

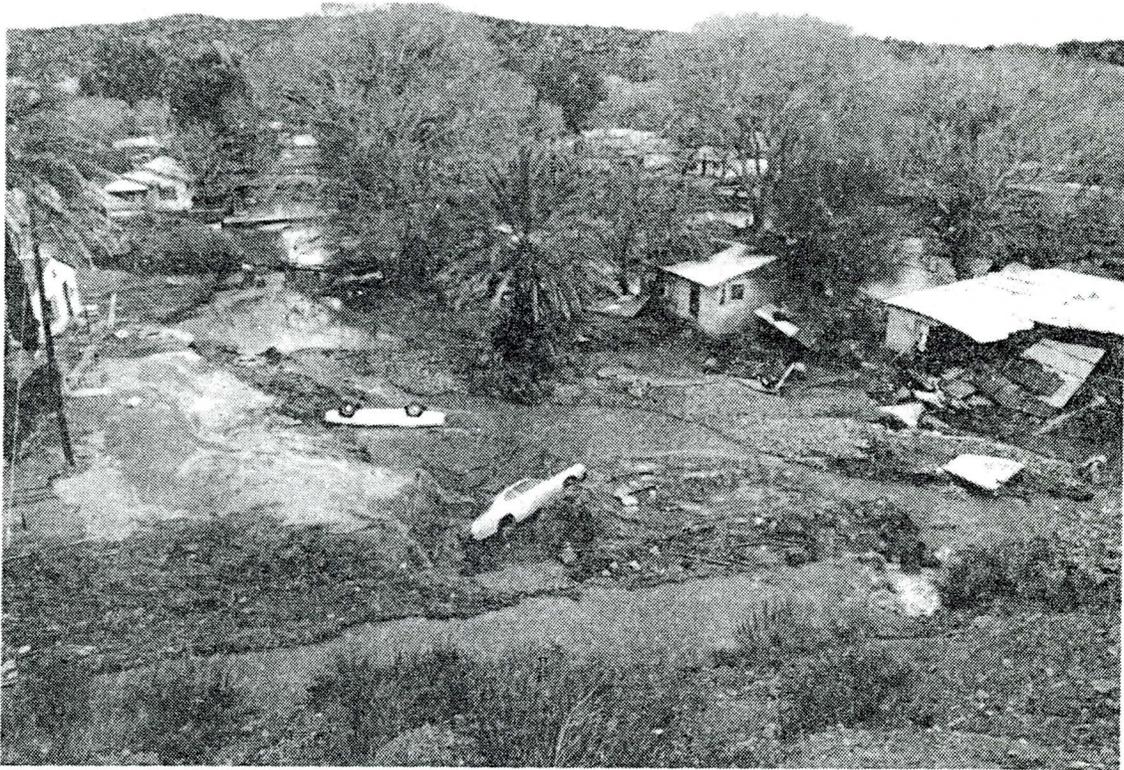
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HAZARD MITIGATION
OPPORTUNITIES
IN THE
STATE OF ARIZONA

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REPORT
OF THE
INTERAGENCY
HAZARD MITIGATION TEAM

FEMA-977-DR



FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION IX

FEBRUARY 19, 1993

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INTERAGENCY
HAZARD MITIGATION TEAM REPORT

In Response to the January 19, 1993
Disaster Declaration
State of Arizona

FEMA-977-DR-AZ

REPORT COVERING:

APACHE, COCONINO, GILA, GRAHAM, GREENLEE, MARICOPA, NAVAJO, PIMA,
PINAL, YAVAPAI, COCHISE, SANTA CRUZ, YUMA COUNTIES

PREPARED BY THE REGION IX
INTERAGENCY HAZARD MITIGATION TEAM

FEDERAL AGENCIES

FEDERAL EMERGENCY MANAGEMENT AGENCY
U. S. ARMY CORPS OF ENGINEERS
NATIONAL WEATHER SERVICE
SMALL BUSINESS ADMINISTRATION
SOIL CONSERVATION SERVICE
DEPARTMENT OF TRANSPORTATION
BUREAU OF INDIAN AFFAIRS
U. S. FOREST SERVICE
BUREAU OF RECLAMATION

