

S Flood Control



REPORT OF HYDRO LIBRARY
OF
FLOOD
PROTECTION
IMPROVEMENT
COMMITTEE

PHOENIX, ARIZONA



1958

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CLERK OF THE BOARD
OF SUPERVISORS

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FLOOD PROTECTION IMPROVEMENT COMMITTEE
315 N. 3rd Ave., Phoenix, Arizona
Phone ALpine 8-4562

April 30th, 1958

Board of Supervisors - Maricopa County
City Council - City of Phoenix
Board of Directors - Salt River Project

Gentlemen:

Submitted herewith is a report with recommendations prepared by your jointly appointed Flood Protection Improvement Committee.

The report consists of a statement of the Committee's formation, its investigations of the general problems, and the conclusions reached. Appendices are attached: I, outlining our original purposes and procedure; II, describing individual drainage areas and recommending future work or action essential to each area; and III, presenting a Flood Control District Act for further study and legislative action. Map exhibits accompany the report for geographic aid.

The report strongly recommends the immediate formation of an interim agency to do planning, acquire right of way, and to further other objectives pending the establishment of a Flood Control District. Since financial requirements are major and time is important we would like full discussion leading to that mutual understanding so necessary for continued good work.

To that end we will be pleased to meet with you and your administrative staff at 1:30 P.M., Monday, May 19th, at the Phoenix Library to discuss the report and the future of a flood protection program for this area.

Respectfully submitted,

The Committee

LOG/mc

Participating Agencies and Committee Members

Maricopa County	City of Phoenix	Salt River Project
T. R. Neiswander	Leigh Gardner, Chairman	H. J. Roth, Secretary
H. C. Tognoni	Sam Tucker	E. L. Wilson
H. H. Williams	L. R. Jurwitz	H. Shipley

REPORT AND RECOMMENDATIONS OF THE FLOOD PROTECTION IMPROVEMENT COMMITTEE APPOINTED BY THE CITY OF PHOENIX, MARICOPA COUNTY AND THE SALT RIVER PROJECT

INTRODUCTION

Presented herein is a general report on flood control, water conservation and storm drainage for the Maricopa County area, together with recommended methods of financing, construction and operating the major flood protection works for the benefit of the community.

AUTHORITY

This Committee was appointed by the City of Phoenix; by the Board of Supervisors of Maricopa County; and by the Board of Directors of the Salt River Project on October 31, 1957. It was directed to prepare a general plan of flood control for the greater Phoenix area; to recommend methods of financing, constructing and operating major flood protection works for the benefit of the community as a whole. The Committee was directed to serve in a supervisory and coordinating capacity for governmental agencies and others concerning the storm drainage problems of the Phoenix vicinity.

RECOMMENDATIONS

There is submitted herewith a preliminary study on the part of the Committee which consists of recommendations, reports of investigations, supporting documents, maps, and references to pertinent reports.

DEFINITE PROJECT INVESTIGATIONS

Definite project investigations which formed the basis of this report consisted primarily of a review of the various documents available and studies thereof. In addition, numerous on-the-site field investigations were conducted and preliminary studies were developed which suggest the plan of improvement as presented herein. The only hydrologic studies available were those of the Geological Survey, the Corps of Engineers, and the Yost & Gardner Report.

In the preparation of this report, full use has been made of existing reports, maps and statistical material. Many worthy reports and studies have been utilized which have been prepared and conducted by various agencies in Maricopa County. Reports, maps and miscellaneous data have been obtained from Federal sources and including the U.S. Geological Survey, the U.S. Weather Bureau, the Corps of Engineers, and the U.S. Soils Conservation Service. Valuable information has come from State and County sources.

Three map exhibits are submitted with this report. Exhibit No. 1 is a map including all of Maricopa County and a portion of surrounding areas. This map outlines the natural drainage areas as based on the preliminary studies and conclusions reached in this report. Exhibit No. 2 shows the location of natural drainage channels and develops the over-all drainage pattern of the area shown. Exhibit No. 3 delineates those areas discussed in detail later in this report warranting immediate attention and study. It must be pointed out that areas delineated on these maps are not the result of ground surveys, but are based on preliminary field studies and on available topographic maps. For the purpose of this report it is considered that they are presently adequate, but more detailed studies will be required. The natural drainage basins or drainage areas located on the exhibit have been named in accordance with the geographical location or in accordance with some particular local feature.

AREAL COMPREHENSIVENESS OF SURVEY

The ultimate goal of any comprehensive plan for flood protection, water conservation and storm drainage should provide equal or equivalent facilities for all portions, presently developed or to be developed in the future with costs to each district, or community commensurate with its particular problems of flood control, water conservation, and storm drainage.

The necessity for providing an equitable distribution of costs should govern time and sequence of construction of works. All planning and construction of flood control systems, spreading basins, or storm drainage projects must provide, also, for the future connection to any system of those outlying areas whose development and consequent needs can be anticipated within a reasonable future period.

GENERAL OUTLINE OF PROBLEMS INVOLVED

Basic Objectives Certain fundamental objectives must be attained in any adequate and proper solution of flood control problems of Maricopa County. These have controlled the investigations conducted in connection with this survey and the conclusions and recommendations included in this report. They may be stated as follows:

1. The development of an orderly comprehensive Master Plan or program for flood control, together with flood channels, reservoirs, the delineation of drainage areas and drainage channels both large and small. This plan should be such as to provide for the anticipated and foreseeable future development of population and industry. The inclusion in this Master Plan, in so far as possible and expedient, of all natural existing features that can possibly be used for flood control. In addition, the inclusion in the early planning for the conservation of flood waters.

2. The inclusion in this Master Plan of an over-all Drainage Plan. This should utilize to the greatest extent, all existing serviceable drainage structures. Currently active rights and equities should be preserved in the highest reasonable degree.

3. The establishment of an organization capable of financing and administering the operations.

SURVEY QUARTERS, ORGANIZATION AND PERSONNEL

Quarters were made available to the Committee in the Salt River Project Building at 315 North Third Avenue, Phoenix, Arizona. Full time services of two engineers were made available - one by Maricopa County and the other by the City of Phoenix. In addition various personnel of the Salt River Project and Maricopa County were made available on a short time basis to this committee.

CONCLUSION

A definite need exists to solve the problems arising from flood conditions in the over-all area as covered in this report; therefore, we recommend the formation of a Flood Control District. This will necessitate the passing of legislation and the formation of a District. Attached we are submitting a preliminary draft of such legislation with the recommendation that it be given comprehensive study. In this relation, the Committee strongly

urges that adequate and sufficient powers be given to the District to be formed so as to enable it to carry out the functions for which it should be organized.

This District should be, in the opinion of this Committee, authorized to assist in zoning property, to undertake the construction of major flood control works and to coordinate the drainage problems throughout the whole district area. It is furthermore recommended, that this District be empowered to participate in the conservation of flood waters.

