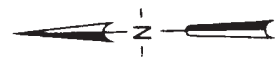
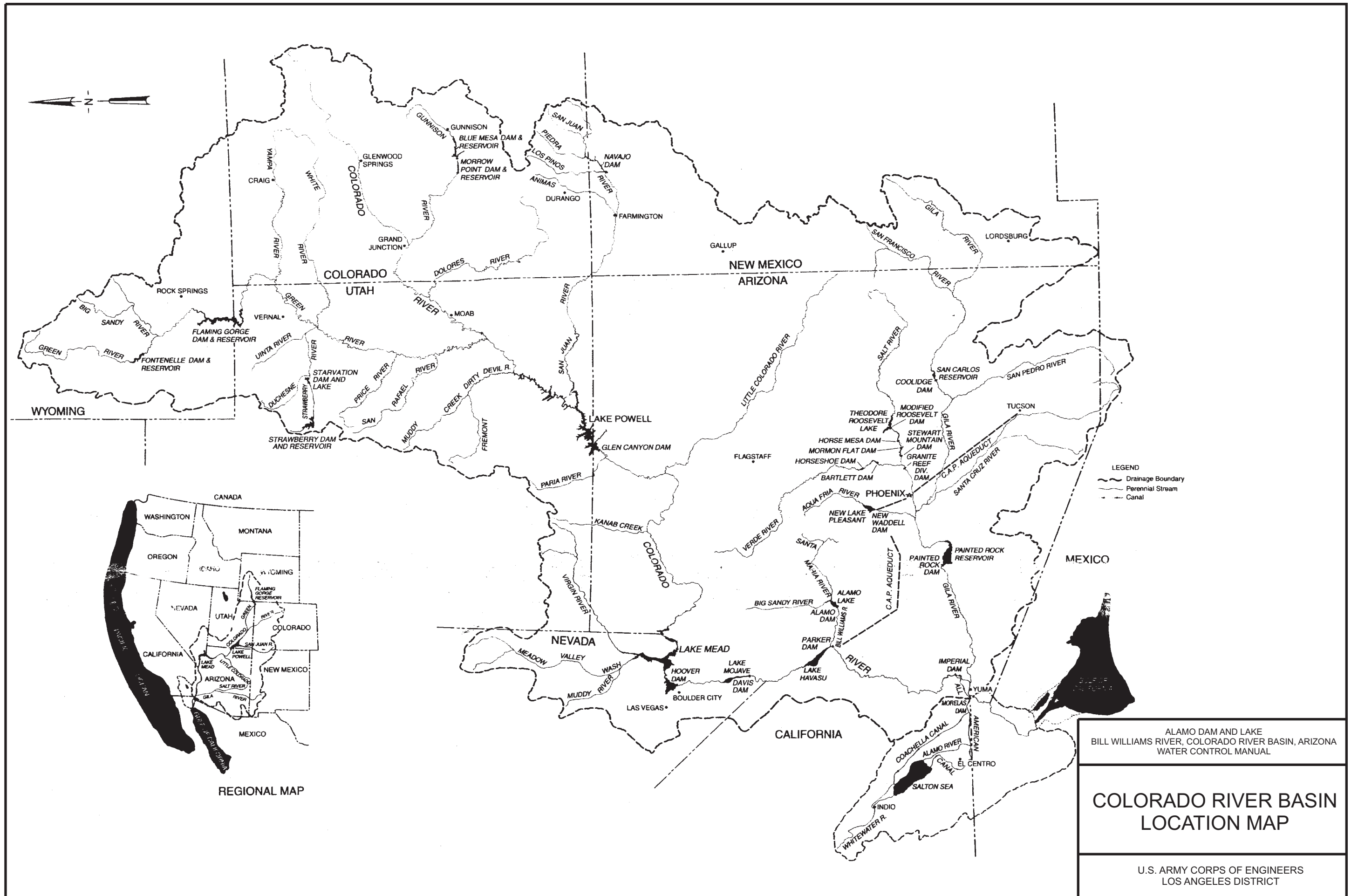


PLATES



LEGEND
 --- Drainage Boundary
 --- Perennial Stream
 --- Canal

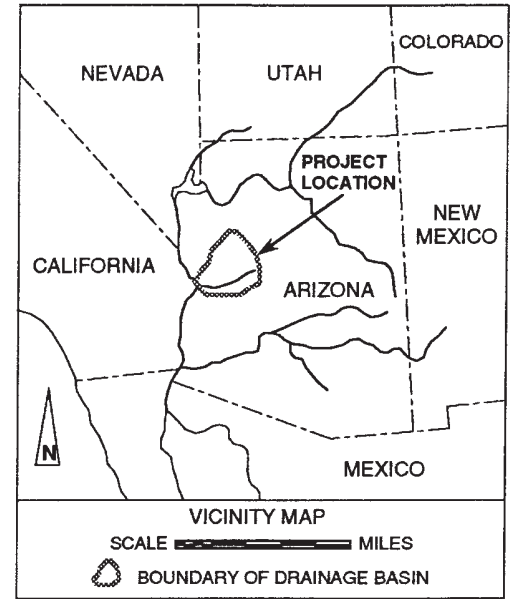
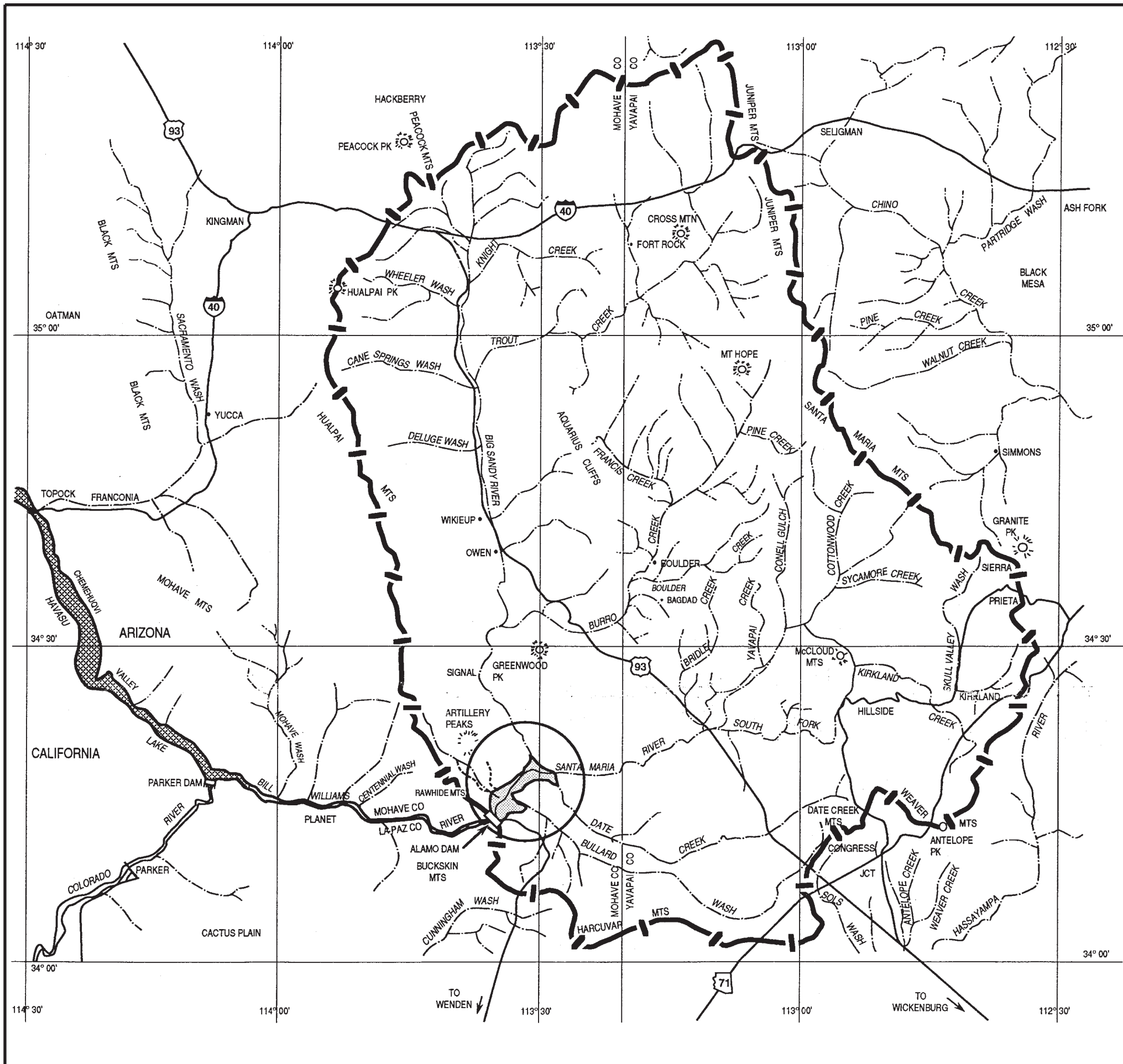


REGIONAL MAP





ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

COLORADO RIVER BASIN LOCATION MAP

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



LEGEND

-  BOUNDARY OF DRAINAGE AREA
-  INTERSTATE HIGHWAY
-  U.S. HIGHWAY
-  ARIZONA HIGHWAY

NOTE:

BASE MAP TRACED FROM AN ENLARGEMENT OF A PORTION OF U.S.G.S. MAP (SCALE 1:300,000) OF STATE OF ARIZONA



ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

PROJECT LOCATION

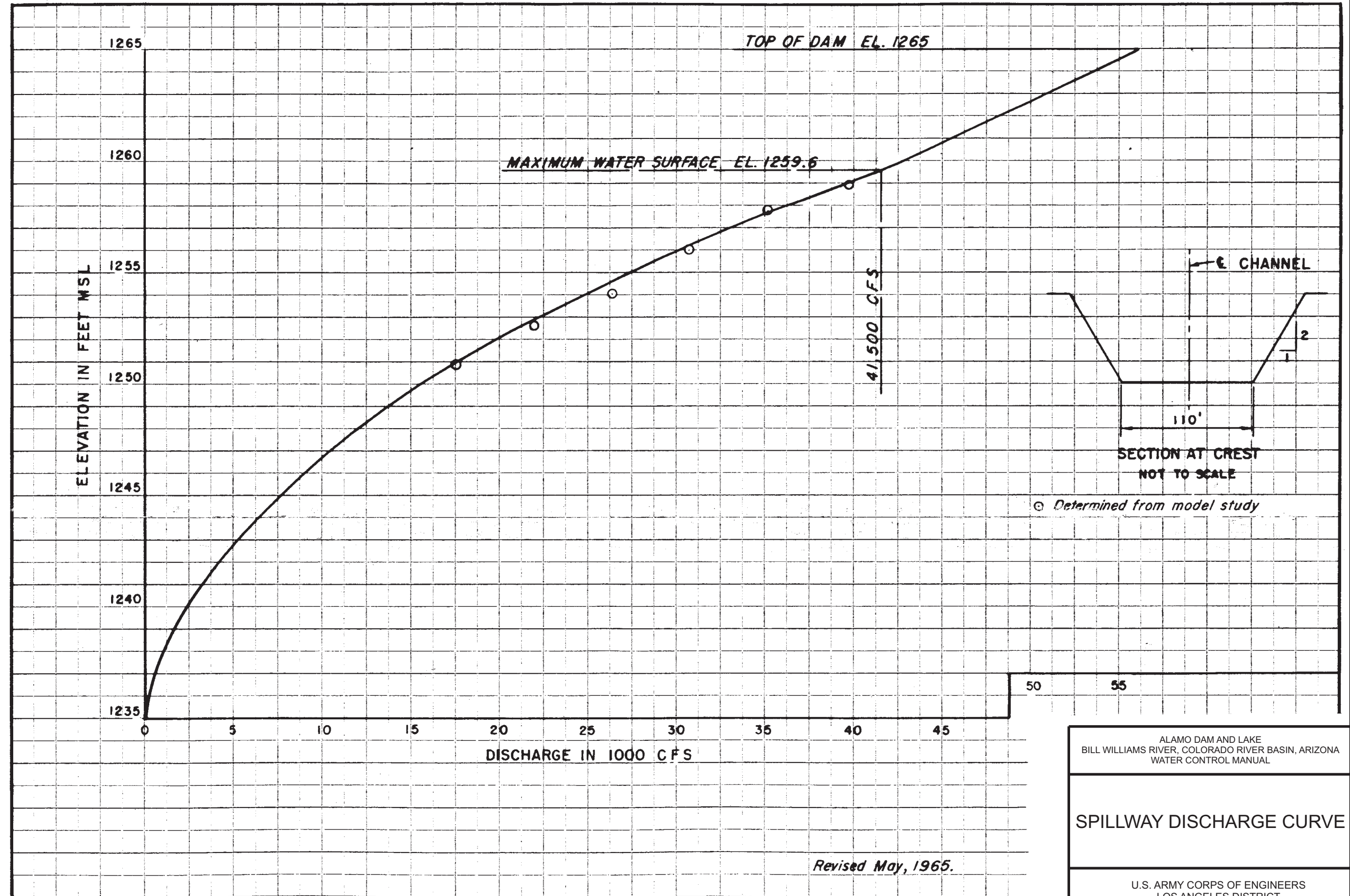
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

The Plate you are attempting to access (Plate 2-02) is not currently available.

For additional information, please contact the Los Angeles District Public Affairs Office at (213) 452-3908.

The Plate you are attempting to access (Plate 2-03) is not currently available.

For additional information, please contact the Los Angeles District Public Affairs Office at (213) 452-3908.



ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

SPILLWAY DISCHARGE CURVE

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

The Plate you are attempting to access (Plate 2-05) is not currently available.

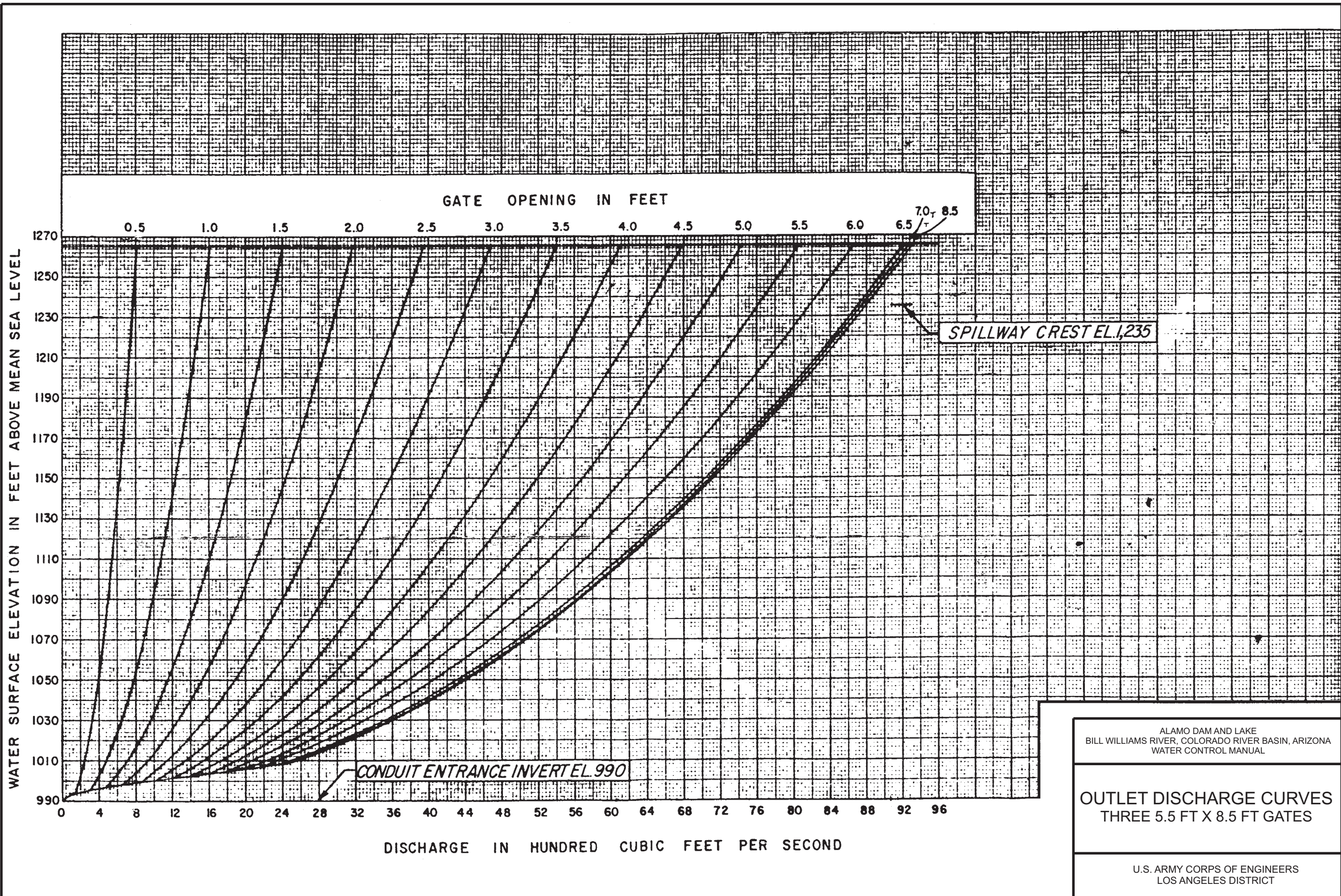
For additional information, please contact the Los Angeles District Public Affairs Office at (213) 452-3908.

The Plate you are attempting to access (Plate 2-06) is not currently available.

For additional information, please contact the Los Angeles District Public Affairs Office at (213) 452-3908.

The Plate you are attempting to access (Plate 2-07) is not currently available.

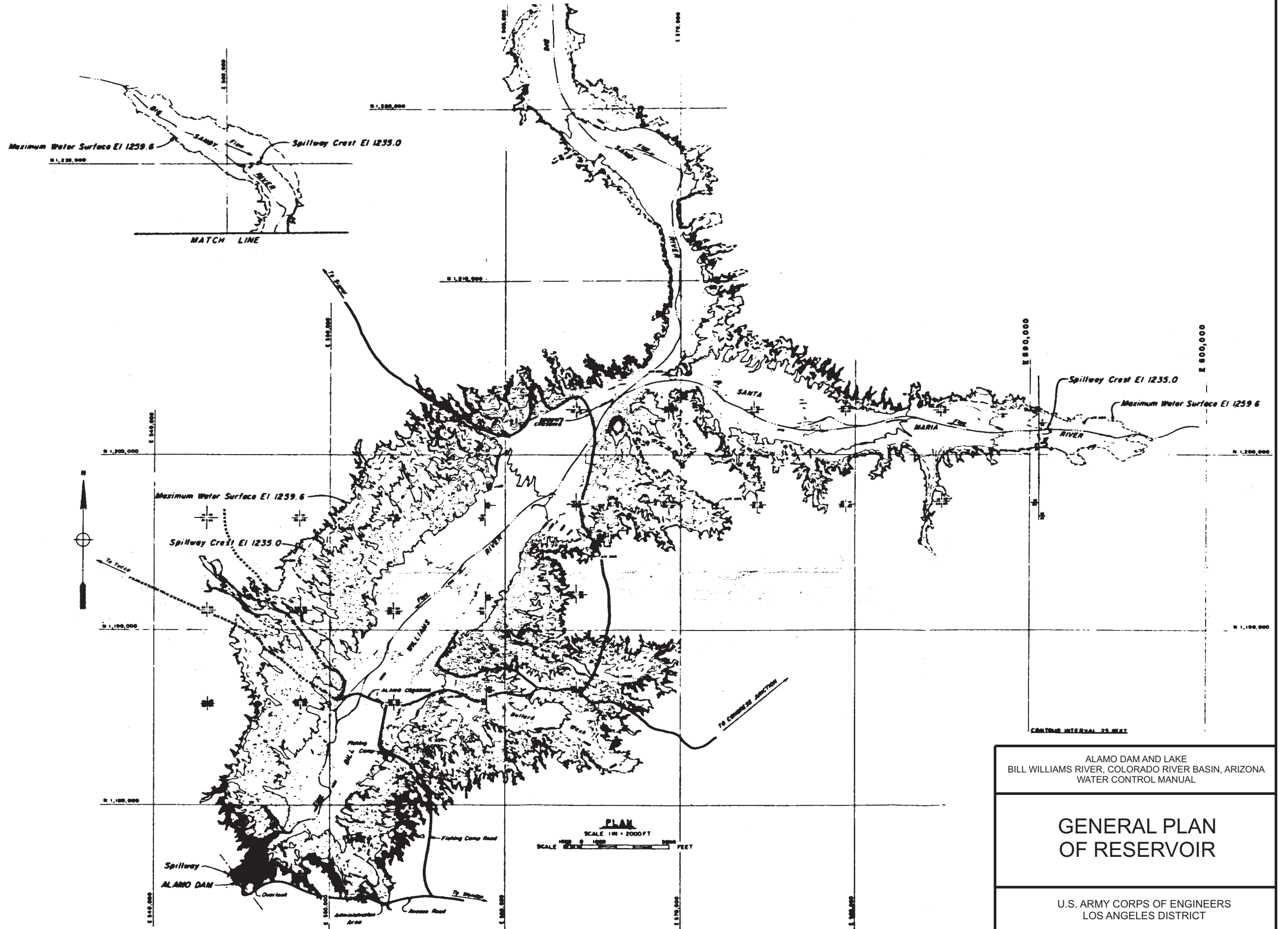
For additional information, please contact the Los Angeles District Public Affairs Office at (213) 452-3908.



ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

OUTLET DISCHARGE CURVES
 THREE 5.5 FT X 8.5 FT GATES

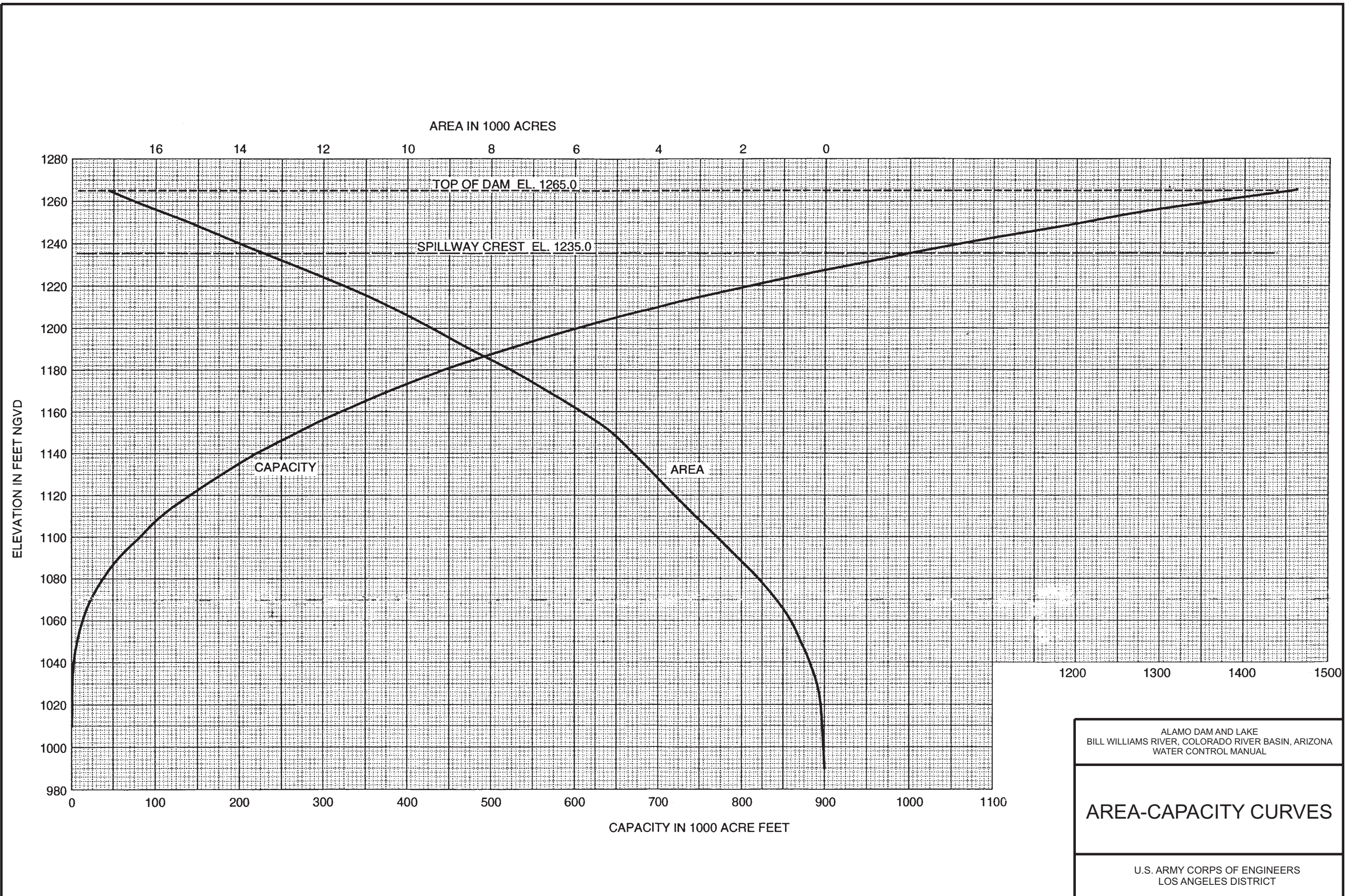
U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

GENERAL PLAN OF RESERVOIR

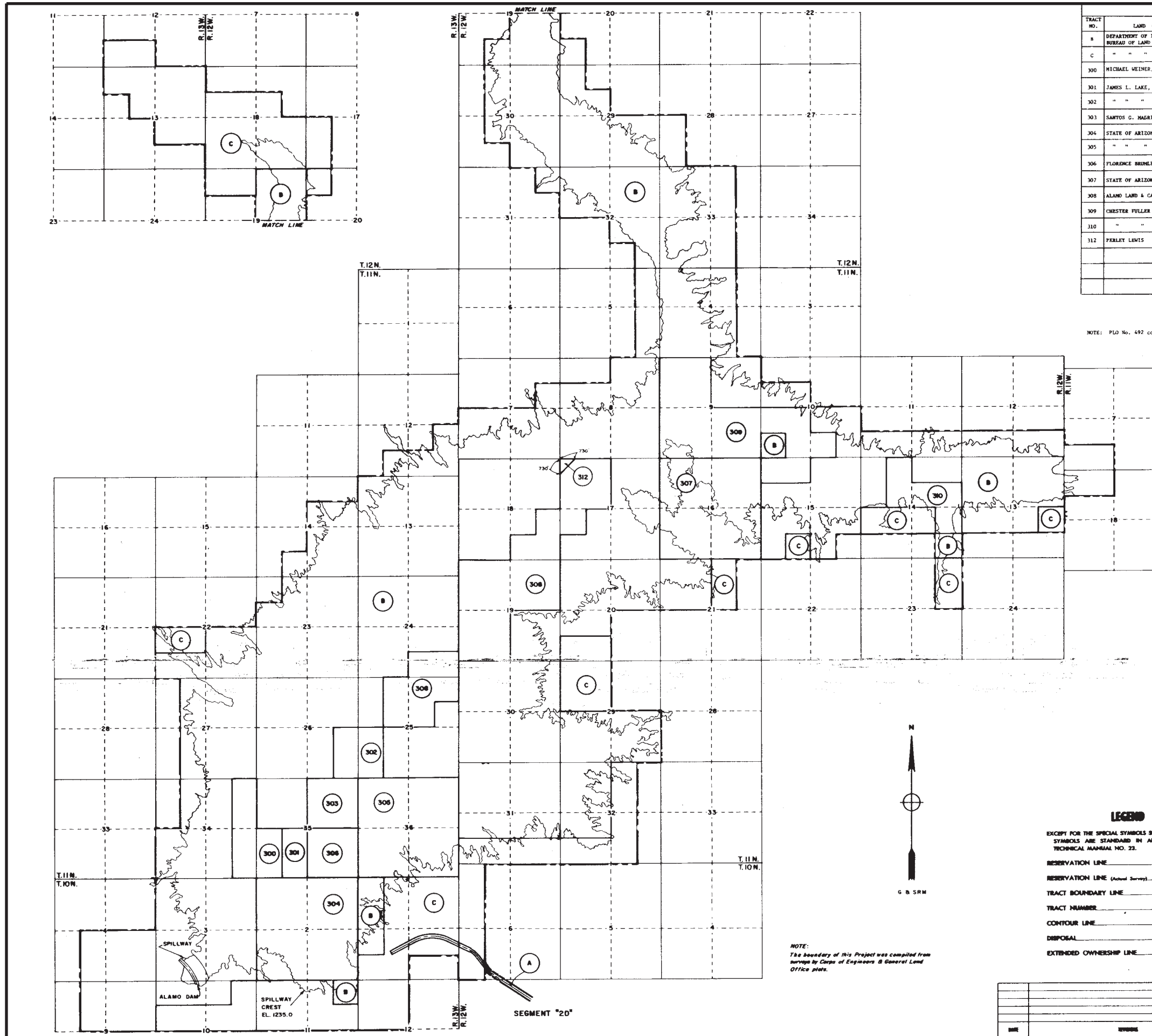
U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

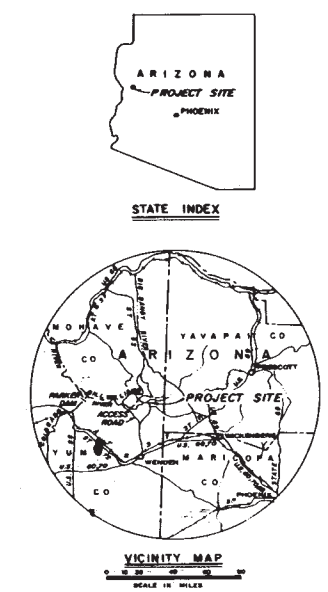
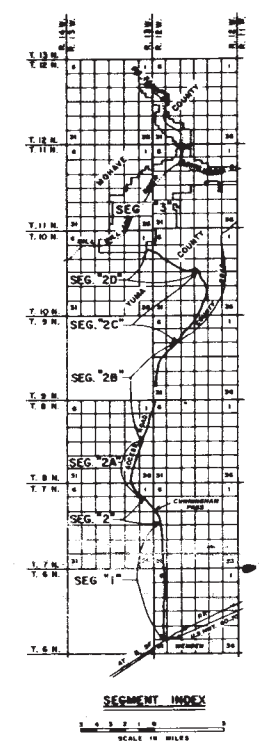
AREA-CAPACITY CURVES

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



TRACT REGISTER					
TRACT NO.	LAND OWNER	ACREAGE		REMARKS	
		FEE	TRANSFER		
a	DEPARTMENT OF INTERIOR BUREAU OF LAND MANAGEMENT	14,889.12		PLD No. 492 dated 2 July 1948	
c	" " " "		3,488.62	Withdrawal order pending.	
300	MICHAEL WEINER, et al	240.00		D/T filed 31 May 1966 - Civil #6005-PHX	
301	JAMES I. LAKE, et al	80.00		" " " " " "	
302	" " " "	160.00		" " " " " "	
303	SANTOS G. MAGRILL, et ux	160.00		" " " " " "	
304	STATE OF ARIZONA	642.92		" " " " " "	
305	" " " "	640.00		" " " " " "	
306	FLORENCE BRINLEY	160.00		Dead dated 18 Oct 65. Formerly Lease No. DA-04-353-CIVENG-6-65-173.	
307	STATE OF ARIZONA	640.00		D/T filed 31 May 1966 - Civil #6005-PHX.	
308	ALAMO LAND & CATTLE CO.	1064.96		D/T filed 14 Mar 69 - Civil #69-101-PHX. Additional 6.12 acres in Tract # 312.	
309	CHESTER FULLER	720.00		D/T filed 29 Sep 67 - Civil #6471-PHX	
310	" " " "	200.00		" " " " " "	
312	FERLEY LEWIS	6.12		D/T filed 14 Mar 69 - Civil #69-101-PHX. Taken as part of Tract #308.	

NOTE: PLD No. 492 covers 19,403.12 acres of which 4,514.00 acres is in private ownership.



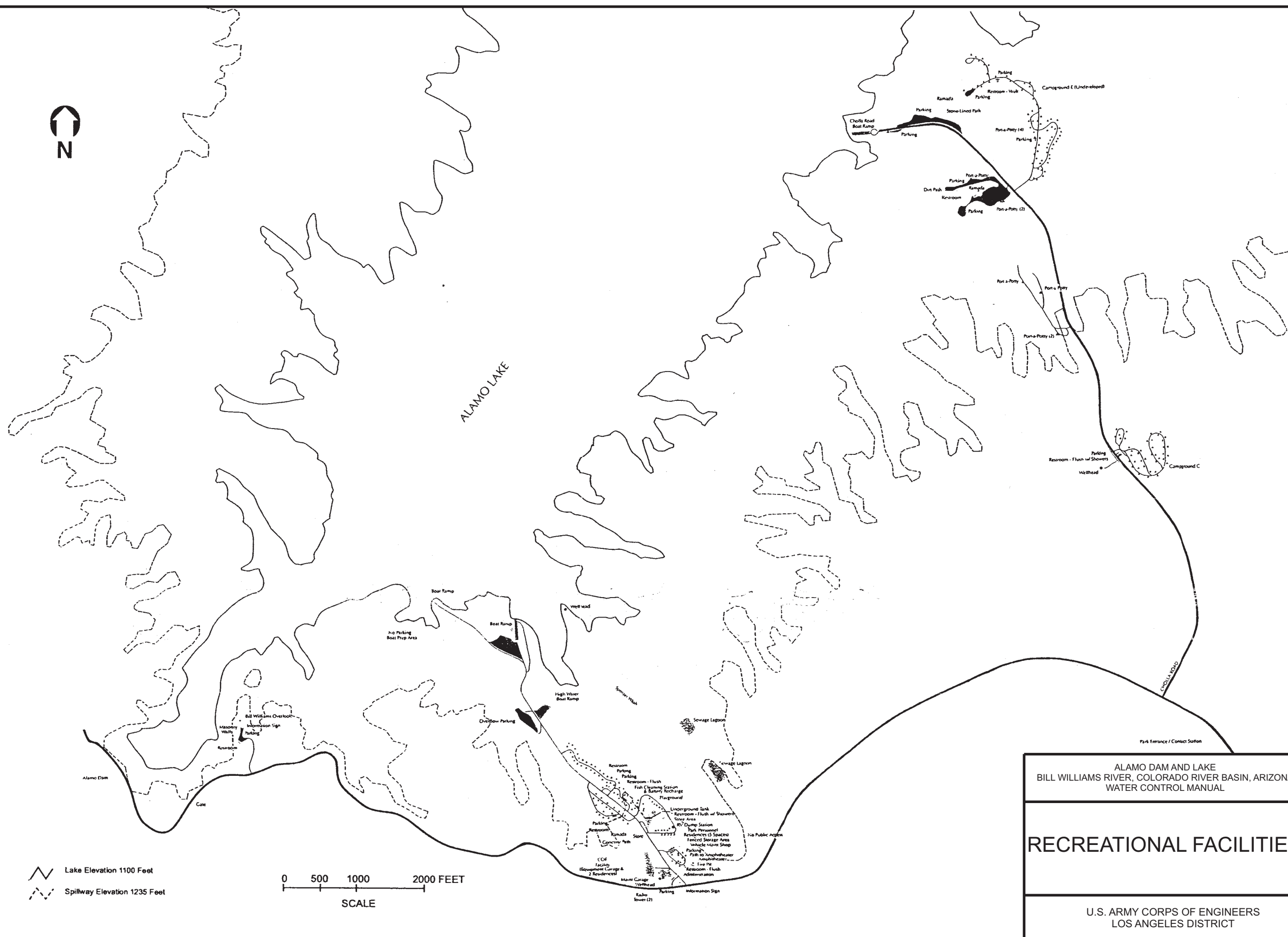
NOTE: The boundary of this Project was compiled from surveys by Corps of Engineers & General Land Office plans.



- LEGEND**
- EXCEPT FOR THE SPECIAL SYMBOLS SHOWN BELOW MAP SYMBOLS ARE STANDARD IN ARMY MAP SERVICE TECHNICAL MANUAL NO. 22.
- RESERVATION LINE
 - RESERVATION LINE (Actual Survey)
 - TRACT BOUNDARY LINE
 - TRACT NUMBER
 - CONTOUR LINE
 - DISPOSAL
 - EXTENDED OWNERSHIP LINE

ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

**REAL ESTATE
BOUNDARIES**

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT



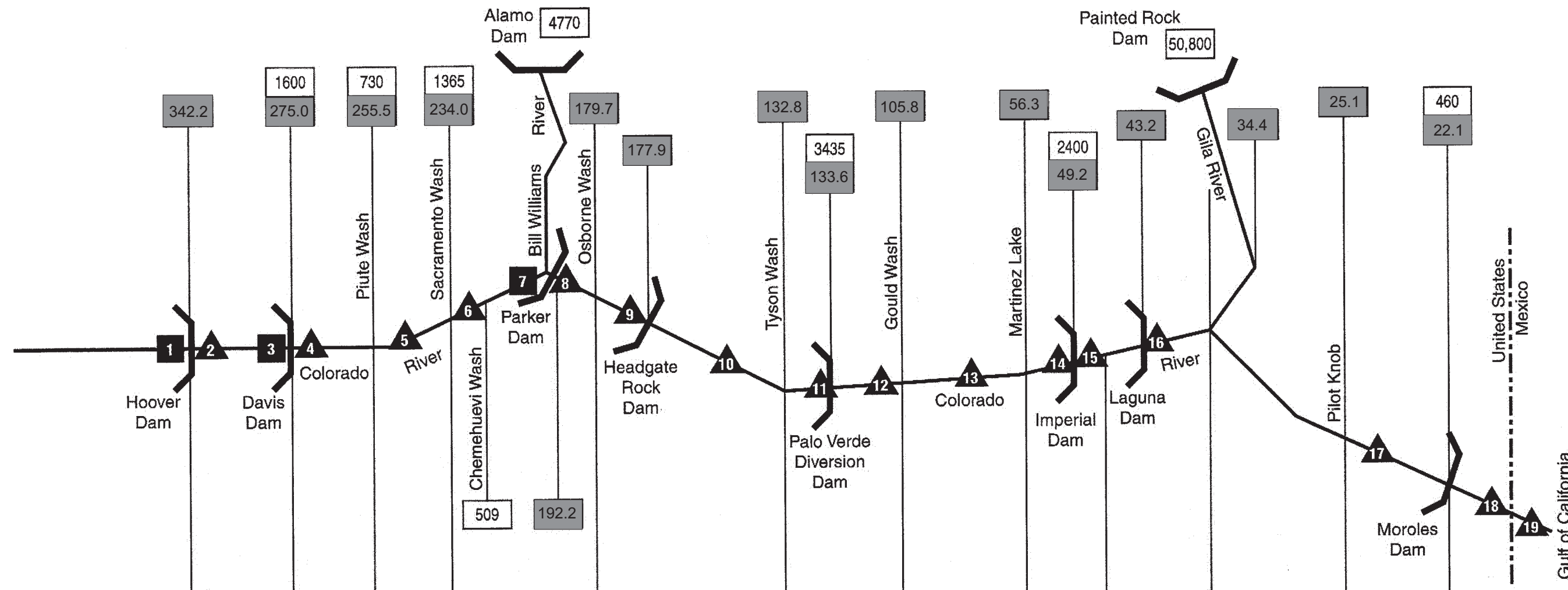
 Lake Elevation 1100 Feet
 Spillway Elevation 1235 Feet

0 500 1000 2000 FEET
 SCALE






ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

RECREATIONAL FACILITIES

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



Levee Design Capacity (cfs)	100,000	50,000	70,000	N/A	50,000	75,000	80,000	N/A	103,500	140,000	
River Channel Capacity (cfs)	N/A	30,000			19,000	15,000			8,000	16,000	12,000
Channel Type	Natural										