ARIZONA STATE AGENCIES

DIVISION OF EMERGENCY MANAGEMENT
DEPARTMENT OF WATER RESOURCES
DEPARTMENT OF TRANSPORTATION

COUNTIES, MUNICIPALITIES, AND SPECIAL DISTRICTS

COCHISE COUNTY
SALT RIVER PROJECT
SANTA CRUZ COUNTY
PINAL COUNTY
GILA COUNTY
NAVAJO COUNTY
PRESCOTT/YAVAPAI COUNTY
TUSCON/PIMA COUNTY
YAVAPAI COUNTY
TOWN OF PATAGONIA

FEBRUARY 19, 1993

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INTRODUCTION

This report transmits the recommendations of FEMA Region IX Interagency Flood Hazard Mitigation Team (IHMT) to the Regional Director of the Federal Emergency Management Agency, the Federal and State agencies that participated in the IHMT process, and the affected State and Local governments.

As a result of a series of intense tropical storms beginning on January 5, 1993 and continuing for two weeks, on January 19, 1993 the President declared ten counties in the State of Arizona as a major disaster (FEMA-977-DR-AZ). The counties of Apache, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, and Yavapai were included in the initial declaration. On January 26, 1993 Cochise and Santa Cruz Counties were declared, and on February 5, 1993 Yuma County was added. All of the counties were declared for both the Public and Individual assistance programs.

On January 18, 1993, the Governor of Arizona, under the provisions of Section 501(b) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, and implemented by 44 CFR part 206.35, requested the President to declare an emergency for Arizona. The emergency was requested as a result of flooding that caused erosion to a landfill located on the Salt River Pima-Maricopa Indian Community along the Salt River in Maricopa County, Arizona. The resulting debris was deposited along the banks and within the bed of the river for a distance of more than ninety miles.

The Governor's request for an emergency to be declared in the State of Arizona was denied on February 10, 1993.

OVERVIEW OF DISASTER ASSISTANCE AUTHORITY AND BACKGROUND

Since 1936, Federal, State, and Local governments have expended in excess of ten billion dollars for structural solutions to flood problems in the United States. In spite of this investment, flood losses continue to increase. In an effort to stem continuing increases in disaster assistance programs and development pressures within the Nation's floodplains, federal emphasis has shifted toward a comprehensive and coordinated approach to floodplain management.

An Office of Management and Budget memorandum of July 10, 1980 provided the basis for the establishment of regional interagency and inter-governmental hazard mitigation teams to promote a comprehensive approach to flood hazard mitigation during the post-flood recovery process. These mitigation measures are to emphasize non-structural measures and to achieve economy of expenditures compatible with the reduction of future losses from flooding to the fullest extent practicable.

PURPOSE OF THIS REPORT

This report and the team recommendations are intended to provide the framework for flood hazard mitigation measures to be taken during the recovery and reconstruction phase to reduce the potential of future flood losses. This report is considered to be a conceptual guide for all federal agencies providing recovery assistance in this disaster. The FEMA, State, and Local Hazard Mitigation Coordinators will also use this report as guidance to implement the requirements of Section 409 of the Stafford Act.

Section 409 requires the State to review and update its Flood Hazard Mitigation Plan to reflect the current disaster, the lessons learned, and the issues that must be addressed if the loss of life and damage to property from future flooding throughout the state is to be reduced. The State will incorporate the recommendations from this report into their hazard mitigation plan update. This updated State Hazard Mitigation Plan will be submitted to the Regional Director within 180 days of the disaster declaration, or by June 19, 1994.

The final element of the Section 409 process, and the most important, is to coordinate and monitor implementation of the State Hazard Mitigation Plan. Federal, State, and the appointed Local Hazard Mitigation Officers must promote implementation of this plan at the local level.

In addition, as a condition of receiving Federal disaster assistance, Section 409 of the Act requires that, at a minimum, disaster recovery activities, including repairs, restoration, or replacement, be accomplished in accordance with applicable codes, specifications and standards. Mitigation may be required as a further condition for receiving disaster assistance if deemed appropriate after consultation with locally elected officials.