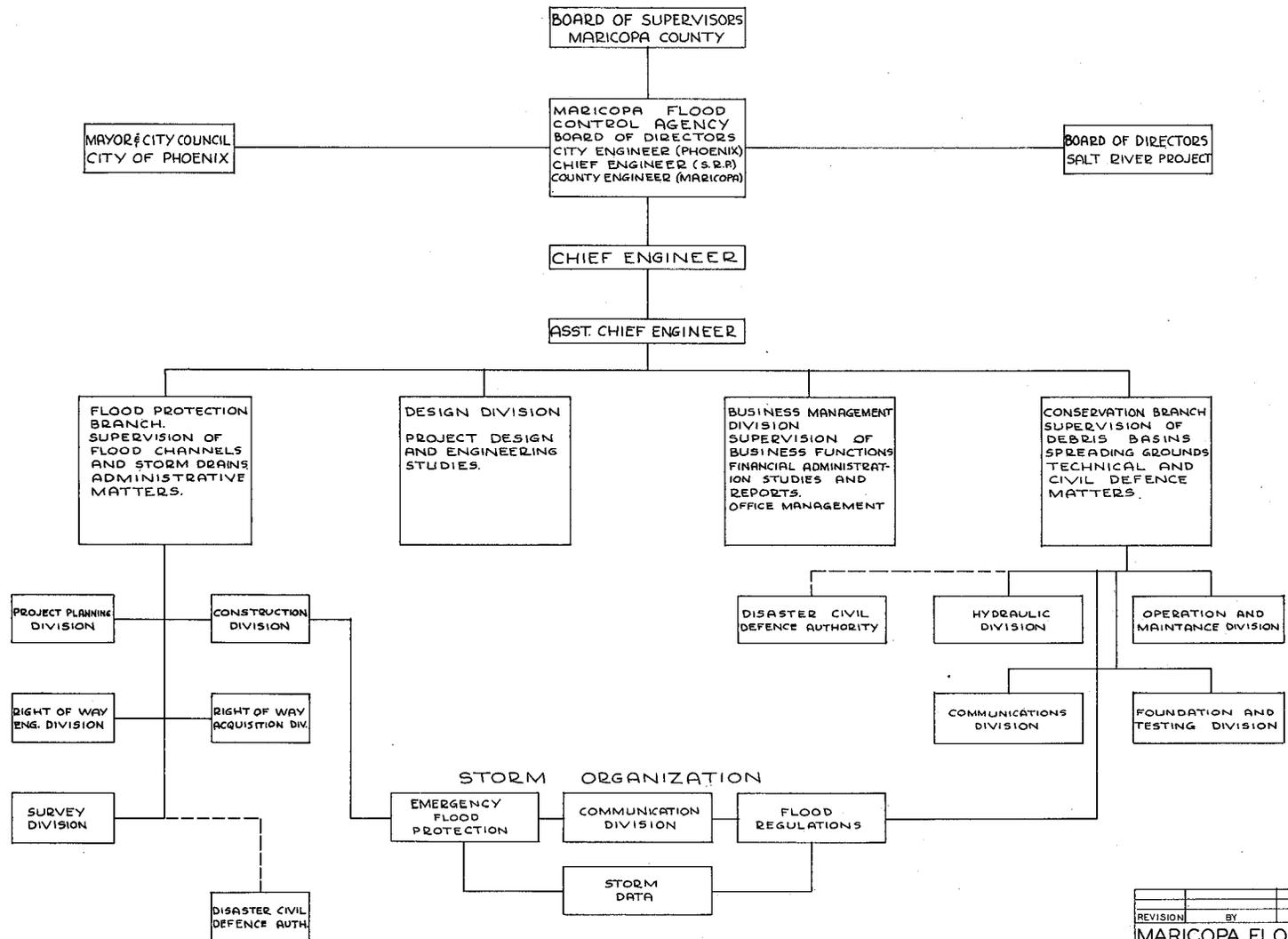
The passing of legislation and the formation of a District will take considerable time. The urgency of the situation requires the immediate formation of an interim group to be called the Maricopa Flood Control Agency. It is recommended that the City of Phoenix, Salt River Project and Maricopa County, enter into a cooperative agreement immediately, forming such an agency.

In our opinion, approximately one million dollars will be required for the first years operation. In this respect adequate funds should be budgeted for personnel, equipment, supplies and operations. There should be made available approximately three-quarters of a million dollars for the procurement of rights-of-way, as every day's delay in acquisition results in the pyramiding of the costs.

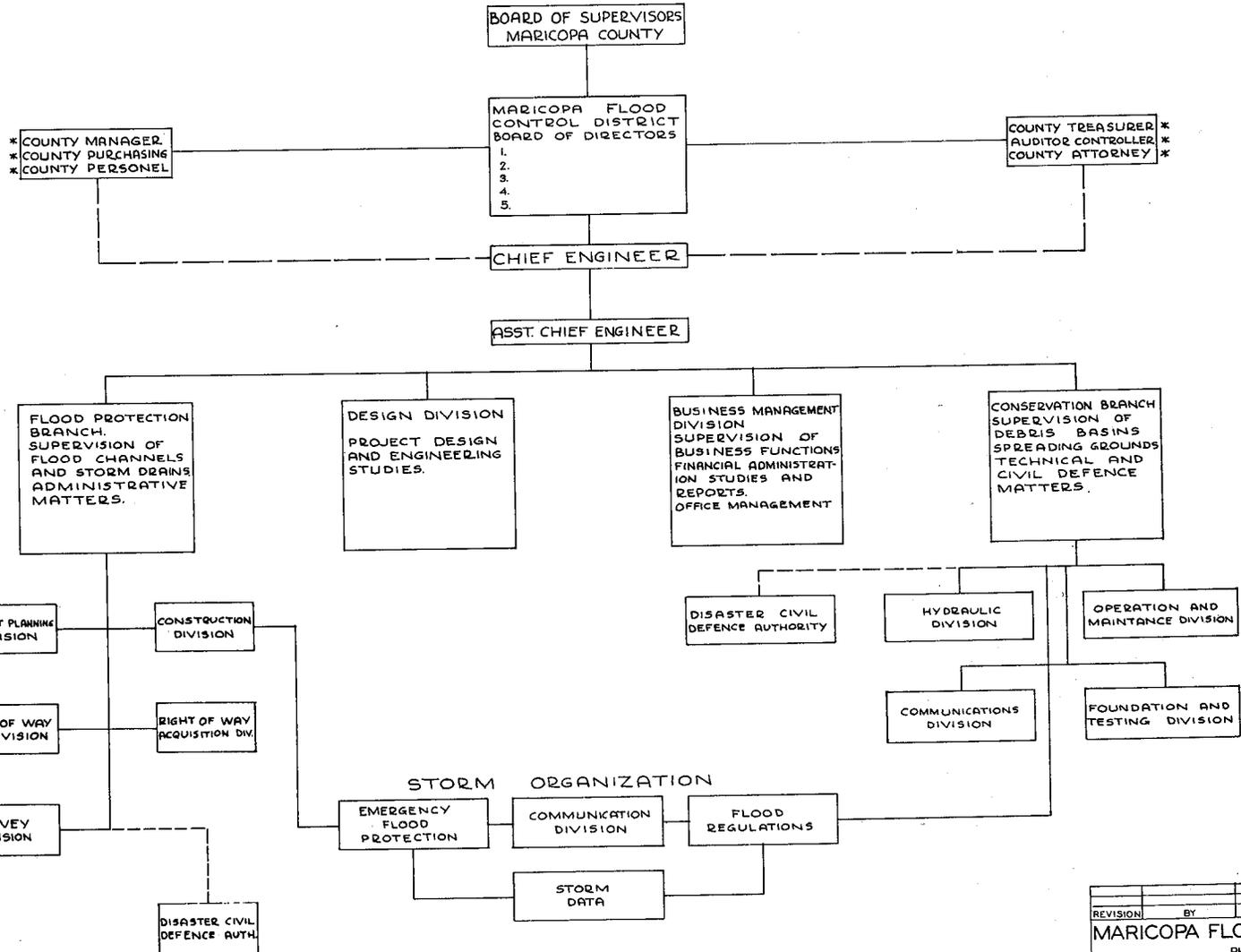
It is the recommendation of this committee that an adequate Flood Zoning Ordinance be immediately enacted by the municipalities concerned, covering the area considered in this report. This ordinance should be sufficient to authorize the acceptance of rights-of-way for flood channels; the acquisition of rights-of-way; the approval or disapproval of subdivision in areas subject to flood damage and the delineation of flood areas.

