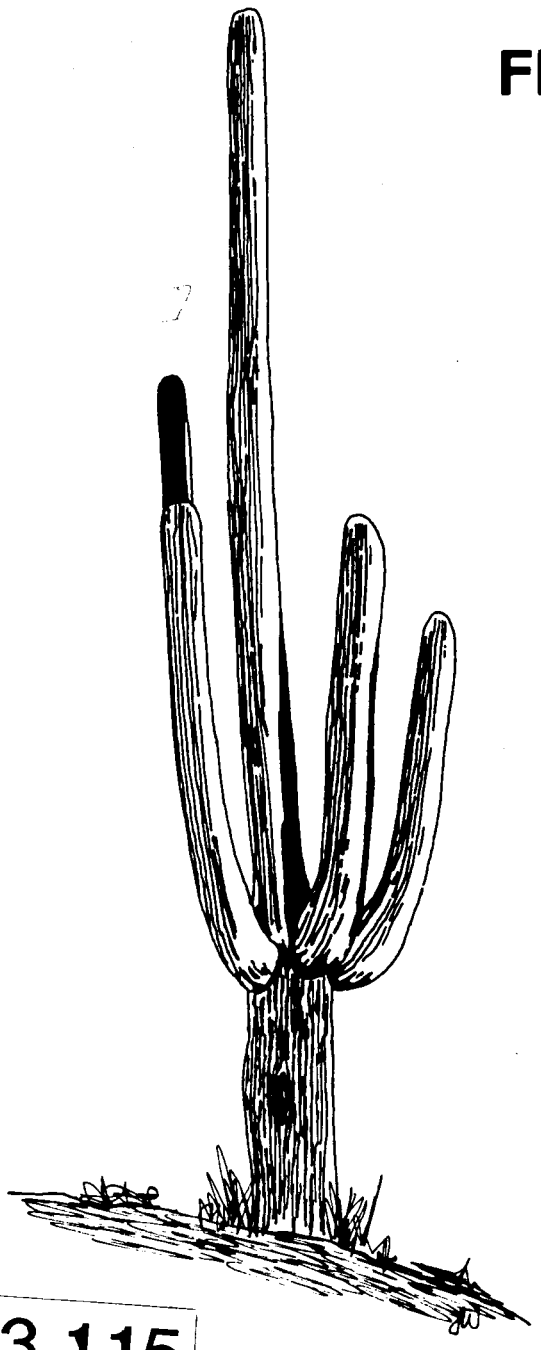
ANNUAL REPORT



FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

JULY 1, 1978
to
JUNE 30, 1979

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT

July 1, 1978 to June 30, 1979

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BACKGROUND

The Flood Control District of Maricopa County was established in 1959 as a Special Flood Control District pursuant to Arizona Revised Statutes as a municipal corporation and a political subdivision of the State of Arizona for the purpose of providing flood protection for metropolitan, urban and agricultural areas in Maricopa County.

Federal flood control projects are planned, designed and constructed by either the U. S. Army Corps of Engineers or by the Soil Conservation Service. It is the responsibility of the Flood Control District, as the local sponsor, to provide all rights-of-way, to relocate all facilities such as roads, bridges and utilities; to relocate people; and to inspect and maintain the structures after completion. In addition, the Flood Control District participates in the planning and construction of local flood control projects.

The Flood Control District provides technical assistance to the County in checking for conformance with floodplain regulations to protect new homeowners from living within a potential flood hazard area. The Flood Control District has also maintained the coordination necessary to make unincorporated areas of Maricopa County eligible for the Federal Flood Insurance Program.

Arizona Revised Statutes authorized the Flood Control Tax Levy to be 20¢ per $100 property evaluation. In addition, the Statutes established the State Flood Control Assistance Program in 1973. This Program provided for State financial assistance for a period of fifteen years and authorized the State to contribute half the local costs for authorized Federal flood control projects.

