time" denotes the processing of current information or data in a sufficiently timely manner to influence a physical response in the system being monitored and controlled. As used herein the term connotes "the analyses for and execution of water control decisions for both minor and major flood events and for navigation, based on prevailing hydrometeorological and other conditions and constraints, to achieve efficient management of water resource systems.

(d) *Procedures.* (1) *Conditions during project formulation.* During the planning and design phases, the project owner should consult with the Corps of Engineers regarding the quantity and value of space to reserve in the reservoir for flood control and/or navigation purposes, and for utilization of the space, and other requirements of the license, permit or conditions of the law. Relevant matters that bear upon flood control and navigation accomplishment include: runoff potential, reservoir discharge capability, downstream channel characteristics, hydrometeorological data collection, flood hazard, flood damage characteristics, real estate acquisition for flowage requirements (fee and easement), and resources required to carry out the water control plan. Advice may also be sought on determination of and regulation for the probable maximum or other design flood under consideration by the project owner to establish the quantity of surcharge storage space, and freeboard elevation of top of dam or embankment for safety of the project.

(2) *Corps of Engineers involvement.* If the project owner is responsible for real-time implementation of the water control plan, consultation and assistance will be provided by the Corps of Engineers when appropriate and to the extent possible. During any emergency that affects flood control and/or navigation, the Corps of Engineers may temporarily prescribe regulation of flood control or navigation storage space on a day-to-day (real-time) basis without request of the project owner. Appropriate consideration will be given for other authorized project functions. Upon refusal of the project owner to comply with regulations prescribed by the Corps of Engineers, a letter will be sent to the project owner by the Chief of Engineers or his duly authorized representative describing the reason for the regulations prescribed, events that have transpired, and notification that the project owner is in violation of the Code of Federal Regulations. Should an impasse arise, in that the project owner or the designated operating entity persists in noncompliance with regulations prescribed by the Corps of Engineers, measures may be taken to assure compliance.

(3) *Corps of Engineers implementation of real-time water control decisions.* The Corps of Engineers may prescribe the continuing regulation of flood control storage space for any project subject to this regulation on a day-to-day (real-time) basis. When this is the case, consultation and assistance from the project owner to the extent possible will be expected. Special requests by the project owner, or appropriate operating entity, are preferred

before the Corps of Engineers offers advice on real-time regulation during surcharge storage utilization.

(4) *Water control plan and manual.* Prior to project completion, water control managers from the Corps of Engineers will visit the project and the area served by the project to become familiar with the water control facilities, and to insure sound formulation of the water control plan. The formal plan of regulation for flood control and/or navigation, referred to herein as the water control plan, will be developed and documented in a water control manual prepared by the Corps of Engineers. Development of the manual will be coordinated with the project owner to obtain the necessary pertinent information, and to insure compatibility with other project purposes and with surcharge regulation. Major topics in the manual will include: Authorization and description of the project, hydrometeorology, data collection and communication networks, hydrologic forecasting, the water control plan, and water resource management functions, including responsibilities and coordination for water control decisionmaking. Special instructions to the dam tender or reservoir manager on data collection, reporting to higher Federal authority, and on procedures to be followed in the event of a communication outage under emergency conditions, will be prepared as an exhibit in the manual. Other exhibits will include copies of this regulation, letters of understanding consummating this regulation, and the water control agreements. After approval by the Chief of Engineers or his duly authorized representative, the manual will be furnished the project owner.

(5) *Water control agreement.* (1) A water control diagram (graphical) will be prepared by the Corps of Engineers for each project having variable space reservation for flood control and/or navigation during the year; e.g., variable seasonal storage, joint-use space, or other rule curve designation. Reservoir inflow parameters will be included on the diagrams when appropriate. Concise notes will be included on the diagrams prescribing the use of storage space in terms of release schedules, runoff, nondamaging or other controlling flow rates downstream of the damsite, and other major factors as appropriate. A water control release schedule will be prepared in tabular form for projects that do not have variable space reservation for flood control and/or navigation. The water control diagram or release schedule will be signed by a duly authorized representative of the Chief of Engineers, the project owner, and the designated operating agency, and will be used as the basis for carrying out this

regulation. Each diagram or schedule will contain a reference to this regulation.

(ii) When deemed necessary by the Corps of Engineers, information given on the water control diagram or release schedule will be supplemented by appropriate text to assure mutual understanding on certain details or other important aspects of the water control plan not covered in this regulation, on the water control diagram or in the release schedule. This material will include clarification of any aspects that might otherwise result in unsatisfactory project performance in the interest of flood control and/or navigation. Supplementation of the agreement will be necessary for each project where the Corps of Engineers exercises the discretionary authority to prescribe the flood control regulation on a day-to-day (real-time) basis. The agreement will include delegation of the responsibility. The document should also cite, as appropriate, section 7 of the 1944 Flood Control Act, the Federal Power Act and/or other congressional legislation authorizing construction and/or directing operation of the project.