It is recommended that the interim Flood Control Agency be provided funds by the three sponsoring bodies to adequately support prescribed activities, including legislation, rights-of-way acquisition, engineering, mapping and related activities.

The Maricopa Flood Control Agency should immediately start studies leading to the formation of a comprehensive flood control and drainage plan.



REVISION	BY	CHECKED	ORDER NO.	REVISED
MARICOPA FLOOD CONTROL AGENCY PHOENIX, ARIZONA				
PROPOSED FUNCTIONAL CHART				
DRAWN <u>G.S. Davison</u>		CHECKED _____		
TRACED _____		RECOMMENDED _____		
SCALE <u>NONE</u>		APPROVED _____		
DATE <u>April 21 1958</u>	CHARGE NO.	DRAWING NO.		



REVISION	BY	CHECKED	ORDER NO.	REVISED
MARICOPA FLOOD CONTROL DISTRICT PHOENIX, ARIZONA				
PROPOSED FUNCTIONAL CHART				
DRAWN	G.S. Davison	CHECKED		
TRACED		RECOMMENDED		
SCALE	NAME	APPROVED		
DATE	CHARGE NO.	DRAWING NO.		
APRIL 22 1958				

* EX-OFFICIO AUTHORITY

APPENDIX I

FLOOD PROTECTION IMPROVEMENT COMMITTEE

(Appointed by the City of Phoenix, Maricopa County, and the Salt River Water Users Association)

PURPOSE

The Committee shall prepare a general plan of flood control for the greater Phoenix area, and recommend methods of financing, constructing and operating major flood protection works to the benefit of the community as a whole. The Committee shall serve in a supervisory and coordinating capacity for Governmental agencies and others concerning the storm drainage problems of the Phoenix vicinity.

PROCEDURE

- I. PREPARE THE GENERAL DRAINAGE PLAN.
 - A. Determine areas of investigation.
 - B. Reconstruct overlay of natural drainage.
 - C. Superimpose existing facilities .
 - D. Recommend remedial measures.

- II. SET FORTH PROJECTS AND ASSIGNMENTS.
 - A. Delineate and improve the Salt River channel - assigned to City along with river bottom owners.
 - B. Study a North Side Floodway, such as one paralleling the Arizona Canal, assigned to the County.
 - C. Utilize the old Cross Cut Wasteway - assigned to the S. R. V. W. U. A.
 - D. Establish the Indian Bend wash drainage - assigned to the County with the S. R. V. W. U. A. help.

Projects to be assigned include Cave Creek, the South Mountain area, the Sunnyslope area, Dreamy Draw and others.

The Committee as a whole will continue on such problems as:

1. City and County planning to assist drainage by keeping natural water ways clear, providing ample thru streets, and other means.
2. Individual subdividers drainage problems.

3. Correlation of road design with drainage requirements.
4. Promoting active work by existing agencies pending studies as to the desirability of a "Flood Control District."

COMMITTEE MEMBERS

LEIGH GARDNER, Yost and Gardner Engineers, Mayer Heard Building, Phoenix.

LOUIS R. JURWITZ, Meteorologist in Charge, U. S. Department of Commerce, Weather Bureau, Phoenix.

T. R. NEISWANDER, County Highway Department, 4701 East Washington, Phoenix.

HARRY J. ROTH, Administrative Assistant to Management, Salt River Project, P.O. Box 1980, Phoenix.

HENRY SHIPLEY, Chief Association Engineer, Salt River Project P.O. Box 1980, Phoenix

HALE C. TOGNONI, Tognoni, Parsons & Gooding, 411 North Central, Phoenix.

SAM TUCKER, City Engineer, City of Phoenix, 837 East Jefferson, Phoenix.

HANEN H. WILLIAMS, Williams Engineering Company, 367 North Fifth Avenue, Phoenix.

E.L. WILSON, Superintendent of Irrigation Operations, Salt River Project, P.O. Box 1980, Phoenix.

Engineer's Office furnished by Salt River Water Users, and staffed by:

BOYD YADEN, Colonel, U. S. A. retired, Maricopa County Highway Department

TOM NEISWANDER, Maricopa County Highway Department

GEORGE S. DAVISON, II, City Engineer's Office, Phoenix.

APPENDIX II

PHOENIX METROPOLITAN AREA

The Phoenix Metropolitan area comprises approximately 221 square miles, and is situated on an alluvial plain. Originally, natural flood channels existed through to the Salt River. However, since the area has built up all of the old flood channels have been substantially obliterated. Storm Drains constructed by the City of Phoenix partially alleviate drainage problems. At the present time a serious flood hazard exists from flood waters from Cave Creek, Sunnyslope, Dreamy Draw and the Salt River. In the past large property damage has resulted from floods. A thorough study should be made of the drainage of this whole area and a comprehensive long range drainage plan should be undertaken. In addition to the local drainage requirements the relief of the metropolitan area should be accomplished by the construction of the Northside Floodway paralleling the Arizona Canal, utilization of the old Cross Cut waste way, and channelization of the Salt River as discussed in other sections of this report.

SALT RIVER AREA

The Salt River drainage area considered in this report extends from the confluence of the Salt and Verde Rivers at Granite Reef Dam and extends in a southwesterly direction, to the confluence of the Gila River, thence in a southwesterly direction to the Gillespie Dam some 75 miles from Granite Reef Dam. From Granite Reef to Tempe the channel is reasonably well defined and hasn't been materially encroached upon. Any work that might be undertaken in this area would not be too difficult. However, an entirely different problem exists as one approaches Tempe.

Works of man have been such as to almost completely obliterate the original channel in many areas - particularly from Tempe southwest to approximately 35th Avenue. Sand and gravel companies have operated in the river bottom; subdivisions have encroached upon the old original flood channels; a large sanitary fill has been built; and other types of work by man have tended to constrict or to obliterate the original channel.

From 35th Avenue to within a mile of the junction with the Gila River, the brush is presently not very heavy and the channel has not been seriously encroached upon. Therefore, any work done would not be too difficult or costly.

It must be pointed out that the hazards to life and property are great in this area. A narrow low-flow channel should be developed throughout the reach of the river. The channel of two

thousand feet in width as delineated in the Corps of Engineers Report is considered advisable. At present, there is no defined channel. It is urged that everything possible be done at the local level to further the program of the Corps of Engineers for this channelization. It is necessary that a high-flow channel from Granite Reef to Gillespie Dam be constructed. Serious consideration should be given the study of re-charge areas along the river. The whole river area should be rigidly zoned.