Stated below are the funds requested and appropriated since the Flood Control Assistance Program was authorized:

Year		Amount Requested	Amount Appropriated
1973		$2,450,000	$2,450,000
1974		2,475,000	895,000
1975		3,688,000	176,000
1976		4,700,000	600,000
1977		8,000,000	8,000,000
1978		4,000,000	4,000,000
	TOTAL	$25,313,000	$16,121,000

BOARD OF DIRECTORS

Hawley Atkinson, Chairman
George L. Campbell
Tom Freestone
Fred Koory, Jr.
Ed Pastor

Rhea Woodall, Clerk of the Board

CITIZENS' FLOOD CONTROL ADVISORY BOARD

H. Lynn Anderson, Vice Chairman, July 1, 1978, through November 15, 1978
Chairman, November 15, 1978, through June 30, 1979
Henry E. Brodersen
Elijah Cardon, Chairman, July 1, 1978, through November 14, 1978
Donald K. Chambers, July 1, 1978, through November 14, 1978
John E. Miller, Jr., November 15, 1978, through June 30, 1979
Paul E. Perry, Vice Chairman, November 15, 1978, through June 30, 1979
J. E. Attebery, Phoenix City Engineer
Reid Teeples, Salt River Project

Larry Richmond, General Counsel
Herbert P. Donald, Chief Engineer and General Manager

CORPS OF ENGINEERS PROJECT ACTIVITIES

A. Cave Buttes Dam

Construction continued by Washington Construction Company on Cave Buttes Dam during the year and was nearing completion at the end of June 1979. The heavy rains of the winter storm season delayed construction. A drying out period was required before additional material could be taken from the borrow sites located behind the Cave Creek Dam.

The Flood Control District asked the Corps of Engineers to consider the construction of a dike below the spillway area so that it would not be necessary to acquire this land.

A delineation of Cave Creek Wash from the outlet channel of Cave Buttes Dam to the Arizona Canal is being completed by the Corps of Engineers. Property owners were concerned because they had been under the impression that the completion of Cave Buttes Dam would remove property from the floodplain. However, preliminary indications show that, under the criteria of allowing for development downstream of Cave Buttes Dam during the 100 year economic life of the structure, these properties will still remain in the floodplain. The matter was unresolved at the end of the year.

B. Adobe Dam

Planning continued during the year. It has been possible to move several parcels of land out of the reservoir limits by adding fill and regrading the land. Therefore, the land will no longer need to be purchased and can be left on the tax rolls.

Adobe Dam is a feature of Stage II of the New River and Phoenix City Streams Project which the U. S. Congress did not fund in its 1979 Public Works Bill. The Flood Control District continued with its acquisition program; however, the Corps of Engineers has had to give the project a lower priority in preparation of final plans and specifications.

C. Arizona Canal Diversion Channel

The U. S. Congress did not fund in their 1979 Public Works Bill Stage II of the New River and Phoenix City Streams Project of which the Arizona Canal Diversion Channel is a feature. This will delay the Corps of Engineers about a year, but the Flood Control District will continue with its acquisition program.

The final right-of-way plans, prepared by International Engineering Co. Inc. for the reach from 67th to 43rd Avenues and relocation of portions of the Arizona Canal, were recorded. Acquisition of undeveloped lands will now proceed.

Our consultant on the reach from Cave Creek Wash to 43rd Avenue prepared an estimate for right-of-way acquisition and relocations. The estimate included costs for a rectangular channel versus the trapezoidal channel. If the rectangular channel is feasible, there would be a reduction in needed right-of-way.

Several parcels of land along the Arizona Canal Diversion Channel were leased at public auction until they will be needed for construction. This produces revenue for the Flood Control District.

Preliminary design studies have been initiated for new bridges on Thunderbird Road and 59th Avenue which will enable the Flood Control District to determine bridge configuration in order to begin final design.

D. New River Dam

Applications have been submitted to the State Land Department and the Bureau of Land Management to obtain required real property interest. The one ownership in private hands was acquired.