(iii) All flood control regulations published in the FEDERAL REGISTER under this section (part 208) of the code prior to the date of this publication which are listed in paragraph 208.11(e) are hereby superseded.

(iv) Nothing in this regulation prohibits the promulgation of specific regulations for a project in compliance with the authorizing acts, when agreement on acceptable regulations cannot be reached between the Corps of Engineers and the owner.

(6) *Hydrometeorological instrumentation.* The project owner will provide instrumentation in the vicinity of the damsite and will provide communication equipment necessary to record and transmit hydrometeorological and reservoir data to all appropriate Federal authorities on a real-time basis unless there are extenuating circumstances or are otherwise provided for as a condition of the license or permit. For those projects where the owner retains responsibility for real-time implementation of the water control plan, the owner will also provide or arrange for the measurement and reporting of hydrometeorological parameters required within and adjacent to the watershed and downstream of the damsite, sufficient to regulate the project for flood control and/or navigation in an efficient manner. When data collection stations outside the immediate vicinity of the damsite are required, and funds for installation, observation, and maintenance are not available from other sources, the Corps of Engineers may agree to share the costs for such stations with the

project owner. Availability of funds and urgency of data needs are factors which will be considered in reaching decisions on cost sharing.

(7) *Project safety.* The project owner is responsible for the safety of the dam and appurtenant facilities and for regulation of the project during surcharge storage utilization. Emphasis upon the safety of the dam is especially important in the event surcharge storage is utilized, which results when the total storage space reserved for flood control is exceeded. Any assistance provided by the Corps of Engineers concerning surcharge regulation is to be utilized at the discretion of the project owner, and does not relieve the owner of the responsibility for safety of the project.

(8) *Notification of the general public.* The Corps of Engineers and other interested Federal and State agencies, and the project owner will jointly sponsor public involvement activities, as appropriate, to fully apprise the general public of the water control plan. Public meetings or other effective means of notification and involvement will be held, with the initial meeting being conducted as early as practicable but not later than the time the project first becomes operational. Notice of the initial public meeting shall be published once a week for 3 consecutive weeks in one or more newspapers of general circulation published in each county covered by the water control plan. Such notice shall also be used when appropriate to inform the public of modifications in the water control plan. If no newspaper is published in a county, the notice shall be published in one or more newspapers of general circulation within that county. For the purposes of this section a newspaper is one qualified to publish public notices under applicable State law. Notice shall be given in the event significant problems are anticipated or experienced that will prevent carrying out the approved water control plan or in the event that an extreme water condition is expected that could produce severe damage to property or loss of life. The means for conveying this information shall be commensurate with the urgency of the situation. The water control manual will be made available for examination by the general public upon request at the appropriate office of the Corps of Engineers, project owner or designated operating agency.

(9) *Other generalized requirements for flood control and navigation.* (i) Storage space in the reservoirs allocated for flood control and navigation purposes shall be kept available for those purposes in accordance with the water control agreement, and the plan

of regulation in the water control manual.

(ii) Any water impounded in the flood control space defined by the water control agreement shall be evacuated as rapidly as can be safely accomplished without causing downstream flows to exceed the controlling rates; i.e., releases from reservoirs shall be restricted insofar as practicable to quantities which, in conjunction with uncontrolled runoff downstream of the dam, will not cause water levels to exceed the controlling stages currently in force. Although conflicts may arise with other purposes, such as hydropower, the plan or regulation may require releases to be completely curtailed in the interest of flood control or safety of the project.

(iii) Nothing in the plan of regulation for flood control shall be construed to require or allow dangerously rapid changes in magnitudes of releases. Releases will be made in a manner consistent with requirements for protecting the dam and reservoir from major damage during passage of the maximum design flood for the project.

(iv) The project owner shall monitor current reservoir and hydro-meteorological conditions in and adjacent to the watershed and downstream of the damsite, as necessary. This and any other pertinent information shall be reported to the Corps of Engineers on a timely basis, in accordance with standing instructions to the dam-tender or other means requested by the Corps of Engineers.

(v) In all cases where the project owner retains responsibility for real-time implementation of the water control plan, he shall make current determinations of: Reservoir inflow, flood control storage utilized, and scheduled releases. He shall also determine storage space and releases required to comply with the water control plan prescribed by the Corps of Engineers. The owner shall report this information on a timely basis as requested by the Corps of Engineers.

(vi) The water control plan is subject to temporary modification by the Corps of Engineers if found necessary in time of emergency. Requests for and action on such modifications may be made by the fastest means of communication available. The action taken shall be confirmed in writing the same day to the project owner and shall include justification for the action.