SOUTH PHOENIX AREA

South Phoenix is bordered on the south by South Mountains and to the north by the Salt River. Rapid run-off can be expected from the mountains. Approximate drainage area is 96 square miles. Due to the heavy development in this area considerable damage could result. The most critical point in South Phoenix is that low lying area on the South side of the Salt River because the Salt River is not channelized. Work that has been done by man will tend to direct any flow of water from the river to the south with a consequent possible high loss of life and property. The Hi-Line and Western canals should have drainage relief structures carried through from major washes which lie to the South. Water should be carried north to the river. This will necessitate the development of a comprehensive drainage program for the whole area, as a great portion of it is very flat. No natural drainage channels now exist. This area should be rigidly zoned.

CAVE CREEK AREA

Cave Creek is divided into two sections because of its size and importance. However, it has been considered as one area. New River was included in the Cave Creek area for the development of water conservation works and for treatment of flood conditions south of the Cave Creek Dam and along the north bank of the Arizona Canal. From the standpoint of topography however, the district naturally divides itself with Cave Creek to the east; Skunk Creek and New River to the west. Cave Creek is a flat alluvial valley area with the upper reaches heading into steep precipitous hills and mountains. The drainage area comprises approximately 580 square miles. There are no existing flood works in Cave Creek, with the exception of Cave Creek Dam which was constructed in 1922, and which picks up approximately 50% of the flow of the Cave Creek area. However it is rapidly developing. The major damage expected would be caused by flood waters from Cave Creek reaching into Metropolitan Phoenix. Recommendations are as follows:

1. Construction of a flood channel north of the Arizona Canal to the Skunk Creek, to be known as the Northside Floodway.

2. Channelization of Skunk Creek to its confluence with New River.
3. Channelization of New River to the Agua Fria.
4. Channelization of the Agua Fria to the Gila River.
5. Study possible construction of a diversion floodway in a westerly direction from a point south of Cave Creek Dam across the Black Canyon Highway to Little Deer Valley at which point a storage reservoir would be constructed. At this point it could be carried into the New River.
6. Serious studies should be undertaken to ascertain the feasibility of recharging underground water.

PARADISE VALLEY AREA

Paradise Valley heads up in steep and precipitous mountains to the north and to the east. To the southwest are the small Camelback Mountains. The drainage area in Paradise Valley is approximately 223 square miles. Run-off is heavy. Property values are very high. Values of ten, fifteen, or twenty thousand dollars an acre are common. There are no particular flood channels presently in existence. The Arizona Canal runs across this area and will carry a small amount of flood water. During flood conditions the canal is liable to rupture with the resultant flooding to the south. Indian Bend Wash is particularly hazardous. During previous floods more than 15,000 second feet of run-off has been observed. Due to the development of Paradise Valley this may increase to as much as 20,000 second feet. Should there be a heavy flood, tremendous property damage can be expected together with hazard to life.

Indian Bend Wash should be channelized south to the Arizona Canal from its intersection with the abandoned Verde Canal, at which point it should be siphoned under the floodway. This floodway should then be carried south to its intersection with the Salt River. If Cave Creek Diversion and Evergreen Diversion are constructed, together with the channelizing of Indian Bend Wash, Paradise Valley should be adequately protected from floods. Other structures then required would be drainage structures and minor flood control structures.

It is recommended that rigid zoning be undertaken. A comprehensive drainage and flood plan should be developed for the area as a whole.

CROSS CUT AREA

Cross Cut has an area of approximately 29 square miles. It has been completely developed and property values here are high. Flood conditions could cause high property losses. It is recommended that the old Cross Cut Canal be increased in size and that it be channelized and lined. With some increase in size, it could adequately handle any flood waters from this area. It is recommended that studies be carried out with the view of picking up all of the water as far west as possible. To the east it should pick up the waters as shown on the boundaries of the map. It is recommended that a comprehensive drainage program be developed for storm drainage as well as any floods that might be expected.

SOUTHSIDE AREA

Southside is primarily a level alluvial plain. The approximate area is 106 square miles. It is in a highly developed farm area; part of it is rapidly developing for urban and residential use. The cities of Mesa and Tempe are located here. Drainage is extremely poor. Although most of the run-off water in this area originates locally, there is hazard from both the east and the west. It is recommended that run-off from the east end of the South Mountains be reduced by construction of check-dams. A study should be made for a comprehensive drainage plan, and the area should be rigidly zoned.

EVERGREEN AREA

Evergreen is mountainous to the east and to the north with precipitous slopes from which the water fans out into a sheet flow after it meets the valley floor. It has an area of approximately 57 square miles. A portion of Paradise Valley has been cut off by an artificial boundary shown as Evergreen. It is desired to divert the run-off from the mountains along the eastern side of the area shown as Evergreen, to the south. Studies should be undertaken therefore, as to the advisability of the construction of a diversion dike from its intersection with the Verde Canal and Taliesen West south to Evergreen Landing and the construction of a flood channel to the Salt River. Rigid zoning should be put in effect in this area.

APACHE AREA

Apache heads up in precipitous mountain slopes with a very large run-off. It comprises approximately 160 square miles and has one of the heaviest run-offs. Considerable study should be undertaken concerning the development of desilting basins, flood channels, etc. This area is building up rapidly and damage that can be expected is increasing from day to day. Considerable damage results to the highway every time there is a flood. At the present time, run-off from Apache Junction goes past Williams Air Force Base to Gilbert and Chandler. Studies should be undertaken to determine the advisability of diverting this water. In the event that flood waters could be diverted from their present course into the Salt River below Granite Reef, it is estimated that practically all of it would be percolated. This is one area where desilting basins would probably be very effective and could well be constructed immediately. Rigid zoning should go into effect as soon as possible.

QUEEN CREEK AREA

Queen Creek is bordered to the east by the Superstition Mountains and then develops into an alluvial plain. To the south there are the San Tan Mountains and the Gila River. It comprises an area of approximately 570 square miles. Queen Creek has a very large run-off area. Much of the flood waters that now come down to Queen Creek are from Apache Junction. The construction of Whitlow Dam by the Corps of Engineers, and the Apache diversion will materially relieve this problem. Requirements are for rigid zoning and for a comprehensive flood plan.

GILA AREA

This area comprises approximately 316 square miles. It is mostly an alluvial plain bordered to the west and northwest by the South Mountains and to the South by the Gila River. Land in the Gila area is mostly farm land. The portions on the Indian Reservation are subject to heavy floods and studies should be made to channelize and control any flooding in this area through cooperation with the Office of Indian Affairs in any over-all comprehensive plan. A comprehensive drainage and flood plan should be adopted for this along with rigid zoning of the whole area.

AGUA FRIA AREA

The Agua Fria like the Cave Creek area heads up into precipitous mountain areas and flattens out into a flood plain. However, it is bordered on the southwest by the White Tank mountains which provide a large run-off. Considerable run-off comes from the north, to the west and northwest. The Agua Fria River runs

along the eastern border. The drainage area is approximately 800 square miles. At the present time the northern section has not been sufficiently built up to cause any serious flood hazards. However, in the area comprising the highly developed farm lands and south near Litchfield, considerable flood damage has occurred in the past. Upon the completion of the Trilby Wash flood structures the greater portion of any damage from heavy floods has been relieved. There remains to be undertaken such local works as may be required. In addition it is recommended that rigid zoning be established for this whole area. An over-all drainage and flood plan should be developed so that when new subdivisions are planned they will fit the comprehensive program.