E. Indian Bend Wash

Outlet. The Corps of Engineers is still in the process of settling with the contractor for this project. The contractor believes that he is entitled to more payment for one of the change orders. If the case is decided in favor of the contractor, the Flood Control District will be responsible for payment of any additional amounts since the change order involved a local interest item.

Inlet. The contract for construction of this project was awarded by the Corps of Engineers to M. M. Sundt Construction Company who was the low bidder with a bid of $4,733,228. The Flood Control District's share is $612,358 for local interest work. As of June 1979, approximately $26,000 in change orders had been added to the Flood Control District's costs and another $35,000 or so is projected in change orders before completion.

The contractor had several delays during the year due to the unusually wet winter in this area plus being pulled off the job by the Corps of Engineers to work in other areas of the State on flood problems. Even after all the delays, the overall job is ahead of schedule.

The inverted siphon at the Arizona Canal was completed and water diverted through it in April 1979. Completion of this particular item was behind schedule, but was unavoidable due to the weather.

Interceptor and Side Channels. The Corps of Engineers decided in December 1979 to separate the Interceptor Channel and the Collector channel into two projects as the revision of the hydrology due to developments in the drainage area of the Collector Channel was delaying both projects.

The draft of the Feature Design Memorandum for the Interceptor Channel was received in May 1979.

SOIL CONSERVATION SERVICE PROJECT ACTIVITIES

A. Spook Hill Floodwater Retarding Structure and Floodway

Construction by Mardian Construction Company continued and most of the work was completed by June 1979 except for landscaping and the pump system for irrigation.

Although adverse weather conditions delayed the construction of the McKellips Road ramp, it was completed and opened to traffic on February 5, 1979. The closure of Brown Road followed with construction completed and the ramp opened to traffic on March 16, 1979. Usury Pass Road has been permanently closed.

At the request of the Arizona Wool Growers Association, additional coyote-proof fencing was constructed by the Flood Control District. Historically, the sheep from the east side of the Salt River Valley have been driven along Brown Road in the vicinity of Spook Hill. The sheep fence and watering facilities are required so that this sheep drive could be repeated in the coming years. Special project construction, such as flattening the slopes was also required.

B. Signal Butte Floodway

Final right-of-way plans were substantially completed by Dibble and Associates, the Flood Control District consultant. The consultant also worked on design of two box culverts at Crismon and Ellsworth Roads. Planning for the project continued and areas discussed were spoil sites for waste material, bridge crossing requirements and access road requirements.

C. Harquahala Watershed

The Flood Control District consultant, Dibble and Associates, completed the right-of-way maps for the Saddleback structures, so it was possible to begin land acquisition in Rose View Estates. Rose View Estates had been subdivided and lots sold prior to stricter laws requiring legal access, water and other utilities. A majority of the lots had absentee owners or were held in trust. The buyers, in many cases, had not seen the land prior to buying it. The property owners paid $7500 per lot and the Flood Control District offered them $2000 to $2250 based upon appraisals by an independent fee appraiser. As the owners were not satisfied with the offer, it has been necessary to condemn many of the properties.

The Bureau of Reclamation and the Flood Control District agreed to work together for joint acquisition of lands needed for the Harquahala Floodwater Retarding Structure and the Central Arizona Project Aqueduct. This will save money on negotiating costs and also appraisal costs by using the Bureau of Reclamation staff appraiser. In the event an agreement is not reached with property owners, the Flood Control District will have to proceed alone as the Bureau of Reclamation cannot take legal action on behalf of the Flood Control District.

As construction of the Saddleback Floodwater Retarding Structure and Diversion Channel is scheduled for next year, the Flood Control District contacted utility agencies to plan for utility relocation work prior to the construction starting date. There is concern about the Palo Verde-Devers 500 kV transmission lines which may conflict with our structures.

Toups Corporation completed the road ramp, box culvert and dip crossing designs for the Saddleback Floodwater Retarding Structure and Diversion Channel. Prefinal design plans for the Saddleback structures were received from the Soil Conservation Service and commented upon.