PART I OVERVIEW OF THE DISASTERR

A SERIES OF STORMS

The persistent El Nino phenomenon in the equatorial Pacific Ocean played a significant role in formation of a series of meteorological events that preceded the abnormal rainfall episodes in Arizona from late December, 1992 till January 19, 1993.

The combination of a northward-displaced subtropical jet, with its abundant moisture, and a southward-displaced polar jet, with its storm track, produced a number of precipitation episodes greatly affecting Arizona. The most significant of these events occurred during the following periods in January: 6-8th, 10-11th, 14-15th, and 17-18th.

Many weather stations in Arizona established new record rainfalls for the month of January. The rate of streamflow on the Salt River through Phoenix was the greatest since 1980. Heavy rainfall occurring over a short period of time on already saturated ground was the primary factor to cause many stream levels throughout the state to exceed bank-full capacities.

Another factor that contributed to the unusually high runoff was snow melt. The subtropical jet stream's position was farther north than was normal for January, and as a result, areas that do not normally experience snow melt till later in the spring received rain on top of the snow pack exacerbating the runoff.

Additional severe weather events occurred in association with these storms. Tornadoes were observed in south-central Arizona on the 17 and 18 of January. A strong short-lived tornado caused extensive damage to a residential area in north Scottsdale.

The last major storm system generated as a result of the upper air pattern that brought most of the storms to Arizona moved out of the state on January 19, the same day Arizona was declared a major disaster area (FEMA-977-DR-AZ).

DESCRIPTION OF DAMAGES

The series of storms beginning in late December and lasting till the 19th of January caused widespread damage throughout the State. With the exception of La Paz and Mohave Counties, the remainder of the State was declared for FEMA's Individual and Public Assistance Programs. Most of the damage resulted from development in floodplains that were inundated from saturated drainage basins and watersheds.

Once ephemeral streams, now high velocity, and debris laden torrents, migrated at will across the width of the floodplain. In some cases, such as Tonto Creek at Punkin Center, the main channel migrated several hundred feet north destroying four homes and forty acres of farm land, peaking at 56,897 cubic feet per second (cfs) on January 8, 1993.

In other cases, creeks, washes, and in some instances rivers, migrated out of the mapped 100-year floodplain to destroy and damage homes (West Clear Creek in Verde Lake Estates).

A new bridge crossing at Mill Avenue (still under construction) in Tempe, Maricopa County was destroyed as the Salt River exceeded 150,000 cfs.

Approximately three acres of the 400 acre Tri-County Landfill owned by the Pima-Maricopa Indian Community was eroded by the Salt River. The high flows in the Salt and Verde washed more than 150,000 cubic yards of buried trash into the river, depositing this material along the banks and in the bed of the Salt and Gila Rivers all the way to Painted Rock Dam, ninety miles to the southwest.

Construction was underway on a coffer dam to span the top of Roosevelt Dam's spillway, allowing permanent modification of the spillway to increase the maximum level of Roosevelt Lake by seventy-two feet. The prolonged rains caused the lake to rise so rapidly that the coffer dam failed, debris rained on the power generating plant below and temporarily interrupted electric production.

A section of the Town of Winkelman known as the "Flats" was heavily impacted by the Gila River below Coolidge Dam. Most of the structures are in the 100-year floodplain. All of the families were evacuated with no loss of life. The Flats was primarily inundated by flows from Coolidge Dam, as the San Carlos Lake level was above the spillway. For fifty years no water came over the spillway. During the 1983 floods Coolidge Dam was discharging at a peak rate of 8,000 cfs. The peak discharge this time was approximately 18,900 cfs (the discharge of record). Baring additional rains, San Carlos Lake will be below the spillway in early February.

Visual inspection leaves little doubt that the majority of homes in Winkelman Flats are substantially damaged.

East of Camp Verde on Route 279, Verde Lakes Estates is in Yavapai County Flood Control District. The West Clear Creek overflowed its channel and spread across the width of the original creek bed. Several homes were damaged and a mobile home was carried 2000 feet down stream. The water was of high velocity, destroying access roads, vegetation and stripping several inches of topsoil.