SANTA CRUZ AREA

The Santa Cruz is all on Indian reservation. Studies are now being undertaken by the Corps of Engineers of its problems. Local plans should tie in with these studies. Any areas that might be open to settlement should be rigidly zoned. A program for this area should be correlated with that of the over-all program.

WATERMAN AREA

The Waterman area is very mountainous and precipitous. Flood Conditions can occur. It comprises 480 square miles. There is very little development in this area, and while it will be well to place gauging stations and collect hydrological data for the future, no particular immediate development is warranted. It should be zoned so that any future development could be controlled in order to avoid the problems presently encountered in other areas. Channelization of Waterman Wash should be continued to Rainbow Valley.

HASSAYAMPA AREA

The drainage area is approximately 1350 square miles and is mountainous in some parts and flat in others. Thorough studies should be made of the Hassayampa River with a comprehensive program of development for the future. This area is being rapidly developed in the neighborhood of Wickenburg. At the present time it is not anticipated that there are any particular flood works warranted with the exception of the immediate vicinity of Wickenburg. It is recommended that studies be undertaken regarding the alleviation of present flooding conditions. The balance of the area should be carefully studied from the standpoint of zoning, establishment of hydrological stations, and the gathering of data for the conservation of flood waters.

CENTENNIAL WASH AREA

Portions of Centennial Wash are mountainous. The runoff is heavy. It comprises approximately 1600 square miles. It is not developed, so no work is warranted at present. This area should be zoned, and planning should be undertaken to control future development.

APPENDIX III

State of Arizona
Senate
Twenty-third Legislature
Second Regular Session

S. B. _____

Introduced by _____

AN ACT

RELATING TO FLOOD CONTROL; PROVIDING FOR THE ESTABLISHMENT OF FLOOD CONTROL DISTRICTS; PRESCRIBING THEIR POWERS AND DUTIES; AUTHORIZING THE ISSUANCE OF BONDS THEREBY; PROVIDING FOR THE LEVY OF TAXES; GRANTING RIGHTS-OF-WAY TO SUCH DISTRICTS; MAKING BONDS ISSUED THEREBY LEGAL INVESTMENTS FOR CERTAIN PURPOSES, AND AMENDING TITLE 45, ARIZONA REVISED STATUTES, BY ADDING TO CHAPTER 10 THEREOF ARTICLE 5, SECTIONS 45-2351 TO 45-2370, INCLUSIVE.

Be it enacted by the Legislature of the State of Arizona:

Section 1. Title 45, chapter 10, Arizona Revised Statutes, is amended by adding article 5, sections 45-2351 to 45-2370, inclusive, to read:

ARTICLE 5. SPECIAL FLOOD CONTROL DISTRICTS

45-2351. Definitions

In this article, unless the context otherwise requires: "district" shall mean a flood control district as such phrase is used and contained in Article 13, Section 7, Constitution of Arizona.

45-2352. District as municipal corporation

A flood control district organized under the provisions of this article is a public political taxing subdivision of the state and a municipal corporation to the extent of the powers and privileges conferred by this article or granted generally to municipal corporations by the constitution and statutes of the state, including immunity of its property and bonds from taxation.

45-2353. Authorization for districts

A flood control district or districts may be established in any county in this state by the Board of Supervisors thereof for the purpose of improving, extending, maintaining and operating a flood control system to control the waters of rivers and streams, and other surface waters and flood waters to prevent the flooding of property and the endangering of lives. Such district may include all or part of one or more municipal corporations, taxing districts or political subdivisions other than flood control districts.

45-2354. Preliminary resolution and notice

A. The board of supervisors of any county may, on its own initiative, adopt a resolution setting forth:

1. The name of a proposed flood control district.
2. The necessity for the district.
3. That the public health, comfort, convenience, necessity or welfare will be promoted by the establishment of such district, and that the property to be included therein will be benefited.
4. The boundaries of the proposed district.
5. A general statement of the flood control system proposed to be acquired.
6. Such other matters as may be desired by the board or as are required by this act.

B. There shall be fixed in the resolution a date for a hearing thereon, which date shall not be less than fifteen days from the date of the adoption of the resolution and at which hearing all interested owners of real property within the boundaries of the proposed district may appear and be heard on any matter relating to its establishment and may allege that his real property will not be benefited by the proposed improvements. Any person wishing so to object to the establishment of the district shall _____ days before the date set for the hearing file his objections in writing with the clerk of the board of supervisors.

C. Notice of the proposed hearing containing substantially the things required to appear in the resolution calling the hearing shall be published once a week for two consecutive weeks in a newspaper of general circulation published in the county or if there is no newspaper so published, shall be posted in not less than three public places within the proposed district. The posting, or the first of the publications, shall be not less than two weeks prior to the date of the hearing.

45-2355. Establishment of district

The board of supervisors shall meet at the time and place fixed for hearing and may adjourn the hearing from time to time. At the hearing, or at any adjournment thereof, all persons who have filed objections prior to the time originally fixed for the hearing shall be heard, and the board may hear such other persons as may wish to appear to argue for or against the establishment of the district. If after hearing it appears to the board of supervisors that the proposed work is necessary, that the public health, comfort, convenience, necessity or welfare will be promoted by the establishment of the district, and that the property in the proposed district will be benefited by the improvements proposed and such improvements will not interfere with or affect vested water rights, the board of supervisors shall declare its findings and shall declare the flood control district established under a corporate name to be given it in the proceedings. The board of supervisors may make such changes in the boundaries proposed for the district as shall seem to it desirable and as may be necessary to assure that all property in the district will be benefited but the changes shall not add to the area of the district any real property not included within the boundaries originally proposed, without the giving of new notice and the holding of a new hearing.

B. The costs incurred in connection with the creation of the district may be paid by the board of supervisors from any funds available for such purpose or may be advanced by the board and reimbursement made from the proceeds of the first bonds issued or maintenance tax levied by the district.

C. Changes in the boundaries of a flood control district may be made by the board of supervisors after its original establishment but only after the giving of like notice and the holding of a like hearing as required for the original establishment of the district. No such change in boundaries shall be made except upon the request of the board of directors of the district evidenced by resolution duly adopted.

D. The area within a flood control district need not be contiguous.

45-2356. Review

Any party aggrieved by action of the board of supervisors in establishing or altering the boundaries of a flood control district may bring an action in the superior court of the county in which the district is located to set aside the action of the board, but the action must be instituted not more than twenty days after the adoption of the resolution creating the district or altering the boundaries.

45-2357. Board of Directors

A. The board of directors of each district created hereunder shall consist of three persons, each of whom shall be a real property taxpayer and qualified elector in the district. The members of the first board of directors shall be appointed by the board of supervisors in the order creating the district. One member shall serve for a term of office commencing on the date of his appointment and continuing for a period ending one year from the next succeeding January 1, another shall serve for a term of office commencing on the date of his appointment and continuing for a period ending two years from the next succeeding January 1, and the third member shall serve for a term of office commencing on the date of his appointment and continuing for a period ending three years from the next succeeding January 1. After the initial term of office has expired, each director shall serve for a term of three years or until his successor has been appointed and has qualified. The persons serving for one, two and three-year terms respectively on the first board of directors shall be designated by the board of supervisors. All vacancies on the board of directors whether due to expiration of term or otherwise shall be filled by the board of supervisors.