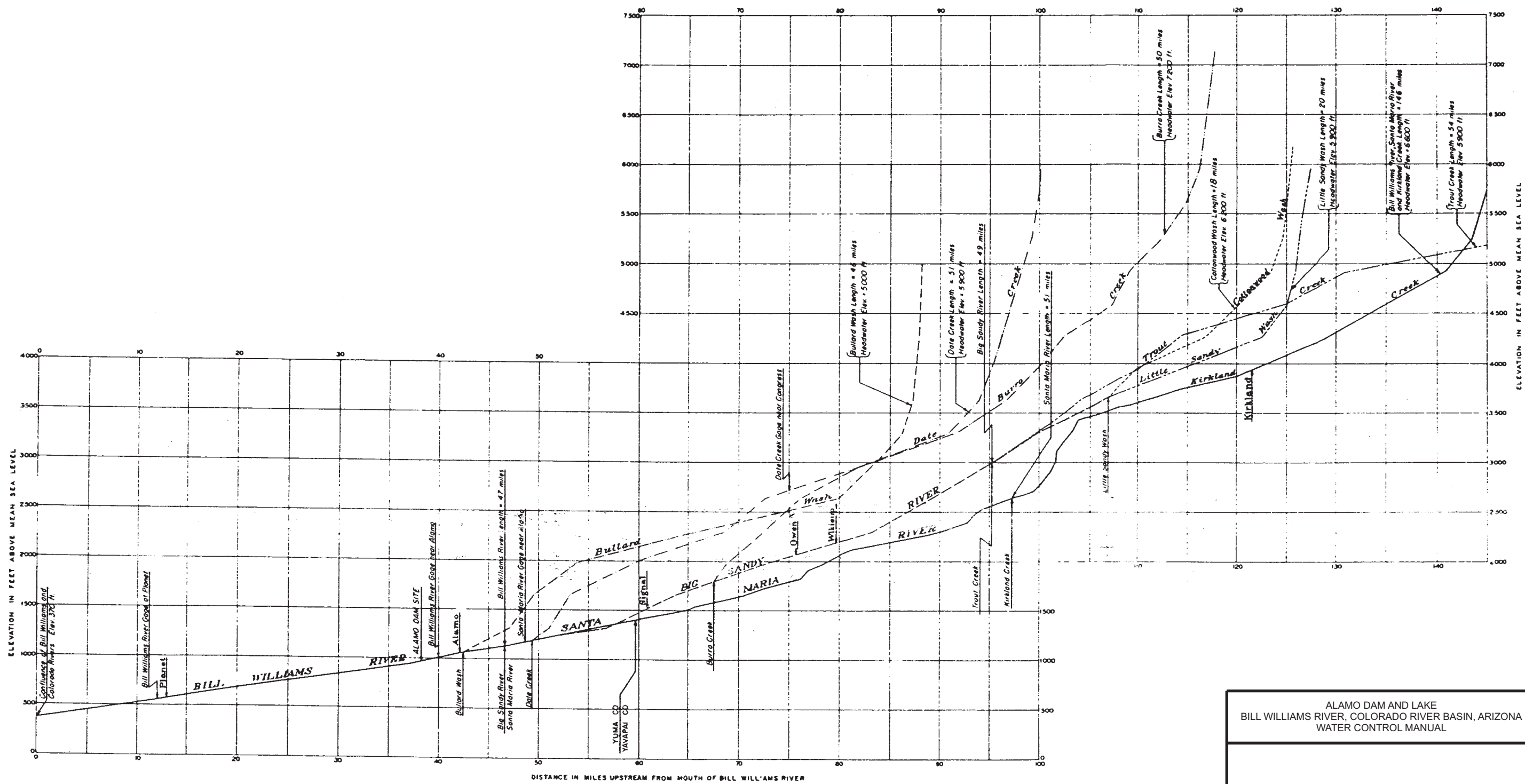
 Streamflow Gage
 Storage Gage
 Dam
 Drainage area in square miles. Unlabeled area is shown at downstream end of reach
 Miles from Stream Mouth

Gage #	USGS Gage #	Station Location	Gage #	USGS Gage #	Station Location
1	09421000	Lake Mead	12		Colorado River at Taylor Ferry
2	09421500	Colorado River below Hoover Dam	13	09429300	Colorado River below Cibola Valley (Adobe Ruin)
3	09422500	Lake Mohave	14	09429490	Colorado River above Imperial Dam
4	09423000	Colorado River below Davis Dam	15	09429500	Colorado River below Imperial Dam
5	09423500	Colorado River at Needles	16	09429600	Colorado River below Laguna Dam
6	09424000	Colorado River near Topock	17	09521100	Colorado River below Yuma Main Canal Wasteway
7	09427500	Lake Havasu	18	09522000	Colorado River at Northerly International Boundary
8	09427520	Colorado River below Parker Dam	19	09522200	Colorado River at Southerly International Boundary
9	09428500	Colorado River at Indian Reservation Main Canal			
10	N/A	Colorado River at Water Wheel			
11	09429010	Colorado River at Palo Verde Dam			

ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**LOWER COLORADO RIVER
 CHANNEL SCHEMATIC**

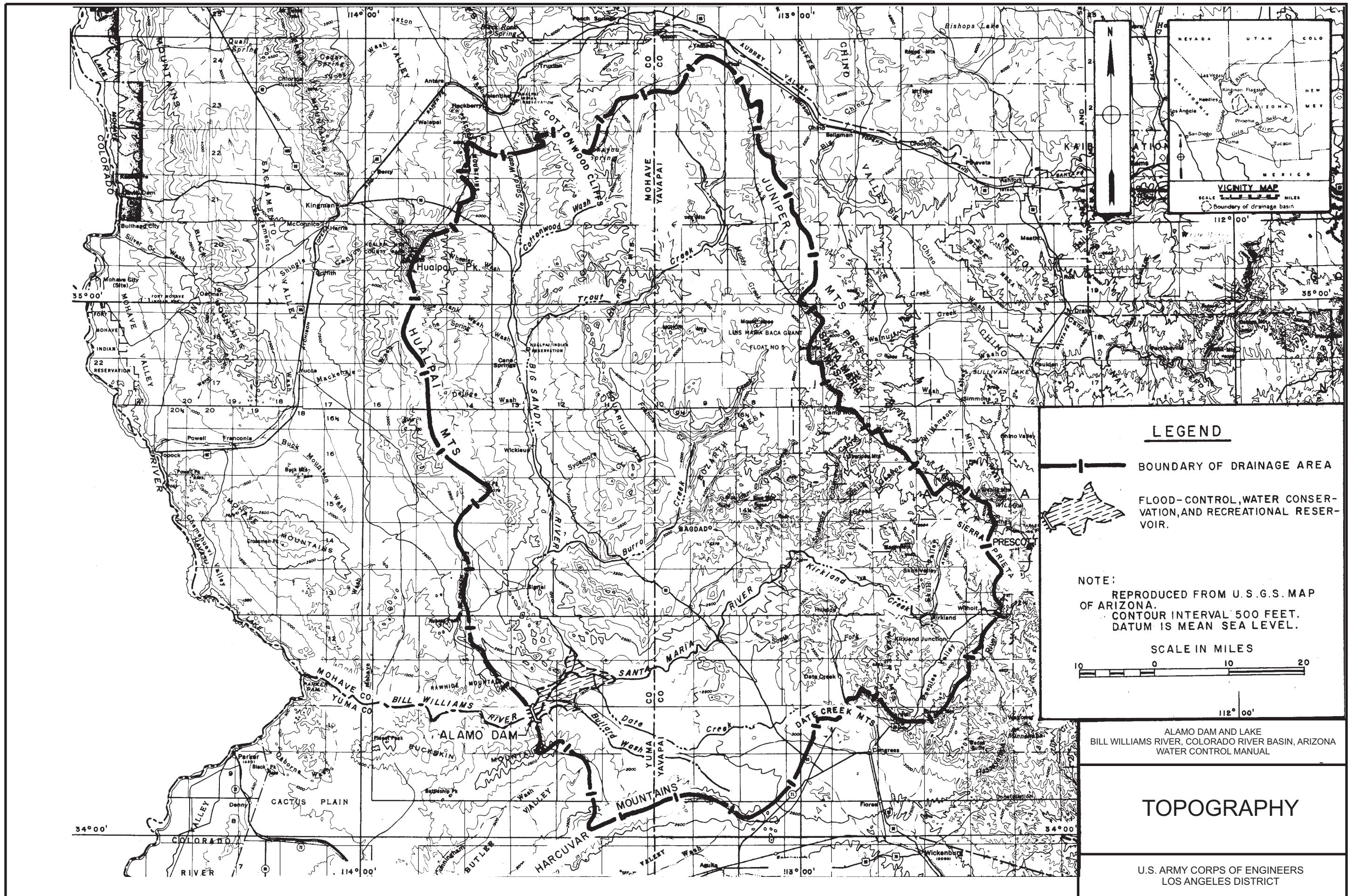
U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

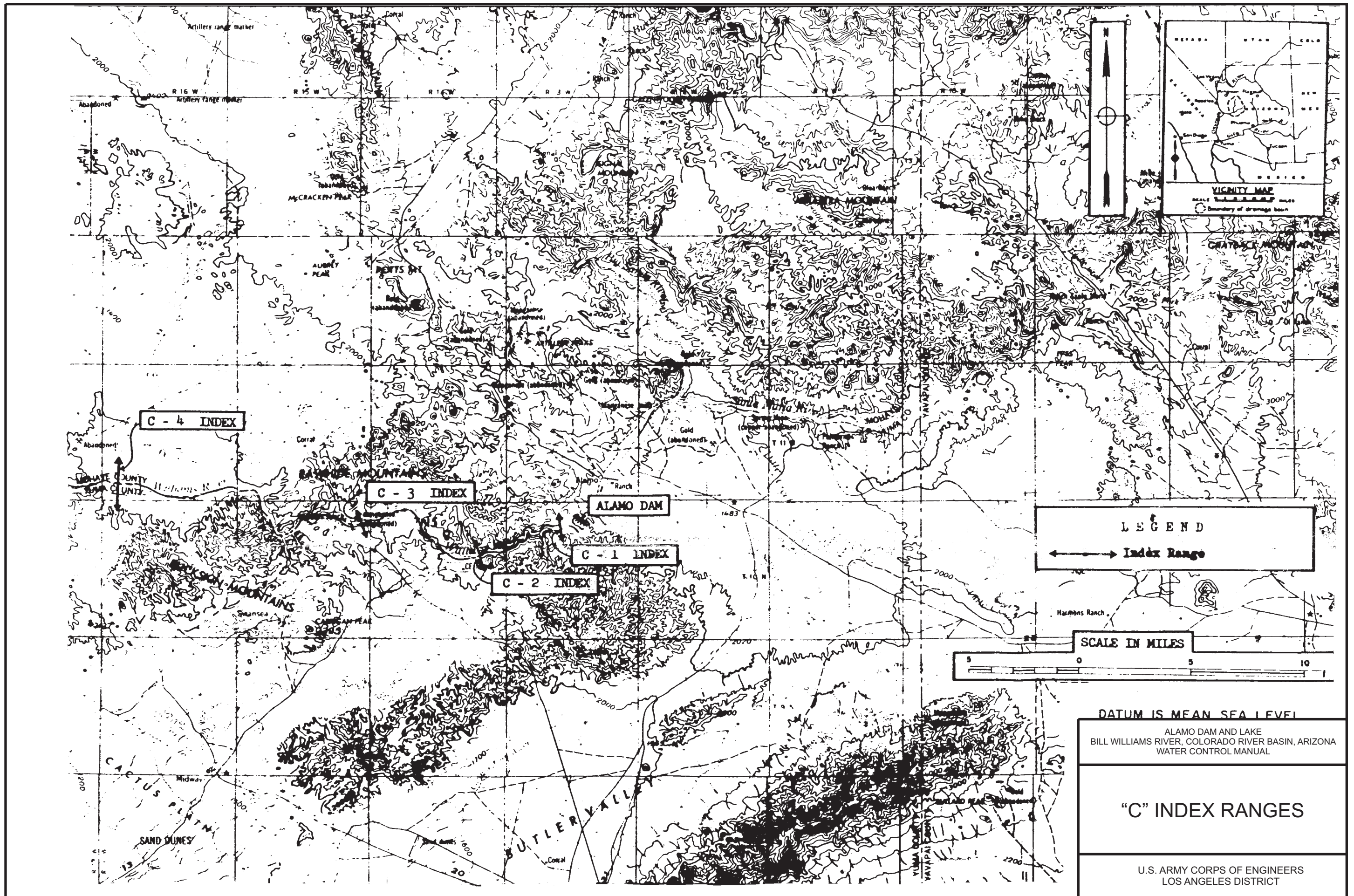


ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

STREAMBED PROFILES

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT





C - 4 INDEX

C - 3 INDEX

ALAMO DAM

C - 1 INDEX

C - 2 INDEX

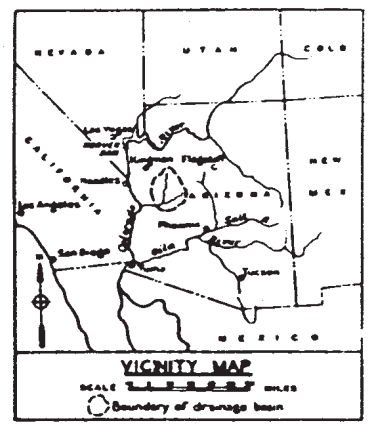
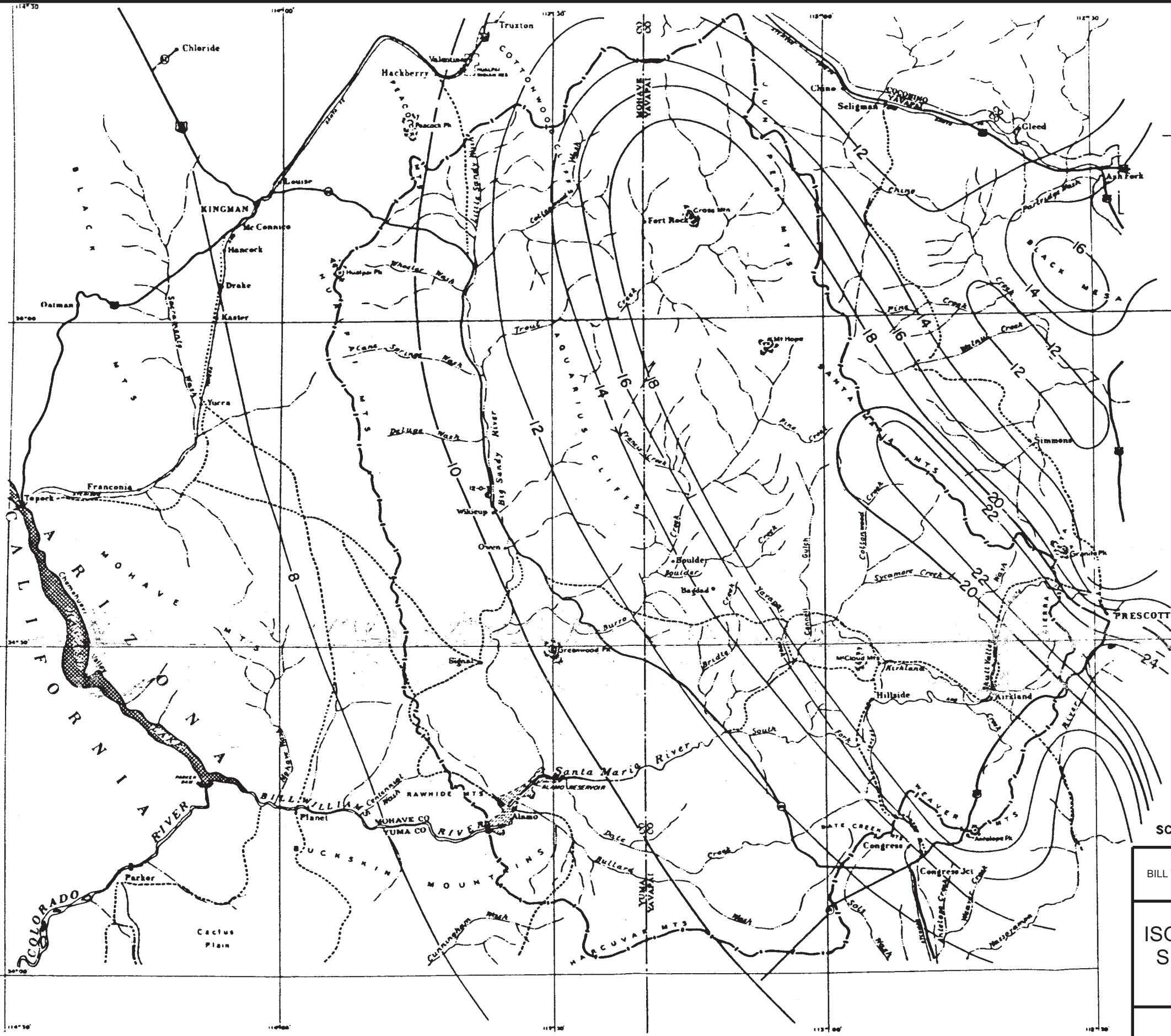
LEGEND
 ← Index Range →

SCALE IN MILES
 5 0 5 10

DATUM IS MEAN SEA LEVEL
 ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

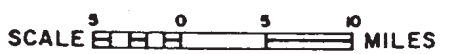
"C" INDEX RANGES

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



- LEGEND**
- BOUNDARY OF PROJECT DRAINAGE AREA
 - LINE OF EQUAL 90-YEAR (1868-1957) MEAN ANNUAL PRECIPITATION IN INCHES.
 - WATER SUPPLY RESERVOIR
 - FLOOD-CONTROL, WATER CONSERVATION, AND RECREATIONAL RESERVOIR
 - DIVERSION DAM

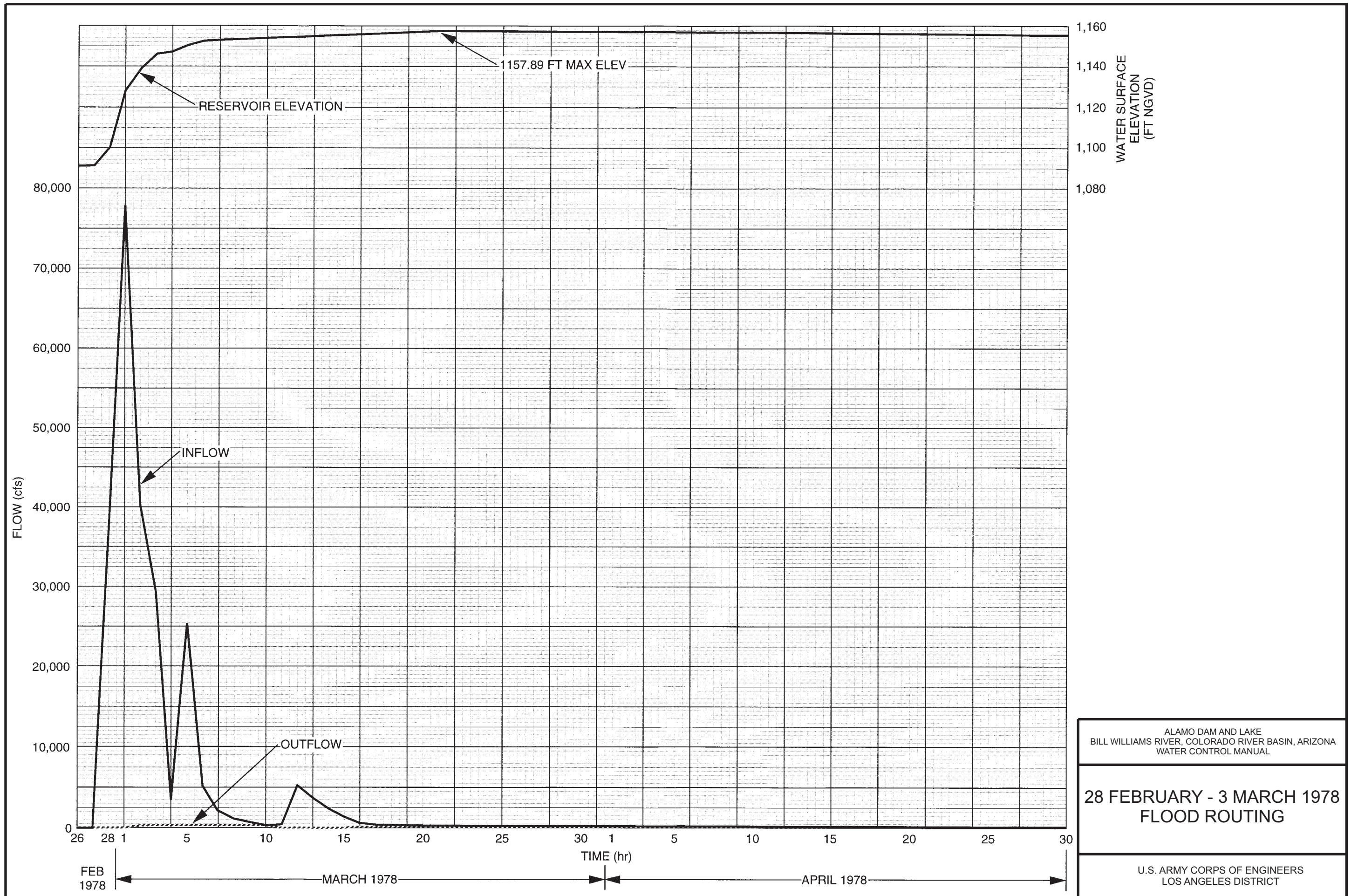
NOTE:
 BASE MAP TRACED FROM AN ENLARGEMENT OF A PORTION OF U.S. G.S. MAP (SCALE 1:50,000) OF STATE OF ARIZONA.