D. RWCD Floodway

The relocation of two railroad crossings and nineteen bridges, where major roads exist, are required for the RWCD Floodway. Several bridges have been completed including Queen Creek Road, Chandler Heights Road, Rittenhouse Road and Higley Road. San Tan Road Bridge has been designed and should be constructed before the end of the calendar year. The Arizona Department of Transportation plans to construct State Highway Bridge 93 during the winter and State Highway Bridge 87 in the middle of 1980.

All utility relocation work in Reach 1 was completed during the first six months of 1979. Final construction plans for Reach 1 have been completed and construction is expected to begin during the next fiscal year.

Adam, Hamlyn and Anderson, the Flood Control District consultant, completed the rights-of-way plans in the Reservation and Governor Alexander Lewis of the Gila River Tribal Community signed the plans in February 1979. About 60% of all the right-of-way required for the RWCD Floodway has been acquired.

E. Queen Creek Watershed

The Soil Conservation Service and the Flood Control District withdrew from the Queen Creek Project because of time restraints. The Soil Conservation Service's estimate for award of a construction contract was December 1983 while the Bureau of Reclamation needed to award a contract for the construction of the Salt-Gila Aqueduct of the Central Arizona Project in June 1980. Therefore, the Bureau of Reclamation will build a structure to protect both the Aqueduct and the Lower Queen Creek Basin. It is estimated that most of the additional cost will be offset by flood protection benefits and will not increase the payback required from the water users. The structure will be similar in design to that protecting the Central Arizona Project above Paradise Valley which provides protection against the Maximum Probable Storm plus a 100 Year Storm as a follow up.

Emergency Watershed Protection Measures. The March 1978 Flood caused changes in the channel along Queen Creek. The repair work was performed by the Soil Conservation Service under provisions of Public Law 216. The Flood Control District obtained the needed easements from property owners. The construction was completed and accepted on May 21, 1979.

F. Rittenhouse Floodwater Retarding Structure

The final inspection of the repair work on Rittenhouse Floodwater Retarding Structure was held in May 1979. The work consisted of installing a blanket of filter material from the crest to the foundation of the structure with outlets to the downstream slope at 1000 foot intervals. The purpose of the reconstruction was the repair of numerous fissures, both longitudinal and transverse, that existed within the structures.

There are five other structures built by the Soil Conservation Service and maintained by the Flood Control District where a similar reconstruction or repair is anticipated in the near future.

LOCAL PROJECT ACTIVITIES

A. Salt-Gila Clearing

A contract was signed in August 1978 with the consulting engineering firm of Benham, Blair, Ditzler and Elling to map and stake a channel alignment from Gillespie Dam to Palo Verde Road and from Bullard Road to 91st Avenue. Applications were filed with the State Land Departmet and the Bureau of Land Management to acquire the necessary rights-of-entry.

A coordination meeting was held in December 1978 at the Arizona Game and Fish Commission with representatives of interested Federal, State and local organizations. The Commission passed a motion to participate in a "Blue Ribbon Committee" to recommend action. It also adopted a motion to grant a right-of-entry in order to establish channel alignment.

The organizational meeting of the Blue Ribbon Committee was held on January 16, 1979. The Committee's charge was to consider alternatives and to recommend an interim solution to the flooding problem which will maintain the Fred J. Weiler Greenbelt, maintain the wildlife habitat, prevent further destruction of public and private property by controlling expansion of the floodplain limits caused by silt deposits and phreatophyte growth, and consider modifications to Gillespie Dam to permit passage of floodwaters.

A presentation was made to the Governor's Task Force on Flood Control, and State funding was requested to accomplish an environmental study and to do some clearing on private lands, on Indian Community lands and on public lands where authorization has already been obtained. Matching funds were appropriated by the State Legislature for this purpose.