B. The directors initially appointed shall meet immediately after their appointment, shall qualify as directors in the same manner as required by law for the qualification of members of county boards of supervisors, and shall organize as a board through the election of one of their members as chairman and through the appointment of a clerk and a treasurer, or a clerk-treasurer, who may, but need not be members of the board. The board of directors may, in its discretion, provide that until further order of the board, the county clerk shall be ex officio clerk of the board, and may similarly provide that the county treasurer shall be ex officio treasurer of the board.

C. The board of directors shall exercise all powers and duties in the acquisition and operation of the properties of the district as are ordinarily exercised by the governing body of a political subdivision. The board of directors shall fix its domicile, fix the times for the holding of its regular meetings, adopt a corporate seal for the district, and adopt such regulations and by-laws for its orderly operation as it may see fit. The board of directors shall have authority to employ such agents and employees as it may consider desirable, including engineers, lawyers, fiscal advisors and a manager for its properties and its operations. The board of directors may sue and be sued, may enter into all contracts necessary and required for the operation of the district, and generally do and perform all things which it may consider are necessary and in the interests of the district.

D. Each director shall receive such compensation not exceeding _____ dollars for each meeting attended and not exceeding _____ Dollars in any calendar month as the board of directors may determine, and in addition shall be entitled to reimbursement for all expenditures properly incurred by him in the performance of his official duties. The board of directors shall require all officers and employees who may from time to time be in possession of any funds of the district to furnish good and sufficient surety bond, or the board of directors may, in its discretion, provide for a blanket surety bond covering all such officers and employees.

E. The affirmative vote of two members of the board of directors shall be necessary to carry any measure. Two members shall constitute a quorum, but one member may adjourn any meeting at which a quorum shall not be present. The clerk shall keep a proper record of all proceedings of the board, which shall be open to public inspection. The accounts of the district shall be subject to such periodic audits as may be provided by law for the audit of county accounts.

45-2358 Powers of district

In addition to the powers specifically granted, a flood control district organized under this article acting through its board of directors may:

1. Acquire, own and dispose of real and personal property within or without the boundaries of the district.
2. Contract and join with the state, the United States or any other flood control district, municipality, political subdivision, governmental agency, irrigation district, association, corporation or individual in the acquisition, maintenance and operation of flood control works, and enter into contracts of indemnity to indemnify the State, the United States, flood control district, municipality, political subdivision, governmental agency, irrigation district, association, corporation or individual against liability by virtue of injuries, losses or damages occurring through the use of their facilities, structures, streets, rights-of-way or properties in connection with the operation of a flood control district.

45-2359. Survey and report

A. After a flood control district has been established, the board of directors shall employ a qualified engineer or engineers to make a survey of the flood control problems of the district and to prepare a report setting forth a description of existing flood control

facilities in the area, recommendations as to cooperation between the district and the owner or owners of such existing facilities, recommendations for the construction or other acquisition of facilities to carry out the purpose of the district, with plans and specifications therefor, a description of the property proposed to be acquired or damaged in performing the work, a map showing the district boundaries and location of the work proposed to be done and property taken or damaged, an estimate of the cost of the proposed work and such other things as the board of directors may request or the engineer or engineers think desirable to be included therein.

B. After the receipt of the report, the board of directors may refuse it and direct that a new report be made, or may require the making of such additions thereto as it shall desire. When a report satisfactory to the board of directors is available, it shall hold a public hearing on the report and the performance of the proposed work, of which hearing notice shall be given by publication once a week for two successive weeks in a newspaper having general circulation in the county, the first of which publications shall be at least ten days prior to the date fixed for the hearing. After hearing and any adjournments thereof which may be ordered, the board of directors may either require such changes to be made in the report as it shall consider desirable or shall approve the report as made. In the event changes are ordered, a further hearing shall be held pursuant to notice. Upon approval of the report, the report or a resume thereof shall be published one time in a newspaper having general circulation in the district.

45-2360. Bond election

A. After approval of the report, the board of directors shall submit to the electors of the district, qualified to vote thereon under the provisions of section 13, article 7, constitution of Arizona, at an election to be held for that purpose, and before incurring bonded indebtedness of the district to obtain funds for the acquisition of the facilities approved in such report. The resolution shall set forth the purpose of the indebtedness, referring to the report for particulars, the amount of the indebtedness, the maximum number of years for which the indebtedness is to be incurred, the maximum rate of interest to be paid thereon, and the date of the election, and shall list the voting places to be used at the election. The resolution shall constitute a notice of the election and shall be published in the county and having a general circulation therein. Publication on the same day of each week shall be sufficient whether or not a daily newspaper is used for the publication.

B. Except as herein otherwise expressly provided, the election shall be called and held and the results thereof canvassed in the manner provided by the laws of Arizona for the holding of election on the issuance of bonds by counties for general county

purposes. The board of directors may for purposes of the election treat the entire district as a single precinct or may divide the district into such precincts and fix such polling places as it may see fit.

C. In the event a majority of the votes cast on the proposition are in favor of incurring the bonded indebtedness proposed, the bonds so authorized may be sold and issued by the board of directors either at one time or in blocks from time to time.

45-2361. Issuance of bonds

A. The bonds shall be issued for the purpose or purposes provided in the voted proposition, which may be the acquisition of any facilities designed to further the purpose for which the district is created, or for improving and extending any such facilities, or any combination thereof, and may include the payment of all legal, engineering and fiscal expenses reasonably incurred in connection with the acquisition, improvement or extension of the facilities and with the authorization and issuance of the bonds, as well as expenses incurred in connection with the original creation of the district. The bonds shall be fully negotiable for all purposes and shall never be issued in an amount which, together with all other existing bonded indebtedness of the district then outstanding, will exceed in total principal amount _____ per cent of the assessed valuation of taxable property in the district as computed from the last assessment roll for county purposes completed prior to the issuance of the bonds. The bonds shall be the general obligations of the district and full faith, credit and resources of the district shall be pledged for the payment thereof. It shall be the duty of the board of directors to certify to the board of supervisors to levy annually on all taxable real property in the district, taxes fully sufficient without limitations as to rate or amount, to pay principal of and interest of such bonds as principal and interest fall due.

B. The bonds shall mature at such time or times not more than forty years from their date, shall bear interest at such rate or rates not greater than six per cent per annum, shall be payable at such place or places within or without the state, and generally shall be issued in such manner and with such details as may be provided in the resolution. No such bonds shall be sold at a price which will cause the net interest cost thereof to the district to exceed more than six per cent per annum computed to maturity according to standard tables of bond values. If the district has any source of revenues other than from the proceeds of taxes, all or such part of such revenues as the board of directors may deem advisable may, in the discretion of the board, be pledged to the payment of the bonds.

C. It may be provided in the resolution authorizing bonds hereunder that the bonds shall recite that they are issued under authority of this act. Such recital shall conclusively import full compliance with all the provisions of this act, and all bonds issued containing the recital shall be incontestable for any cause whatsoever after their delivery for value.

D. The board of directors may provide for the publication of any resolution or other proceeding adopted by the board of directors in a newspaper having general circulation in the district. For a period of thirty days after the date of publication any person in interest may contest the legality of the resolution or proceedings or any bonds which may be authorized thereby, or the provisions made for the security and payment of the bonds, and after such time no one shall have any cause of action to contest the regularity, formality, legality or source of payment thereof for any cause whatsoever.