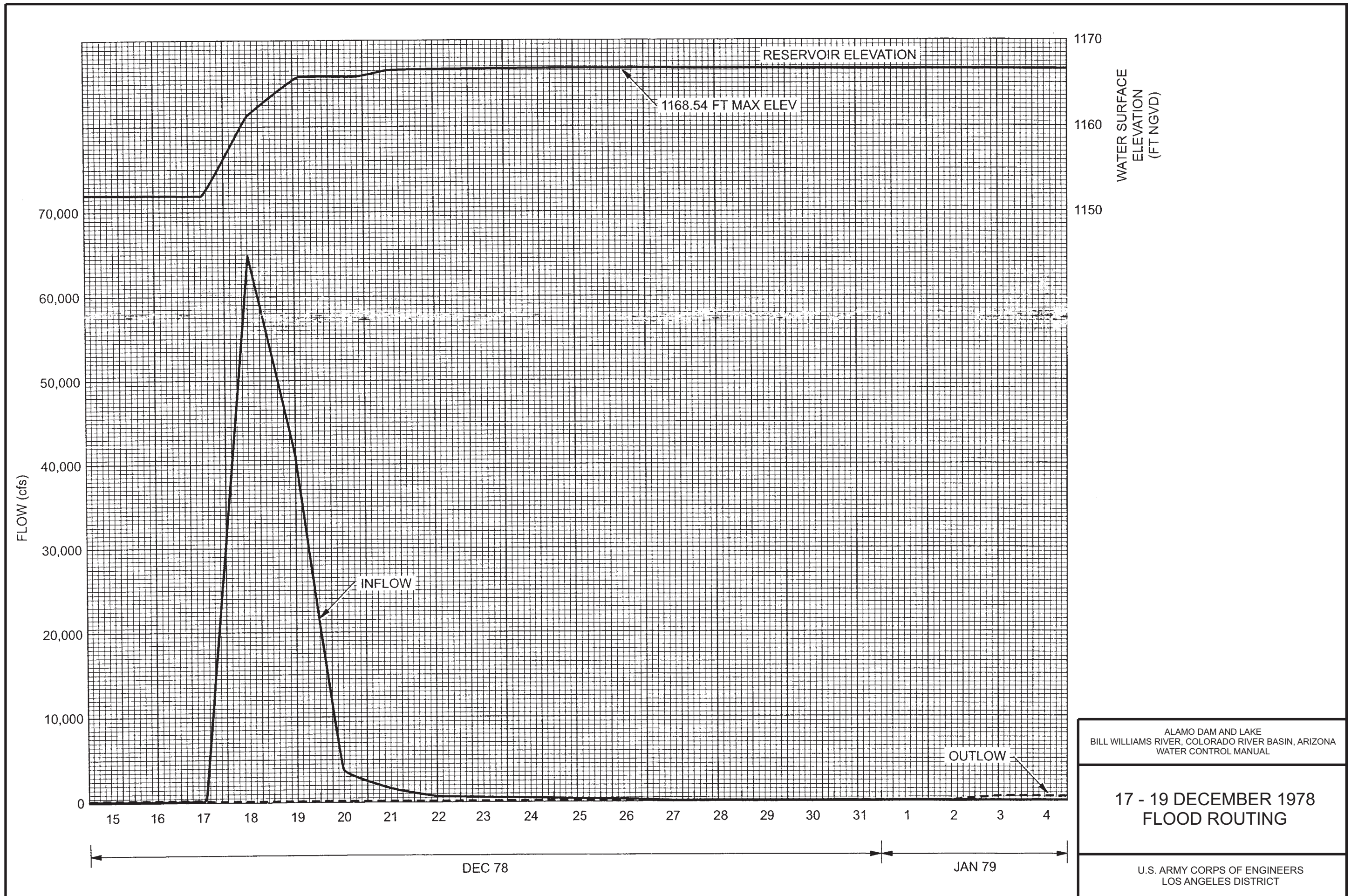


ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**ISOHYETS OF 90-YEAR MEAN
 SEASONAL PRECIPITATION
 1868 - 1957**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

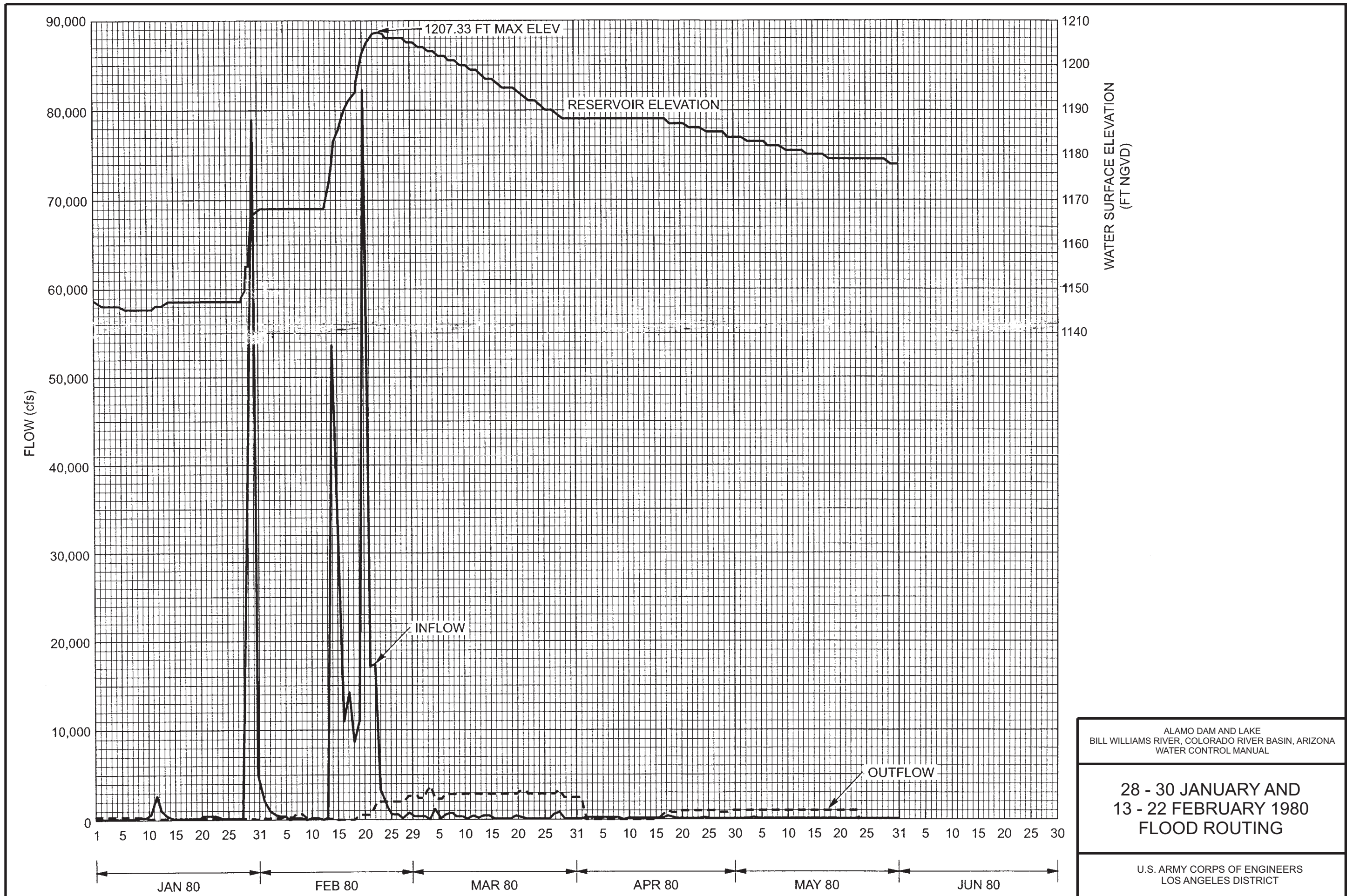




ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**17 - 19 DECEMBER 1978
 FLOOD ROUTING**

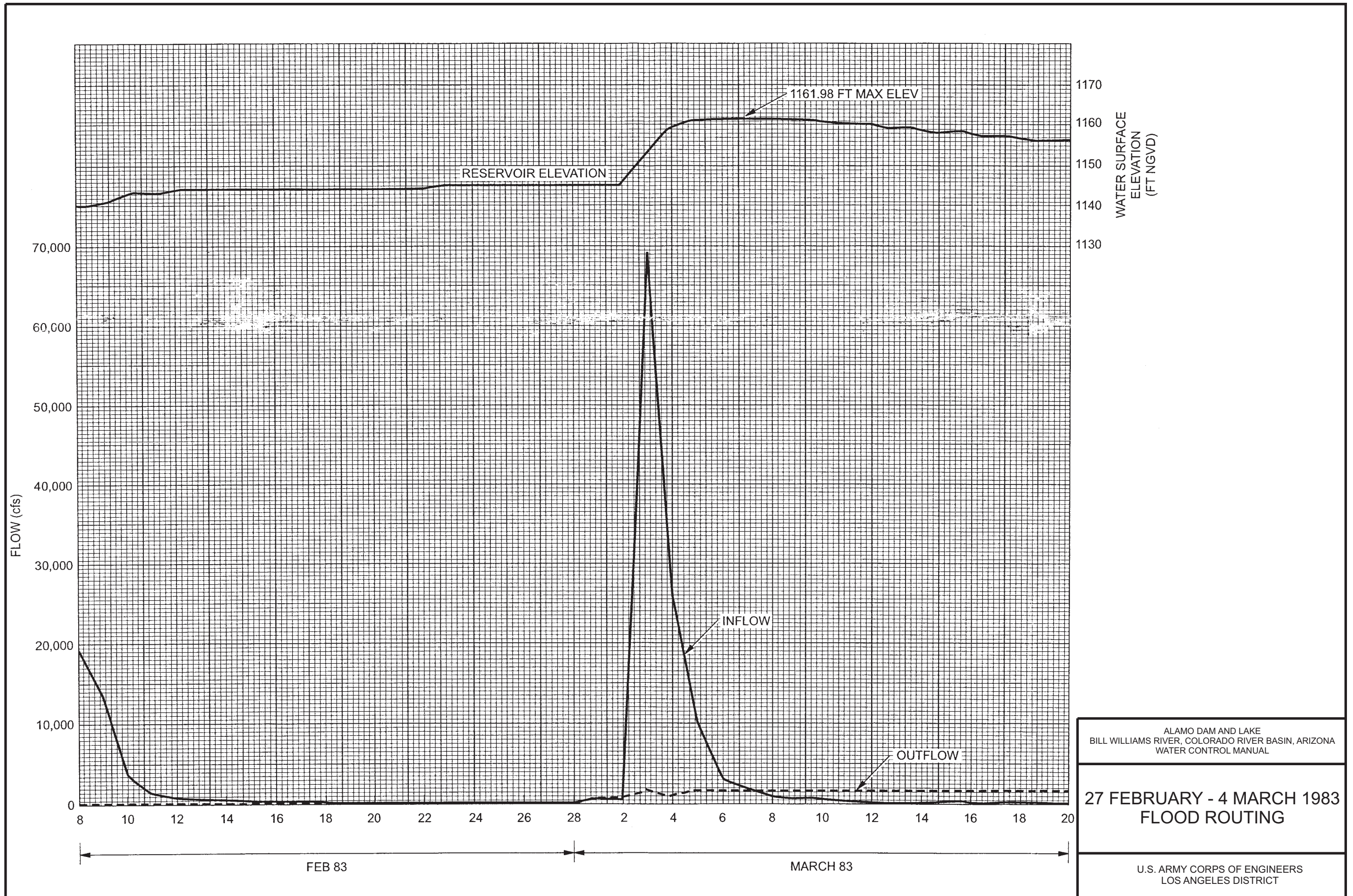
U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

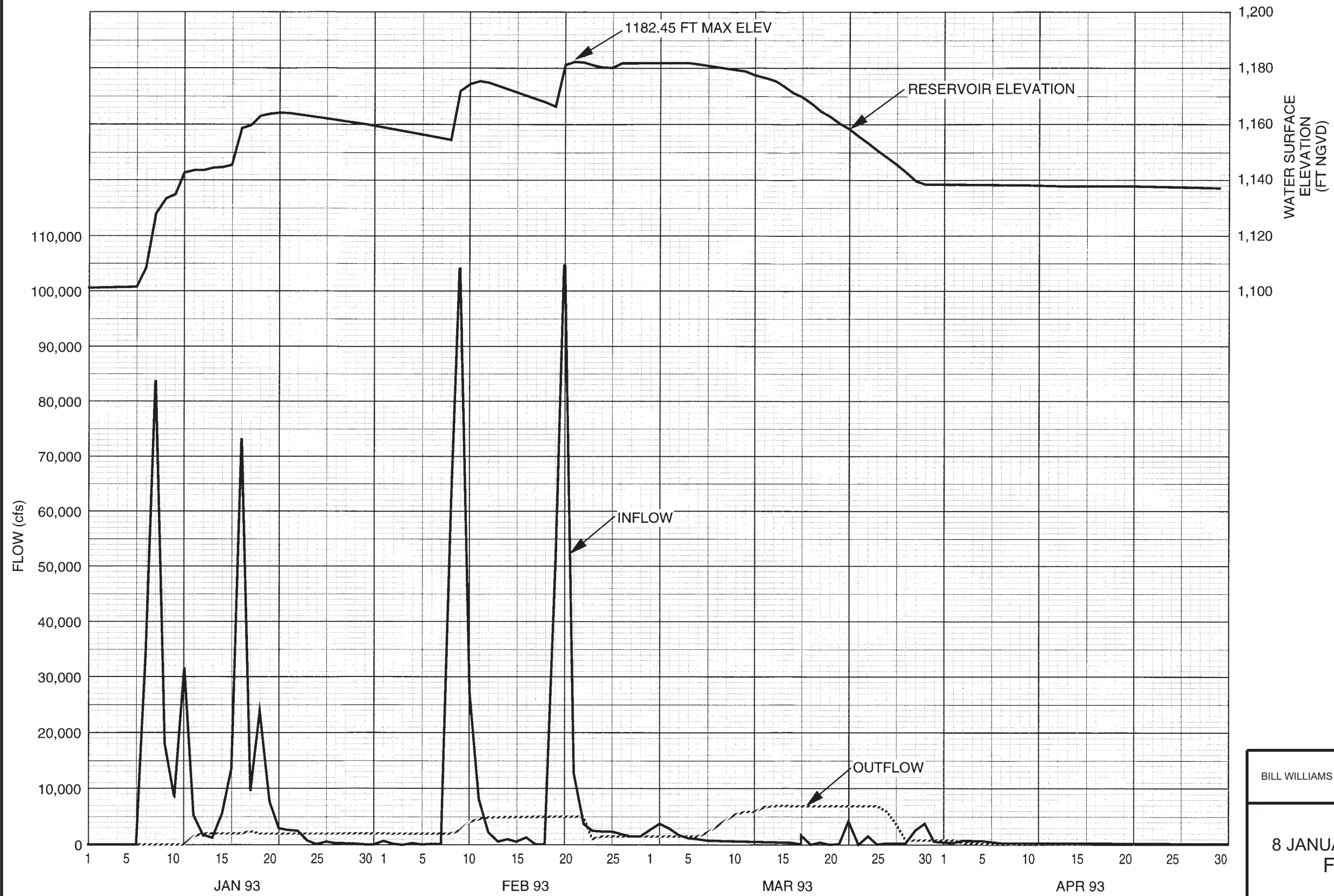


ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**28 - 30 JANUARY AND
 13 - 22 FEBRUARY 1980
 FLOOD ROUTING**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

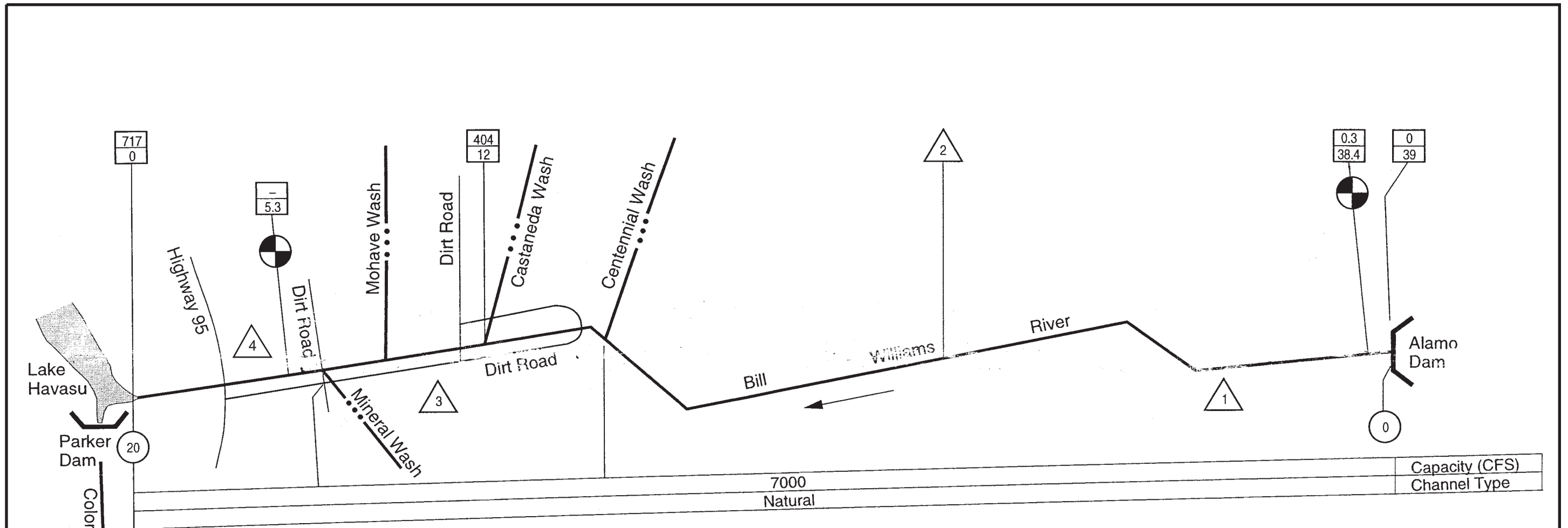




ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

8 JANUARY - 28 FEBRUARY 1993
 FLOOD ROUTING

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



Symbol	Feature	Miles*
	Bill Williams River below Alamo Dam	38.4
	Lincoln Ranch	32.4
	El Paso Natural Gas above-ground pipeline crossing (suspension bridge)	25.5
	Planet Ranch	11.3 - 16.3
	Bill Williams River National Wildlife Refuge	0 - 11.3
	Bill Williams River near Parker	5.3