In 1981, thirty families from Verde Lakes Estates were relocated to a twelve-acre parcel one mile north of Camp Verde. Federal and State funds were used to purchase the land, for site improvements, and for moving the mobile and prefabricated homes to the new site.

Montezuma Lake, also in the Yavapai County Flood Control District, experiences repetitive flooding. Wet and Dry Beaver Creeks and No Name and Russell Washes affect this community. Thirty homes are located on what was the original watercourse of No Name Wash. Homes are also located along its currently altered bed. Clogged culverts from sediment out of No Name Wash caused additional back up in the thirty home area. The County Flood Control District estimates this to be a 25-30 flood event.

The Agua Fria River, which drains the basalt-covered tablelands and narrow gorges cut by mountain-fed streams to the north, traverses Black Canyon City in the Yavapai County Flood Control District to flow into Lake Pleasant ten miles to the southwest of the City.

Squaw Valley Wash flows into the Agua Fria in Cold Water Canyon at the site of a vast junk-car park. The junk yard straddles the floodway of the Agua Fria. The high peak flows from the fourteen days of rain in January, swept away an estimated 200 junk cars to distribute them along the bed of the Agua Fria for ten miles.

The Old Stage Stop Mobile Home Park adjacent to the Agua Fria was severely impacted by the high velocity flows. Although the mobile home park is not in the 100-year floodplain, the channel of the Agua Fria shifted 300 feet to erode a portion of the park and destroy or damage four homes. The remainder of the park is now at considerable risk from future flooding.

Portions of Winslow, adjacent to the Navajo Reservation in north central Arizona, were inundated when a dike protecting the town from the floodwaters of the Little Colorado River failed. Moderate velocity floodwaters impacted approximately 100 families, in some locations water was four to five feet deep. Water wells were damaged or contaminated and septic systems failed, as drainage fields clogged with silt, and holding tanks filled with water or collapsed.

SMALL BUSINESS ADMINISTRATION

As of February 9, 1993 a total of 367 interviews had been conducted. The results are as follows:

<u>Loan Applications Issued</u>		<u>Loan Applications Accepted</u>	
Homes	316		111
Business	124		12

INDIVIDUAL ASSISTANCE

As of 2-11-93 a total of 1,187 registrations were taken, a breakdown follows:

NTC	607	Winslow	115
Winkelman	129	Camp Verde	74
Florence	12	Tucson	72
Duncan	23	Youngtown	23
Punkin Center	37	Safford	48
Marana	36	Leupp	16
Hopi	38		

PUBLIC ASSISTANCE

The current estimate for categories C through G (permanent restorative work) for the entire State of Arizona, including Indian Communities, Nations, and tribes is \$35,769,000. A total of 107 Notice of Interests (NOI) were received from sixty-six local governments, four State agencies, twenty-nine Special Districts, and eight private-nonprofit groups. In excess of 1000 Damage Survey Reports (DSRs) are projected.

GOVERNMENT AND REGULATORY STRUCTURE

Local government in Arizona consist of cities, counties and special purpose districts. Cities are incorporated entities of local government, while counties govern the unincorporated areas of the state not otherwise subject to city, state or federal laws.

A city may be a *charter* or *general law* community. A charter city is one which deals with local problems by means of approving a charter of its own. The charter is submitted to the electorate for approval, and, if accepted, submitted to the state legislature for concurrence. Charter cities and counties vary the structure of their local government according to their particular needs.

General law is used to describe a form of government under which the city or county is subject to the general laws passed by the state legislature.

INDIAN COMMUNITIES, NATIONS, AND TRIBES

There are twenty-one Federally recognized Indian Communities, Nations, and Tribes in the State of Arizona. Of the twenty-one, eleven have submitted Notices Of Interest (NOI) for Public Assistance.