(vii) The project owner may temporarily deviate from the water control plan in the event an immediate short-term departure is deemed necessary for emergency reasons to protect the safety of the dam, or to avoid other serious hazards. Such actions shall be immediately reported by the fastest

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means of communication available. Actions shall be confirmed in writing the same day to the Corps of Engineers and shall include justification for the action. Continuation of the deviation will require the express approval of the Chief of Engineers, or his duly authorized representative.

(viii) Advance approval of the Chief of Engineers, or his duly authorized representative, is required prior to any deviation from the plan of regulation prescribed or approved by the Corps of Engineers in the interest of flood control and/or navigation, except in emergency situations provided for in paragraph (d)(9)(vii) of this section. When conditions appear to warrant a prolonged deviation from the approved plan, the project owner and the Corps of Engineers will jointly investigate and evaluate the proposed deviation to insure that the overall integrity of the plan would not be unduly compromised. Approval of prolonged deviations will not be granted unless such investigations and evaluations have been conducted to the extent deemed necessary by the Chief of Engineers, or his designated representatives, to fully substantiate the deviation.

(10) *Revisions.* The water control plan and all associated documents will be revised by the Corps of Engineers, as necessary, to reflect changed conditions that come to bear upon flood control and navigation, e.g., reallocation of reservoir storage space due to sedimentation or transfer of storage space to a neighboring project. Revision of the water control plan, water control agreement, water control diagram, or release schedule requires approval of the Chief of Engineers or his duly authorized representative. Each such revision shall be effective upon the date specified in the approval. The

original (signed document) water control agreement shall be kept on file in the Office, Chief of Engineers, Department of the Army, Washington, D.C. Copies of the agreement shall be kept on file and may be obtained from the office of the project owner, or from the office of the appropriate Division Engineer, Corps of Engineers.

(11) *Federal Register.* The following information for each project subject to section 7 of the 1944 Flood Control Act and other applicable congressional acts shall be published in the FEDERAL REGISTER prior to the time the projects becomes operational and prior to any significant impoundment before project completion or * * * at such time as the responsibility for physical operation and maintenance of the Corps of Engineers owned projects is transferred to another entity: (i) Reservoir, dam, and lake names, (ii) stream, county, and State corresponding to the damsite location, (iii) the maximum current storage space in acre-feet to be reserved exclusively for flood control and/or navigation purposes, or any multiple-use space (intermingled) when flood control or navigation is one of the purposes, with corresponding elevations in feet above mean sea level, and area in acres at the upper and lower limits of said space, (iv) the name of the project owner, and (v) congressional legislation authorizing the project for Federal participation.

(e) *List of projects.* The following tables, "Pertinent Project Data—Section 208.11 Regulation," show the pertinent data for projects which are subject to this regulation.

(Sec. 7, Pub. L. 78-534, 58 Stat. 890 (33 U.S.C. 709); the Federal Power Act, 41 Stat. 1063 (16 U.S.C. 791(A)); and Sec. 9, Pub. L. 83-436, 68 Stat. 303.)

[FR Doc. 78-29100 Filed 10-12-78; 8:45 am]

with regard to certain activities and responsibilities concerning water control management throughout the nation in the interest of flood control and navigation.

EFFECTIVE DATE: November 30, 1981.

FOR FURTHER INFORMATION CONTACT:
Mr. Earl Eiker, Chief, Water Control/
Quality Section, Office, Commander,
U.S. Army Corps of Engineers,
Department of the Army, Washington,
DC 20314 (202) 272-0234.

SUPPLEMENTARY INFORMATION:

Note.—The Commander has determined that this rule is not a "major rule" proposal requiring preparation of a regulatory impact analysis under Executive Order 12291.
Dated: November 16, 1981.

James W. Ray,
Colonel, Corps of Engineers, Executive
Director, Engineer Staff.

PART 208—FLOOD CONTROL REGULATIONS

§ 208.11 [Amended]

Accordingly 33 CFR 208.11 is amended by revising the table in paragraph (e) as follows:

LIST OF PROJECTS

[Pertinent project data]