* Miles from Stream Mouth

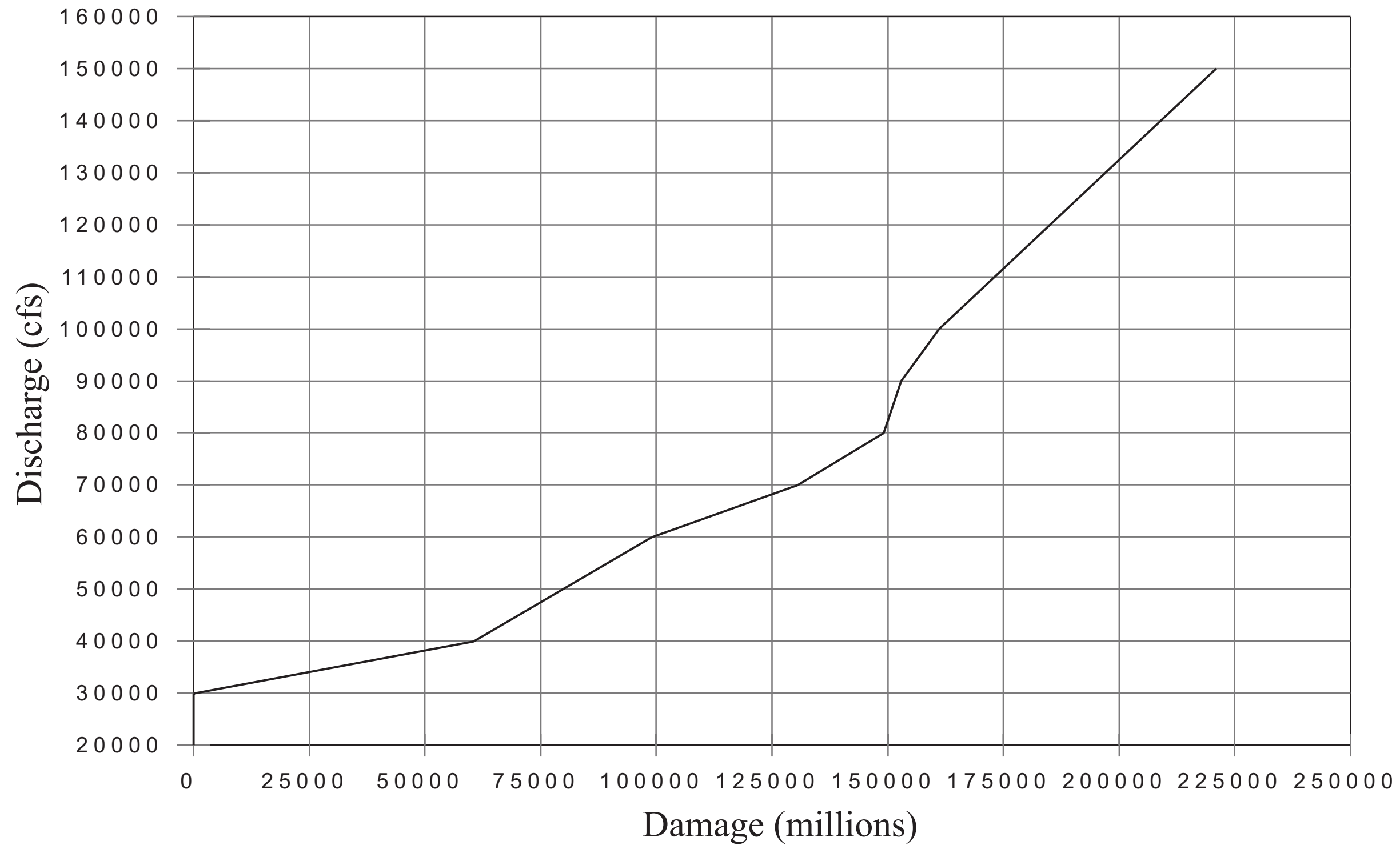
Legend

- Stream Gage
- Drainage Area
- Miles from Stream Mouth
- Miscellaneous Feature

ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

**BILL WILLIAMS RIVER
CHANNEL SCHEMATIC**

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

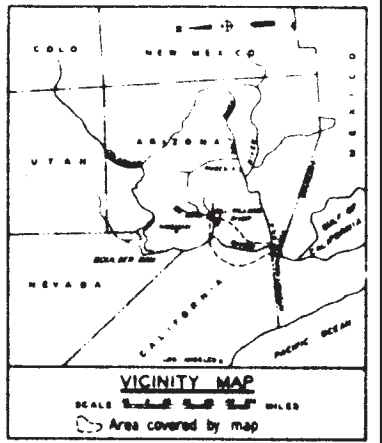
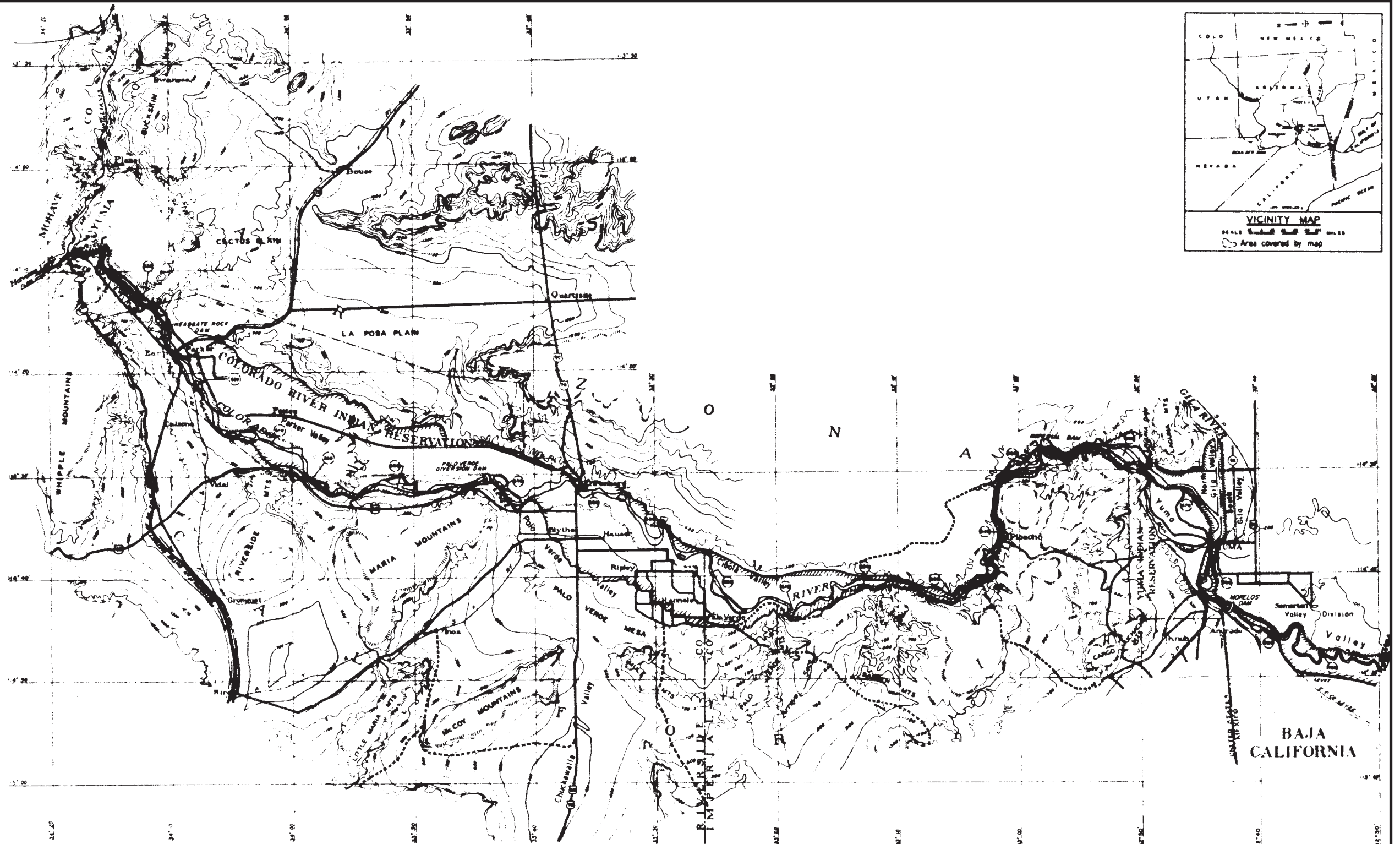


ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**DAMAGE vs. DISCHARGE
 CURVE**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

TO ALAMO DAM



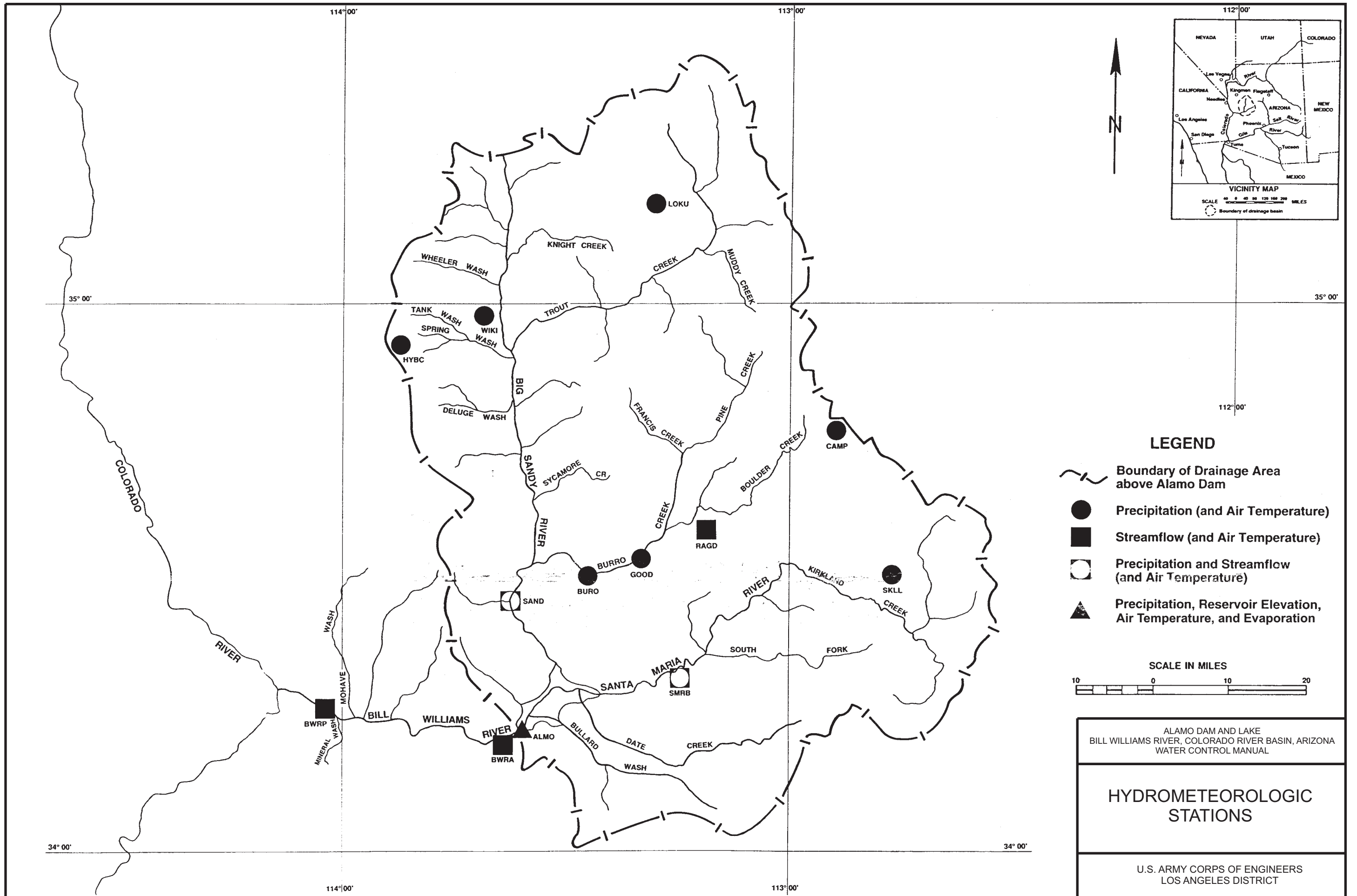
- LEGEND**
- AREA SUBJECT TO OVERFLOW
 - RIVER MILE BELOW LEE FERRY, ARIZONA
 - EXISTING DAM
 - BOUNDARY OF INDIAN RESERVATION
 - EXISTING LEVEE
- NOTE
CONTOUR INTERVAL 100 FEET



ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

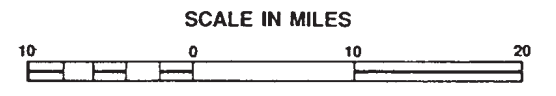
**LOWER COLORADO RIVER
AREA SUBJECT TO OVERFLOW
PRIOR TO CONSTRUCTION OF
ALAMO DAM**

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT



LEGEND

- Boundary of Drainage Area above Alamo Dam
- Precipitation (and Air Temperature)
- Streamflow (and Air Temperature)
- Precipitation and Streamflow (and Air Temperature)
- Precipitation, Reservoir Elevation, Air Temperature, and Evaporation



ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

HYDROMETEOROLOGIC STATIONS

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

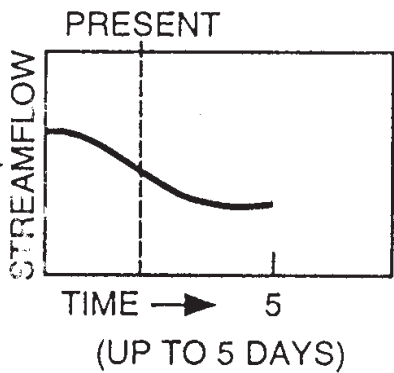
OBSERVED
TIME SERIES

FORECAST
TIME SERIES

MEAN AREAL
TIME SERIES
PRECIPITATION
TEMPERATURE

CURRENT CONDITIONS
• SOIL MOISTURE
• SNOW PACK
• RESERVOIR LEVELS
• STREAMFLOW

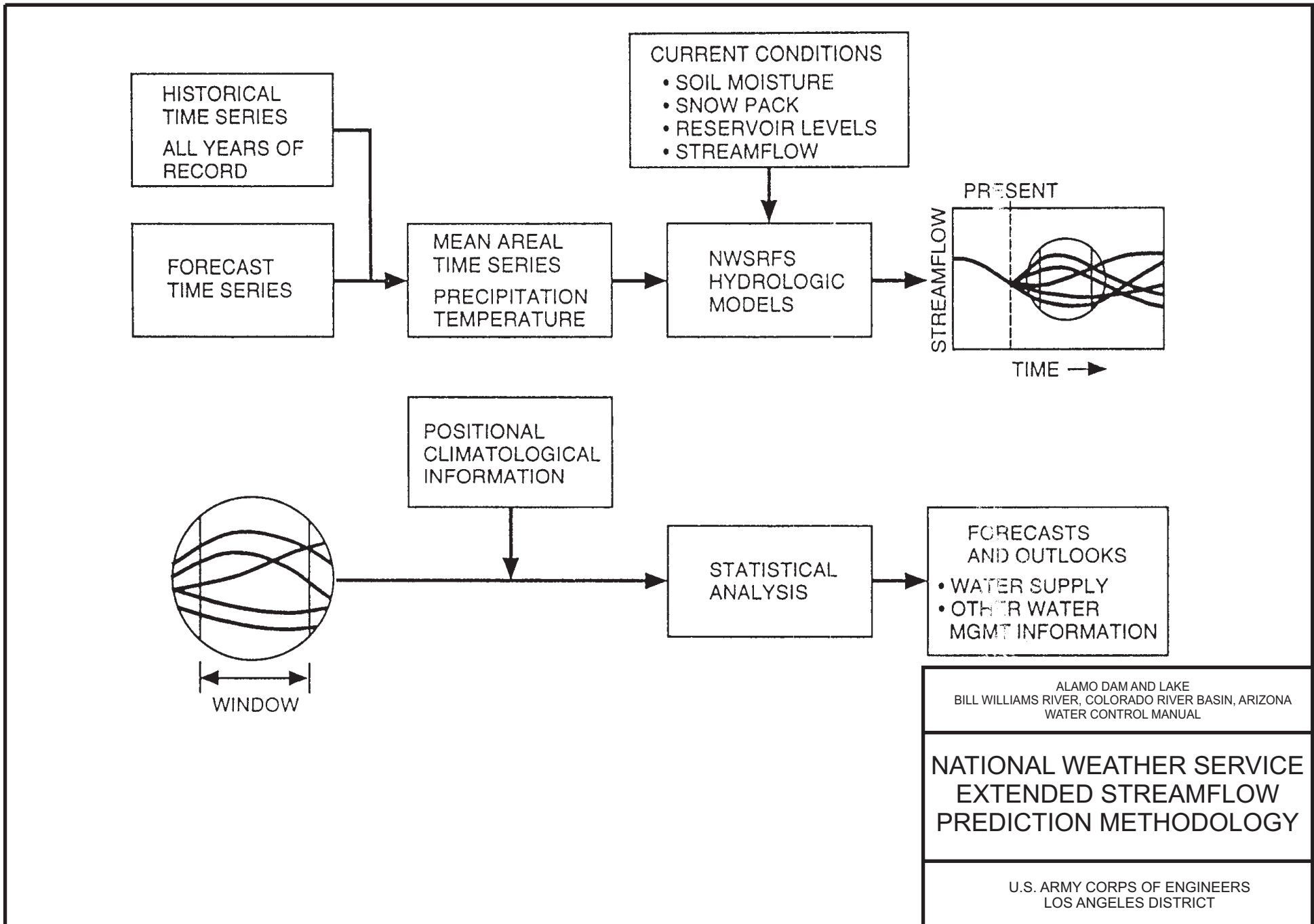
NWSRFS
HYDROLOGIC
MODELS

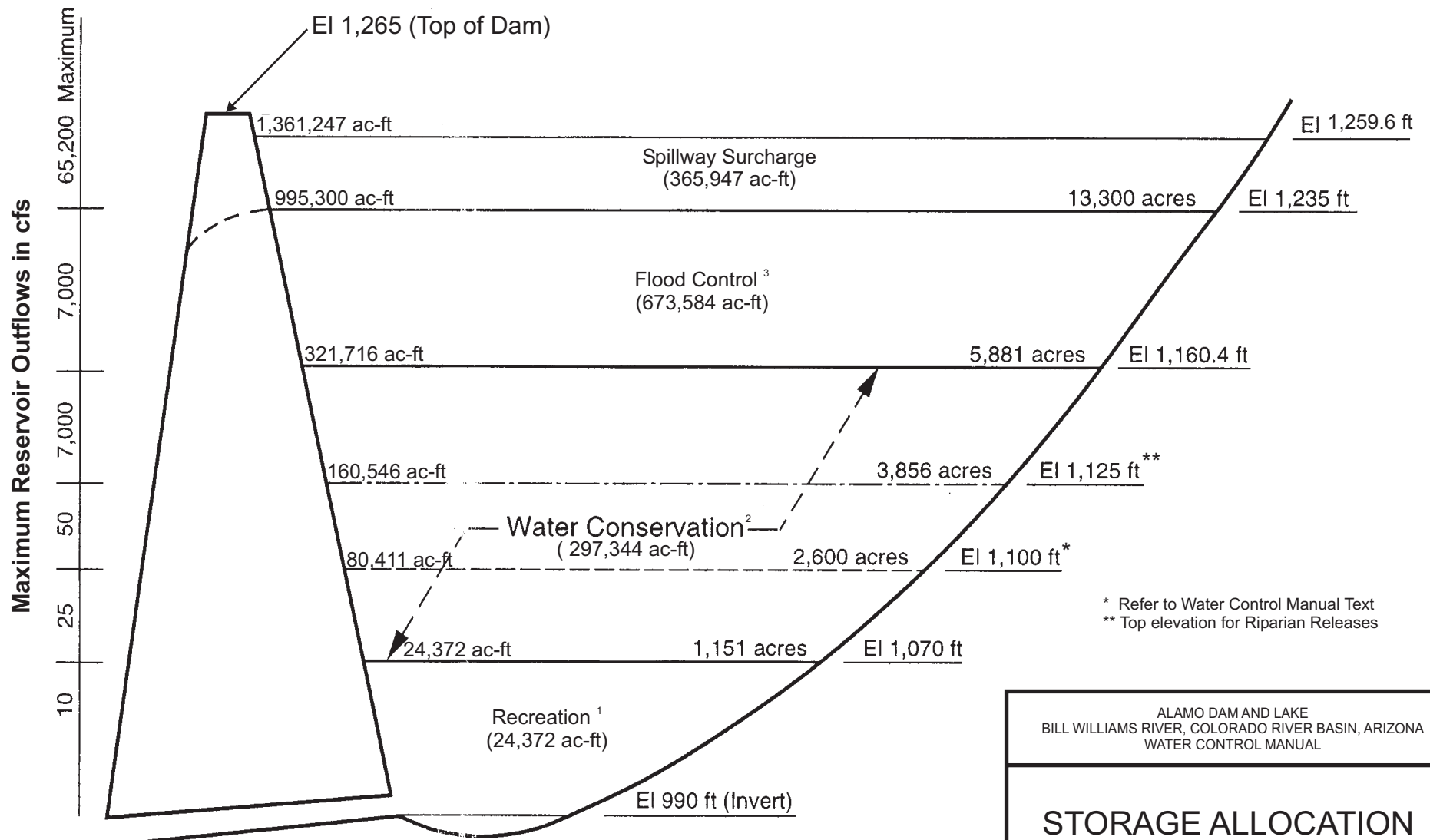


ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

NATIONAL WEATHER SERVICE
FLOOD FORECAST METHODOLOGY

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT





* Refer to Water Control Manual Text
 ** Top elevation for Riparian Releases

ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

STORAGE ALLOCATION DIAGRAM

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

- Notes:
1. Of the 24,372 ac-ft net storage, 5,000 ac-ft is allocated for Recreation.
 2. Of the 297,344 ac-ft net storage, 230,000 ac-ft is allocated for Water Conservation.
 3. Of the 673,584 ac-ft net storage, 608,369 ac-ft is allocated for Flood Control.