1. Ak-Chin Indian Community
2. Camp Verde Yavapai-Apache Tribe
3. Gila River Indian Community
4. Havasupai Tribe
5. Hopi Tribe
6. Navajo Nation
7. Pascua Yaqui
8. Salt River Pima-Maricopa Indian Community
9. San Carlos Apache Tribe
10. Tohono O'Odham Nation
11. Tonto Apache Tribe
12. Yavapai-Prescott Indian Tribe

The Native American's right of self-government is a right which has been consistently protected by the courts. The long history of judicial decision on the nature of Native American tribal power is marked by the adherence to three fundamental principals:

1. A Native American Community, Nation, or Tribe possesses all the powers of a sovereign state;
2. The tribe is subject to the legislative powers of the sovereignty of Congress e.g., Congress's power to enter into treaties with foreign nations, but this does not by itself affect the *internal sovereignty* of the tribe; i.e., its powers of local self-government; nevertheless,
3. The Tribes are subject to the legislative powers of Congress *but*, with few exceptions, full powers of internal sovereignty are vested in the Native American Tribes and in their duly constituted government.

FLOODPLAIN MANAGEMENT IN ARIZONA

Floodplain management in Arizona is the responsibility of the Counties, while primary responsibility for implementation of flood hazard mitigation activities rests with local government. County Flood Control Districts, as political taxing subdivisions of the State, control most floodplain management decisions (County Board of Supervisors). The County Flood Control Districts also provide technical assistance to the incorporated areas. Nevertheless, Tucson, Phoenix, Scottsdale, Tempe, and Flagstaff maintain their own floodplain management programs.

The Board of Directors of the Flood Control Districts must adopt and enforce regulations governing floodplains and floodplain management in their area of jurisdiction. The Flood Control Districts regulate all development of land, construction of residential, commercial or industrial structures or uses of any kind which may divert, retard or obstruct floodwater and threaten public health, safety or the general welfare. Among their duties, they adopt and enforce regulations relating to minimum floodplain elevations, mobile home placement, installation of waste disposal systems, water supply, water treatment and sewage collection and disposal systems. The district can grant variances given adherence to specific criteria.

According to Arizona Revised Statutes (County Flood Control Districts) Section 48-3609, 7F, all development of land, construction of residential, commercial or industrial structures or future development within delineated floodplain areas is prohibited unless floodplain regulations have been adopted and are in full force and effect.

PART II

HAZARD MITIGATION OPPORTUNITIES AND RECOMMENDATIONS

The Interagency Hazard Mitigation Team selected 7 areas that represent the best opportunities to accomplish significant flood hazard mitigation.

1. Winkelman Flats in Gila County at the confluence of the San Pedro and Gila Rivers;
2. Verde Lake Estates, in Yavapai County on West Clear Creek.

The Team developed work programs for each of the above areas and for special issues that apply throughout flood prone areas of the state. The work programs are the recommendations of the Interagency Hazard Mitigation Team and were the consensus of the participating members.

It is the hope of the IHMT that the information and recommendations compiled in this report will lead to actions by citizens and federal, state, and local governments, Indian Communities, Nations, and Tribes, and non-profit organizations to mitigate or prevent flood damage in the future.

Other areas within the disaster declared counties also have significant hazards and opportunities for mitigation. They will be addressed by the FEMA and State Hazard Mitigation Officers as required by Section 409 of the Stafford Act.

This report also provides the basis for actions to be included in Arizona's State Hazard Mitigation Plan. An update of the State Hazard Mitigation Plan is due June 19, 1994, 180 days from the declaration date.

GILA AND SAN PEDRO RIVERS AT THE TOWN OF WINKELMAN

BACKGROUND INFORMATION

The two primary watercourses affecting the Town of Winkelman are the San Pedro (an unregulated river draining 4,500 square miles) and the Middle Gila River (382 square miles of drainage below Coolidge Dam).

The San Pedro River enters Pinal County from the southeast corner and flows north-northwesterly adjacent to State Road 77, through the small towns of Mammoth and Dudleyville to join the Gila River At Winkelman thirty-five miles on.

The Gila River forms the far northeastern border between Pinal County and a portion of the San Carlos Indian Reservation below Coolidge Dam. As the Gila River flows southwest from Coolidge Dam to reach Winkelman, the northwesterly flowing San Pedro joins with it to transverse on across Pinal County to Florence, the County seat. The Town of Winkelman lies on the north bank of the Gila River less than a mile from the confluence of these two rivers.

Winkelman and its neighboring riverine town of Hayden are early copper mining communities who have suffered with the world-wide decline of copper prices for many years. The town of Hayden still has an operating mine and smelter.

Past flooding in Pinal County emphasizes that large portions of the county are subject to destructive floods. Both the Gila and San Pedro have the capacity for large flood peaks. Erosion combined with shifting channels adds to the potential flood hazards.

Major floods of the San Pedro will travel directly across the Gila River channel between Winkelman and Hayden to inundate the floodplain containing the 140 structures of Winkelman "Flats." The San Pedro River does not seem to be the primary cause of flooding in the Flats this time.

Coolidge Dam is located on the Gila River approximately thirty miles upstream from Winkelman Flats. The dam was officially completed in 1931 and is owned and managed by the Bureau of Indian Affairs.

San Carlos Lake, behind the dam, is the recipient of the drainage areas of the Gila River--the second largest river in Arizona--beginning on the western slope of the Continental Divide, and five additional watersheds covering 12,866 square miles.

The dam's primary function is to store irrigation water for the San Carlos Irrigation District. Regulation of the Coolidge reduces the impact of more frequent floods, but will not mitigate the 100-year

or greater events.

During the recent series of storms, the elevation of the water in San Carlos Lake, the dam's twenty-mile long reservoir reached 18.5 feet above the safety limitation imposed by the Bureau of Reclamation many years ago. The maximum that can be retained in San Carlos Lake is 910,000 acre feet of water. Once that maximum figure is exceeded, water flows over the spillways in uncontrolled volumes (33,000 cfs for the current event).

The Gila River communities of Winkelman (including the Flats), Hayden, Kearney, and Riverside have experienced many flooding incidents over the years. The Gila River floodplain through Winkelman is 0.5 miles wide. The right bank of this floodplain, containing the Flats area, is where the majority of the floodplain development is located.

Flooding from the Gila and San Pedro Rivers is characterized by high velocity, debris laden flows. The 140 structures located in the Flats were inundated by five to seven feet of high velocity flow. Because of this, the elevation of structures does not seem to be a practicable floodproofing strategy. It would seem to be time for the residents of the Flats with substantial damage to their homes (50% or greater) to consider relocation out of the floodplain.

RECOMMENDATION NO. 1

TITLE: Relocate repetitive flooding victims out of the floodplain.

BACKGROUND: The "Flats" section of the Town of Winkelman in Gila County was severely impacted by the recent series of storms. This area has been flooded many times in the past (FEMA-641-DR-AZ, 1983). Over ninety dwellings were substantially damaged (50% or greater). The vast majority of the flooded families are willing to relocate. Twenty-one of the homes carried NFIP insurance. A Local/State task Force has been organized to effect the acquisition of the homes and to relocate the families.

Verde Lakes Estates in Yavapai County has also suffered repetitive flooding. The substantially damaged residences should be considered for acquisition and relocation. Verde Lakes Estates should consider enacting more stringent floodplain management regulations (elevation to more than one foot above the base flood elevation) than are required by the NFIP.

LEAD AGENCY: FEMA.
State Division of Emergency Management

SOURCES OF FUNDING: FEMA, 1362 program for those with NFIP insurance coverage, Section 404-Hazard Mitigation Grant Program, Individual and Family Grants, Temporary Housing Program, Public Assistance Program.
Small Business Administration.
HUD Community Development Block Grant funds.
State Congressional appropriations, legislation.
Other non-governmental programs.

SCHEDULE: Immediate and ongoing

RECOMMENDATION NO. 2

TITLE: Acquire, centralize, and disseminate river gage flow data in conjunction with flood projections for all major watersheds in the state.

BACKGROUND: During the recent statewide flooding event, there were inadequate warnings to effected communities, state agencies, and interested parties, of the potential for destructive flooding on major water courses in the state. This was particularly true for the San Pedro and Upper Gila Rivers. The only functioning flow gage below Coolidge Dam (San Carlos Reservoir) is at Kelvin on the Gila, and that gage appears to be unreliable. There are no gages on the San Pedro (The feasibility of data collection would depend upon accessible sites for gages, data transmission and the population at risk).

A central point of dissemination must be established to assure that all interested parties are appraised of developing areas of concern.

The Arizona Division of Emergency Management would be the appropriate collector and disseminator of critical flood stage bulletins for the major watersheds state-wide.

LEAD AGENCIES: Arizona Division of Emergency Services
Arizona Division of Water Resources
National Weather Service
U.S. Geological Service

FUNDING SOURCES: FEMA, 404 HMGP
normal agency budgets

SCHEDULE: As soon as practicable

RECOMMENDATION NO. 3

TITLE: Encourage Residents of Montezuma Lakes subdivision to elevate or floodproof their homes.

BACKGROUND: Lots in this community were sold as retirement sites. Some of the homes along Wet Beaver Creek, built at grade, are in the path of drainage from surrounding mountains. Most of the residents were not aware of the possibility of flooding when they bought the property.

An outreach program by the Yavapai County Flood Control District in cooperation with the Arizona Division of Water Resources to educate the residents at risk from flooding about the possibilities of protecting themselves from that risk could halt the flooding cycle.

LEAD AGENCY(ies): Yavapai County Flood Control District
Arizona Division of Water Resources

FUNDING SOURCES: none required, normal agency budget

SCHEDULE: as soon as practicable

RECOMMENDATION NO. 4

TITLE: IMPROVEMENTS TO PUBLIC FACILITIES

RECOMMENDATION:

1. **BRIDGES:** Improve the design and construction of bridges and bridge approaches to eliminate repeated damage from flooding.
2. **LOW WATER CROSSINGS:** Improve the design and construction of low-water crossings to include the dip sections with flood-warning devices, concrete pads, armored culverts, riprap and gabion basket protection.
3. **RURAL ROADS:** Improve roadway design procedures by adopting Arizona Department of Transportation specifications or other applicable standards.
4. **DESIGN AND MAINTENANCE CRITERIA - CHANNELS, DIKES, AND LEVEES:** Develop design and maintenance standards for new and existing channels, dikes, and levees to include consideration of:
 1. Design of new dikes and levees to withstand prolonged wetting, multiple flood peaks, and regular maintenance.
 2. Harden or armor existing dikes and levees.
 3. Routinely clean and maintain natural channels through the protected areas.
 4. Streambank stabilization and hardening.
5. **IMPROVEMENTS TO UTILITY FACILITIES:** (Dams, Waste-water Treatment Plants, Electrical Power, Telephone, and Gas lines, and other facilities)
 1. Improve the structural stability of dams and power generating facilities.
 2. Avoid future landslides in facility areas by installing matting, piers, etc.
 3. Rip-rap and/or concrete channels to prevent future erosion of irrigation facilities.
 4. Provide deeper and structurally sound foundations for facilities in the floodplain to reduce damage in future floods.
 5. Relocate waste water treatment plants and other facilities that are repeatedly damaged by flooding.

LEAD AGENCY:

Affected Agencies

FUNDING SOURCES:

FEMA Section 404/ADES/Local

SCHEDULE:

RECOMMENDATION NO. 5

TITLE: EMERGENCY POWER BACK-UP GENERATORS

RECOMMENDATION:

Redistribute back-up generators purchased for use in Florida and Hawaii to various locations where they would be available for immediate use in local disasters.

LEAD AGENCY:

FEMA/ADES

FUNDING SOURCES:

FEMA

SCHEDULE:

RECOMMENDATION NO. 6

TITLE: MONTEZUMA LAKES

RECOMMENDATION:

1. Elevate residential structures.
2. Allow Flood District to maintain creeks.
3. Redesign public areas.

LEAD AGENCY:

FEMA/ADES

FUNDING SOURCES:

FEMA Section 404

SCHEDULE:

RECOMMENDATION NO. 7

TITLE: REGULATIONS PERTAINING TO RIVER MEANDER ZONES

RECOMMENDATION:

Regulations should be established or present floodplain management ordinances should be revised to include consideration of river meander zones similar to those now established prohibiting building in Floodways. This would greatly reduce damage from erosion in these meander areas.

LEAD AGENCY:

Arizona DES

FUNDING SOURCES:

FEMA Section 404/NFIP

SCHEDULE:

ASAP

FEMA-DR-977-AZ
INTERAGENCY HAZARD MITIGATION TEAM

NATIONAL GUARD MILITARY ACADEMY
PAGAGO PARK MILITARY RESERVATION
5636 EAST MCDOWELL
PHOENIX, AZ.

TUESDAY, FEBRUARY 16, 1993

AGENDA

9:00 AM	WELCOME	RICHARD A. BUCK, FCO WILLIAM D. LOCKWOOD, SCO
9:10 AM	INTRODUCTIONS	
9:15 AM	OVERVIEW OF THE FEDERAL HAZARD MITIGATION PROGRAMS	BOB SCHOFIELD, FEMA HMO
9:30 AM	STATE HAZARD MITIGATION GRANT PROGRAM	BARBARA CORSETTE, SHMO
9:45 AM	DESCRIPTION OF THE STORM	NATIONAL WEATHER SERVICE
10:00 AM	DESCRIPTION OF THE DAMAGE	BILL SHOUGH, FEMA
10:30 AM	MORNING BREAK	
10:45 AM	IDENTIFICATION OF THE ISSUES	TEAM MEMBERS
12:00 N	LUNCH	
1:00 PM	PREPARATION OF SUGGESTED WORK ELEMENTS	INDIVIDUAL TEAMS
3:00 PM	REPORTS OF WORK ELEMENT TEAMS	
4:00 PM	ADJOURN	

PARTICIPANTS
FEMA INTERAGENCY HAZARD MITIGATION TEAM MEETING

FEMA-977-DR-AZ FEBRUARY 16, 1993

NAME	TITLE	AGENCY AND ADDRESS
Jim Payne	Public Affairs Specialist	Tonto National Forest 2324 E. McDowell Road Phoenix, AZ 85010
Rich Martin	Hydrologist	Tonto National Forest 2324 E. McDowell Road Phoenix, AZ 85010
John Drake	Community Planner	U.S. Army Corps of Engineers 3636 N. Central Ave. Suite 740 Phoenix, AZ 85016
Ken Clouser	Safety of Dams & Floodplain Mmgt. Coordinator	Bureau of Indian Affairs Phoenix Area Office Phoenix, AZ 85001
Bob Bobar	Emergency Services Coordinator	Cochise County 619 Melody Lane Bisbee, AZ 85605
Barbara Corsette	State HMO	Arizona Division of Emergency Management 5636 E. McDowell Road Phoenix, AZ 95016
Mike Franjevic	Warning Coordination	National Weather Service Office, PAB 500, P.O. Box 52025 Phoenix, AZ 85072-2025
Blaine Akine	Senior Engineer	Salt River Project P.O. Box 52025 Phoenix, AZ 85072
Ken Zehentner	Public Works Director	Santa Cruz County
Clauda Leal	Accountant	Santa Cruz County
Jim Jepsen	Floodplain Management	Arizona Dept. of Water Resources
Ed Henry		U.S. Department of Transportation

PARTICIPANTS
FEMA INTERAGENCY HAZARD MITIGATION TEAM MEETING

FEMA-977-DR-AZ FEBRUARY 16, 1993

NAME	TITLE	AGENCY AND ADDRESS
Joe DiVito	District Development Engineer	AZ. Dept. of Transportation
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Carmen Corso	Emergency Services Director	Gila County 1400 E. Ash Street Globe, AZ 85501
R.C.Schofield	HMO	FEMA 430 West Shore Road Anacortes, WA 98221
Jim Guyer	Arizona Director	U.S. Small Business Administration 2828 Central Phoenix, AZ 85004
Joy Shrilla	Hazard Mitigation Specialist	FEMA 2331 2nd. Avenue Seattle, WA 98121
Kent Deph	Hydrologist	Navajo County Dept. of Public Works P.O. Box 668 Holbrook, AZ
Terri Miller	NFIP Coordinator	AZ Department of Water Resources 15 S. 15th. Avenue Phoenix, AZ 85007
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FEMA-977-DR-AZ FEBRUARY 16, 1993

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