E. Subject to the foregoing provisions of this section, the board of directors of the district shall sell the bonds in such manner as it shall provide or determine, except that the provisions of any law in force at the time of the sale applicable to the sale of courthouse bonds by counties shall be applicable to the sale, and shall apply the proceeds thereof to the purpose for which the bonds were authorized.

F. Bonds may be issued by the district from time to time subsequent to the issuance of the first bonds hereunder, but shall be issued pursuant to the making of a supplemental engineer's report and a hearing thereon as hereinabove prescribed.

G. No bonds issued under authority of this act shall enjoy a priority over other bonds issued hereunder by reason of the time of authorization or issuance thereof. No bonds issued hereunder shall be taxable by the state or by any county, city, town or other political subdivision of the state.

H. It shall be the duty of the board of directors annually not less than fifteen days before the first day of the month in which the board of supervisors of the county is required by law to levy county taxes, to certify to the board of supervisors the amount necessary to pay the principal and interest falling due during the ensuing year on any bonds issued hereunder, and the board of supervisors at the time of levying general county taxes shall levy and cause to be collected in the manner prescribed by law for county taxes, a tax on the real property within the district sufficient to pay all principal and interest falling due prior to the time as of which the proceeds of the next year's tax levy will have been collected, as certified by the board of directors of the district. In the event the board of directors of a flood control district fails

to certify to the board of supervisors the amount necessary to be levied for bonds, the board of supervisors shall ascertain the amount which should have been certified as provided in this section, and shall levy and cause to be collected a tax sufficient to produce that amount. The proceeds of the taxes when collected shall be paid to the treasurer of the district to the credit of the bond fund of the district, and shall be used solely for the payment of principal and interest and redemption premiums on the bonds of the district.

45-2362. Tax levy for current expenses

The board of directors may cause to be levied in each year a tax on the taxable real property in the district as it may consider necessary or appropriate to pay the expenses of administering the district and maintaining and operating the district's flood control system.

Any such annual tax levied before the system is placed in operation may be an amount sufficient to pay the costs incurred in connection with the organization of the district and the cost of administering the affairs of the district. The amount of the tax shall be determined by the board of directors from year to year and shall be certified, levied, collected and the proceeds thereof paid to the district treasurer in the manner hereinabove specified for taxes levied for the payment of the bonds of the district. The maintenance and operation tax proceeds not used for current expenses of maintenance and operation may either be paid into a reserve to be accumulated for such purpose or may be used for extending, improving and constructing the flood control system.

The board of directors may include in its annual budget items for the construction, extension, or improvement of its flood control system. The items so included shall not result in a levy on the taxable property in the district which exceeds ten cents on each one hundred dollars of property valuation.

45-2363. Right-of-way

A right-of-way in, under, along or across any public highway, public street, or public property within a flood control district is hereby granted to the district whenever found by the board of directors of the district to be necessary or convenient for performing any work authorized by this act. When found necessary to the carrying out of such work, the board of directors may bring action to condemn any needed property, which suits may be brought under any statute applicable to the bringing of condemnation suits by municipal corporations.

45-2364. Connection permits

Any person desiring to make a connection to any storm water drain of a flood control district or to cause storm waters to be emptied into any ditch or drain of the district shall first make application to the district for permission to make the connection. The district may require the connection to be made in such manner as it shall direct and may impose such reasonable connection fee as it deems proper or if reasonably justified by the circumstances may refuse permission. Any person making a connection or causing flood waters to be so discharged without first having obtained permission is guilty of a misdemeanor.

45-2365. Refunding bonds

Any bond issued under this act may be refunded pursuant to resolution to be adopted by the board of directors in the manner hereinabove provided for the issuance of other bonds, except that no engineer's report or hearing need be obtained or held, and it shall not be necessary to submit the question of the issuance of the refunding bonds at an election. Refunding bonds so authorized may be sold and the proceeds of sale applied to or escrowed for the payment of the bonds to be refunded in such manner as may be provided in the authorizing resolution, or may be delivered in exchange for the bonds to be refunded, or may be in part sold and in part exchanged. No bonds may be refunded hereunder unless they either mature or are callable for redemption under their terms within twelve months from the date of the issuance of the refunding bonds or unless the holders thereof voluntarily surrender them for exchange or payment.

45-2366. Bonds as investments

All bonds issued under this act shall be legal investments for all trust funds, including those under jurisdiction of the state of Arizona, and for the funds of all insurance companies, banks and trust companies, and for the investment of state funds and for all sinking funds under the control of the state or any municipality or political subdivision thereof.

45-2367. Cooperation in flood control projects

In addition to the general powers herein granted to flood control districts, any district may cooperate with the United States of America and the state of Arizona, or any instrumentality, department, agency or political or municipal subdivision of either in the construction, maintenance and operation of flood control projects. To that end, appropriate agreements may be entered into and the district may acquire and provide without cost to the cooperating entity land, easements and rights-of-way necessary for the con-

struction of flood control projects, may hold and save any cooperating entity free from any claim for damages arising from the construction, maintenance and operation of flood control projects, may maintain and operate all works in accordance with regulations prescribed by the cooperating entity and may establish and enforce flood channel limits and regulations, if any, satisfactory to the cooperating entity.

45-2368. Limitation on powers

Notwithstanding anything to the contrary herein set forth, no flood control district shall exercise any power or authority granted by this article, nor shall it undertake or cooperate in either the planning, authorization, construction, acquisition, extension, improvement, maintenance, or operation of any flood control structures, dams, systems or projects on any portion of a watershed supplying water to any dam and reservoir existing within the state of Arizona having a designed water storage capacity of fifty thousand acre feet or more, or to any existing diversion dam and canal system having facilities within the state of Arizona designed to divert and carry not less than one thousand cubic feet per second, without first having obtained the written consent of the agency, district, association, company or organization owning or operating or being served by such dam, reservoir, diversion dam and canal system. Such consent, however, shall only be required from irrigation districts and agricultural improvement districts organized pursuant to the laws of the state of Arizona and now presently defined under title 45, Arizona Revised Statutes, and any other associations or organizations operating such dams, reservoirs, diversion dams and canal systems as a part of a federal reclamation project.