Release Schedule

Lake Water Surface Elevation (ft, NGVD)	Spillway Discharge (cfs)	Non-Spillway Flow Transfer Option ⁹			Spillway Flow Transfer Option ⁶		
		Outlet Works Discharge (cfs)	Total Discharge (cfs)	Recommended Gate Setting (ft)	Outlet Works Discharge (cfs)	Total Discharge (cfs)	Recommended Gate Setting (ft)
1250 - 1265 ¹	15,625 - 56,000	9,198	24,604 - 65,198	6.8	8,979 - 9,198	24,604 - 65,198	6.8 (3 gates)
1244.3 - 1250	7,000 - 15,625	8,979	15,899 - 24,604	6.8	0	7,000 - 15,625	0.0
1244.3	7,000	8,874	15,899	6.8	0	7,000	0.0
1244	6,650	8,869	15,519	6.8	350	7,000	0.7 (1 gate)
1243	5,400	8,850	14,250	6.8	1,600	7,000	1.0 (3 gates)
1242	4,350	8,832	13,182	6.8	2,650	7,000	1.7 (3 gates)
1241	3,300	8,814	12,114	6.8	3,700	7,000	2.5 (3 gates)
1240	2,500	8,795	11,295	6.8	4,500	7,000	3.0 (3 gates)
1239	1,700	8,779	10,479	6.8	5,300	7,000	3.6 (3 gates)
1238	1,200	8,763	9,963	6.8	5,800	7,000	4.0 (3 gates)
1237	700	8,747	9,447	6.8	6,300	7,000	4.4 (3 gates)
1236	350	8,731	9,081	6.8	6,650	7,000	4.7 (3 gates)
1235 (Spillway crest)	0	8,715	8,715	6.8	7,000	7,000	5.0 (3 gates)
		Discharge (cfs)		Recommended Gate Setting (ft)			
1148.4 ² - 1235		7,000		6.80 - 5.0 (3 gates)			
1132 - 1148.4		6,621 ³ - 7,000		6.80 (3 gates)			
1131 - 1132		6,000		5.75 (3 gates)			
1130 - 1131		5,000		4.65 (3 gates)			
1129 - 1130		4,000		3.65 (3 gates)			
1128 - 1129		3,000		2.70 (3 gates)			
1127 - 1128		2,000		1.75 (3 gates)			
1126 - 1127		1,000		1.30 (2 gates)			
1125 - 1126		Transition up to 1,000 cfs		0 - 1.3 (2 gates)			
1100 - 1125 ⁴	40 cfs	25 cfs	40 cfs	50 cfs			
1070 - 1100 ⁴	15 cfs	10 cfs	25 cfs	25 cfs			
990 - 1070	10 cfs	10 cfs	10 cfs	10 cfs			

Oct 1 Nov 1 Feb 1 May 1^{4,5} Sep 30
 Season of Year applies to riparian base flows only (shaded area).

Notes:

1. Top of dam
2. Minimum elevation at which 7,000 cfs can be released (3 gates at 6.90 feet opening).
3. Maximum outflow at elevation 1132 feet (3 gates at 6.80 feet opening).
4. Riparian release shown in the shaded area that are above 10 cfs are maximum. Smaller releases can be made with agreement by the Bill Williams River National Wildlife Refuge Manager.
5. Riparian releases could be temporarily interrupted to allow inspection and/or maintenance. Compensatory releases should be made to maintain the scheduled daily average release rate. Coordination with the resource agencies and other interested parties should be made.
6. Refer to section 7-05 for a discussion of when to use Spillway Flow Transfer Option.
7. Total flow (Spillway + Outlets)
8. Outlet Works only
9. To arrive at recommended gate setting, use 3 gate changes, one per hour apart: 1.7, 3.4, 5.1, then 6.8 feet.

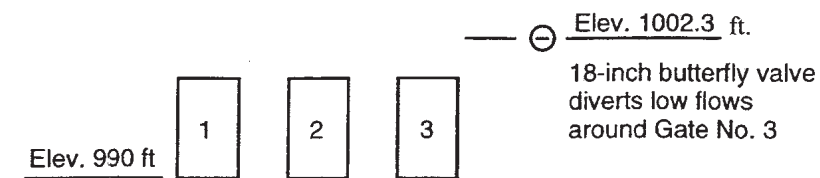
AGENCIES WITH WHOM TO COORDINATE RELEASES

- (1) U.S. Bureau of Reclamation in Boulder City, Nevada
- (2) U.S. Fish and Wildlife Service, Bill Williams River National Wildlife Refuge in Parker, Arizona
- (3) U.S. Bureau of Land Management in Lake Havasu City, Arizona
- (4) Arizona Department of Water Resources in Phoenix, Arizona
- (5) Arizona Department of Game and Fish in Phoenix, Arizona
- (6) Arizona State Parks Department in Lake Havasu City, Arizona

Maximum Rate of Release Increase

Release Range (cfs) ⁷	Rate of Increase (cfs/hr) ⁸
0 - 500	250
500 - 1,000	500
1,000 - 3,000	1,000
3,000 - 7,000	2,000

**OUTLET WORKS DIAGRAM
(Looking Downstream)**



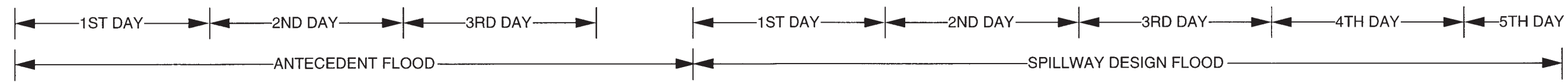
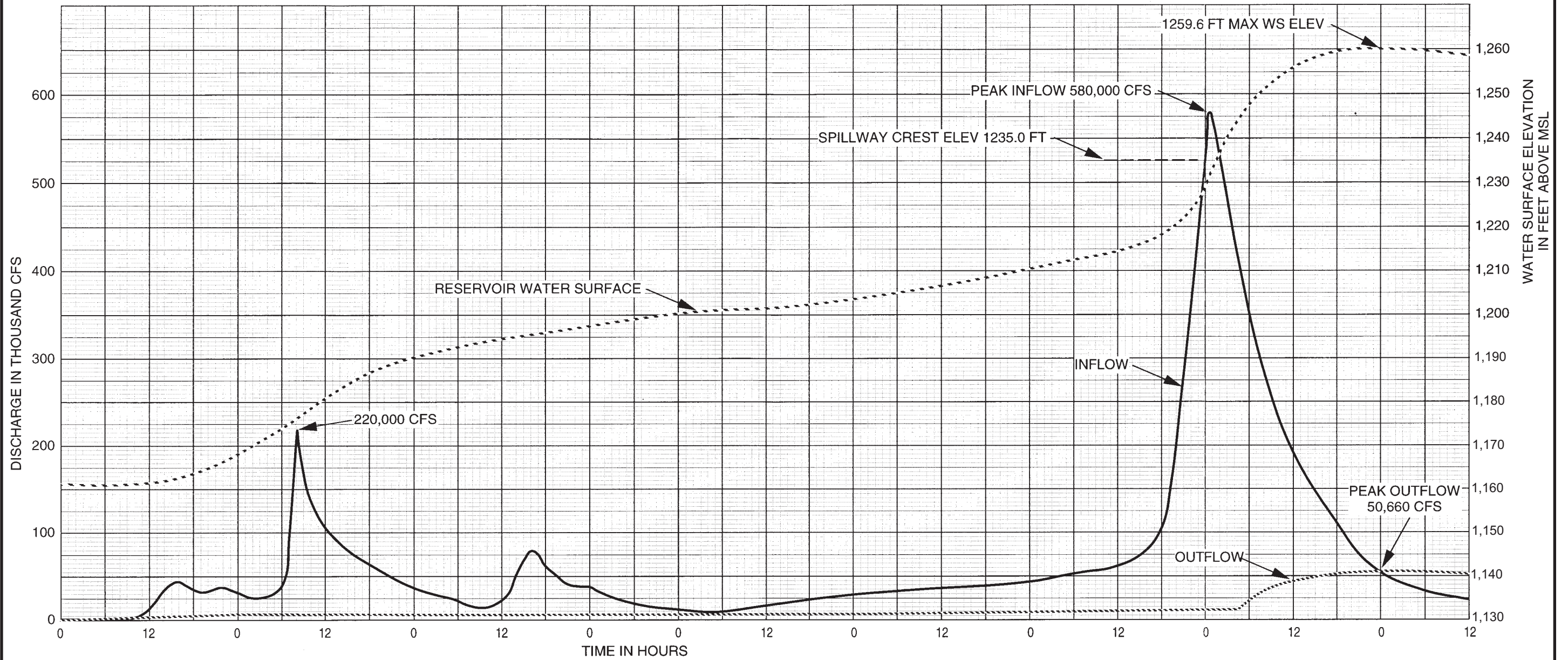
All outlet gates 5.5 ft W x 8.5 ft H

When service gates are in use, butterfly valve is closed

ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**RESERVOIR OPERATION
 SCHEDULE**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

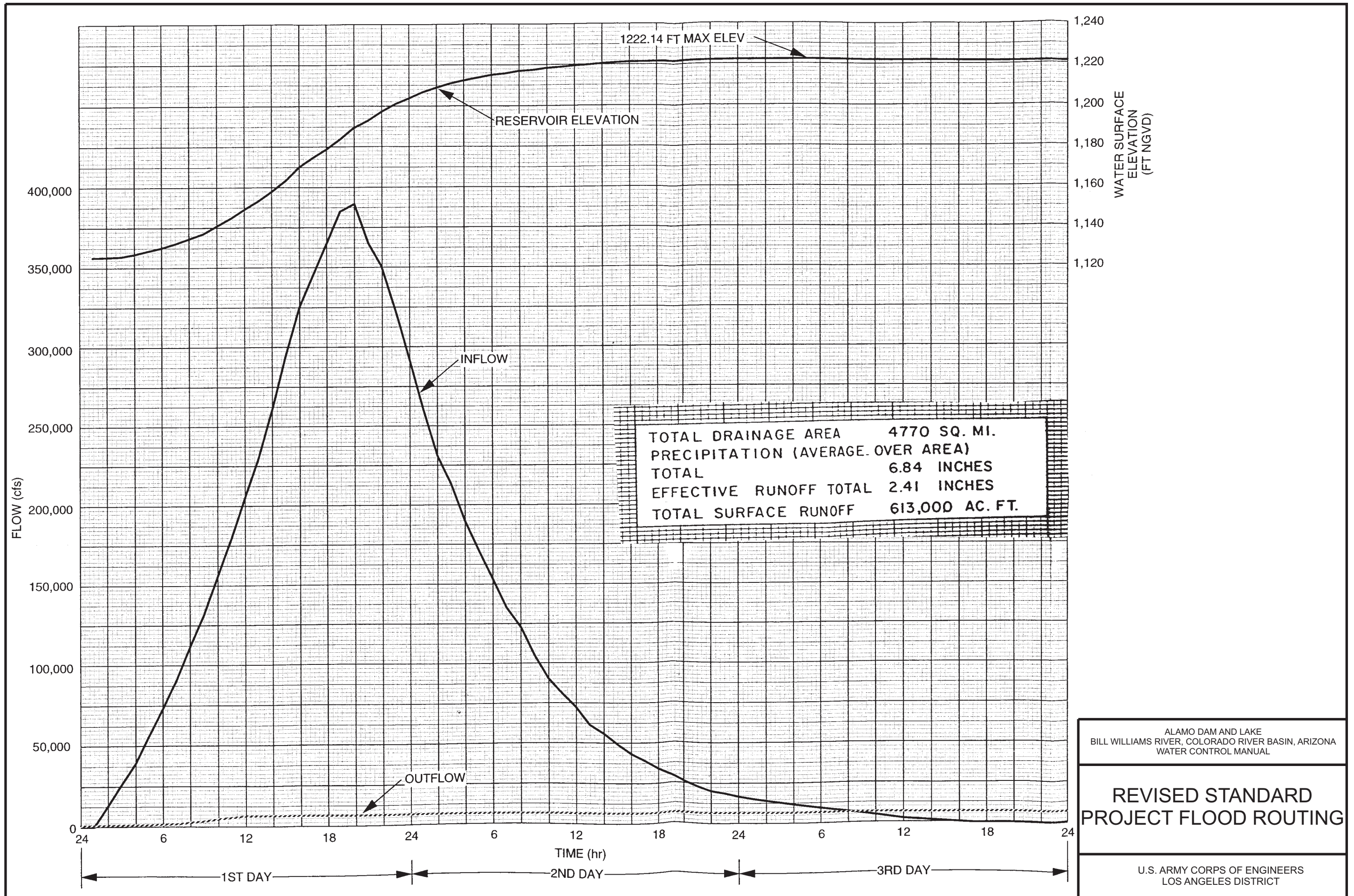


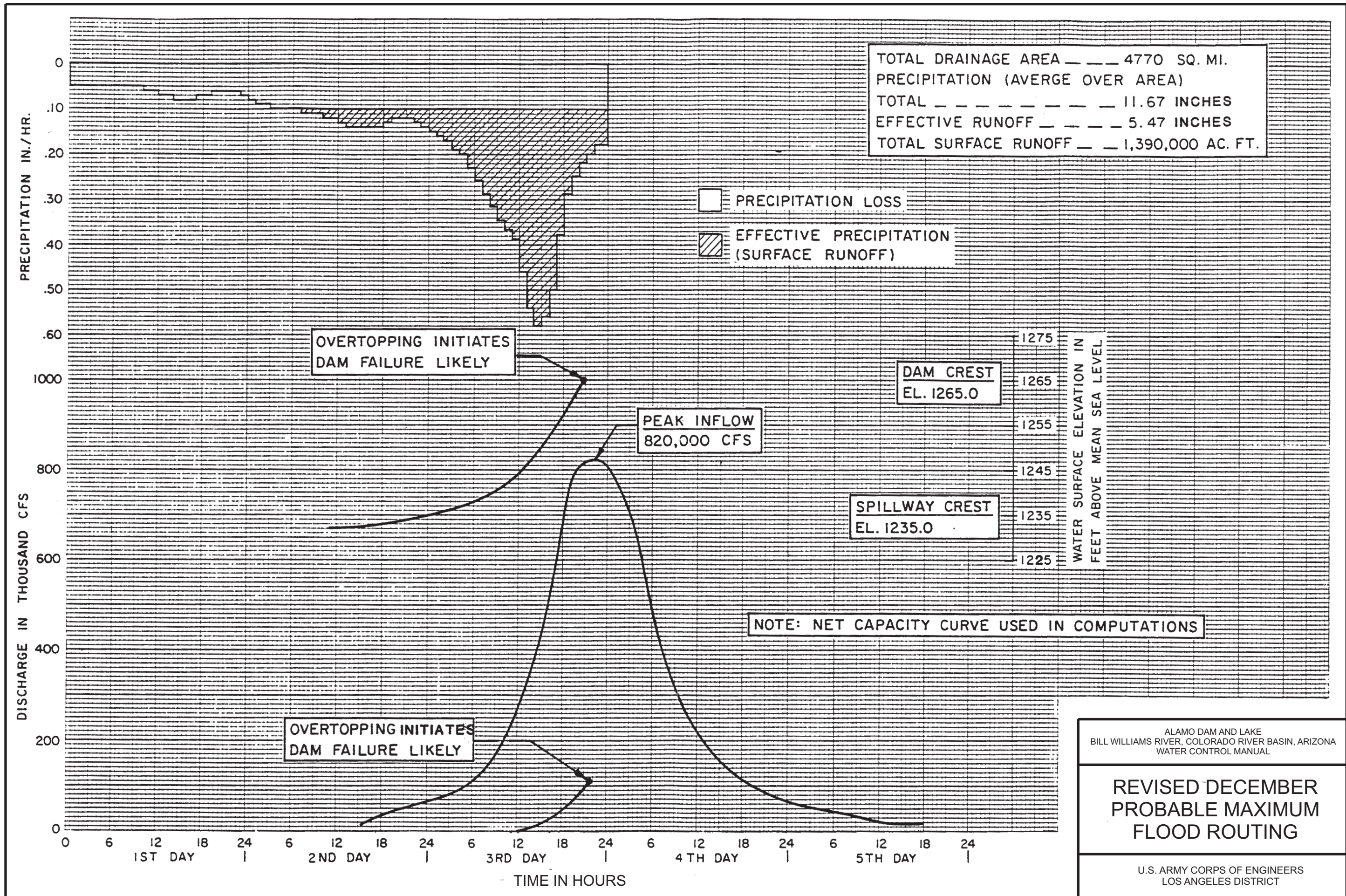
TOTAL DRAINAGE AREA	4,770 SQ MI
AVERAGE RAINFALL DEPTH OVER AREA:	
TOTAL (72 HOURS)	12.0 INCHES
EFFECTIVE TOTAL (SURFACE RUNOFF)	3.1 INCHES
TOTAL RUNOFF FOR PERIOD OF SURFACE	
RUNOFF (INCLUDING BASE FLOW)	893,000 AC-FT
	3.5 INCHES

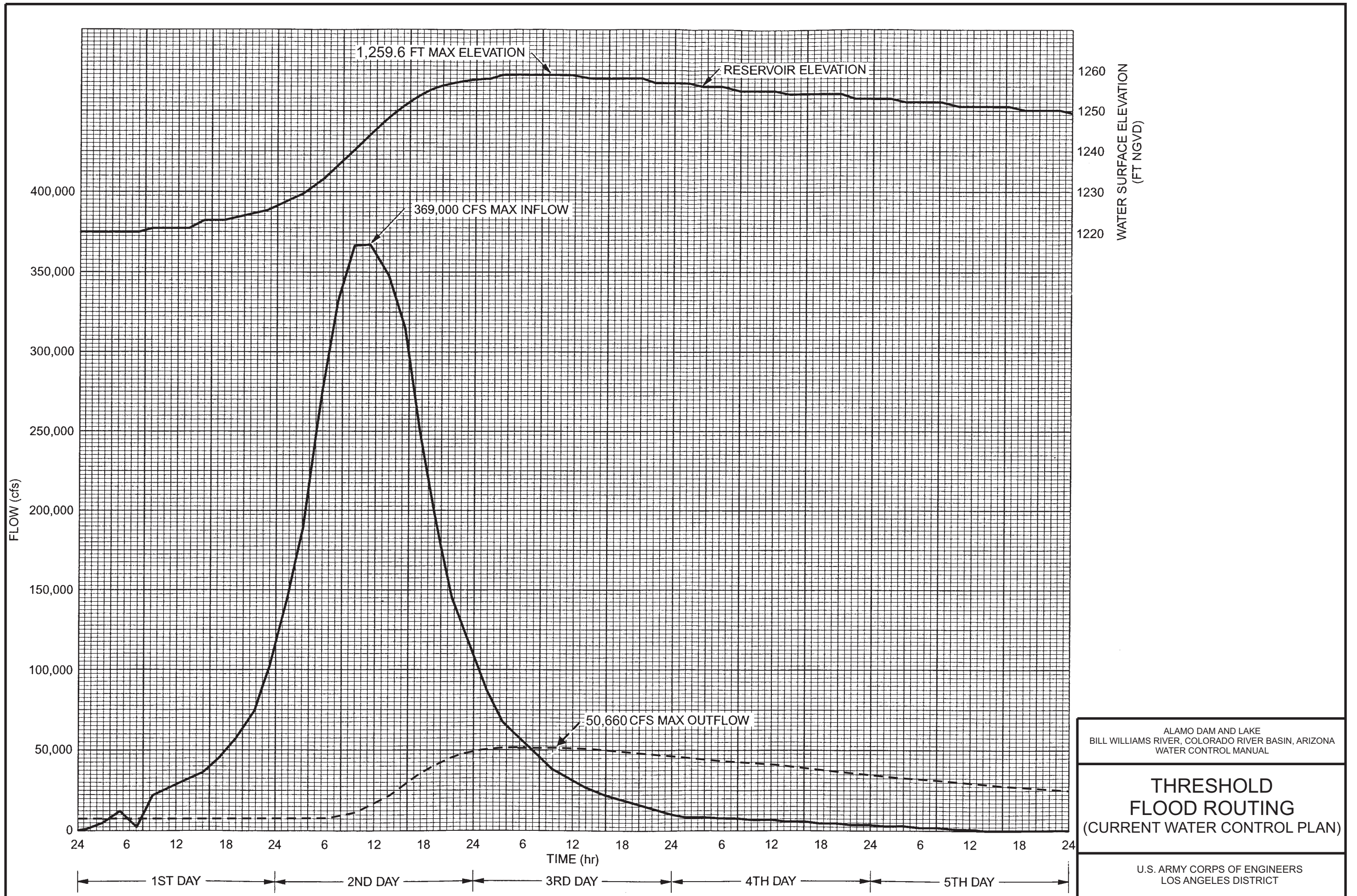
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BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