B. Paradise Valley, Scottsdale, Phoenix Study (PVSP)

The consultant, Collar, Williams and White, completed Phase II of the preliminary design. The estimated construction cost was $6,677,000.

A proposal for financing and construction was circulated to the participating municipalities for their comments and approval by their governing bodies. In December 1979, the Councils of the Town of Paradise Valley and the City of Scottsdale approved the project concept and funding arrangements.

In April 1979 the City of Phoenix City Council decided to withdraw from the project and, although it plans to proceed with design and construction of facilities within its city limits as bond funds become available, it will not be participating financially in joint funding with Scottsdale, Paradise Valley and the Flood Control District. The reasons given were that full participation could result in additional liabilities for the City and the City does not want to be burdened by the capital improvement schedules of the other municipalities involved. The City also estimated the final cost as being much greater than projected.

It is anticipated that the project will continue without Phoenix. The new estimated cost will be $3,707,000.

C. Gila Drain

The Flood Control District Board of Directors on August 14, 1978, approved a contract with Coe and Van Loo for engineering services, including preliminary design and right-of-way determination for the Gila Drain Project. The fee for this contract was $39,366 plus a $10,634 contingency fund, a total of $50,000. The consultant was given an order to proceed in August 1978.

The Preliminary Design Report for the Gila Drain was completed and submitted by the consulting engineer in May 1979. The Report recommended an $11.5 million project that utilized Salt River Project facilities to the maximum extent and required enlargement of the existing drain channel to the Gila River to accept maximum flows resulting from a 100 Year Storm.

HYDROLOGY DIVISION ACTIVITIES

In addition to performing hydrologic studies for the Flood Control District, the Hydrology Division performs a number of tasks for Maricopa County on a cost reimbursable basis. This includes review of floodplain delineations to be adopted by the Floodplain Board (Board of Supervisors). During the year, no additional delineations were adopted and 17.8 miles of delineated floodplains were incorporated by cities and towns.

Other reviews included:

	FY 78-79	Percent Change from 77-78
Building Permits	192	7% Increase
Zoning District Changes	167	27% Increase
Board of Adjustment Cases	29	71% Increase
Subdivision Drainage Cases	254	32% Increase

Due to complaints of adjacent property owners, the Chairman of the Floodplain Board ordered an investigation of sand and gravel operations in the Agua Fria River. Preliminary investigation of eleven operations indicated that all were violating the provisions of the floodplain regulations. The Flood Control District will continue to provide technical assistance to the County in this investigation.

LEGISLATION

A major piece of legislation which affects the Flood Control District in a number of ways, House Bill 2457, was signed by the Governor on May 2, 1979, to become effective July 31, 1979. Among other things, the legislation:

1. Grants authority for the Flood Control District to dispose of real and personal property valued in excess of $25,000 without a vote of the electorate.

2. Authorized reimbursement to the Flood Control District of 50% of the land enhancement costs charged by a Federal agency.

3. Appropriated $3 million under an "Alternative Assistance Program" to reimburse 50% of costs on local projects. The Flood Control District is eligible to apply for $900,000 of this appropriation, perhaps for the PVSP and the Gila Drain Projects.

4. Appropriated $5 million for a loan fund for local projects. The Flood Control District is eligible to apply for $1.5 million of the current appropriation.

5. Appropriated $4 million for rechanneling the Salt River near Sky Harbor Airport.

6. Appropriated $455,000 as matching funds for the Salt-Gila Clearing Project. The County was requested to provide the matching funds with Revenue Sharing Funds.

7. Authorized the Board of Supervisors to levy a flood control tax not to exceed 50¢ per $100 of assessed real property valuation. However, due to a technicality, yet to be resolved, the Board of Supervisors has not yet increased the flood control tax levy.

In addition, $4 million was appropriated for reimbursement through the Water Commission for 50% of Flood Control District costs for relocations and rights-of-way on Federal projects.

FLOOD OF DECEMBER 1978

A major flood emergency occurred on December 18 and 19, 1978. Flood Control District personnel were sent to monitor rainfall and stream flows at Cave Creek, McMicken And Rittenhouse Dams as well as the progress of flood peaks down the Salt and Agua Fria Rivers. Other streams within the County were also monitored.

Releases from Cave Creek Dam did not exceed 500 cfs and all of this flow was handled by the Arizona Canal with no significant damage. Careful management of these releases was necessary to prevent damage to the partially completed Cave Buttes Dam.

Peak flows into the Salt River Project Reservoirs exceeded 286,000 cfs, and, by management of releases, the Salt River Project was able to limit the maximum releases at Granite Reef to an estimated 115,000 cfs. These peak releases occurred between 12:30 p.m. on December 19 and 3:00 a.m. on December 20. The total volume released from Granite Reef was approximately 725,000 acre feet during the period from December 18 through December 19.

The flow of floodwaters caused serious damage in the Salt and Gila Rivers. All bridges across the Salt River except Mill Avenue, Interstate 10 and Central Avenue were inundated and approaches were destroyed. Some of the bridges destroyed had only recently been put back into operation following the March 1978 Flood.

There was major concern about the buildup of floodwaters in the Agua Fria River. During the evening of December 18, inflow into Lake Pleasant (Waddell Dam) increased as available storage was decreasing. At about 11:00 p.m., inflows were estimated at 78,000 cfs. Disaster Defense Center personnel were informed that evacuation of the Agua Fria floodplain below Lake Pleasant would very likely be required.

By midnight, Waddell Dam officials confirmed they were making major releases. Flood Control District personnel estimated the area to be evacuated along the Agua Fria River for a flood of 60,000 cfs and recommended that area for evacuation. The Disaster Defense Center advised the Sheriff's Department and local police to begin the evacuation.

The advance of the flood crest on the Agua Fria was monitored by helicopter and by ground observers traveling from crossing to crossing. Continual advisories were sent to the Sheriff and local police. This information enabled Flood Control District personnel to more accurately estimate the lead time for evacuation of the floodplain from Waddell Dam to the Gila River, and floodplain residents had from one to ten hours of advance warning.

Subsequent information from Waddell Dam officials indicated that the peak discharge was approximately 60,000 cfs from 1:30 a.m. until 4:00 a.m. on December 19. Total volume of water released was approximately 52,500 acre feet or about one third the capacity of Lake Pleasant. Most of that volume was discharged on December 19.

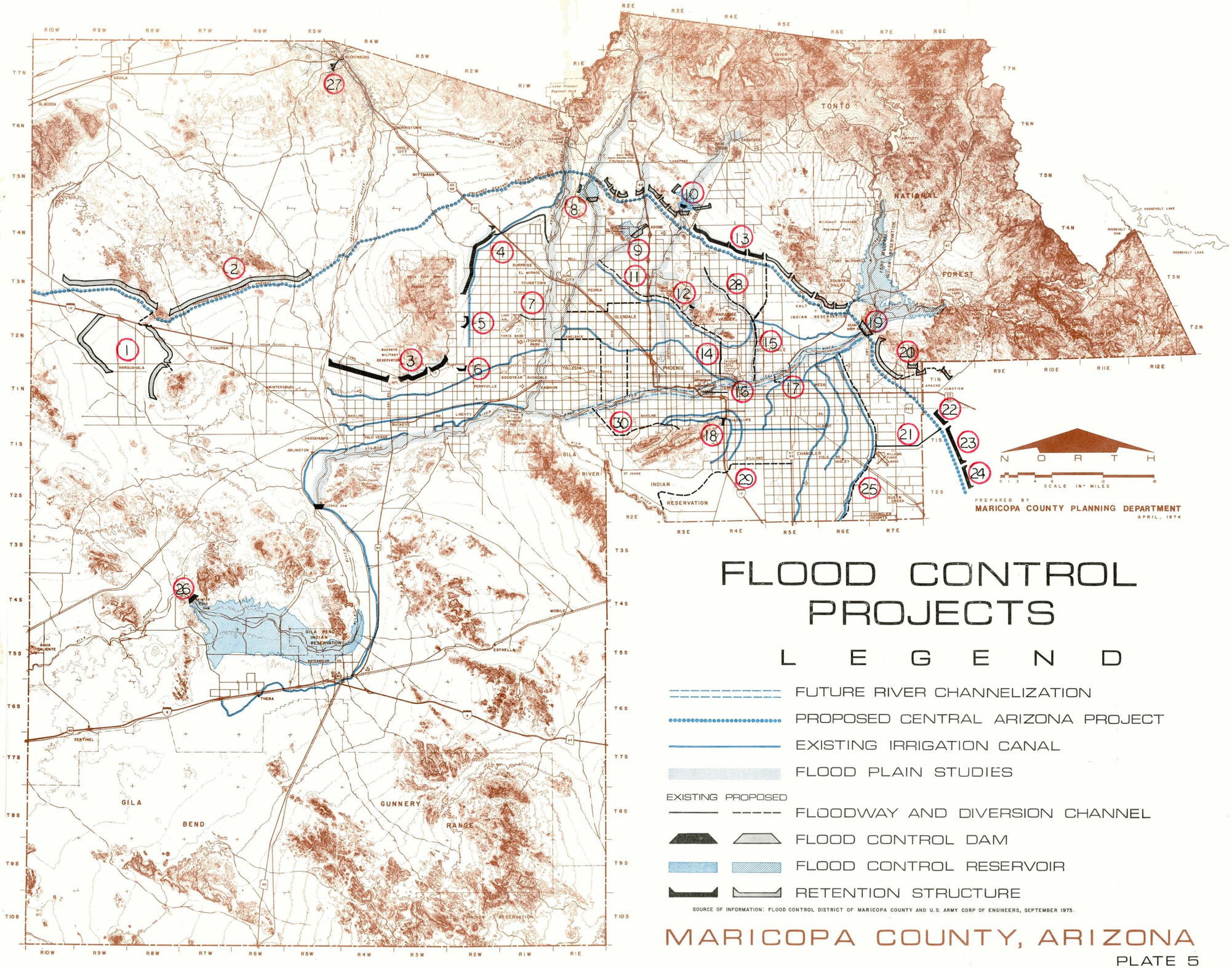
FLOOD CONTROL DISTRICT EXPENDITURES

FY 1978-1979

48th Street Drain	52,671.90
Indian Bend Wash	1,424,466.50
Gila Drain	50,496.52
RWCD Floodway	797,585.14
Arizona Canal Diversion Channel	2,210,168.09
Spook Hill FRS and Outlet	342,195.60
Signal Butte FRS and Floodway	33,337.56
Harquahala Watershed	228,979.65
Cave Buttes Dam	237,775.16
Adobe Dam	1,996,717.76
New River Dam	2,915,791.10
Salt-Gila Clearing and Channelization	27,140.86
Paradise Valley, Scottsdale, Phoenix Study	18,613.35
Insurance	125,175.50
Flood Warning, Data Collection	51,605.45
Operation and Maintenance of Structures	254,888.49
Other	486,333.20
TOTAL	11,253,941.83

STRUCTURE	DRAINAGE AREA	STORAGE CAPACITY	SURFACE AREA FLOODWATER POOL	VOLUME OF FILL	MAXIMUM HEIGHT OF DAM	LENGTH OF STRUCTURE	TIME TO DISCHARGE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETE
Powerline F.R.S.	49.6 sq. mi.	4019 ac. ft.	456 ac.	880,000 c.y.	35 ft.	3.9 mi.	30 days	$ 4,800	$ 377,300	1967
Vineyard Road F.R.S.	53.4 sq. mi.	4122 ac. ft.	837 ac.	1,154,400 c.y.	20 ft.	4.5 mi.	30 days	$ 54,900	$ 512,000	1968
Rittenhouse F.R.S.	49.6 sq. mi.	3875 ac. ft.	660 ac.	798,800 c.y.	21 ft.	3.0 mi.	30 days	$ 28,800	$ 400,000	1969
Guadalupe F.R.S.	1191 ac.	273 ac. ft.	30.4 ac.	175,000 c.y.	32 ft.	1.0 mi.	10 days	$160,500	$ 498,000	1975
White Tanks Dam #3	24.1 sq. mi.	2655 ac. ft.	384 ac.	375,000 c.y.	30 ft.	7667 ft.	80 hrs	$218,287	$ 199,088	1954
White Tanks Dam #4	10.3 sq. mi.	1036 ac. ft.	221 ac.	175,000 c.y.	20 ft.	6839 ft.	118 hrs			1954
Buckeye F.R.S. Sites 1,2, & 3	58,896 ac.	8000 ac. ft.	2845 ac.	4,100,000 c.y.	33 ft.	16 mi.	10 days	$103,400	$3,544,000	1975
McMicken Dam	223 sq. mi.	30,500 ac. ft.	2300 ac.	2,400,000 c.y.	38 ft.	9.4 mi.	4.5 days	$180,000	$2,000,000	1956
Dreamy Draw	1.3 sq. mi.	317 ac. ft.	26.7 ac.	83,500 c.y.	50 ft.	1400 ft.	19.5 hrs	$ 25,000	$ 388,870	1973
Sunset F.R.S.	384.0 ac.	55 ac. ft.	8.6 ac.	67,800 c.y.	30.5 ft.	500 ft.	7.6 days	$150,000	$ 776,700	1976
Sunnycove F.R.S.	864.0 ac.	218.7 ac. ft.	18.0 ac.	111,500 c.y.	50.5 ft.	700 ft.	17 days			1976

	LENGTH	AVERAGE BOTTOM WIDTH	AVERAGE CHANNEL DEPTH	VOLUME OF EXCAVATION	VOLUME OF CONCRETE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline Floodway	8.7 mi.	7'	5'	285,800 c.y.	15,534 cy	$64,000	$871,000	1968



LEGEND

1. Harquahala Valley Watershed Project
* 2. Tonopah Watershed Project
3. Buckeye Watershed Project
4. McMicken Dam
5. White Tanks Dam #3
6. White Tanks Dam #4
7. Dysart-Agua Fria Drain
8. New River Dam
9. Adobe Dam
10. Cave Buttes Dam
11. Arizona Canal Diversion Channel
12. Dreamy Draw Dam
* 13. Paradise Valley Structures
14. Old Cross Cut Canal
15. Indian Bend Wash Floodway
16. 48th Street Drain
17. Alma School Drain
18. Guadalupe Watershed Project
19. Orme Dam
20. Buckhorn Mesa Watershed Project
21. Powerline Floodway
22. Powerline Dam
23. Vineyard Road Dam
24. Rittenhouse Dam
25. RWCD Floodway
26. Painted Rock Dam
27. Wickenburg Watershed Project
28. PVSP
29. Gila Drain
30. Champion Drain

* Bureau of Reclamation Projects

PREPARED BY
MARICOPA COUNTY PLANNING DEPARTMENT
APRIL, 1974

FLOOD CONTROL PROJECTS

L E G E N D

- FUTURE RIVER CHANNELIZATION
- PROPOSED CENTRAL ARIZONA PROJECT
- EXISTING IRRIGATION CANAL
- FLOOD PLAIN STUDIES

EXISTING	PROPOSED	
———	- - - - -	FLOODWAY AND DIVERSION CHANNEL
		FLOOD CONTROL DAM
		FLOOD CONTROL RESERVOIR
		RETENTION STRUCTURE

SOURCE OF INFORMATION: FLOOD CONTROL DISTRICT OF MARICOPA COUNTY AND U.S. ARMY CORP OF ENGINEERS, SEPTEMBER 1975.

MARICOPA COUNTY, ARIZONA

PLATE 5