45-2369. Severability

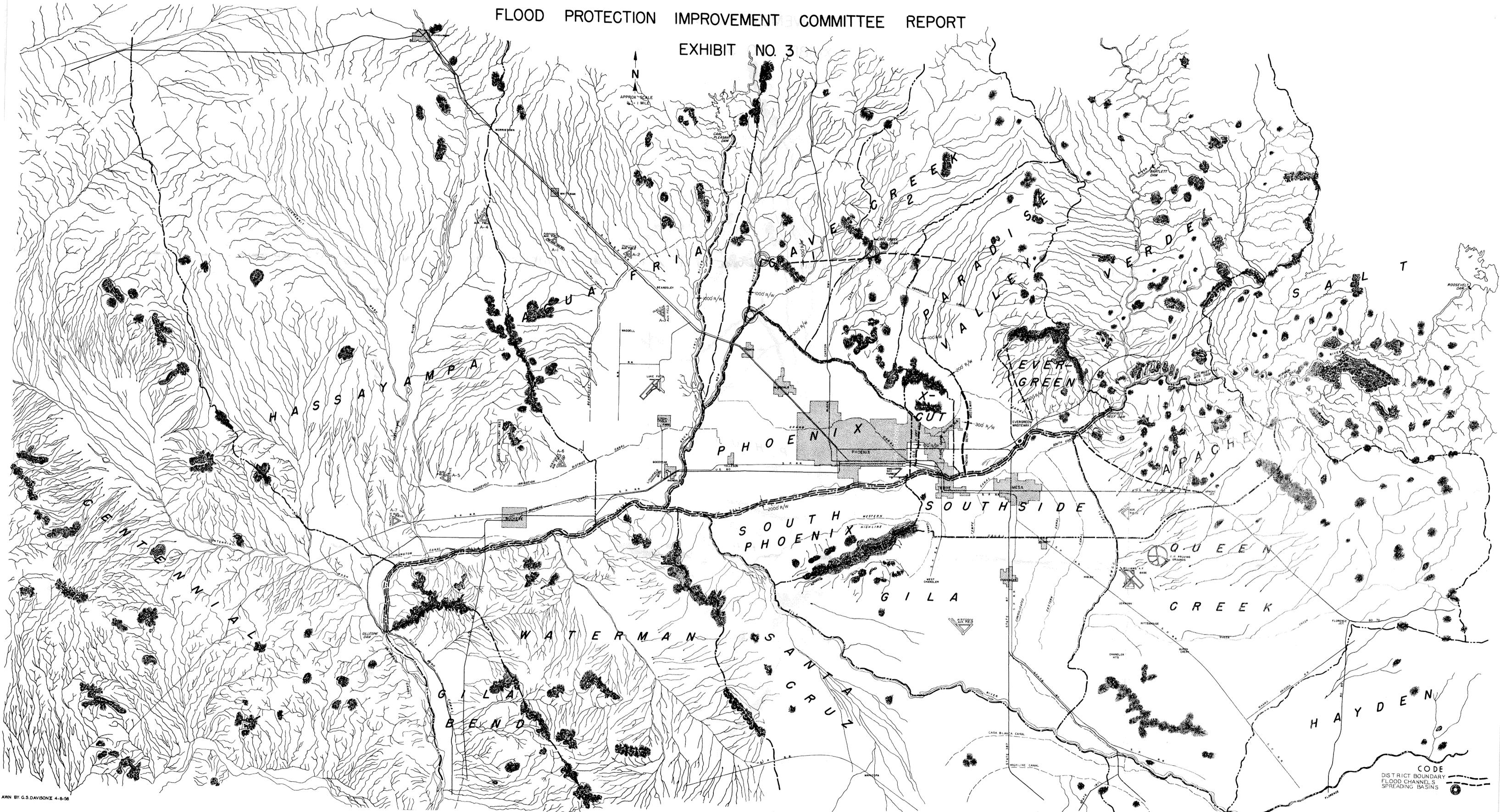
If any provision of this act shall ever be held to be invalid for any reason, such holding shall not affect the enforceability of the remaining provisions hereof.

45-2370. Emergency

To preserve the public peace, health and safety it is necessary that this act become immediately operative. It is, therefore, declared to be an emergency measure, to take effect as provided by law.

FLOOD PROTECTION IMPROVEMENT COMMITTEE REPORT

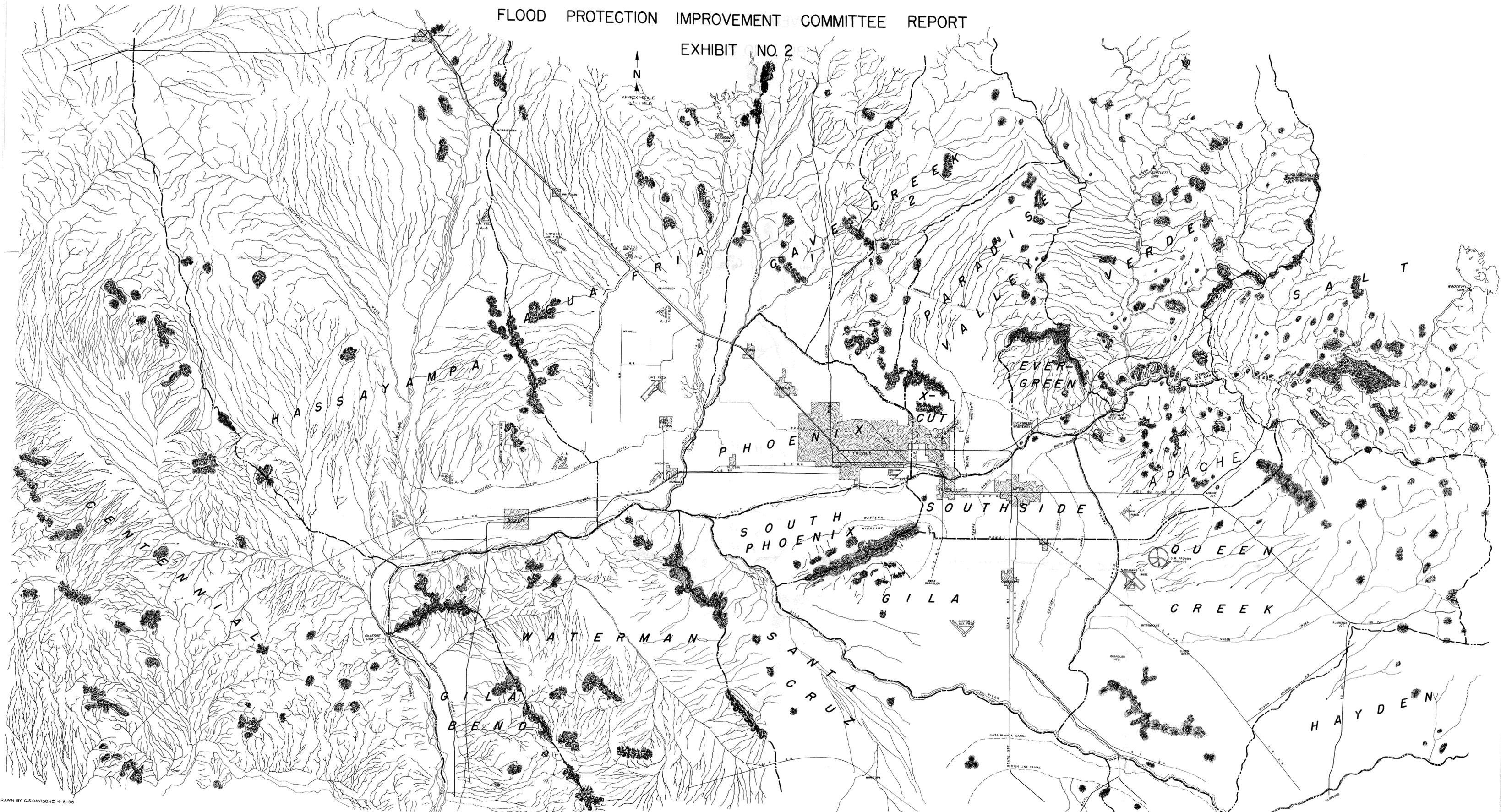
EXHIBIT NO. 3



CODE
DISTRICT BOUNDARY
FLOOD CHANNELS
SPREADING BASINS

FLOOD PROTECTION IMPROVEMENT COMMITTEE REPORT

EXHIBIT NO. 2



FLOOD PROTECTION IMPROVEMENT COMMITTEE REPORT

EXHIBIT NO. I