**SPILLWAY DESIGN
FLOOD ROUTING**

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT



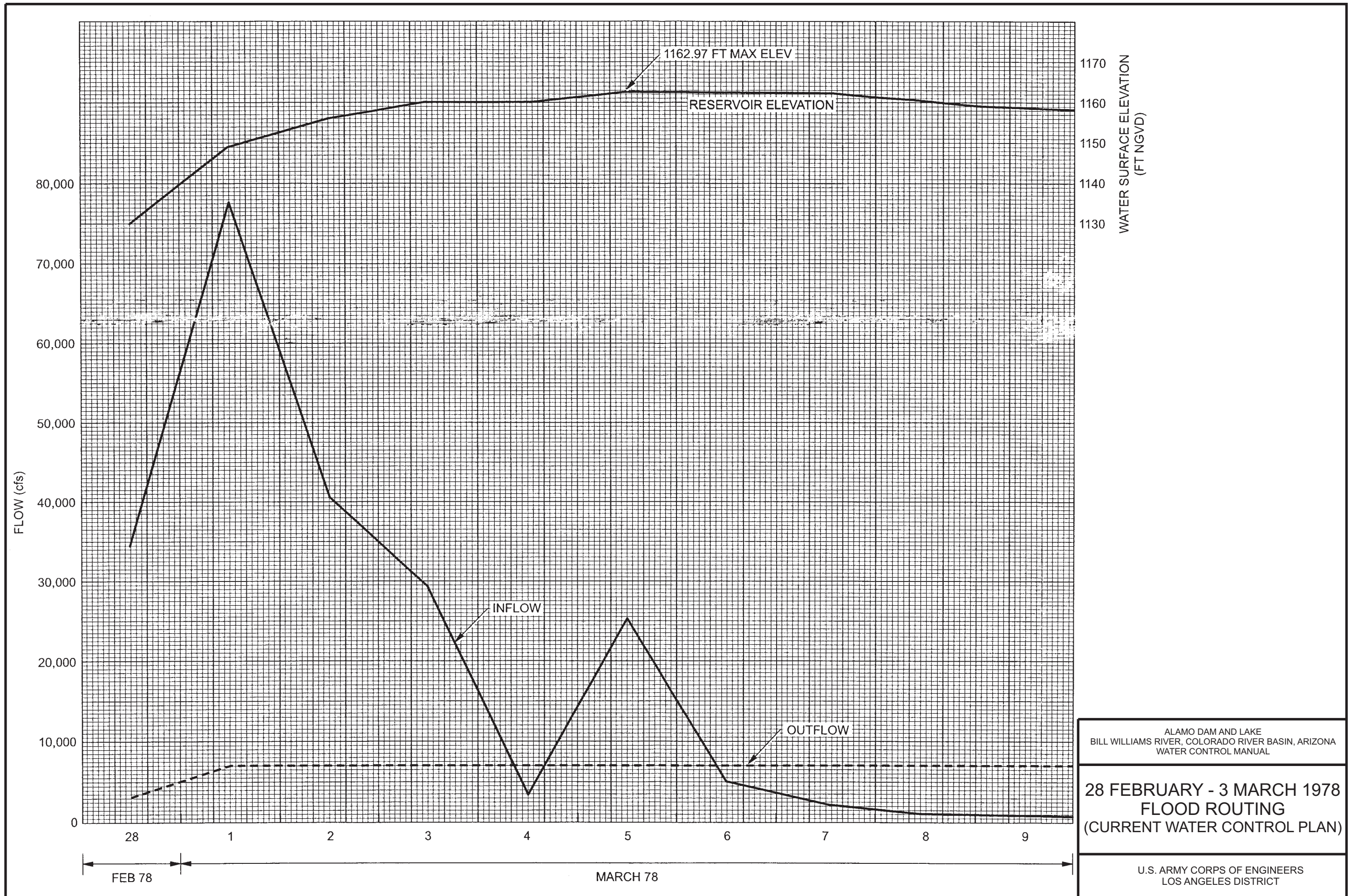




ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**THRESHOLD
 FLOOD ROUTING**
 (CURRENT WATER CONTROL PLAN)

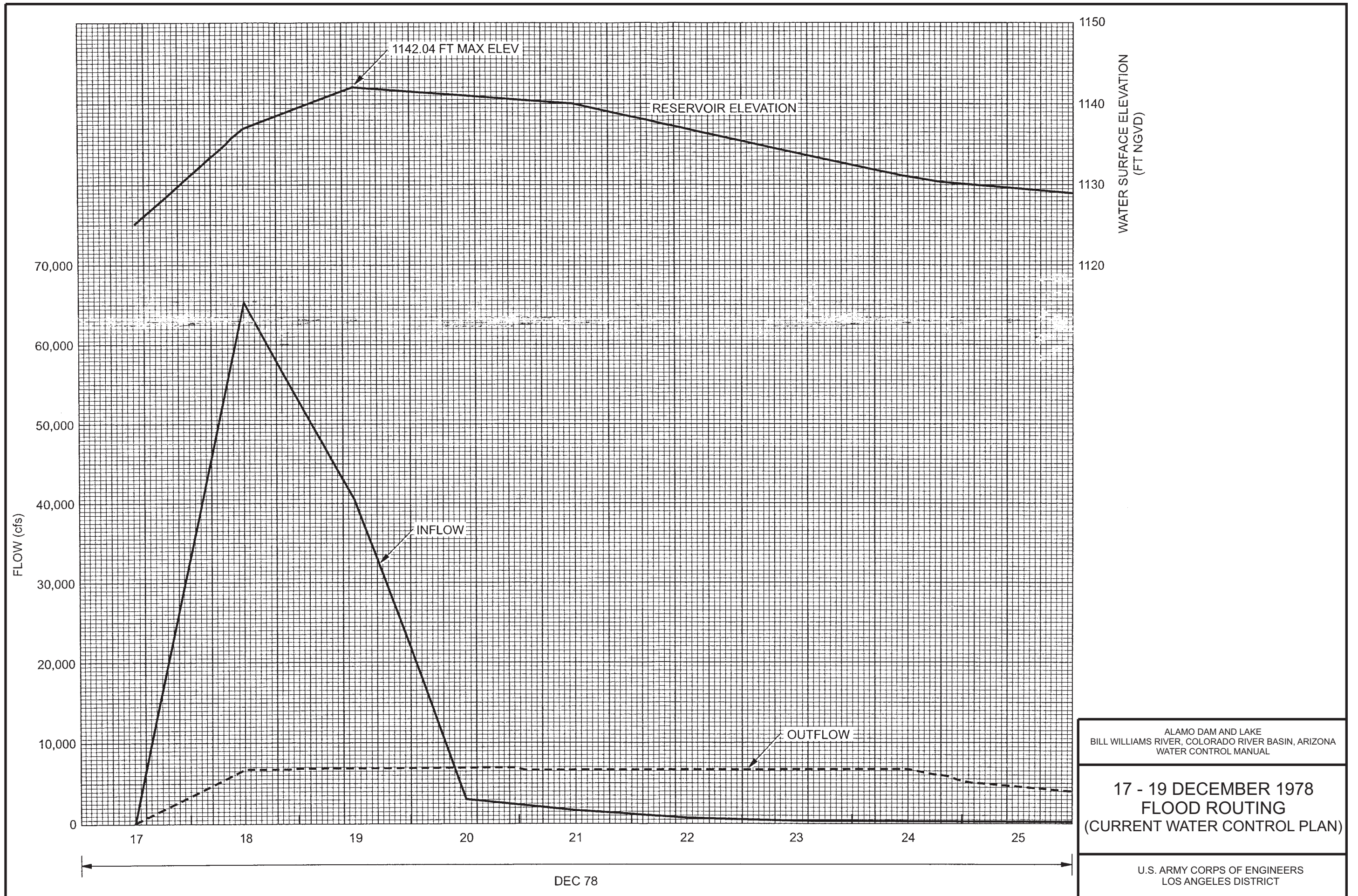
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ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**28 FEBRUARY - 3 MARCH 1978
 FLOOD ROUTING
 (CURRENT WATER CONTROL PLAN)**

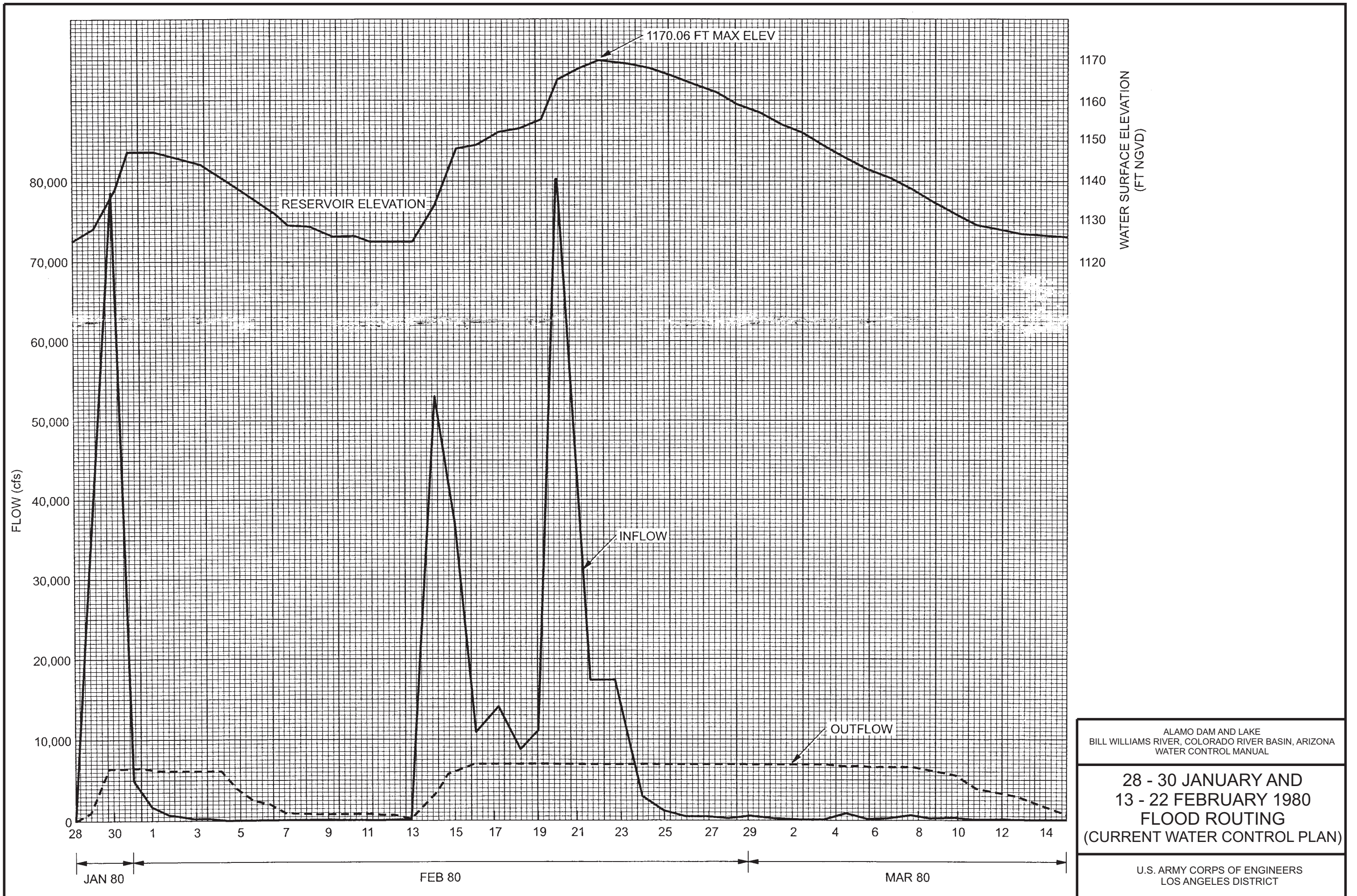
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ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

17 - 19 DECEMBER 1978
 FLOOD ROUTING
 (CURRENT WATER CONTROL PLAN)

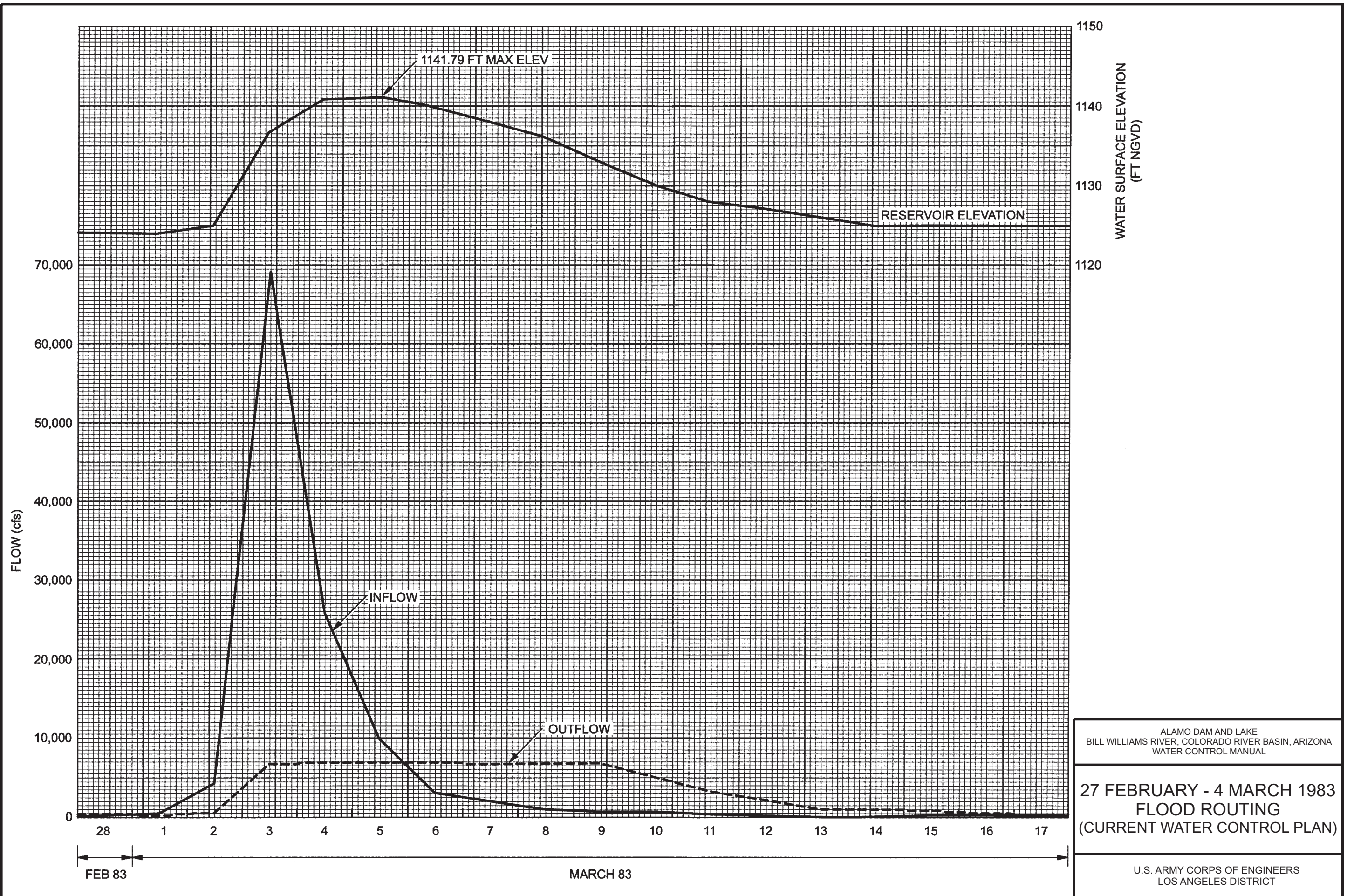
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 LOS ANGELES DISTRICT

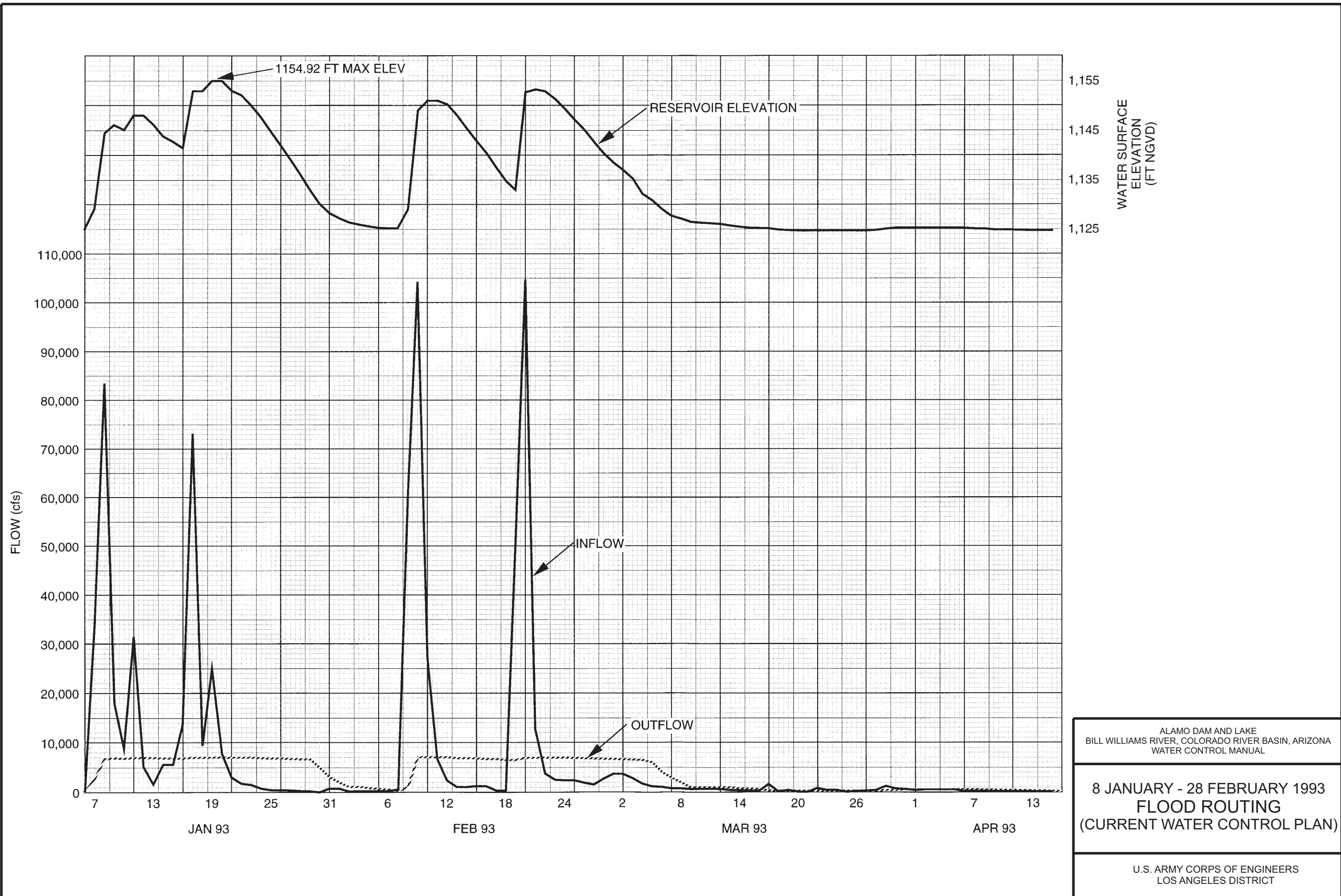


ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**28 - 30 JANUARY AND
 13 - 22 FEBRUARY 1980
 FLOOD ROUTING
 (CURRENT WATER CONTROL PLAN)**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