Project name ¹	State, county and stream ¹	Exclusive-use				Multiple-use				Project owner ²	Authorizing legislation ³	
		Flood control/navigation				Flood control/navigation						
		Storage (1,000 AF)	Elevation limits (feet, m.s.l.)		Area (acres)		Storage (1,000 AF)	Elevation limits (feet, m.s.l.)				Area (acres)
Upper	Lower		Upper	Lower	Upper	Lower		Upper	Lower			
Alpine Dam.....	IL, Winnebago, Keith Cr.....	0.6	796.0	764.0	52	0					City of Rockford, IL.....	PWA Proj. PL 68-292.
Agency Valley Dam & Res.	OR, Malheur, N. Fork Malheur R.....										USBR.....	FERC 2259.
American Fall Dam & Res.	ID, Power, Snake River.....										USBR.....	Act of 1939 53 Stat 1187.
Anderson Ranch Dam & Res.	ID, Elmore, S. Fk. Boise River.....										USBR.....	
Arrowrock Dam & Res.....	ID, Elmore, Boise River.....										USBR.....	Act of 1902 32 Stat 388.
Bear Cr Dam.....	MO, Marion Ralls, Bear Cr.....	8.7	546.5	520.0	540	0					City of Hannibal, MO.....	PL 83-790.
Bear Swamp Pumped Storage	MA, Franklin, Deerfield R Trib.....										New England Pwr Co.....	Fed Pwr Act.
Big Dry Creek and Div.....	CA, Fresno, Big Dry Cr & Dog Cr.....	16.2	425.0	393.0	1,530	0					Reclamation Board of CA.....	PL 77-228.
Bocu Dam & Res.....	CA, Nevada, Little Truckee R.....					41	5,805.0	5,596.4	980	873	USBR.....	PL 61-289, PL 68-292.
Bonny Dam & Res.....	CO, Yuma, S. Fork Republican R.....	128.8	3,710.0	3,872.0	5,036	2,042					USBR.....	PL 78-534.
Boysen Dam & Res.....	WY, Fremont, Wild River.....	146.0	4,732.0	4,725.0	22,100	19,560					USBR.....	PL 78-534.
Brownlee Dam & Res.....	OR, Baker, ID, Washington, Snake River.....										USBR.....	PL 78-534.
Bully Cr Dam & Res.....	OR, Malheur, Bully Creek.....										Idaho Pwr Co.....	FERC No 1971-C.
Camaranche Dam & Res.....	CA, San Joaquin, Mokelumne R.....										USBR.....	PL 86-248.
Canyon Ferry Dam & Lk.....	MT, Lewis, Clark, Missouri R.....										USBR.....	PL 86-845.
Cedar Bluff Dam & Res.....	KS, Trego, Smoky Hill River.....	191.9	2,168.0	2,144.0	10,790	6,869					USBR.....	PL 78-534.
Clark Canyon Dam & Res.....	MT, Beaverhead, Beaverhead River.....	79.1	5,560.4	5,546.1	5,903	5,160					USBR.....	PL 78-534.
Del Valle Dam & Res.....	CA, Alameda, Alameda Cr.....	37.0	745.0	703.1	1,060	710					CA Dept of Wtr Res.....	PL 87-874.
Don Pedro Dam & Lk.....	CA, Tuolumne, Tuolumne R.....										USBR.....	PL 78-534.
East Canyon Dam & Res.....	UT, Morgan, East Canyon Creek.....										USBR.....	PL 78-534.
Echo Dam & Res.....	UT, Summit, Weber River.....										USBR.....	PL 81-273.
Emigrant Dam & Res.....	OR, Jackson, Emigrant Cr.....	39.0	2,241.0	2,131.5	801	80					USBR.....	PL 83-606.
Enders Dam & Res.....	NB, Chase, Frenchman Cr.....	30.0	3,127.0	3,112.3	2,405	1,707					USBR.....	PL 78-534.
Folsom Dam & Lk.....	CA, Sacramento, American R.....										USBR.....	PL 81-358.
Friant Dam & Millerton Lk.....	CA, Fresno, San Joaquin River.....										USBR.....	PL 75-392, PL 76-868.
Gaston-Roanoke Rapids Dam Res.	NC, Northhampton, Halifax, Roanoke R.....	63.0	203.0	200.0	22,500	20,300					VA Elec & Pwr Co.....	Fed Pwr Act.
Glen Elder Dam & Wacanda Lk.	KS, Mitchel, Solomon R.....	722.3	1,488.0	1,455.6	33,682	12,602					USBR.....	PL 78-534, PL 79-526.
Glendo Dam & Res.....	WY, Platte, N. Platte R.....	271.9	4,853.0	4,853.0	17,966	12,365					USBR.....	PL 78-534.
Grand Coulee Dam, FDR Lk.	WA, Okanogan, Grant, Columbia R.....										USBR.....	PL 69-561.
H. Neely Henry.....	AL, Calhoun, St. Clair, Coosa River.....										Alabama, Pwr Co.....	PL 83-436.
Heart Butte Dam & Lk Tachida.	ND, Grant, Heart River.....	150.0	2,084.5	2,064.5	6,625	3,400					USBR.....	PL 78-534.
Hells Canyon Dam & Res.....	OR, Wallowa, ID, Adams, Snake River.....										Idaho Pwr Co.....	FERC No 1971-A.
Hoover Dam & Lake Mead.	NV, Clark, AZ, Mohave, Colorado R.....	1,500	1,228.0	1,219.6	162,700	156,500					USBR.....	PL 70-642.
Hungry Horse Dam & Res.	MT, Flathead, S. Fork Flathead R.....	2,982.0	3,560.0	3,336.0	23,800	5,400					USBR.....	PL 78-329.
Indian Valley Dam & Res.	CA, Lake, N. Fork Cache Creek.....										USBR.....	PL 84-984 Cons Dist.
Jamestown Dam & Res.....	ND, Stutsman, James River.....	185.4	1,454.0	1,432.7	13,206	2,555					USBR.....	PL 78-534.
Kerr Dam, Flathead Lk.....	MT, Lake, Flathead R.....										Montana Pwr Co.....	FERC No 5.
Keyhole Dam & Res.....	WY, Crook, Belle Fourche River.....	140.2	4,111.5	4,099.3	13,686	9,394					USBR.....	PL 78-534.
Kirwin Dam & Res.....	KS, Phillips, N. Fork Solomon R.....	215.1	1,757.3	1,729.3	10,640	5,073					USBR.....	PL 78-534.
Lemon Dam & Res.....	CO, La Plata, Florida R.....										USBR.....	PL 84-485.
Lewis M. Smith Dam & Res.	AL, Walker, Cullman, Sipsey Fork Black Warrior River.....	280.0	522.0	510.0	25,700	21,200					Alabama Pwr Co.....	Fed Pwr Act.
Little Wood.....	ID, Blain, Little Wood River.....	30.0	5,237.3	5,127.8	574	0					USBR.....	PL 84-993.

B-5

LIST OF PROJECTS—Continued
(Pertinent project data)

Project name ¹	State, county and stream ¹	Exclusive-use					Multiple-use					Project owner ²	Authorizing legislation ³
		Flood control/navigation					Flood control/navigation						
		Storage (1,000 AF)	Elevation limits (feet, m.s.l.)		Area (acres)		Storage (1,000 AF)	Elevation limits (feet, m.s.l.)		Area (acres)			
Upper	Lower		Upper	Lower	Upper	Lower		Upper	Lower				
Logan Martin Dam & Res	AL, Talladega, Coosa River	245.3	477.0	465.0	26,310	15,260						Alabama Pwr Co.	PL 83-436.
Los Banos Dam & Detention.	CA, Merced, Los Banos Cr						14.0	353.5	327.8	619	467	USBR	PL 86-488.
Lost Creek Dam & Res	UT, Morgan, Lost Creek						20.0	6,005.0	5,912.0	365	93	USBR	PL 81-273.
Lovewell Dam & Res	KS, Jewell, White Rock Cr	50.5	1,595.3	1,582.6	5,025	2,986						USBR	PL 78-534.
Markham Ferry Dam, Lake Wash E. Hudson.	OK, Mayes, Grand Neosho River	244.2	636.0	619.0	18,000	10,900						Grand R Dam Authority	PL 76-476.
Mayfield Dam & Res	WA, Lewis, Cowlitz River						21.4	425.0	415.0	2,070	1,825	City of Tacoma	FPC No 2016-A.
Medicine Cr Dam Harry Strunk Lk.	NB, Frontier, Medicine Cr	52.2	2,386.2	2,366.1	3,465	1,850						USBR	PL 78-534.
Mossyrock Dam Davison Lk.	WA, Lewis, Cowlitz River						1,397.0	778.5	621.5	11,800	5,000	City of Tacoma	FERC No 2016-B.
Navajo Dam & Res	NM, San Juan, Arriba, Rio, San Juan R						1,036.1	6,085.0	5,990.0	15,610	7,400	USBR	PL 84-485.
New Exchequer Dam & Lake.	CA, Tuolumne, Merced River						400.0	867.0	799.7	7,110	4,849	Merced Irr.	PL 86-425.
New Melones Dam & Lk.	CA, Tuolumne, Calaveras, Stanislaus R						450.0	1,088.0	1,049.5	12,500	10,900	USBR	PL 87-874.
Norton Dam Res	KS, Norton, Prairie Dog Cr	98.8	2,331.4	2,304.3	5,316	5,316						USBR	PL 78-534.
Ochoco Dam & Res	OR, Crook, Ochoco Creek	51.4	3,136.2	3,048.1	1,150	120						USBR	PL 84-992.
Oroville Dam & Lake	CA, Butte, Feather River						750.0	900.0	848.5	15,800	13,346	CA Dept of Wtr Res	PL 85-500.
Oxbow Dam & Res	OR, Baker, ID, Adams, Snake River						5.0	1,805.0	1,800.0	1,165	1,115	Idaho Pwr Co	FERC No 1971-B.
Pactola Dam & Res	SD, Pennington, Rapid Creek	34.0	4,821.5	4,580.2	1,232	860						USBR	PL 78-534.
Palisades Dam & Res.	ID, Bonneville, Snake River	1,202.0	5,620.0	5,452.4	16,100	2,170						USBR	PL 81-864.
Paonia Dam & Res	CO, Gunnison, Muddy Creek						17.0	6,447.5	6,373.0	334	120	USBR	PL 80-177, PL 84-485.
Pineview Dam & Res	UT, Weber, Ogden River						110.0	4,900.0	4,818.0	2,874	0	USBR	PL 81-273.
Piatono Dam & Res	CO, Conejos, Conejos R	6.0	10,034.0	10,027.5	947	920	54.0	10,027.5	9,911.0	920	0	USBR	PL 76-640.
Priest Rapid Dam & Res.	WA, Grant, Columbia R						44.0	488.0	481.0	7,100	6,500	Grant County PUD No 2	FERC No 2114-A.
Pineville Dam & Res	OR, Crook, Crooked Cr	153.0	3,234.8	3,112.0	2,990	120						USBR	PL 84-992.
Prosser Cr & Res	CA, Nevada, Prosser Cr						20.0	5,741.2	5,703.7	745	334	USBR	PL 84-858.
Pueblo Dam & Res	CO, Pueblo, Arkansas R	27	4,898.7	4,893.8	5,664	5,350	66.0	4,893.8	4,880.6	5,350	4,641	USBR	PL 87-590
Red Willow Dam, Hugh Butler Lk.	NB, Frontier, Red Willow	48.9	2,604.0	2,581.8	2,682	1,629						USBR	PL 78-534, PL 85-783.
Ririe Dam & Res	ID, Bonneville, Willow Cr						99.0	5,119.0	5,023.0	1,560	360	USBR	PL 87-874.
Rocky Reach Dam Lk Entiat.	WA, Chelan, Columbia R						37.0	707.0	703.0	9,600	0	Chelan Cnty PUD No 1	FERC No 2145.
Ross Dam & Res	WA, Whatcom, Skagit R						530.5	1,602.5	1,475.0	6,000	2,168	City of Seattle	FERC No 553-C.
Sanford Dam & Lk Meredith.	TX, Hutchison, Canadian R	462.1	2,965.0	2,941.3	21,640	17,320						USBR	PL 81-808.
Savage River Dam & Res	MD, Garrett, Savage R						16.0	1,468.5	1,400.0	366	127	Upper Potomac R Commission.	PL 78-534.
Shadehill Dam & Res	SD, Perkins, Grand R	217.7	2,302.0	2,272.0	9,900	4,800						USBR	PL 78-534.
Shasta Dam & Lake.	CA, Shasta, Sacramento R						1,300.0	1,067.0	1,018.6	29,570	23,894	USBR	PL 75-392.
Smith Mtn & Leesville Dam & Res.	VA, Bedford, Campbell, VA, Pittsylvania, Roanoke River.						(⁴)	(⁴)	(⁴)	(⁴)	(⁴)	Appalachian Pwr Co	Fed Pwr Act.
Stampede Dam & Res.	CA, Sierra, Little Truckee R						226.5	5,948.7	5,942.1	3,430	3,230	USBR	PL 84-858.
Trenton Dam & Res	NB, Hitchcock, Republican R	133.8	2,773.0	2,752.0	7,975	4,974						USBR	PL 78-534.
Twitchell Dam & Res	CA, Santa Barbara, Cuyama River	89.0	651.5	623.0	3,690	2,650						USBR	PL 83-774.
Upper Baker Dam, Baker Lk.	WA, Whatcom, Baker River						220.6	724.0	655.0	4,890	0	Puget Sound Pwr Light Co.	PL 89-298, FERC 2150-B.
Vallecito Dam & Res	CO, La Plata, Los Pinos R						115.4	7,965	7,600	2,723	683	USBR	PL 81-288, PL 66-292.
Wanapum Dam & Res.	WA, Grant, Columbia R						151.6	571.5	560.0	14,400	9,600	Grant Cnty PUD No 2	FERC No 2114-B.
Wanship Dam & Rockport	UT, Summit, Weber River						61.0	6,037.0	5,930.0	1,077	121	USBR	PL 81-273.
Warm Springs Dam & Res.	OR, Malheur, Middle Fork Malheur R						191.0	3,406.0	3,327.0	4,600	90	50% Yale Irr 50% USBR	
Waterbury Dam & Res	VT, Washington, Little River	27.2	617.5	592.0	1,330	890						State of VT	PL 78-534.
Weiss Dam & Res	AL, Cherokee, Coosa River	397.0	574.0	564.0	50,000	30,200						Alabama Pwr Co.	PL 83-436.
Wells Dam Lk Paterns.	WA, Douglas, Columbia R						74.0	799.0	711.0	10,700	7,700	Douglas Cnty PUD No 1	FERC No 2149.
Webster Dam & Res.	KS, Rocks, S. Fork Solomon R	183.4	1,923.7	1,892.45	8,480	3,786						USBR	PL 534 78-2.
Yellowtail Dam & Bighorn Lk.	MT, Big Horn, Bighorn R	258.0	3,657.0	3,640.0	17,298	12,685	250.0	3,640.0	3,614.0	12,685	7,410	USBR	PL 78-534.

¹ Res—Reservoir; Lk—Lake; Div—Division; R—River; Cr—Creek.

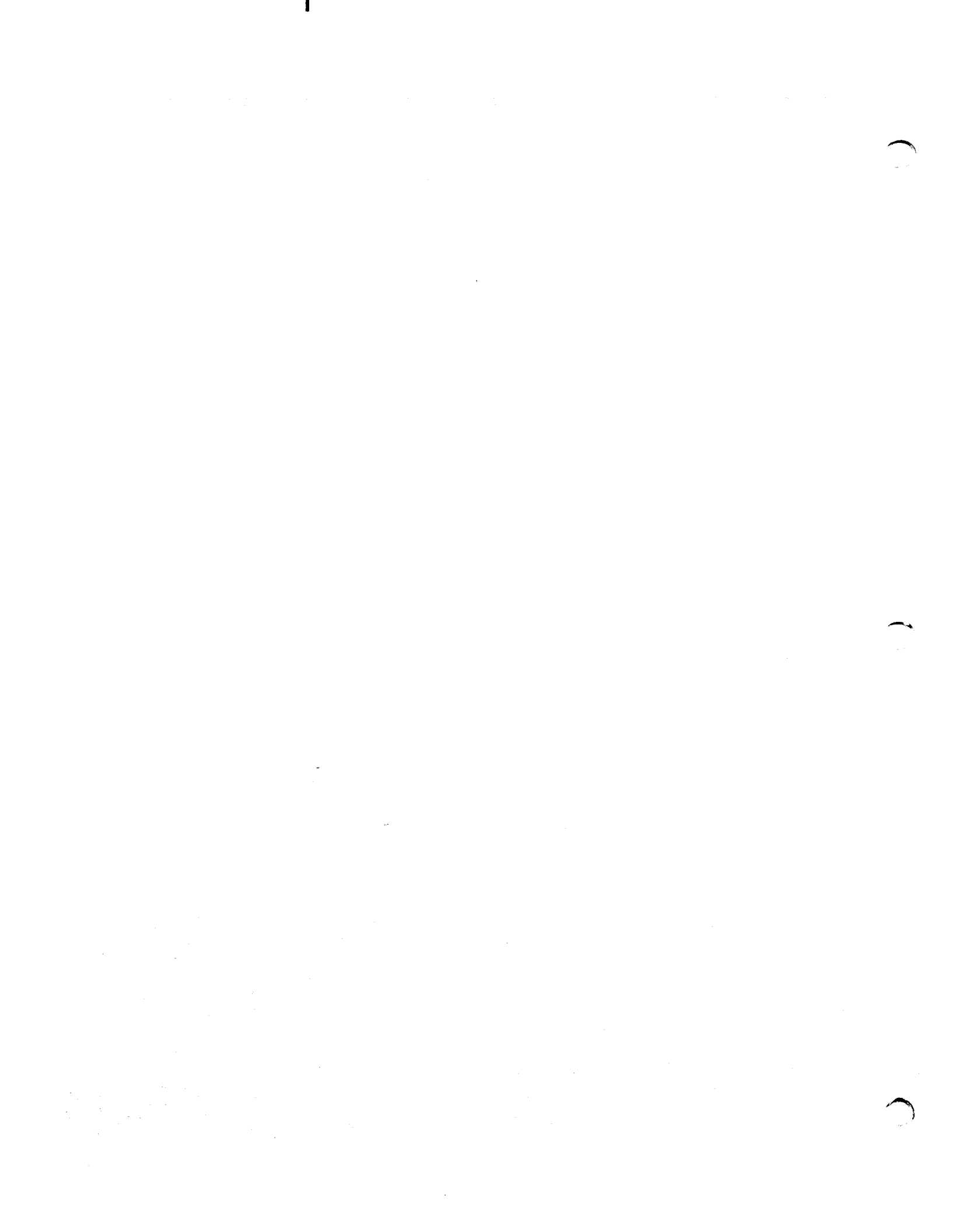
² USBR—United States Bureau of Reclamation; Irr—Irrigation District; Mun—Municipal; Fl—Flood; Res—Resources.

[FR Doc. 81-34222 Filed 11-27-81; 8:45 am]

SELLING CODE 3710-88-M

³ PL—Public Law; HD—House Document; FERC—Federal Energy Regulatory Commission (formerly Federal Power Commission (FPC)).

⁴ No specific FC/Nav. storage allocation.



**CAMANCHE DAM AND RESERVOIR
MOKELUMNE RIVER, CALIFORNIA**

WATER CONTROL MANUAL

AUGUST 1981

EXHIBIT C

**FIELD WORKING AGREEMENT
CAMANCHE DAM AND RESERVOIR**

**Department of the Army
Sacramento District, Corps of Engineers
Sacramento, California**



FIELD WORKING AGREEMENT
BETWEEN
EAST BAY MUNICIPAL UTILITY DISTRICT
AND
DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS
FOR
FLOOD CONTROL OPERATION
OF
CAMANCHE DAM AND RESERVOIR
ON
MOKELUMNE RIVER, CALIFORNIA

THIS agreement, made and entered into this 19 day of April 1982, between the East Bay Municipal Utility District hereinafter referred to as the Utility District and the Department of the Army, Corps of Engineers, hereinafter referred to as the Corps of Engineers.

WITNESSETH THAT:

WHEREAS, under terms of contract number DA-04-167-CIVENG-62-57 entered into 19 March 1962 by the United States of America and the Utility District, the Utility District agrees to provide 200,000 acre-feet of flood space in Camanche Reservoir, and

WHEREAS, Utility District, owner and operator of Camanche Dam and Reservoir, represented by the General Manager is responsible for normal operations and structural safety of the project, and

WHEREAS, the Department of the Army, acting through the Corps of Engineers, represented by its appropriate District and Division Engineers, is responsible for the flood control operation plan of said dam and reservoir in accordance with Section 7 of the 1944 Flood Control Act (33 U.S.C. 709) and as promulgated in code of Federal Regulations, Title 33, Part 208.11, and

WHEREAS, there is a need for a working agreement to insure a clear understanding of the flood control regulations and information exchange required for the project operation.

NOW, THEREFORE, it is mutually understood and agreed by and between the parties hereto that the Camanche Dam and Reservoir will be operated in accordance with the following criteria:

(a) Conservation operations shall be in accordance with the Utility District criteria as determined by the General Manager or his designated representative.

(b) Storage space in the Camanche Dam and Reservoir shall be made available on a seasonal basis and operated for flood control in accordance with the Flood Control Diagram currently in force.

(c) Emergency operation shall be in accordance with the procedures currently in force.

(d) The Utility District is responsible for the safety of the dam and appurtenant facilities and for regulation of the Camanche Dam and Reservoir during surcharge storage utilization. Emphasis upon the safety of the dam is especially important in the event surcharge storage is utilized, which results when the total storage space reserved for flood control is exceeded. Any assistance provided by the Corps of Engineers concerning surcharge regulation is to be utilized at the discretion of the Utility District, and does not relieve the Utility District of the responsibility for safety of the Camanche Dam and Reservoir.

(e) Revisions of the Flood Control Diagram may be developed as necessary by parties of this agreement. Each such revision shall be effected on the date specified.

(f) Except as necessary in order to comply with Emergency Operation procedures, the flood control regulations shall not be construed to require dangerously rapid changes in magnitude of releases. Releases will be made in a manner consistent with requirements for protecting the dam, reservoir, and appurtenances from major damages.

(g) Any water impounded in the flood control space defined by the Flood Control Diagram shall be evacuated as rapidly as can be safely accomplished without causing downstream flows to exceed the controlling rates; i.e., releases from the reservoir shall be restricted insofar as practicable to quantities which, in conjunction with uncontrolled runoff downstream of the dam, will not cause water levels to exceed the controlling stages currently in force. Although conflicts may arise with other purposes, such as hydropower, the plan or regulation may require releases to be completely curtailed in the interest of flood control or safety of the project.

(h) The General Manager shall procure such current basic hydrologic data and make such current determinations of required flood control space and releases at the reservoir independently or in conjunction with the Corps of Engineers as are required to accomplish the flood control objectives.

(i) The General Manager shall keep the District Engineer advised of currently available hydrometeorological reservoir operating data as the District Engineer may request. The minimum data required is reservoir storage, releases and streamflow at control points designated by the Flood Control Diagram on a daily basis.

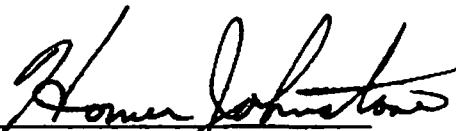
(j) The flood control regulations are subject to temporary modification by the Corps of Engineers if found necessary in time of emergency. Requests for and action on such modifications may be made by the fastest means of communication available. The action taken shall be confirmed in writing the same day to the office of the General Manager and shall include justification for the action.

(k) The General Manager may temporarily deviate from the flood control regulations in the event an immediate short-term departure is deemed necessary for emergency reasons to protect the safety of the dam, or to avoid other serious hazards. Such actions shall be immediately reported by the fastest means of communication available. Actions shall be confirmed in writing the same day to the Corps of Engineers and shall include justification for the action. Continuation of the deviation will require the express approval of the Division Engineer.

IN WITNESS WHEREOF, the parties hereto have caused this memorandum of agreement to be executed as the day and date first above written.

CORPS OF ENGINEERS

EAST BAY MUNICIPAL UTILITY DISTRICT

By: 
Division Engineer
South Pacific Division

By: 
General Manager