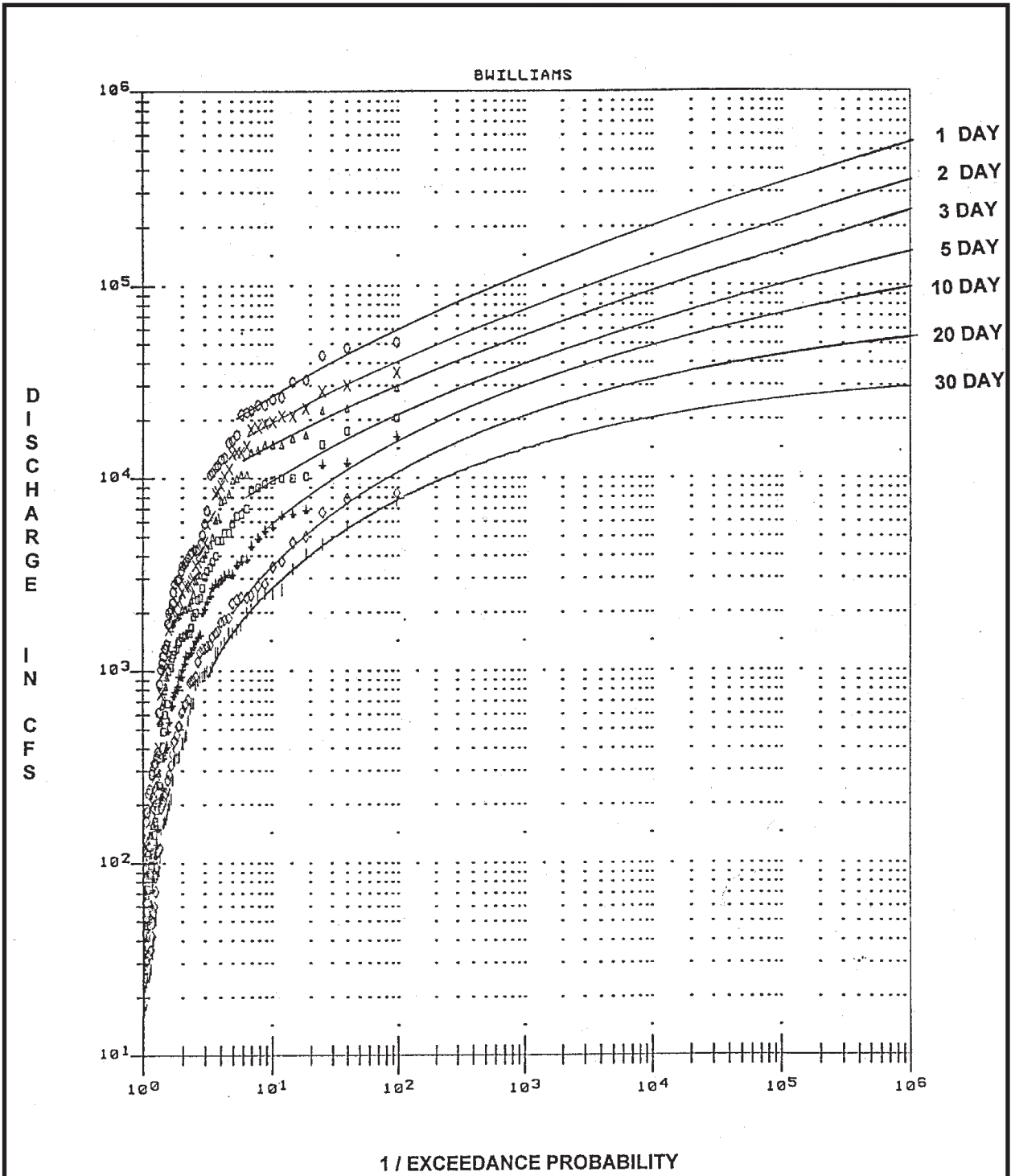




ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**8 JANUARY - 28 FEBRUARY 1993
 FLOOD ROUTING
 (CURRENT WATER CONTROL PLAN)**

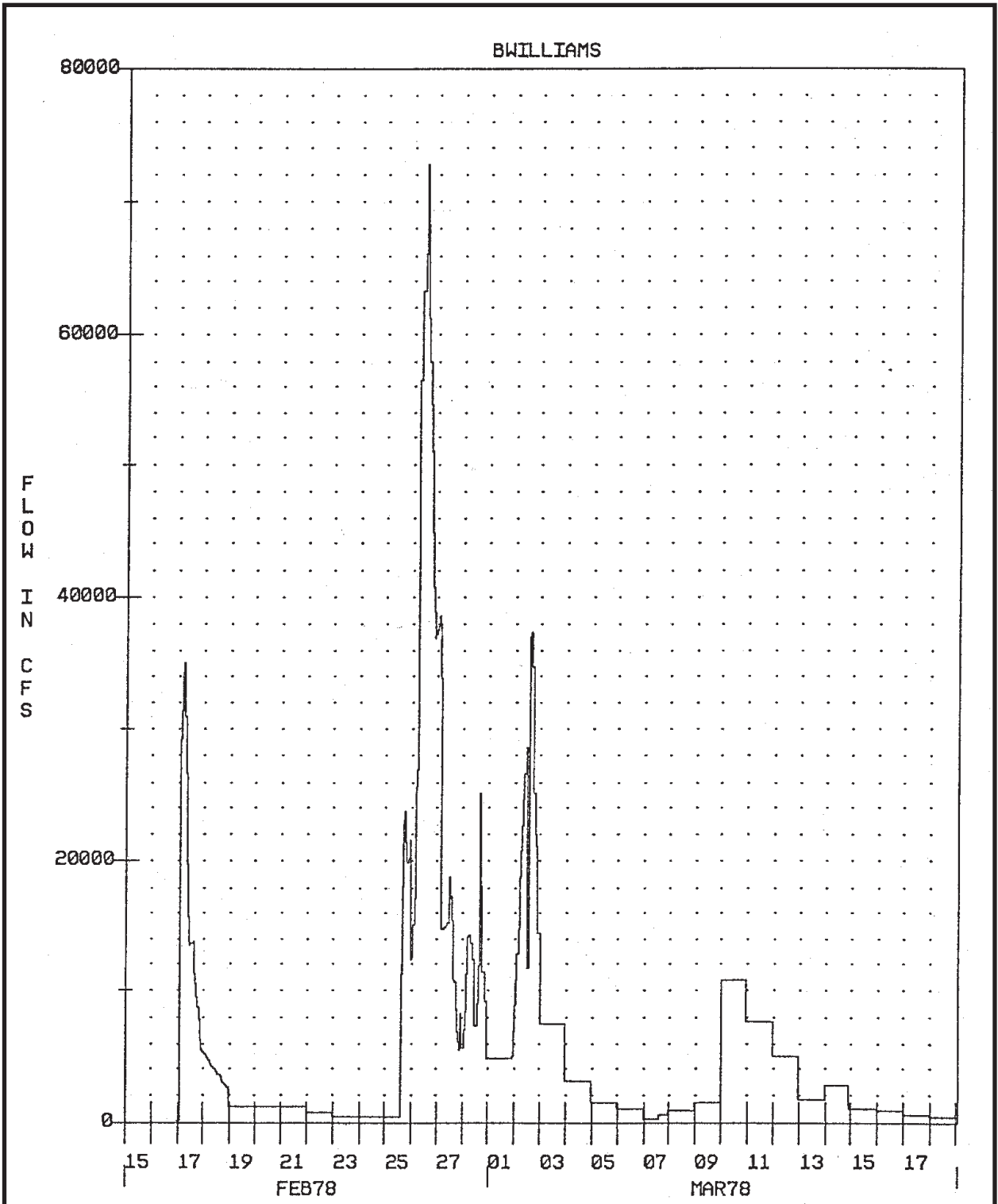
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 LOS ANGELES DISTRICT



ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

**RISK ASSESSMENT
 INFLOW VOLUME
 FREQUENCY CURVES**

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT



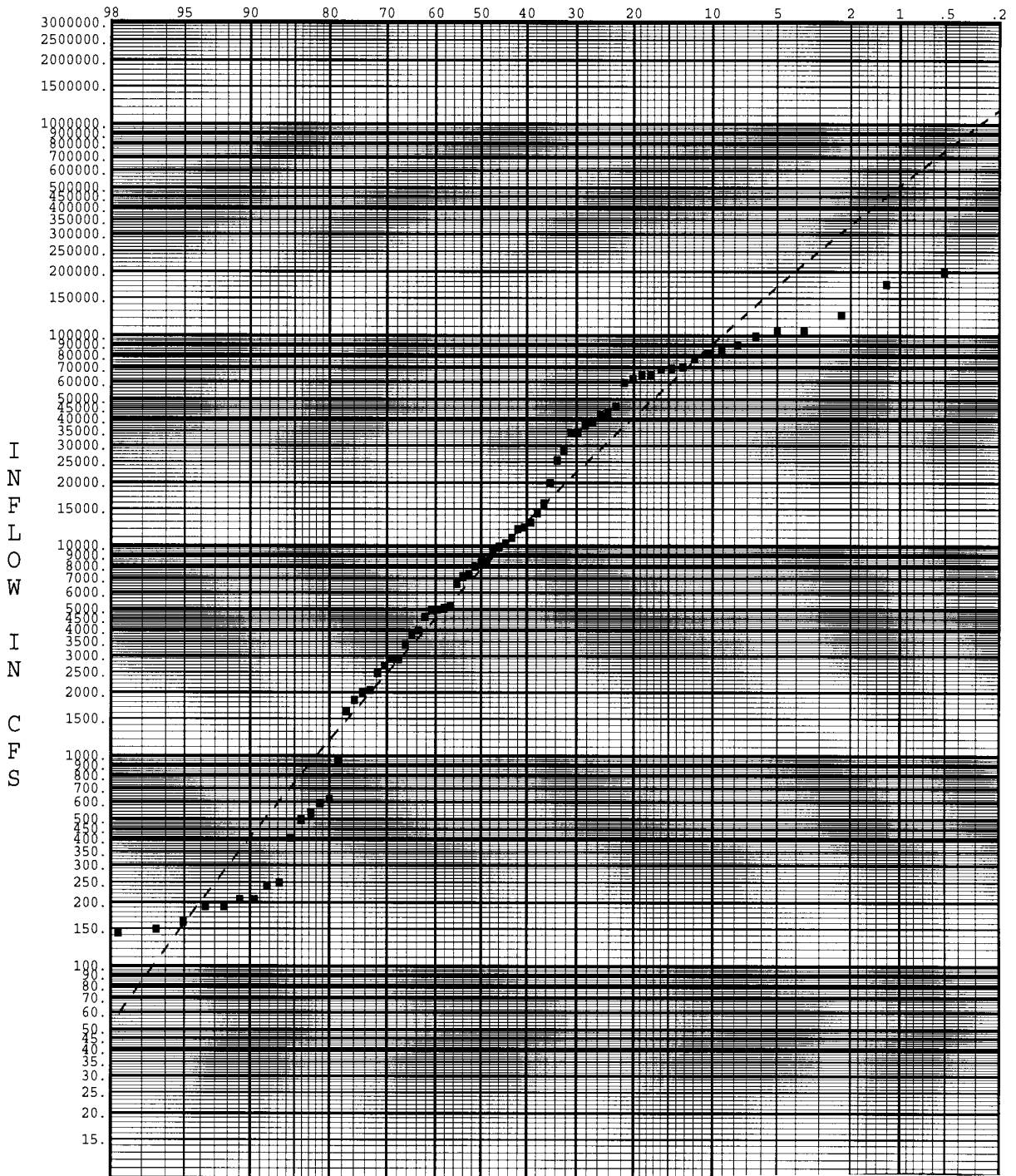
NOTE:
 Information is from the Alamo Dam Risk Assessment
 Demonstration Study, dated 1998. The period of record
 spans from 1929 to 1998.

ALAMO DAM AND LAKE
 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

50-YEAR BALANCED HYDROGRAPH

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

EXCEEDANCE FREQUENCY IN PERCENT



I
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F
L
O
W

I
N
C
F
S

--- INFL Frequency (with Exp. Prob.)
 ■ Median Plotting Positions

FREQUENCY STATISTICS

LOG TRANSFORM OF INFLOW	CFS	NUMBER OF EVENTS
MEAN	3.8271	HISTORIC EVENTS 2
STANDARD DEV	.9061	HIGH OUTLIERS 0
SKEW	-.4171	LOW OUTLIERS 0
REGIONAL SKEW	-.4600	ZERO OR MISSING 0
ADOPTED SKEW	-.4000	SYSTEMATIC EVENTS 72
		HISTORIC PERIOD(1861-1999) 138

WATER YEARS IN RECORD: 1891, 1916, 1927, 1929-1999
 BASIN DRAINAGE AREA: 4,770 SQUARE MILES

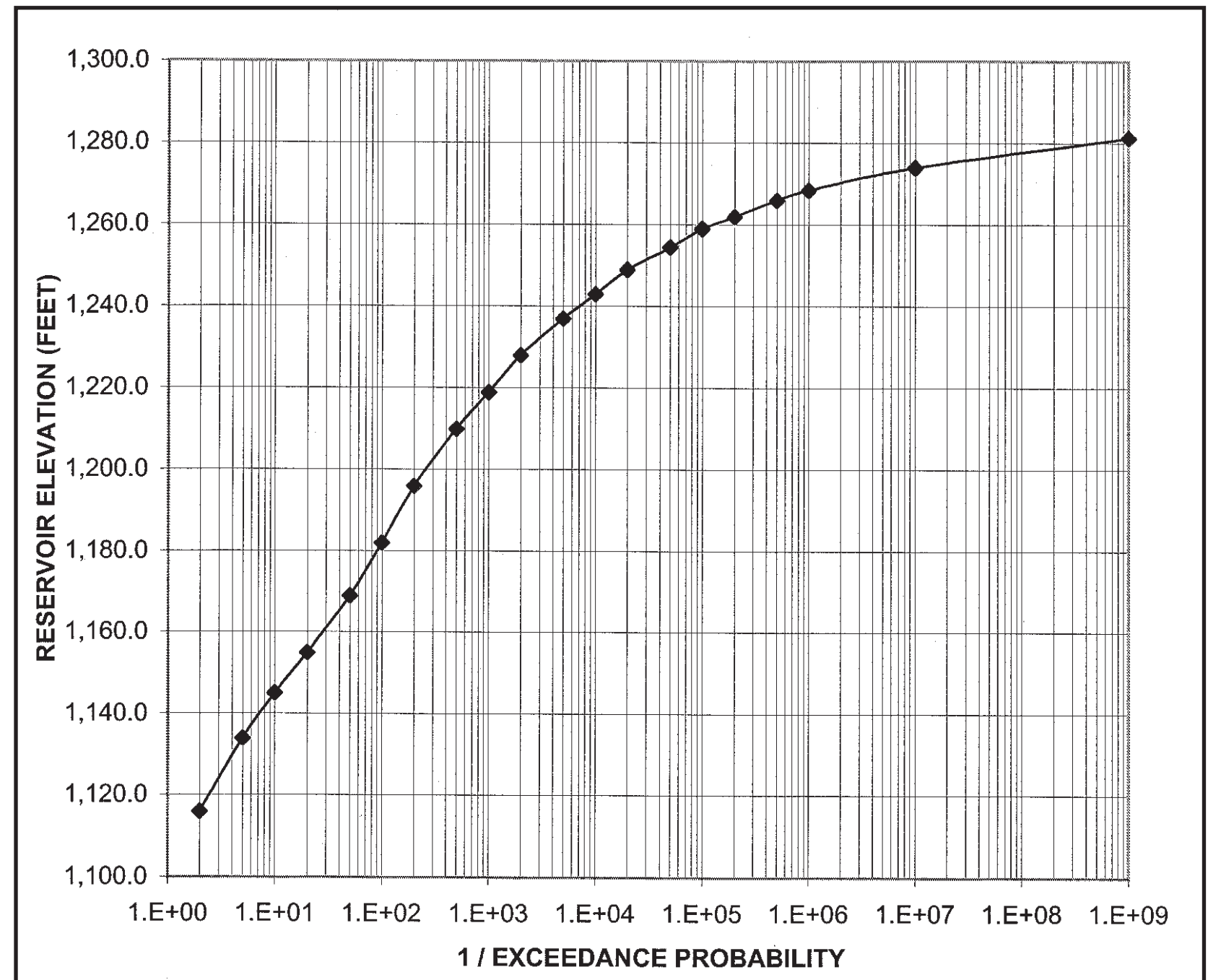
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 BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
 WATER CONTROL MANUAL

PEAK ANNUAL
 INFLOW FREQUENCY

U.S. ARMY CORPS OF ENGINEERS
 LOS ANGELES DISTRICT

Alamo Dam Risk Assessment Demonstration Study - 2000

Average Return Interval ARI (yr)	Annual Exceedance Probability AEP (%)	Maximum Reservoir Stage (feet)	Maximum Reservoir Outflow (cfs)
2	50	1,116.0	5,000
5	20	1,134.0	5,000
10	10	1,145.0	5,000
20	5	1,155.0	5,000
50	2	1,169.0	5,000
100	1	1,182.0	5,000
200	0.5	1,196.0	5,000
500	0.2	1,210.0	5,000
1000	0.1	1,219.0	5,000
2000	0.05	1,228.0	5,000
5000	0.02	1,237.0	7,000
10000	0.01	1,243.0	12,526
20000	0.005	1,249.0	21,311
50000	0.002	1,254.5	33,391
100000	0.001	1,259.0	45,510
200000	0.0005	1,262.0	53,560
500000	0.0002	1,266.0	68,188
1000000	0.0001	1,268.5	85,596
10000000	0.00001	1,274.0	157,107
100000000	0.000001	1,281.3	282,142



NOTES:

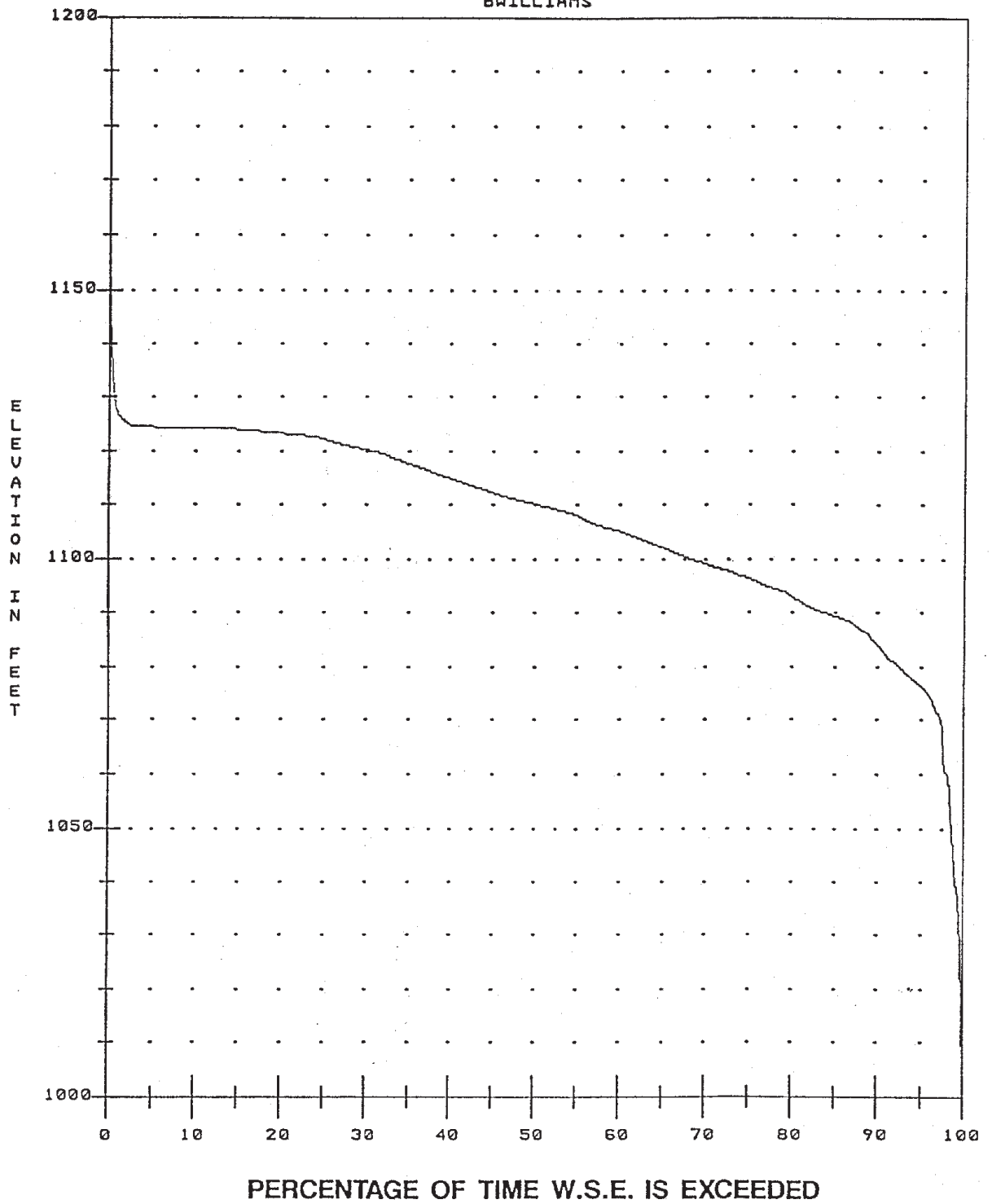
- Maximum reservoir outflow is a combination of discharge through the dam outlet works, spillway, and over or through the embankment (in the case of dambreak)
- Values assume no embankment failure regardless of extent of overtopping
- The period of record spans from 1929 to 1998.

ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

RESERVOIR STAGE FREQUENCY
AND OUTFLOW FREQUENCY
RELATIONSHIPS FOR
CURRENT WATER CONTROL PLAN

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

BWILLIAMS



NOTE:
Information is from the Alamo Dam Risk Assessment Demonstration Study, dated 1998. The period of record spans from 1929 to 1998.

ALAMO DAM AND LAKE
BILL WILLIAMS RIVER, COLORADO RIVER BASIN, ARIZONA
WATER CONTROL MANUAL

**ELEVATION-DURATION
FREQUENCY CURVE**

FOR PERIOD OF RECORD (1929-1998)

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT