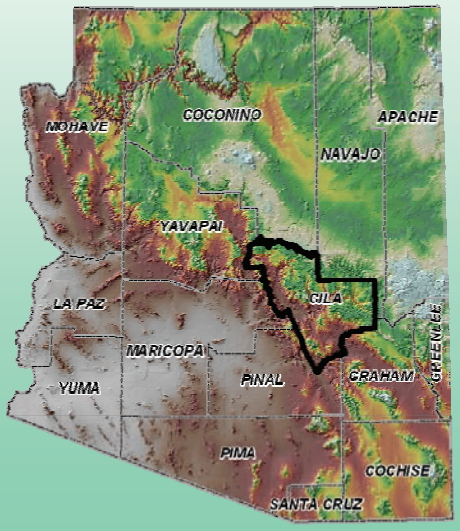
Gila County Multi-Jurisdictional Hazard Mitigation Plan 2011



EXECUTIVE SUMMARY

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With 48 federal or state declarations, 353 other significant events, and a combined total of 401 disaster events recorded, the four jurisdictions within Gila County, Arizona participating in this planning effort, recognize the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards. The county and jurisdictions also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards.

The elected and appointed officials of Gila County, Globe, Hayden, Miami, and Payson demonstrated their commitment to hazard mitigation in 2005-2006 by preparing the first set of Single Jurisdiction Multi-Hazard Mitigation Plans (2006 Plans). The 2006 Plans were developed through a planning effort that resulted in an unincorporated county plan and four city/town plans. The Town of Miami was unable to complete the planning performed during the 2005-2006 effort, but later completed their Plan in 2009. The 2006 Plans were approved by FEMA in September 2006, and require full, FEMA approved, updates prior to the subsequent five year expiration.

In response, the Arizona Division of Emergency Management (ADEM) secured a federal planning grant and hired JE Fuller/ Hydrology & Geomorphology, Inc. to assist the county and participating jurisdictions with the update process. Gila County reconvened a multi-jurisdictional planning team comprised of veteran and first-time representatives from each participating jurisdiction, various county and local departments and organizations, and ADEM. The Planning Team met four times during the period of November 2010 to April 2011 in a collaborative effort to review, evaluate, and update the 2006 Plans. The resulting Gila County Multi-Jurisdictional Hazard Mitigation Plan (Plan) will continue to guide the county and participating jurisdictions toward greater disaster resistance in full harmony with the character and needs of the community and region.

The Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S. C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at CFR 201.6 and 201.7 dated October, 2007. The Plan identifies hazard mitigation measures intended to eliminate or reduce the effects of future disasters throughout the county, and was developed in a joint and cooperative venture by members of the Gila County Planning Team.

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SECTION 1: JURISDICTIONAL ADOPTION AND FEMA APPROVAL

Requirement §201.6(c)(5): *[The local hazard mitigation plan shall include…] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted*.

Requirement §201.6(d)(3): *A local jurisdiction must review and revise its plan to reflect changes in development ,progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five (5) years in order to continue to be eligible for mitigation project grant funding.*

1.1 DMA 2000 Requirements

1.1.1 General Requirements

The Gila County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), 42 U.S.C. 5165, as amended by Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) Public Law 106-390 enacted October 30, 2000. The regulations governing the mitigation planning requirements for local mitigation plans are published under the Code of Federal Regulations (CFR) Title 44, Section 201.6 (44 CFR §201.6). Additionally, a DMA 2000 compliant plan that addresses flooding will also meet the minimum planning requirements for the Flood Mitigation Assistance program as provided for under 44 CFR §78.

DMA 2000 provides requirements for States, Tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning[1]. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

Under 44 CFR §201.6, local governments must have a Federal Emergency Management Agency (FEMA)-approved local mitigation plan in order to apply for and/or receive project grants under the following hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

FEMA, at its discretion, may also require a local mitigation plan under the Repetitive Flood Claims (RFC) program as well.

1.1.2 Update Requirements

DMA 2000 requires that local plans be updated every five years, with each plan cycle requiring a complete review, revision, and approval of the plan at both the state and FEMA levels. Gila County, and the incorporated communities of Globe, Hayden, Miami, Payson, Star Valley, and Winkelman all currently have FEMA approved hazard mitigation plans. The result of the plan update process is a single, multi-jurisdictional plan that reflects both an update and a consolidation of the individual community plans from the participating jurisdictions.

[1] FEMA, 2008, *Local Multi-Hazard Mitigation Planning Guidance*

1.2 Official Record of Adoption

Adoption of the Plan is accomplished by the governing body for each participating jurisdiction in accordance with the authority and powers granted to those jurisdictions by the State of Arizona. The officially participating jurisdictions in the Plan include:

County	Cities	Towns
• Gila County	• City of Globe	• Town of Hayden • Town of Miami • Town of Payson

The Towns of Winkelman and Star Valley chose to not participate in the planning effort, and are therefore not included in this Plan. It is noted that Winkelman's current hazard mitigation plan expired September 8, 2011. Star Valley's current hazard mitigation plan does not expire until December 2014.

Each jurisdiction will keep a copy of their official resolution of adoption located in Appendix A of their copy of the Plan.

1.3 FEMA Approval Letter

The Plan was submitted to the Arizona Division of Emergency Management (ADEM), the authorized state agency, and FEMA for review and approval. FEMA's approval letter is provided on the following page.

[Insert FEMA Approval Letter Here]

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SECTION 2: INTRODUCTION

2.1 Plan History

In 2005 and 2006, Gila County and the incorporated communities of Globe, Hayden, Winkelman, and Payson participated in a mitigation planning process that resulted in the development of separate stand-alone plans for each participating jurisdiction. Miami also partially participated, but was unable to finish the process required to develop a plan. In 2009, Star Valley, a newly incorporated community located east of Payson, and Miami conducted a planning process to prepare their own plans. The following is a list of the plans that were produced for the Gila County jurisdictions:

- *Gila County Multi-Hazard Mitigation Plan*
- *City of Globe Multi-Hazard Mitigation Plan*
- *Town of Hayden Multi-Hazard Mitigation Plan*
- *Town of Miami Multi-Hazard Mitigation Plan*
- *Town of Payson Multi-Hazard Mitigation Plan*
- *Town of Star Valley Multi-Hazard Mitigation Plan*
- *Town of Winkelman Multi-Hazard Mitigation Plan*

Collectively and individually, these plans will be referred to herein as the 2006 Plan(s). The 2006 Plans received official FEMA approval ranging from September 12, 2006 to September 13, 2006, with exception to the Town of Miami and Town of Star Valley Plans which were approved in 2009. The 2006 Plans (except for Miami and Star Valley's) are expired with the last plan September 12, 2011

2.2 Plan Purpose and Authority

The purpose of the Plan is to identify natural hazards that impact the various jurisdictions located within Gila County, assess the vulnerability and risk posed by those hazards to community-wide human and structural assets, develop strategies for mitigation of those identified hazards, present future maintenance procedures for the plan, and document the planning process. The Plan is prepared in compliance with DMA 2000 requirements and represents a multi-jurisdictional update of the 2006 Plans listed in Section 2.1.

Gila County and the Cities and Towns within, are political subdivisions of the State of Arizona and are organized under Title 9 (cities/towns) and Title 11 of the Arizona Revised Statutes (ARS). As such, each of these entities are empowered to formally plan and adopt the Plan on behalf of their respective jurisdictions.

Funding for the development of the Plan was provided through a PDM planning grant obtained by the State of Arizona from FEMA. JE Fuller/ Hydrology & Geomorphology (JE Fuller) was retained by Arizona Division of Emergency Management (ADEM) to provide consulting services in guiding the planning process and Plan development.

2.3 General Plan Description

The Plan is generally arranged and formatted to be consistent with the 2010 State of Arizona Multi-Hazard Mitigation Plan (State Plan) and is comprised of the following major sections:

Planning Process – this section summarizes the planning process used to update the Plan, describes the assembly of the planning team and meetings conducted, and summarizes the public involvement efforts.

Community Description – this section provides an overall description of the participating jurisdictions and the County as a whole.

Risk Assessment – this section summarizes the identification and profiling of natural and human-caused hazards that impact the County and the vulnerability assessment for each hazard that considers exposure/loss estimations and development trend analyses.

Mitigation Strategy – this section presents a capability assessment for each participating jurisdiction and summarizes the Plan mitigation goals, objectives, actions/projects, and strategy for implementation of those actions/projects.

Plan Maintenance Strategy – this section outlines the proposed strategy for evaluating and monitoring the Plan, updating the Plan in the next 5 years, incorporating plan elements into existing planning mechanisms, and continued public involvement.

Plan Tools – this section includes a list Plan acronyms and a glossary of definitions.

2.4 Overall Plan Update Process

The Plan is the result of a thorough update process that included a section by section review and evaluation of the 2006 Plans by the planning participants. As previously stated, the individual 2006 Plans are being consolidated into a single, multi-jurisdictional plan with this update. Accordingly, the final arrangement of the Plan is different from the 2006 Plans.

At the onset of the planning process, ADEM printed a copy of each of the 2006 Plans and provided them to each respective jurisdiction as a working document for their review and use during the planning process. This way the jurisdictions could keep their original 2006 Plan intact and unmarked. Digital versions of the Gila County 2006 Plan were made available to planning team members not directly associated with a specific jurisdiction. The Planning Team reviewed each section of the 2006 Plan(s) during the first meeting, wherein the plan purpose was explained, sections were discussed, and the plans' relation to the DMA 2000 requirements were summarized. Using the existing Plan(s), gave way to discussions on how to update and improve the Plan. Planning participants were requested bring their working copy to every meeting as the team stepped through each stage of the update process. Table 2.1 summarizes the review and analysis of each section of the 2006 Plans and generally describes what changes were or were not made and why. Additional details of that process are also discussed in the Plan sections as well.

Table 2-1: Summary of 2006 Plan review and 2011 Plan correlation

2006 Plan Section	2011 Plan Section	Review and Changes Description (2006 Plan to the 2011 Plan)
1	1, 2, and 4	• Plan format changes were made to make the Plan more compatible with the 2010 State Plan format. • General plan descriptions were changed to reflect the update process, the new plan format, and authorizations • Community descriptions were compiled to provide both a county-wide and jurisdiction specific depiction. Much of the original text was kept. Time sensitive data such as demographics, climate statistics, and incorporated community boundaries were updated with the latest information available. • Descriptions of development history were updated to reflect the last five years.
2	3	• The 2006 Plan contacts were updated as necessary and recompiled into Section 3 of the 2011 Plan. The review concluded that the original Section 2 data did not warrant a separate section and it could be added to Section 3.
3	3	• Section 3 was expanded to include evaluation summaries and to better describe the planning team development. • Added a column to the table listing the planning team participants to describe their roles • Decided to keep the table format summarizing the planning team meetings and agendas, but provide supplemental meeting minutes in an Appendix • Provided a new section to address agency/organization participation and changes between the 2006 Plan and 2011 Plan participation

Table 2-1: Summary of 2006 Plan review and 2011 Plan correlation

2006 Plan Section	2011 Plan Section	Review and Changes Description (2006 Plan to the 2011 Plan)
4	5	• Risk Assessment changed from Section 4 to Section 5 • The whole structure of the risk assessment was revised to provide a hazard based approach to the subsections. The planning team felt this would make the plan easier to understand and follow. • Each hazard profile and vulnerability analysis was carefully updated to reflect either more current or totally new data. • Asset inventories were updated and refined to make them more complete and current.
5	6	• Mitigation Strategy changed from Section 5 to Section 6 • A review of the goals and objectives subsection resulted in a significant change to much simpler goals and objectives. Reasoning for the changes are summarized in Section 6.1 • Tables 5.1 and 5.4 of the capability assessment were compiled into one table to provide an "at-a-glance" summary of these elements. The details of the old Table 5.4 were relegated to the reference lists provided at the end of each hazard subsection of the new Plan Section 5.3 and at other locations throughout the Plan where the documents are referenced. • Tables summarizing previous mitigation activities for each jurisdiction were provided to document past mitigation activities • Section addressing the NFIP program was added in compliance to requirement changes from the 2006 Plan to the 2011 Plan • Each mitigation action/project in the 2006 Plan were reviewed and assessed by the respective jurisdiction. Tables summarizing the results are provided • Planning team chose to combine the old tables 5.5 and 5.6 into one table to have all the details of the new mitigation actions/projects in one table.
6	7	• Plan Maintenance Procedures changed from Section 6 to Section 7. • In general, the review of this section highlighted the lack of plan maintenance actually performed and forced a better definition of future efforts. It is anticipated that a multi-jurisdictional plan will provide the platform for a more regular review. • Added text to discuss review past plan maintenance activities and reasons for successes/failures. • Identified the need to expand Section 7.3 to provide a better explanation of plan incorporation by each of the jurisdictions. • Identified a need to provide more definition and specificity to the approach in Section 7.4. Revised to be more specific in the types and schedules of future public involvement opportunities.

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SECTION 3: PLANNING PROCESS

§201.6 (b): *Planning process. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*
(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

§201.6(c)(1)*: [The plan shall include…] (1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

This section includes the delineation of various DMA 2000 regulatory requirements, as well as the identification of key stakeholders and planning team members within Gila County. In addition, the necessary public involvement meetings and actions that were applied to this process are also detailed.

3.1 Planning Process Description

ADEM applied for and received a PDM planning grant to fund a multi-jurisdictional effort to review, update and consolidate the 2006 Plan. Once the grant was received, ADEM then selected JE Fuller to work with the participating jurisdictions and guide the planning process. An initial project kick-off meeting between JE Fuller and ADEM was convened in September 2010 to begin the planning process, outline the plan objectives, outline the anticipating meeting agendas for the planning efforts, and to discuss the new plan format and other administrative tasks. Initial points of contact were also established between ADEM, JE Fuller, and Gila County. A total of four Planning Team meetings were conducted over the period of November 2010 through April 2011, beginning with the first meeting on November 30, 2010. Throughout that period and for several months afterward, all the work required to collect, process, and document updated data and make changes to the plan was performed, culminating in a draft of the Plan. Details regarding key contact information and promulgation authorities, the planning team selection, participation, and activities, and public involvement are discussed in the following sections.

3.2 Previous Planning Process Assessment

The first task of preparation for this Plan, was to evaluate the process used to develop the 2006 Plans. This was initially discussed by ADEM and JE Fuller prior to the county planning team kickoff meeting. The previous planning approach included a blended use of multi-jurisdictional planning team meetings and individual local planning team meetings within each jurisdiction, all facilitated by JE Fuller. This was mostly due to the development of individual plans for each participating jurisdiction and the difficulty in acquiring the needed data. The process worked moderately well, but required a tremendous amount of time and budget that is not available for this planning process. A conclusion of the 2006 Plans process assessment was that the new planning process and approach would result in a paradigm shift away from individual plans and planning meetings, and will require a slightly different strategy in gathering and compiling the Plan information. The result will be a true multi-jurisdictional plan (one document for all participating jurisdictions).

The planning process was presented and discussed at the first multi-jurisdictional planning team meeting and was contrasted to the 2006 Plan approach. Less than a third of the planning team members were involved with the development of the 2006 Plan, so there was some institutional knowledge of the prior process.

3.3 Primary Point of Contact

Table 3-1 summarizes the primary points of contact identified for each participating jurisdiction.

Table 3-1: List of jurisdictional primary points of contact

Jurisdiction	Name	Department / Position	Address	Phone	Email
Gila County	Debra Williams	Emergency Management / Deputy Director	5515 S. Apache Avenue, Suite 400 Globe, AZ 85501	928-402-8763	dwilliams@co.gila.az.us
City of Globe	Matt Rencher	Public Works Department / Engineering Division / City Engineer	150 N. Pine St. Globe, AZ 85501	928-425-7146 Ext. 19	mrencher@globeaz.gov
Town of Hayden	Carlos Estrada	Public Works Department / Operations Supervisor	520 Velasco Ave. P.O. Box B Hayden, AZ 85235	520-356-7801	hayden@theriver.com
Town of Miami	Dale Metz	Engineering / Engineering Technician	500 Sullivan St. Miami, AZ 85539	928-473-9024	miamiengineering@cableone.net
Town of Payson	Martin de Masi	Fire Department / Fire Chief	Fire Station 11 400 W. Main Street Payson, AZ 85541	928-474-5242 Ext. 3	mdemasi@paysonaz.gov

3.4 Planning Teams

Two levels of planning teams were organized for the development of this Plan. The first was a Multi-Jurisdictional Planning Team (Planning Team) that was comprised of one or more representatives from each participating jurisdiction. The second level planning team was the Local Planning Team.

The role of the Planning Team was to work with the planning consultant to perform the coordination, research, and planning element activities required to update the 2006 Plans. Attendance by each participating jurisdiction was required for every Planning Team meeting as the meetings were structured to progress through the planning process. Steps and procedures for updating the 2006 Plans were presented and discussed at each Planning Team meeting, and assignments were normally given. Each meeting built on information discussed and assignments given at the previous meeting. The Planning Team also had the responsibility of liaison to the Local Planning Team, and were tasked with:

- Conveying information and assignments received at the Planning Team meetings to the Local Planning Team
- Ensuring that all requested assignments were completed fully and returned on a timely basis.
- Arranging for review and official adoption of the Plan.

The function and role of the Local Planning Team was to:

- Provide support and data
- Assist the Planning Team representative in completing each assignment
- Make planning decisions regarding Plan components
- Review the Plan draft documents

3.4.1 Planning Team Assembly

At the beginning of this planning process, Gila County organized and identified members for the Planning Team by initiating contact with, and extending invitations to, all incorporated communities and Indian tribes within the county limits, as well as the Arizona Division of Emergency Management and JE Fuller. Other entities that were subsequently invited to participate are discussed in Section 3.4.3. The participating members of the Planning Team are summarized in Table 3-2. Returning planning team members are highlighted.

Table 3-2: Multi-jurisdictional planning team participants

Name	Jurisdiction / Organization	Department / Position	Planning Team Role
Chris Collopy	City of Globe	Planning & Zoning / P&Z Administrator	Planning Team participant Local resource to Globe
Leon Cons	City of Globe	Public Works / Public Works Director	Planning Team participant Local resource to Globe
Ed Copp	Salt River Project	Emergency Management / Manager	Planning Team participant Local resource to all jurisdictions
Martin de Masi	Town of Payson	Fire Department / Fire Chief	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Darde de Roulhac	Gila County	Flood Control District / Chief Engineer	Planning Team participant Local resource for county
Larry Dorame	Gila County	Emergency Management Services / Addresser	Planning Team participant Local resource for county
Carlos Estrada	Town of Hayden	Public Works / Operations Supervisor	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Bryan Goslin	Arizona Public Service	DPZ	Planning Team participant Local resource to all jurisdictions
Kurt Hinkle	Freeport McMoRan	Emergency Management Services / Security / Safety / Health	Planning Team participant
Chris Jones	University of Arizona	Gila County Cooperative Extension / Extension Agent	Planning Team participant Local resource to all jurisdictions
Lee Kinnard	City of Globe	Police Department / Police Chief	Planning Team participant
Dale Metz	Town of Miami	Engineering Technician	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Rosann Moya	City of Globe	Police Department / Lieutenant	Planning Team participant Local resource to Globe
Scott Ogden	JE Fuller / Hydrology & Geomorphology, Inc.	Project Manager	Planning Team Lead Consultant Preparation and presentation of plan update elements
Matt Rencher	City of Globe	Engineering / City Engineer	Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Nick Renon	City of Globe	Fire Department / Deputy Chief	Planning Team participant
Marc Richardson	ASARCO	Environmental Department / Environmental Engineer	Planning Team participant Local resource to all jurisdictions
Ron Sattelmaier	Whispering Pines Fire District	Fire Chief	Planning Team participant Local resource for county
Russ Shumate	State of Arizona	Land Department / Forestry Division / AFMU	Planning Team participant Local resource to all jurisdictions
Debra Williams	Gila County	Emergency Management / Deputy Director	Planning Team Primary Point of Contact Jurisdictional Point of Contact Lead coordinator for LPT Planning Team participant
Mike Williamson	Beaver Valley Fire District	Fire Chief	Planning Team participant Local resource for county
Sue Wood	Arizona Division of Emergency Management	Mitigation Branch / Program Manager	Planning Team participant Project/Grant Manager State reviewer
Ann Youberg	Arizona Geological Survey	Research Geologist	Planning Team participant Local resource to all jurisdictions

Lists of Local Planning Team members and their respective roles, for each jurisdiction, are provided in Appendix B.

3.4.2 Planning Team Activities

The Planning Team met for the first time on November 18, 2010 to begin the planning process. Three more meetings were convened on about a bi-monthly basis to step through the plan review and update process. Planning Team members used copies of the 2006 Plan for their jurisdiction for review and reference. Following each Planning Team meeting, the Point of Contact for each jurisdiction would convene meetings with the Local Planning Team as needed to work through the assignments. Table 3-3 summarizes the Planning Team meetings along with a brief list of the agenda items discussed. Detailed meeting notes for all of the Planning Team meetings are provided in Appendix B. There are no details of the Local Planning Team meetings.

Table 3-3: Planning meetings convened as part of the plan update process

Meeting Type, Date, and Location	Meeting Agenda

Planning Team Meeting No. 1
 	
November 30, 2010
 	
Gila County Emergency Operations Center
 	
Globe, AZ
	• INTRODUCTIONS / GREETING
	• MITIGATION PLANNING OVERVIEW
	• CURRENT MITIGATION PLAN REVIEW
	• PLANNING PROCESS
	  o MJ Planning Team Roles
	  o Public Involvement Strategy
	• RISK ASSESSMENT
	  o Hazard Identification / Profiling
	  o Asset Inventory
	• PREVIOUS MITIGATION PROJECTS
	• OTHER DATA NEEDS
	• NEXT MEETING DATES
	• ACTION ITEM SUMMARY

Planning Team Meeting No. 2
 	
February 17, 2011
 	
Gila County Emergency Operations Center
 	
Globe, AZ
	• ACTION ITEM REVIEW/STATUS
	• HAZARD PROFILE MAP/INFORMATION REVIEW
	• CAPABILITY ASSESSMENT
	  o Jurisdictional Capabilities
	  o Prior Mitigation Activities
	  o NFIP Participation and Status
	  o Repetitive Loss Properties
	• MEETING ENDING
	  o Review of action items
	  o Next meeting reminder/verification

Planning Team Meeting No. 3
 	
March 17, 2011
 	
Gila County Emergency Operations Center
 	
Globe, AZ
	• STATUS REVIEW
	• PLAN MAINTENANCE STRATEGY
	  o Monitoring and Evaluation
	  o Plan Update
	  o Plan Incorporation
	  o Continued Public Involvement
	• MITIGATION STRATEGY - Goals and Objectives
	• PLAN IMPLEMENTATION
	• NEXT MEETING DATES

Table 3-3: Planning meetings convened as part of the plan update process

Meeting Type, Date, and Location	Meeting Agenda
Planning Team Meeting No. 4 April 21, 2011 Gila County Emergency Operations Center Globe, AZ	• ACTION ITEM REVIEW/STATUS • VULNERABILITY ANALYSIS REVIEW • MITIGATION ACTION/PROJECT FORMULATION AND IMPLEMENTATION STRATEGY • END OF MEETING DISCUSSION

3.4.3 Agency/Organizational Participation

The planning process used to develop the 2006 Plan included participation from several agencies and organizations, including the adopting jurisdictions, that operate within or have jurisdiction over small and large areas of Gila County. At the start of the Plan update, a list of the agencies and organizations that participated in the development of the 2006 Plan was compiled to provide continuity and institutional knowledge to the planning team and the overall update process. Invitations were also extended to various entities not directly participating as a signatory to the Plan, but that may have an interest in the mitigation planning for the county. Invitations were sent via a letter. A copy of the letter text is provided in Appendix B. The invitation list included the following entities:

- Arizona Department of Housing
- Arizona Department of Transportation
- Arizona Department of Water Resources
- Arizona Division of Emergency Management
- J.E. Fuller/ Hydrology & Geomorphology, Inc.
- San Carlos Apache Tribe
- Arizona Department of Housing
- Arizona Geological Survey
- Arizona Public Service
- Army Corp of Engineers
- Asarco Mining
- Beaver Valley Fire Department
- Bureau of Indian Affairs
- Canyon Fire Department
- Christopher Kohls Fire Department
- City of Giobe
- Freeport McMoran Miami Mining
- Gila County Community Development
- Gila County Emergency Management
- Gila County Public Works
- Gisela Volunteer Fire Department
- Globe Fire Department
- Globe Police Department
- Hayden Police Department
- Hellsgate Fire Department
- Houston Mesa Fire Department
- Miami Fire Department
- Miami Police Department
- Payson Fire Department
- Payson Police Department
- Phelps Dodge
- Pine-Strawberry Fire Department
- Pleasant Valley Fire Department
- Salt River Project
- San Carlos Apache Environmental Protection Agency
- San Carlos Apache Tribe
- San Carlos Forestry
- San Carlos Police Department
- State of Arizona Department of Forestry
- Tonto Apache Tribe
- Tonto Basin Fire Department
- Tonto National Forest
- Town of Hayden
- Town of Miami
- Town of Payson
- Town of Star Valley
- Town of Winkelman
- Tri-City Fire Department
- U.S. Army Corp of Engineers
- U. S. Bureau of Reclamation
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- U.S. Fish & Wildlife
- University of Arizona Cooperative Extension
- Whispering Pines Fire Department
- Winkelman Fire Department

Table 3-4 summarizes the organizations and agencies that participated in the 2006 Plan and those that participated in the 2010-2011 Plan update process. An explanation of the differences between the two lists is also provided where appropriate.

Table 3-4: Comparative summary of agency/organization participation in the plan update process

Agency / Organization	Participation		Explanation
	2006 Plan	2011 Plan	
Arizona Division of Emergency Management	yes	yes	
Arizona Geological Survey	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
Arizona Public Service	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
Arizona State Land	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
ASARCO	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
Beaver Valley Fire District	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
City of Globe	yes	yes	
Gila County	yes	yes	
Freeport McMoRan	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
JE Fuller Hydrology & Geomorp.	yes	yes	
Salt River Project (SRP)	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
Town of Hayden	yes	yes	
Town of Miami	yes	yes	
Town of Payson	yes	yes	
Town of Star Valley	no	yes	Star Valley incorporated after the 2005-2006 planning effort. An invitation to participate was extended, but the town opted to stick with the plan they currently have and enter into the multi-jurisdictional plan at the next 5 year update.
Town of Winkelman	yes	no	The Town of Winkelman was invited to participate but did not send any representatives to the planning team meetings
University of Arizona	no	yes	No record of invited entities was specifically documented in the 2006 Plans.
Whispering Pines Fire District	no	yes	No record of invited entities was specifically documented in the 2006 Plans.

An integral part of the planning process included coordination with agencies and organizations outside of the participating jurisdiction's governance to obtain information and data for inclusion into the Plan or to provide more public exposure to the planning process. Much of the information and data that is used in the risk assessment is developed by agencies or organizations other than the participating jurisdictions. In some cases, the jurisdictions may be members of a larger organization that has jointly conducted a study or planning effort like the development of a community wildfire protection plan or participation in an area association of governments. Examples of those data sets include the FEMA floodplain mapping, the county-wide community wildfire protection plan, severe weather statistics and incidents, and the Central Arizona Association of Governments. The resources obtained, reviewed and compiled into the risk assessment are summarized at the end of each subsection of Section 5.3 and in Section 3.6. Jurisdictions needing these data sets obtained them by either requesting them directly from the host agency or organization, downloading information posted to website locations, or engaging consultants.

3.5 Public Involvement

3.5.1 Previous Plan Assessment

The pre-draft public involvement strategy for the 2006 Plan development included the development of a FAQ brochure for posting on the individual jurisdiction's websites and making brief presentations notifying the various boards and councils of the mitigation planning process.

The post-draft strategy included posting the draft plan to the county website and requesting public comment and participation in the formal council and board of supervisors meetings wherein the 2006 Plans were presented and promulgated. The details of the meeting process varied from jurisdiction to jurisdiction, but typically included some form of advertisement of the meeting agenda two to four weeks in advance of the council/board meeting. In most cases, an informal, pre-adoption presentation of the 2006 Plan was made during a working session of the council/board. The final adoption of the resolutions were almost unanimously done as part of a consent agenda at a formal council/board meeting.

There were no records of any public comment on the 2006 Plan development and adoption process. The Planning Team discussed the prior public involvement actions and concluded that it provided adequate public exposure to the mitigation planning process. The Planning Team also concluded that more web-based technology should be used for the update as well as making better use of the local media outlets through press releases. Also, since any formal council/board action has a built-in public notification and comment opportunity, the Planning Team chose to continue using this process as one of the post-draft mechanisms for getting the Plan before the public.

3.5.2 Plan Update

Public involvement and input to the planning process was encouraged cooperatively among all of the participating jurisdictions using several venues throughout the course of the pre-draft planning. A web page notice was developed for the Gila County website and all of the incorporated jurisdictions with websites duplicated the public notice or provided a text announcement with a link to the county website. On the county website, email and phone contact information for Gila County Emergency Management are provided. Any comments would be routed to the emergency manager for address and further action. Additionally, city and town postings also include contact information for the Planning Team representative for their community. Comments received by towns or cities are routed to the Gila County Emergency Manager for addressing. No questions, concerns, or responses were received from the first round of notices from the general public.

The post-draft public involvement included the following actions:

- Update of the County website to include the draft Plan.
- A press release announcing the posting of the draft Plan to the Gila County website and requesting comment.
- Notices will be posted to each jurisdiction's website (as appropriate) notifying readers that the draft Plan is completed and available for comment via the County website, for which links will be provided.

All of the notices, postings, and articles encouraged review and comment of the draft Plan by the public. Interested citizens were also encouraged to participate in the local community adoption process which, depending upon the jurisdiction, may have included a public meeting and a formal public hearing. Copies of the pre- and post-draft public notices, web pages, and newspaper notices are provided in Appendix C.

3.6 Reference Documents and Technical Resources

Over the course of the update planning process, numerous other plans, studies, reports, and technical information were obtained and reviewed for incorporation or reference purposes. The majority of sources referenced and researched pertain to the risk assessment and the capabilities assessment. To a lesser extent, the community descriptions and mitigation strategy also included some document or technical information research. Table 3-5 provides a reference listing of the primary documents and technical resources reviewed and used in the Plan. Detailed bibliographic references for the risk assessment are provided at the end of each hazard risk profile in Section 5.3. Other bibliographic references are provided as footnotes.

Table 3-5: List of resource documents and references reviewed and incorporated in the plan update process

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
Arizona Department of Commerce	Website Data and Community Profiles	Reference for demographic and economic data for the county. Used for community descriptions
Arizona Dept of Commerce - Office of Employment and Population Statistics	Website	Source for employment statistics in Arizona.
Arizona Department of Emergency Management	Data and Planning Resource	Resource for state and federal disaster declaration information for Arizona. Also a resource for hazard mitigation planning guidance and documents.
Arizona Department of Water Resources	Technical Resource	Resource for data on drought conditions and statewide drought management (AzGDTF), and dam safety data. Used in risk assessment.
Arizona Geological Survey	Technical Resource	Resource for earthquake, fissure, landslide/mudslide, subsidence, and other geological hazards. Used in the risk assessment.
Arizona Land Subsidence Group	Technical Resource	Resource for fissure and subsidence data. Used in the risk assessment.
Arizona Model Local Hazard Mitigation Plan	Hazard Mitigation Plan	Guidance document for preparing and formatting hazard mitigation plans for Arizona.
Arizona State Land Department	Data Source	Source for statewide GIS coverages (ALRIS) and statewide wildfire hazard profile information (Division of Forestry). Used in the risk assessment.
Arizona Wildland Urban Interface Assessment (2004)	Report	Source of wildfire hazard profile data and urban interface at risk communities. Used in the risk assessment.
Bureau Net (2010)	Website Database	Source for NFIP statistics for Arizona.
Central Arizona Association of Governments (2009)	GIS and Demographic Data	Source for GIS data and countywide demographic projections and development data.
City of Globe General Plan	General Plan	Source for history, demographic and development trend data for the city.
City of Globe MHMP (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Gila County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Earth Fissure Risk Zone Investigation Report (AMEC, 2006)	Hazard Data	Source of fissure risk data and historic fissure and subsidence events. Used in the risk assessment. Used in the risk assessment.
Gila County Comprehensive Plan (2003)	Comprehensive Plan	Source for history, demographic and development trend data for the unincorporated county.
Gila County Flood Control District	Technical Resource	Resource for floodplain, levee, and dam failure data. Used in the risk assessment.
Gila County GIS	GIS Data	Source for county-wide GIS data and supplemental flood hazard data sets. Used for maps and risk assessment.
Gila County MHMP (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other PinalCounty jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Gila County Community Wildfire Protection Plan (LSD, 2009)	Community Wildfire Protection Plan	Source of wildfire hazard profile data for hazard mapping and risk assessment
Environmental Working Group's Farm Subsidy Database (2010)	Website Database	Source of disaster related agricultural subsidies. Used in the risk assessment.
Federal Emergency Management Agency	Technical and Planning Resource	Resource for HMP guidance (How-To series), floodplain and flooding related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.
HAZUS-MH	Technical Resource	Based data sets within the program were used in the vulnerability analysis.
National Climatic Data Center	Technical Resource	Online resource for weather related data and historic hazard event data. Used in the risk assessment.
National Integrated Drought Information System (2007)	Technical Resource	Source for drought related projections and conditions. Used in the risk assessment.
National Inventory of Dams (2009)	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
National Response Center	Technical Resource	Source of traffic related HAZMAT incidents and rail accidents. Used in the risk assessment.

Table 3-5: List of resource documents and references reviewed and incorporated in the plan update process

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group (2010)	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Office of the State Climatologist for Arizona	Website Reference	Reference for weather characteristics for the county. Used for community description.
Standard on Disaster/Emergency Management and Business Continuity Programs (2000)	Standards Document	Used to establish the classification and definitions for the asset inventory. Used in the risk assessment.
State of Arizona MHMP (2010)	Hazard Mitigation Plan	The state plan was used a source of hazard information and the state identified hazards were used as a starting point in the development of the risk assessment.
Town of Hayden MHMP (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Gila County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Miami MHMP (2009)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Gila County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Town of Payson General Plan (2003)	General Plan	Source for history, demographic and development trend data for the city.
Town of Payson MHMP (2006)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Gila County jurisdiction's MHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
USACE Flood Damage Report (1978)	Technical Data	Source of historic flood damages for 1978 flood. Used in the risk assessment.
USACE Flood Damage Report (1994)	Technical Data	Source of historic flood damages for 1993 flood. Used in the risk assessment.
U.S. Forest Service	Technical Data	Source for local wildfire data. Used in the risk assessment.
U.S. Geological Survey	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Western Regional Climate Center	Website Data	Online resource for climate data used in climate discussion of Section 4
World Wildlife Fund (2010)	GIS Data	Terrestrial ecoregions database used in the general county description.

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SECTION 4: COMMUNITY DESCRIPTIONS

4.1 General

The purpose of this section is to provide updated basic background information on Gila County as a whole and includes information on geography, climate, population and economy. Abbreviated details and descriptions are also provided for each participating jurisdiction.

4.2 County Overview

4.2.1 Geography

The Gila County area received a large influx of miners and livestock owners during the 1870s. In 1881, Gila County was carved out of Maricopa and Gila County by the Arizona Territorial Legislature to respond to the need for organized government and law enforcement. Globe was designated as the County seat. In 1889, Yavapai County sold an additional 1,500 square miles to Gila County. Today, Gila County covers 4,752 square miles. Gila County is located in the central to eastern portion of the State of Arizona, as depicted in Figure 4-1.

The County limits generally extend from longitude 110.0 to 111.7 degrees west and latitude 32.0 to 34.4 degrees north. Major roadway transportation routes through the County, shown on Figure 4-2, include U.S. Highways 60 and 70, State Highways 73, 77, 87, 88, 170, 188 and 260. Railways include the Arizona Eastern Railroad.

Gila County is home to portions of five rivers. The Gila River makes up part of the southern boundary of Gila County. The San Carlos Reservoir was created on the historic confluence of the Gila River and the San Carlos River upon the closure of the Coolidge Dam in 1928. Theodore Roosevelt Lake is located at the historic confluence of the Salt River and the Tonto Creek. The East Verde River is in the northern end of Gila County and flows west into the Verde River. The Mogollon Rim forms the northern edge of Gila County and is the southern boundary of the Colorado Plateau. Other dominant topographic features include the Naegelin Rim, Sierra Ancha, Pinal and Mazatzal Mountains.

The geographical characteristics of Gila County have been mapped into three terrestrial ecoregions[2], which are depicted in Figure 4-3 and described below:

- **Arizona Mountain Forests** – this ecoregion contains a mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 4,000 to 13,000 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas are largely high altitude grasses, shrubs, brush, and conifer forests.
- **Sonoran Desert** – this ecoregion is an arid environment that covers much of southwestern Arizona. The elevation varies in this zone from approximately sea level to 3,000 feet. Vegetation in this zone is comprised mainly of Sonoran Desert Scrub and is one of the few locations in the world where saguaro cactus can be found. The climate is typically hot and dry during the summer and mild during the winter.
- **Chihuahuan Desert** – this ecoregion is typical of the high altitude deserts and foothills and is found in much of the southeastern portion of Arizona. Elevations in this zone varies between 3,000 to 4,500 feet. The average temperatures for the Chihuahuan Desert tend to be cooler than the Sonoran Desert (see below) due to the elevation differences. However, like its lower elevation cousin, the summers are hot and dry with mild to cool winters.

[2] URS, 2004, *State of Arizona Enhanced Hazard Mitigation Plan.*

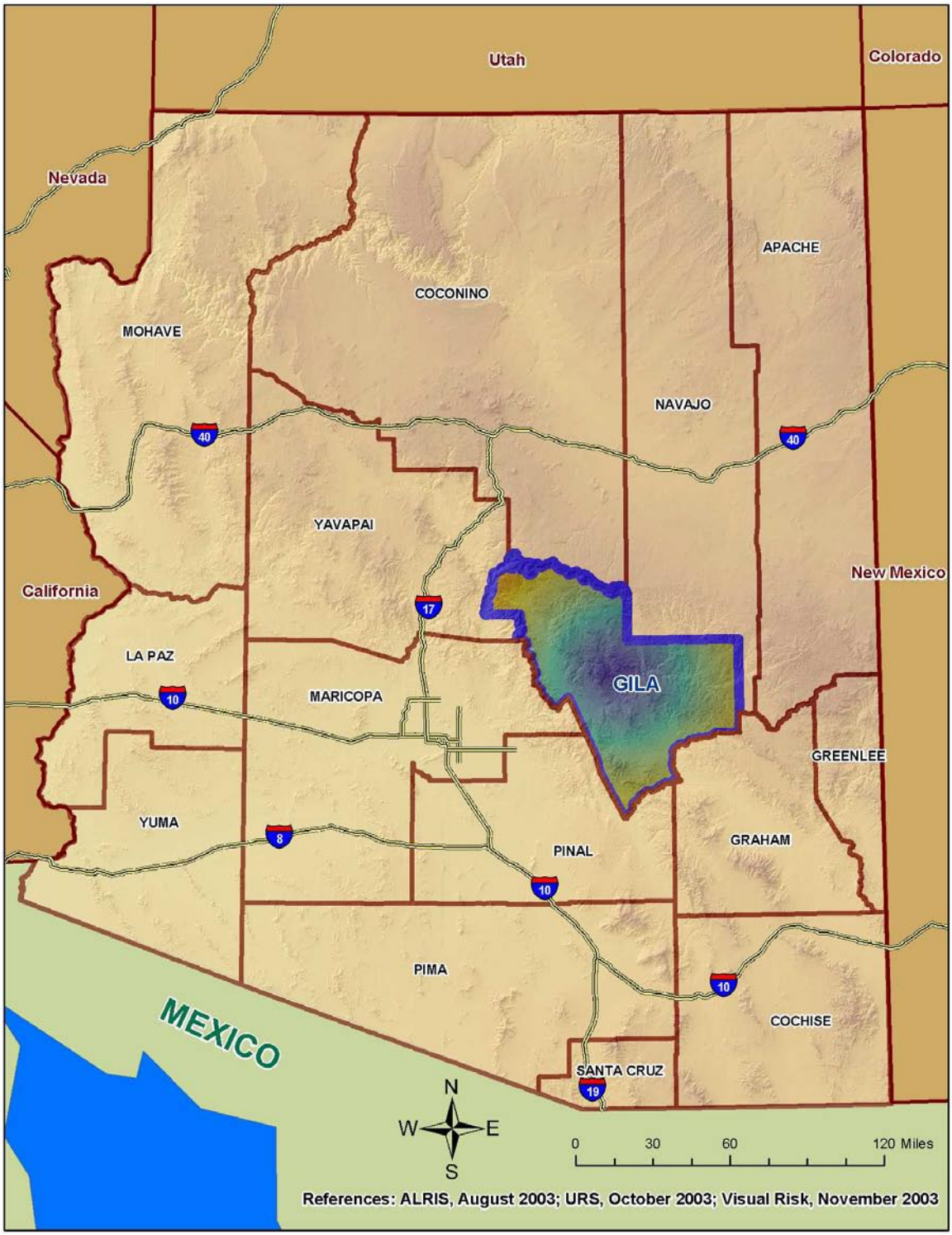

Figure 4-1
Vicinity Map

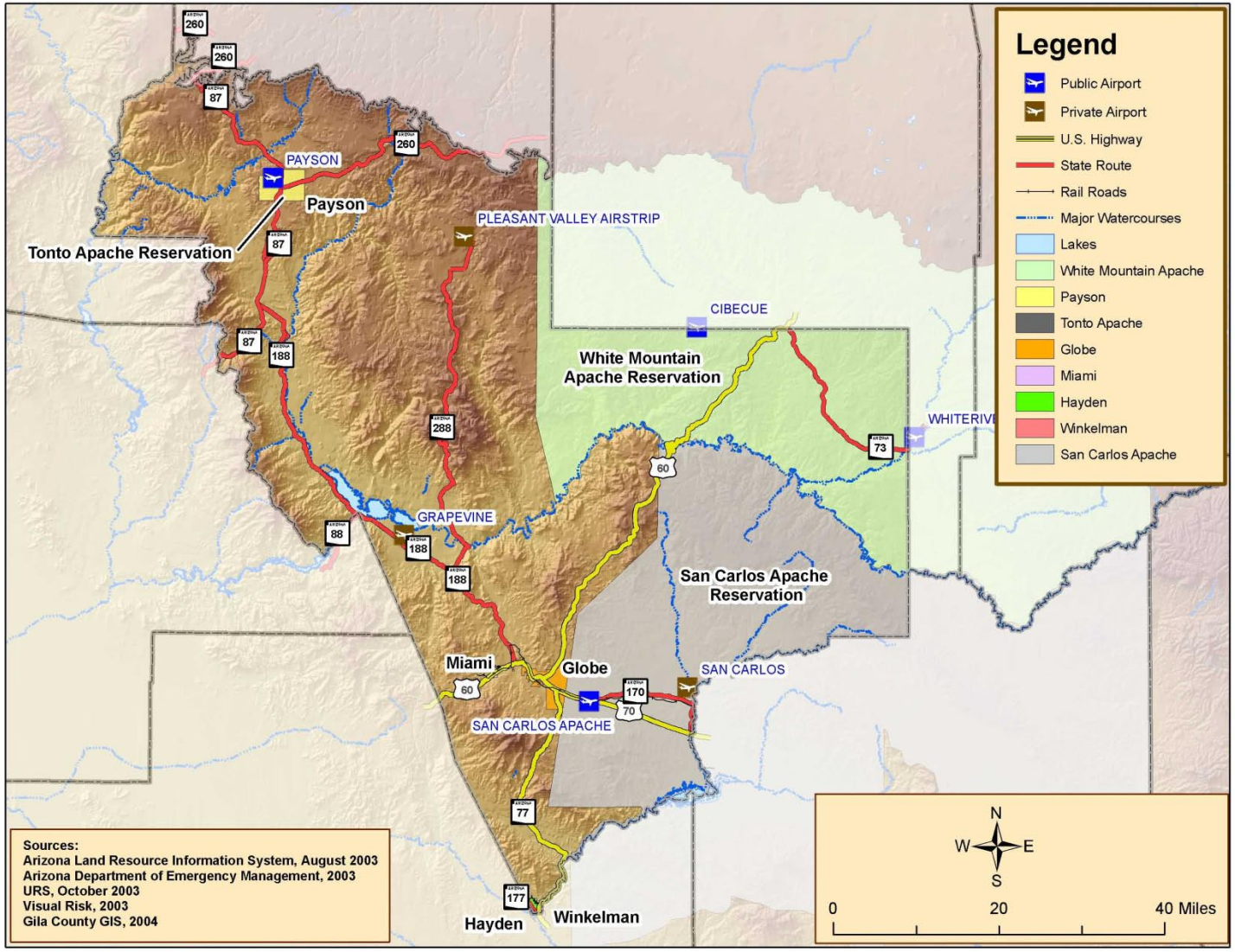

Figure 4-2
Transportation Routes Map

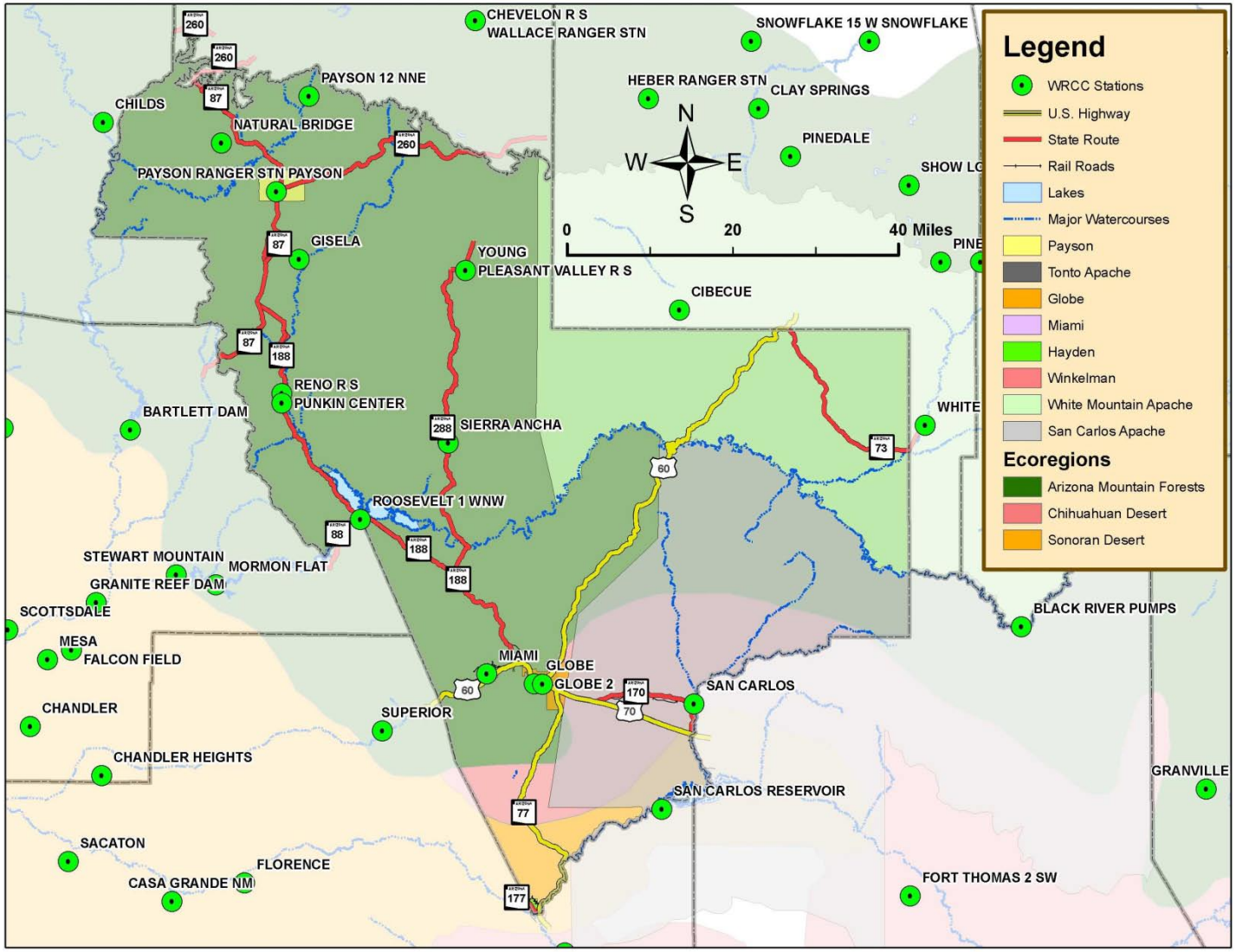

Figure 4-3
Terrestrial Ecoregions Map

4.2.2 Climate

The majority of Gila County can be classified as Arizona Mountain Forest; however, the lower part of the County, including the Town of Hayden and the Town of Winkelman, are in the Sonoran Desert. The elevation range for these two ecoregions in Gila County is from approximately 2,000 to 7,000 feet. Such a range in elevation results in differences in climate. Climatic statistics for weather stations within Gila County are produced by the Western Region Climate Center[3] and span records dating back to the early 1900's. Locations of reporting stations within or near Gila County are shown on Figure 4-3.

Average temperatures within Gila County range from below freezing during the winter months to over 100 degrees Fahrenheit during the hot summer months. The severity of temperatures in either extreme is highly dependent upon the location, and more importantly the altitude, within the County. Below are figures taken from three climate stations found in the three ecoregions (See Section 4.3.1) found in Gila County. Figure 4-4 presents a graphical depiction of temperature variability and extremes throughout the year for the Natural Bridge station, and it shows values typical to the Arizona Mountain Forest ecoregion. A similar graph is presented in Figure 4-5 for the San Carlos station, which is typical of the Chihuahuan Desert ecoregion. Figure 4-6 shows the temperature variability for the San Carlos Reservoir station and is typical of the Sonoran Desert ecoregion. In general, there is an approximate ten degree reduction in temperatures between the lower Sonoran Desert and Arizona Mountain Forest elevation stations.

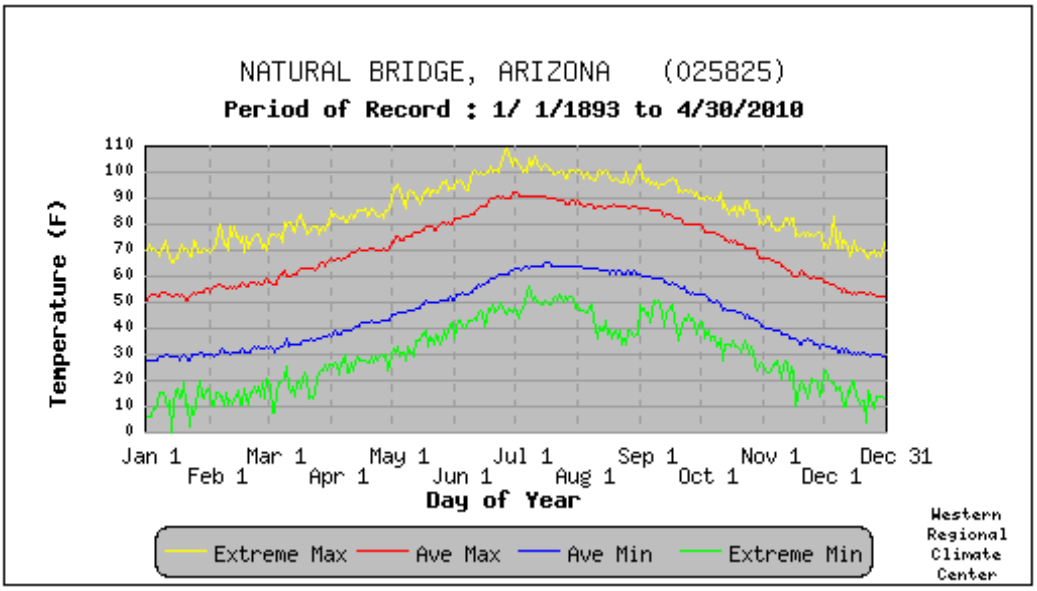

Figure 4-4
Daily Temperatures and Extremes for Natural Bridge, Arizona

[3] Most of the data provided and summarized in this plan are taken from the WRCC website beginning at the following URL: http://www.wrcc.dri.edu/CLIMATEDATA.html

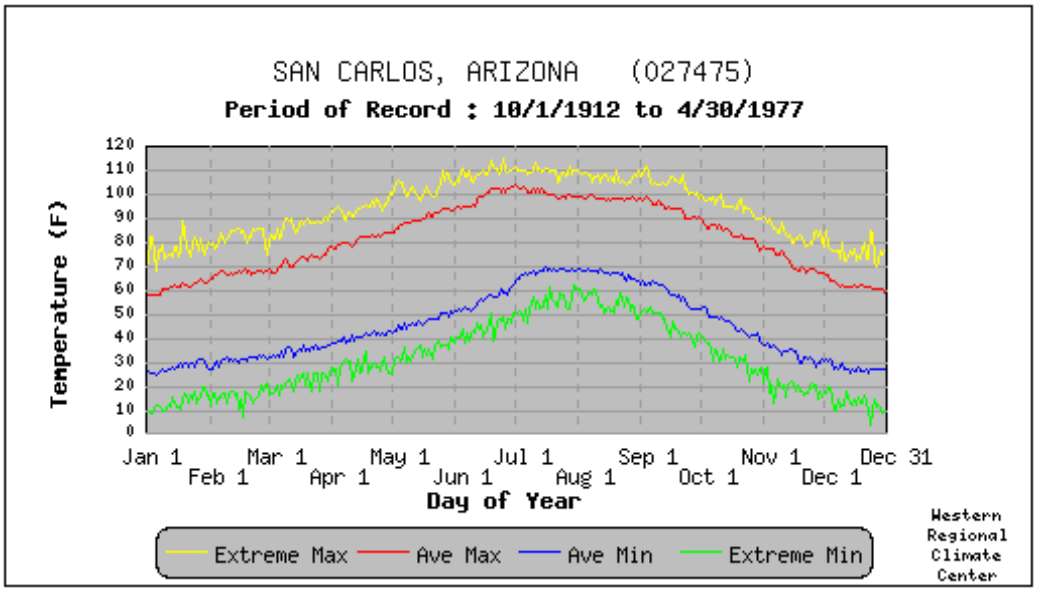

Figure 4-5
Daily Temperatures and Extremes for San Carlos, Arizona

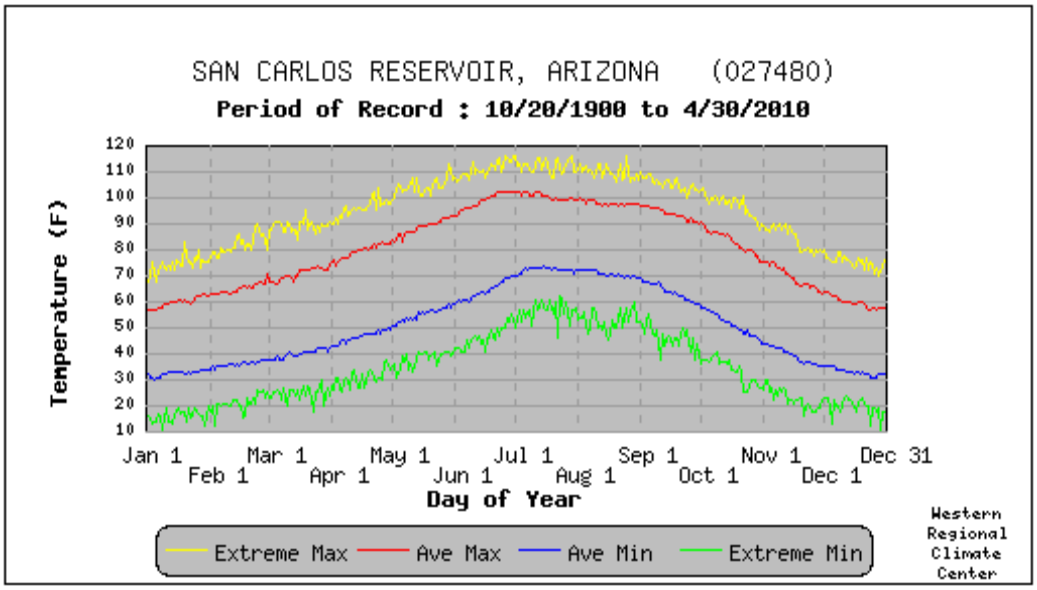

Figure 4-6
Daily Temperatures and Extremes for San Carlos Reservoir, Arizona

Precipitation throughout Gila County is governed to a great extent by elevation and season of the year. From November through March, storm systems from the Pacific Ocean cross the state as broad winter storms producing mild precipitation events, including snow, in the Pinal Mountains, Four Peaks, and Mazatzal Mountains. Summer storms between the months of May and October result in heavy downpours that make up almost half of Gila County's annual precipitation. Summer monsoons are created when moisture-bearing weather systems move into Arizona from the Gulf of California and

from the Gulf of Mexico causing a shift in wind direction. The monsoons are often accompanied by thunderstorms caused by excessive heating of the land surface uplifting moisture-laden air[4].

Figures 4-7, 4-8, and 4-9 show tabular temperature and precipitation statistics for the Natural Bridge, San Carlos, and San Carlos Reservoir stations. Statistics for other stations shown on Figure 1-3 will be somewhat similar to those of the Natural Bridge, San Carlos, and San Carlos Reservoir stations, and hence are not included herein.

NATURAL BRIDGE, ARIZONA (025825)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1893 to 4/30/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	53.0	56.6	61.7	69.0	77.4	86.8	90.1	87.1	83.0	73.7	62.4	54.4	71.3
Average Min. Temperature (F)	29.1	31.3	34.4	40.7	48.6	57.1	63.7	62.2	57.2	47.3	36.8	30.9	44.9
Average Total Precipitation (in.)	2.59	2.56	2.29	1.29	0.54	0.44	2.72	3.49	2.00	1.62	1.75	2.70	23.99
Average Total SnowFall (in.)	5.4	4.8	3.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.0	19.4
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 68% Min. Temp.: 67.6% Precipitation: 97% Snowfall: 96.6% Snow Depth: 94%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-7
Monthly Climate Summary for Natural Bridge, Arizona

SAN CARLOS, ARIZONA (027475)

Period of Record Monthly Climate Summary

Period of Record : 10/1/1912 to 4/30/1977

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	61.2	67.0	71.9	80.9	89.9	98.6	100.4	98.3	94.3	83.7	71.7	62.1	81.7
Average Min. Temperature (F)	27.3	30.7	34.6	40.3	46.6	55.7	67.6	66.8	58.4	45.6	33.1	27.4	44.5
Average Total Precipitation (in.)	1.25	0.93	1.02	0.37	0.22	0.30	1.68	1.96	1.05	1.13	0.65	1.41	11.97
Average Total SnowFall (in.)	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 94.2% Min. Temp.: 94.1% Precipitation: 95.6% Snowfall: 95.8% Snow Depth: 95.7%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-8
Monthly Climate Summary for San Carlos, Arizona

[4] Office of the State Climatologist for Arizona, 2004. Partially taken from the following weblink: http://geography.asu.edu/azclimate/narrative.htm.

SAN CARLOS RESERVOIR, ARIZONA (027480)

Period of Record Monthly Climate Summary

Period of Record : 10/20/1900 to 4/30/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	59.8	64.7	70.5	79.3	88.6	98.5	100.5	98.1	94.0	83.2	69.5	59.7	80.5
Average Min. Temperature (F)	32.9	36.1	40.4	46.8	55.3	64.4	72.5	70.9	64.3	51.6	39.9	33.1	50.7
Average Total Precipitation (in.)	1.50	1.50	1.39	0.51	0.30	0.26	1.64	2.14	1.20	0.99	1.08	1.66	14.17
Average Total SnowFall (in.)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 96.5% Min. Temp.: 96.5% Precipitation: 96.7% Snowfall: 96.6% Snow Depth: 96.1%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Figure 4-9
Monthly Climate Summary for San Carlos Reservoir, Arizona

4.2.3 Population

According to the 2010 Census, Gila County is home to 53,597 residents, who primarily reside in six incorporated communities, with the majority of the population living in the Town of Payson and unincorporated areas of Gila County. The population of Gila County is estimated at 4.4 percent growth from 2000 to 2010, with the majority of growth occurring in Payson. Gila County has grown steadily since 1900 with the exception of a decline in the 1940s and 50s.[5] Table 4-1 summarizes jurisdictional population statistics for Gila County communities and the County as a whole.

Table 4-1: Summary of jurisdictional population estimates for Gila County

Jurisdiction	1990	2000	2010	2015	2020
Gila County (total)	40,300	51,335	53,597	61,128	64,396
Towns and Reservation					
Globe	6,070	7,486	7,532	7,974	8,223
Hayden	910	892	662	860	860
Miami	2,020	1,936	1,837	2,022	2,053
Payson	8,410	13,620	15,301	18,603	20,132
Star Valley	n/a	n/a	2,310	3,893	4,401
Winkelman (Gila part only)	675	439	353	430	430
Unincorporated	n/a	n/a	19,026	19,486	19,915
Fort Apache Tribe (part)			1,678	1,776	1,874
San Carlos Apache Tribe (part)			5,514	5,931	6,349
Tonto Apache Tribe (part)			147	153	159

- *Figures for 1990 and 2000 (1980 – 2008 Historical Estimates: http://www.azcommerce.com/econinfo/demographics/Population+Estimates*
- *Figures for 2010 are from 2010 Census Bureau*
- *Figures for 2015 to 2020: Arizona Department of Administration – Office of Employment and Population Statistics. http://www.workforce.az.gov/population-projections.aspx*

[5] Gila County Comprehensive Master Plan, March 2002.

4.2.4 Economy

The first settlers entered Gila County (then Pinal and Maricopa County) in 1870, prospecting mining operations in the Globe area. The growth in Globe promoted the settlement of other communities in the surrounding area including Miami in 1870, Hayden in 1909, and Winkelman in 1911. Ranching communities found good pastureland in northern Gila County. Payson was originally established as a mining camp, but didn't incorporate until 1973, as a result of development pressure.

The U.S Forest Service owns 56 percent of the land in Gila County. Approximately 38 percent belongs to the Apache Tribe. Individuals and corporations own 2 percent of the land; the U.S. Bureau of Land Management, 2 percent; and the state of Arizona, 1 percent of the land; and other public lands comprise the remaining 1 percent as represented in Figure 4-10.

The Gila County average labor force in August 2011 was 23,157 with an unemployment rate of 10.2 percent. The major industries of Gila County include Public Administration, Retail Trade, Accommodations, Food Services and Mining industries.

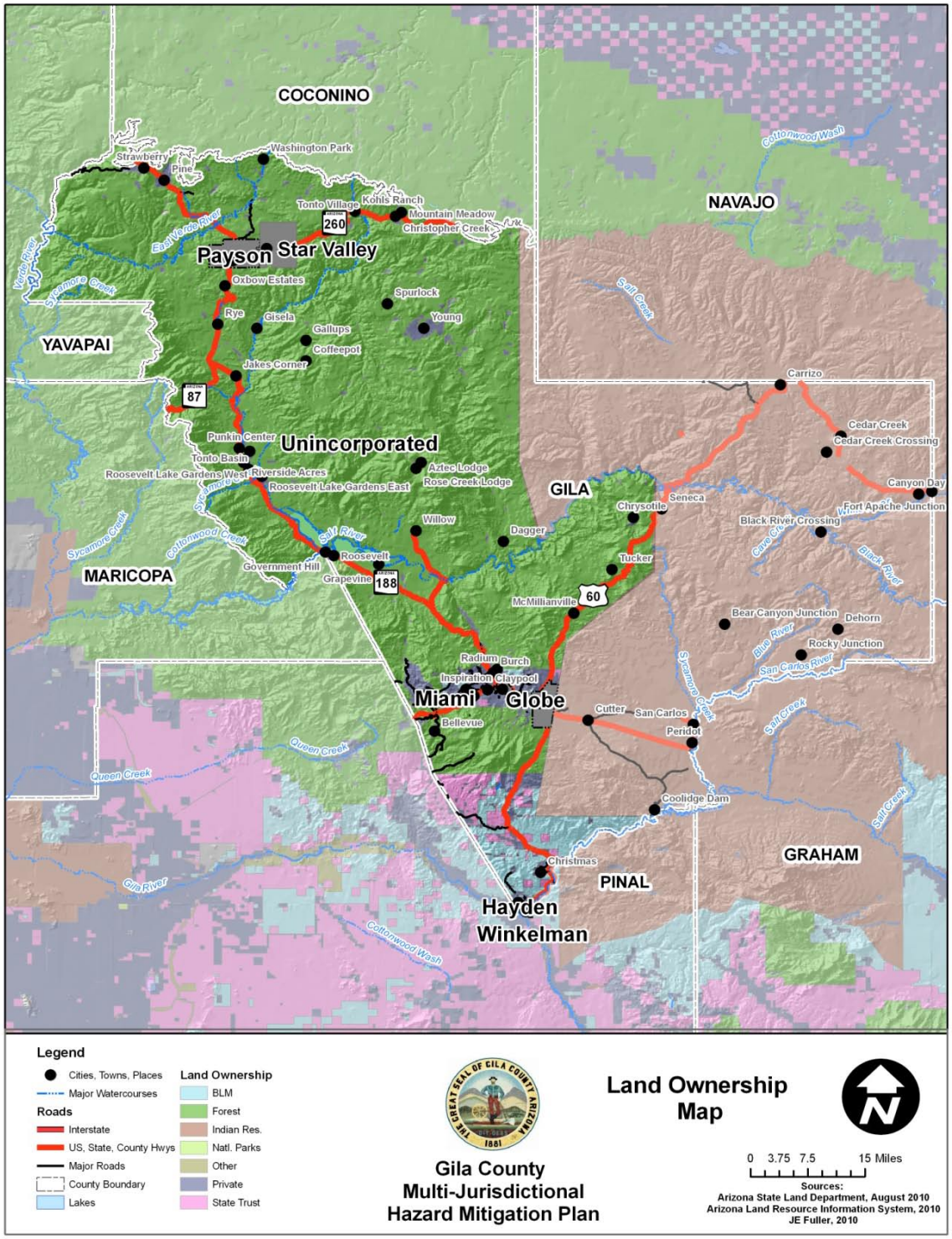

Figure 4-10: 2010 Land Ownership Map for Gila County

4.3 Jurisdictional Overviews

The following are brief overviews for each of the participating jurisdictions in the Plan.

4.3.1 Globe

According to the Arizona Department of Commerce[6], Globe was founded as a mining town in 1876 and was incorporated twice prior to its present incorporation of 1907. The community was named for a large globe-shaped silver nugget weighing close to 70 pounds with veins resembling the continents. Globe was designated the Gila County seat during the county establishment in 1881. Today, the City of Globe covers 12,800 acres.

Globe is located in the southern portion of the Gila County, as depicted in Figure 4-2, and is situated at an elevation of 3,500 feet. The City is geographically located at longitude 110.78 degrees west and latitude 33.39 degrees north, and is 87 miles east of Phoenix and 106 miles north of Tucson. U.S. Highways 60 and 70 and State Routes 77 and 88 pass through Globe and serve as major roadways servicing the community. Railways include the Arizona Eastern Railroad. The major transportation routes and land features around Globe are shown on Figure 4-11.

Founded as a mining town, Globe's economy continues to prosper from mining and the production of copper in the nearby Town of Miami. Over half of Gila County's manufacturing employment sector is related to mining and ore processing. Globe is rich in culture and historic structures and with the proximity to recreational campgrounds and amenities at nearby Roosevelt Lake, tourism contributes to Globe's economy. Major public employers include: the City of Globe, Globe/Miami Public Schools, U.S. Post Office, Gila County Government, and the Town of Miami. Major private employers include: Arizona Public Service, Carlota Copper Company, Phelps Dodge Corporation, Southwest Gas, BHP Copper, Groupo Mexico, Safeway and Wal-Mart. The civilian labor force in 2008 was 3,548 with an unemployment rate of 4.8 percent. Figure 4-11 provides a visual depiction of the land ownership around the Globe area.

As stated previously, Globe started as a mining town when silver was discovered in the area around 1873 during the "silver rush". By 1881, silver was glutting the market resulting in an increased interest in copper mining which eventually proved to be the most profitable for the region. By 1898, the Gila Valley, Globe, & Northern Railroad was completed bringing a flood of immigrants and the opening of dozens of new copper mines.

During the great depression of the 1930s, the mines in Globe ceased production. Many old copper mines in the region reopened in 1940 in response to the growing demand resulting from World War II and boosted the region's economy.

The City of Globe has a long history related to the mining industry and mining in nearby communities continues to be important to the economy today. With the quality of life and rich western heritage, the economy is growing and diversifying with businesses drawn to the area. The 2010 Census population for Globe was 7,532. The civilian labor force in August 2011 was 3,668 with an unemployment rate of 8.3 percent. There were 84 new building permits in 2008 and taxable sales increased 35.5 percent between 2000 and 2008.

[6] Arizona Department of Commerce, 2009, *Community Profile for Globe, Arizona*

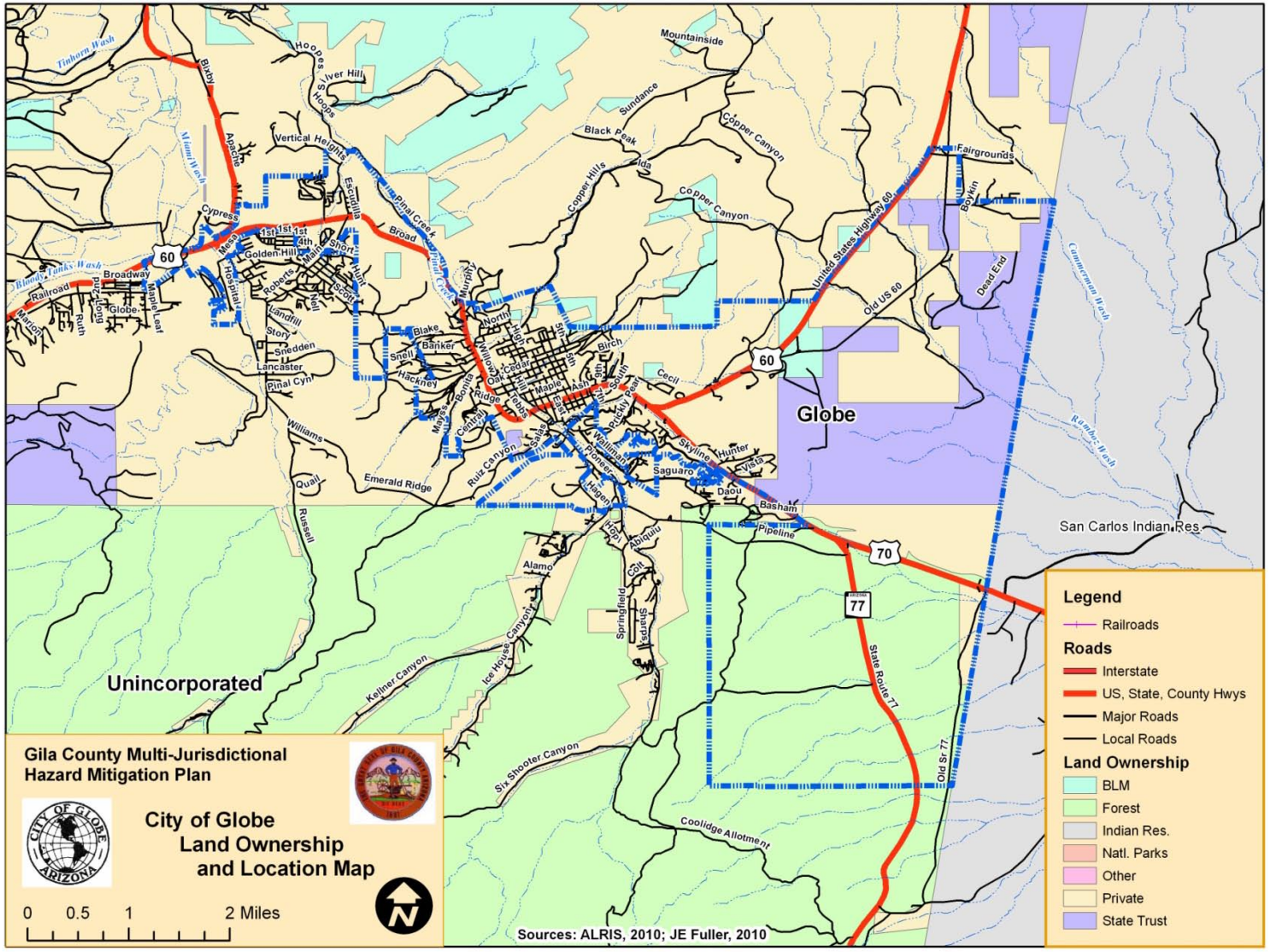

Figure 4-11: City of Globe Land Ownership and Location Map

4.3.2 Hayden

According to the Arizona Department of Commerce[7], Hayden was founded in 1909 by the Hayden, Stove Company and later incorporated in 1956. The Town was named after the Charles Hayden, the president of the mining company. Today, the Town of Hayden covers 1,280 acres.

Hayden is located in the very southern portion of the Gila County, as depicted in Figure 4-2, and is situated at an elevation of 2,100 feet. The San Pedro and Gila River confluence is in Hayden providing excellent outdoor recreational opportunities. The Town is geographically located at longitude 110.78 degrees west and latitude 33.00 degrees north, and is 94 miles southeast of Phoenix and 69 miles northeast of Tucson. State Route 60 passes through Hayden and serves in conjunction with State Route 177 through nearby Winkelman, as the main roadways servicing the community. The Copper Basin rail line serves Hayden and the ASARCO mine and connects the Hayden to Kearny, Magma and finally Phoenix to the west. The major transportation routes and land features around Hayden are shown on Figure 4-12.

Founded as a mining town, Hayden's economy continues to be dependent on mining and the production of copper. However, copper production is declining in Hayden and therefore the economic base is diversifying to accommodate tourism and retirement living. The San Pedro and Gila River confluence near Hayden promotes economic activity with the outdoor recreational opportunities. Figure 4-12 provides a visual depiction of the land ownership around the Hayden area.

As stated previously Hayden started as a company town in 1909. The Town started as a "tent-house" town and gradually tent-houses were replaced by permanent housing. Hayden's business area was established on Hayden Avenue and included all the major amenities of a town at one time or another including a grocery store, drug store, post office, movie theater and café.

During the great depression of the mill and smelter shut down in 1931 and many residents moved away. In 1937 the Civilian Construction Corps set up camp near the Town and helped build and maintain roads, flood control facilities and forest and wildlife conservation. In 1935 government contracts were acquired by the mill and smelter in response to World War II and workers started returning to the Town boosting Hayden's economy.

The Town of Hayden has a long history in the mining industry and mining continues to be important to the economy today. With the quality of life and rich western heritage, the Town is promoting business diversification. The 2010 Census population for Hayden was 662. The civilian labor force in August 2011 was 339 with an unemployment rate of 15.0 percent. Taxable sales in Hayden increased by 21 percent between 2000 and 2008. The biggest employer in the area is the mining and smelter operation owned by American Smelting and Refining Company (ASARCO), Inc.

[7] Arizona Department of Commerce, 2009, *Community Profile for Hayden, Arizona*

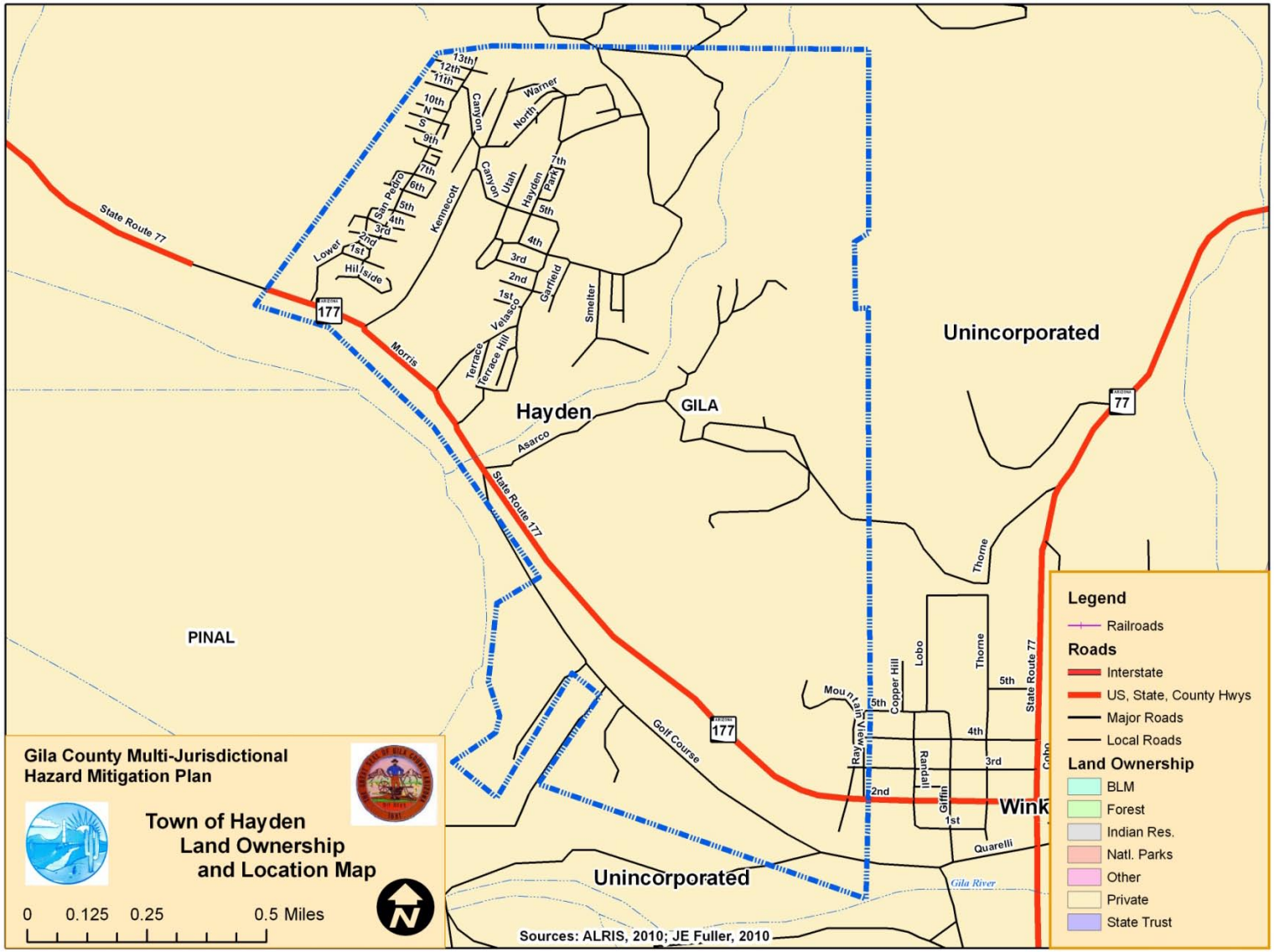

Figure 4-12: Town of Hayden Land Ownership and Location Map

4.3.3 Miami

According to the Arizona Department of Commerce[8], Miami was incorporated in 1907. The earliest community was a mining camp formed by Black Jack Newman near his copper mine in 1870. He named the camp after his fiancée, Mima Tune and the town was later named Miami by Cleve W. Van Dyke. Today, the Town covers 583 acres.

Miami is located in the southern portion of the Gila County, as depicted in Figure 4-2, and is situated at an elevation of 3,411 feet. The town is geographically located at longitude 110.87 degrees west and latitude 33.40 degrees north, and is 80 miles east of Phoenix and 112 miles North of Tucson. U.S. Highway 60 passes through Miami and serves as the main roadway servicing the community. Railways include the Arizona Eastern Railroad. The major transportation routes and land features around Miami are shown on Figure 4-13.

Founded as a mining town, Miami's economy continues to prosper from mining and the production of copper. Over half of Gila County's manufacturing employment sector is related to mining and ore processing. Miami is rich in culture and historic structures and with the proximity to recreational campgrounds and amenities at nearby Roosevelt Lake, tourism contributes to Miami's economy. Major public employers include the Town of Miami, Globe/Miami Public Schools, U.S. Post Office and Gila County Government Major private employers include Arizona Public Service, Carlota Copper Company, Phelps Dodge Corporation, Southwest Gas, BHP Copper, Groupo Mexico, Safeway and Wal-Mart. The civilian labor force in 2008 was 774 with an unemployment rate of 7.4 percent. Figure 4-13 provides a visual depiction of the land ownership around the Miami area.

As stated previously, Miami started as a mining town when silver was discovered in the area around 1873 during the "silver rush". By 1881 silver was glutting the market resulting in an increased interest in copper mining which eventually proved to be the most profitable for the region. By 1898 the Gila Valley, Globe, & Northern Railroad was completed bringing a flood of immigrants and the opening of dozens of new copper mines.

A Globe businessman, Cleve W. Van Dyke, played a crucial role in the establishment of Miami when he promoted the idea of a "planned community" near the Miami Copper Company and started the Town with a celebration he called "Miami Townsite Day" on October 11th, 1909. The population of Miami rose to 800 in early 1910, and 1,390 later in the year. During the great depression of the 1930s production decreased however many old copper mines reopened in 1940 in response to the growing demand resulting from World War II and boosted the region's economy.

The Town has a long history in the mining industry and mining continues to be important to the economy today. With the quality of life and rich western heritage, the economy is growing and diversifying with businesses drawn to the area. The 2010 Census population for Miami was 1,837. The civilian labor force in August 2011 was 816 with an unemployment rate of 12.5 percent. Taxable sales in Miami increased by 54.5 percent between 2000 and 2008.

[8] Arizona Department of Commerce, 2009, *Community Profile for Miami, Arizona*

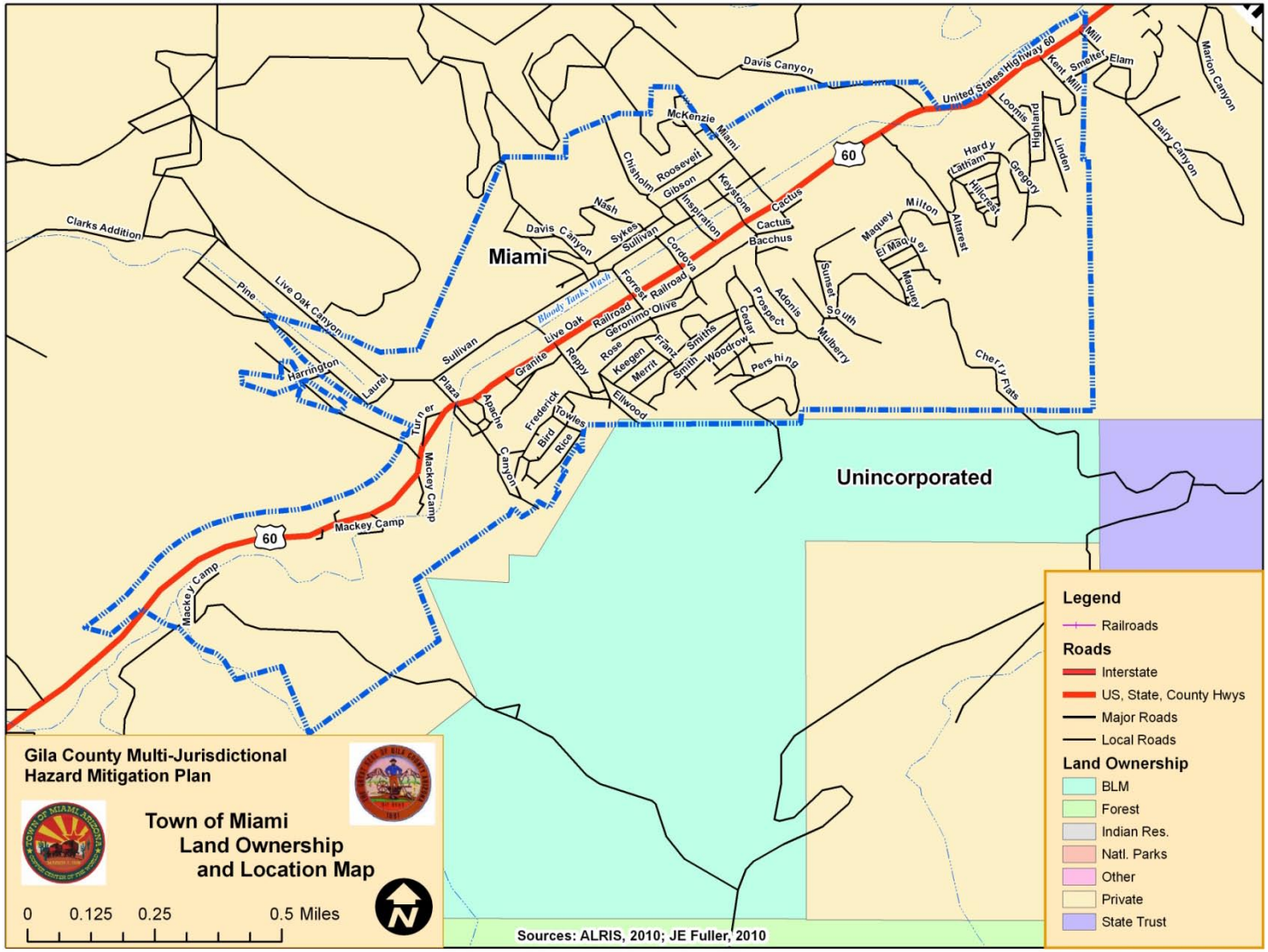

Figure 4-13: Town of Miami Land Ownership and Location Map

4.3.4 Payson

According to the Arizona Department of Commerce[9], Payson was founded in 1884 and incorporated in 1973. Payson historically was known as Union Park, Green Valley, Long Valley and Big Valley. Today, the Town of Payson covers 12,612 acres.

Payson is located in the northern Gila County, as depicted in Figure 4-2, and is situated at an elevation of 4,982 feet. Payson sits at the base of the Mogollon Rim and is part of the "Rim Country". The Mogollon Rim stands at an elevation of 7000 feet north of Payson and is a 200-mile long escarpment in the largest Ponderosa Pine forest in the world. The Town is geographically located at longitude 111.32 degrees west and latitude 34.23 degrees north, and is 93 miles northeast of Phoenix and 183 miles North of Tucson. State Routes 87 and 260 pass through Payson and serve as the main roadways servicing the community. The major transportation routes and land features around Payson are shown on Figure 4-14.

Payson's economy prospers from tourism, retirement and the construction industry. Payson is rich in culture and history and is the center of numerous outdoor recreational opportunities with the proximity to majestic Mogollon Rim. The civilian labor force in 2008 was 6,281 with an unemployment rate of 4.4 percent.

Payson got its start in the late 1800's as gold prospectors entered the region. With little gold found, the vast grazing lands turned residents to ranching. The forests brought trappers, hunters and eventually logging and milling to the region. The Town was platted in 1882 and called Union Park, but was named Payson in 1884 after Congressman Louis Edward Payson. Payson was considered an isolated mountain Town until 1959 after the construction of the Beeline Highway (SR 87) connecting Payson to Phoenix.

The Town of Payson has a long history in southwest heritage. With the quality of life and endless recreational activities, the community is growing and diversifying with businesses drawn to the area. The 2010 Census population for Payson was 15,301. The civilian labor force in August 2011 was 6,474 with an unemployment rate of 7.7 percent. Taxable sales in Payson increased by 30 percent between 2000 to 2008. New building permits decreased from 442 in 2000 to 204 in 2008.

[9] Arizona Department of Commerce, 2009, *Community Profile for Payson, Arizona.*

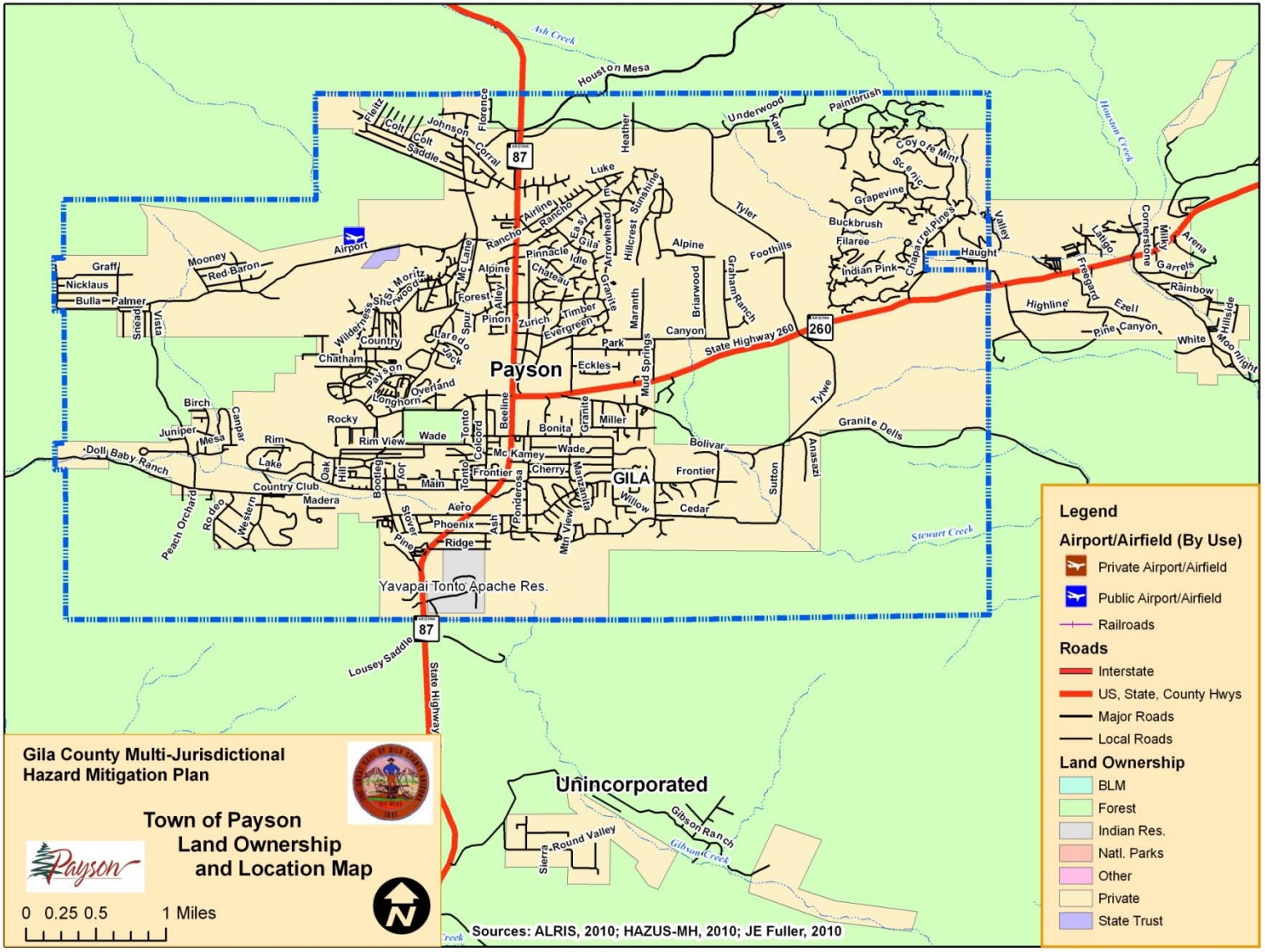

Figure 4-14: Town of Payson Land Ownership and Location Map

4.3.5 Star Valley

The Town of Star Valley, Arizona was recently incorporated on November 1, 2005 and is located just east of Payson. The town was incorporated to protect its citizens and their properties from being used to provide the surrounding areas with water for development. This water source means enough to the residents and needs to be conserved for the citizens and future generations who call Star Valley home.

Star Valley is located in the northern Gila County, as depicted in Figure 4-2, and is situated at an elevation of 4,982 feet. Star Valley sits at the base of the Mogollon Rim and is part of the "Rim Country". The Mogollon Rim stands at an elevation of 7000 feet north of Star Valley and is a 200-mile long escarpment in the largest Ponderosa Pine forest in the world. The Town is geographically located at longitude -111.257165 degrees west and latitude 34.254353 degrees north, and is 93 miles northeast of Phoenix and 183 miles North of Tucson. State Route 260 pass through Star Valley and serve as the main roadway servicing the community. The major transportation routes and land features around Star Valley are shown on Figure 4-15.

Star Valley is located 5 miles north and east of Payson, Arizona and is believed to have been named for Mr. Starr (no one can document his first name) who came to the valley in the mid 1870's. Mr. Starr sold his acreage to the Houston family in 1877. Mr. Starr was killed by a runaway horse team and was buried on the farm. The Houston family named the Valley in his honor. Somewhere along the way the name lost the second "r" in Starr. The fire district took the name Diamond Star and when Star Valley was first incorporated it was given the name Diamond Star. Residents put the name change on the ballot and it was voted to change the name back to Star Valley. The early settlers included names like Houston, Haught, Pyle, Cline, Ogalvie, Beard and others that might be recognized today that farmed, ranched, hunted and mined in Star Valley. When queried on the internet, Star Valley presents only a population census, as it is a new town.

The 2010 Census population for Star Valley was 2,310. There are currently no labor force statistics for Star Valley due to its newly incorporated status.

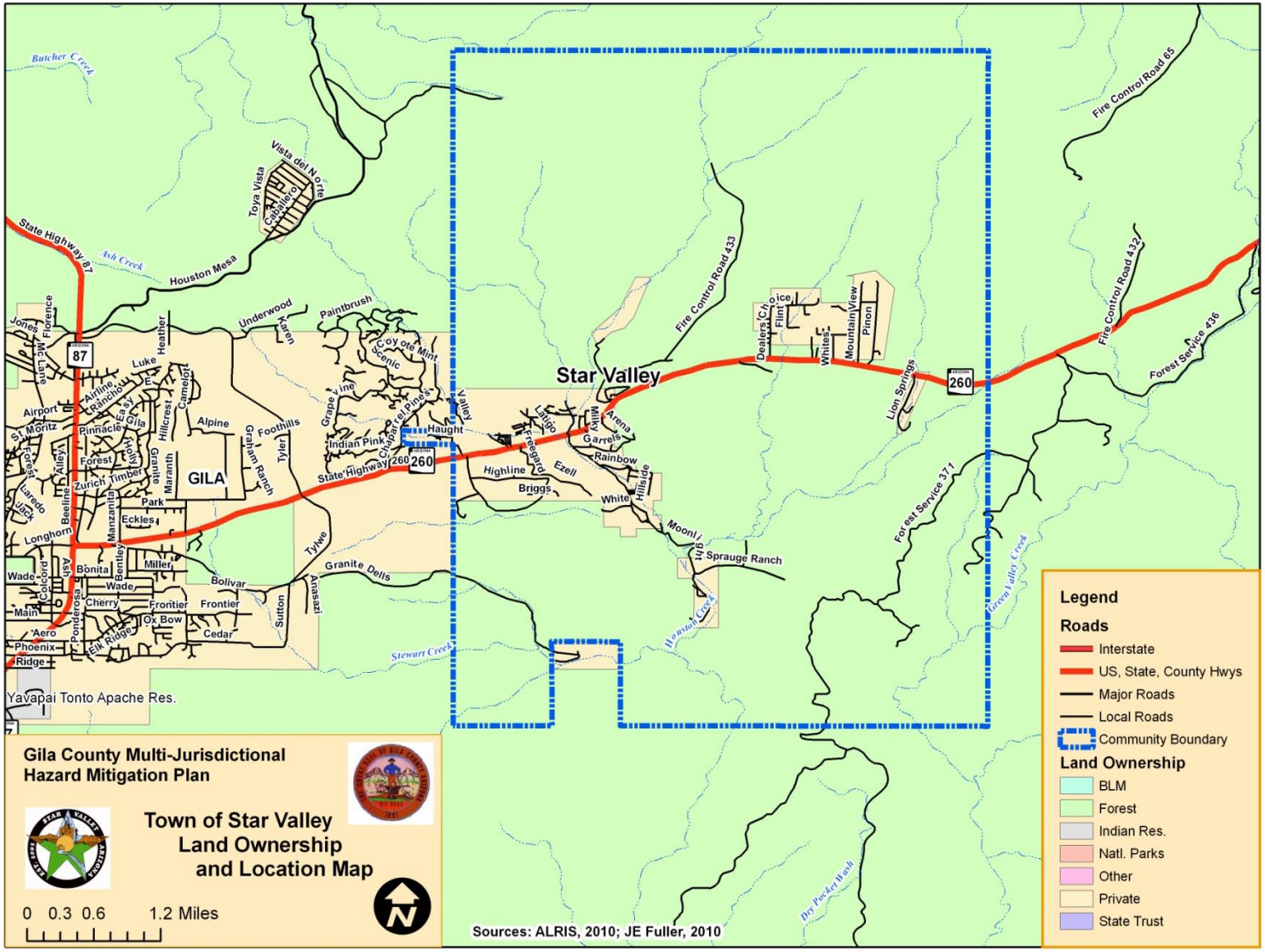

Figure 4-15: Town of Star Valley Land Ownership and Location Map

4.3.6 Winkelman

According to the Arizona Department of Commerce[10], Winkelman's was founded with a large number of farmers that migrated to the region in 1887 and 1878. Winkelman incorporated in 1949. The Town was named after a stockman named Peter Winkelman who owned a ranch in the area. Today, the Town of Winkelman covers 960 acres.

Winkelman is located in the very southern portion of the Gila County, as depicted in Figure 4-2, and is situated at an elevation of 1,972 feet. The San Pedro and Gila River confluence is near Winkelman providing excellent outdoor recreational opportunities. The Town is geographically located at longitude 110.77 degrees west and latitude 33.00 degrees north, and is 90 miles southeast of Phoenix and 71 miles northeast of Tucson. State Routes 60 and 177 pass through Winkelman and serve as the main roadways servicing the community. The Arizona Eastern Railroad serves Hayden to the west of Winkelman. The major transportation routes and land features around Winkelman are shown on Figure 4-16.

The Arizona Department of Commerce prepares annual community profiles for individual counties and communities within the state. The total 2008 population for Winkelman is estimated at 427. Table 4-1 summarizes population estimates for Winkelman and other Gila County communities in 10-year cycles beginning in 1990 and projecting through 2020.

Founded as a mining town, Winkelman's economy continues to be dependent on mining and the production of copper however due to the influx of retirees the economic base is diversifying to include services. The San Pedro and Gila River confluence near Winkelman promotes economic activity with the outdoor recreational opportunities.

As stated previously Winkelman started when ranchers came to the area in 1877. The railroad was constructed near Peter Winkelman's ranch in 1903 and a Post Office was constructed and named after the ranch owner. During the great depression of the mill and smelter in Hayden shut down in 1931 and many residents moved away. In 1937 the Civilian Construction Corps set up camp near the Town and helped build and maintain roads, flood control facilities and forest and wildlife conservation. In 1935 government contracts were acquired by the mill and smelter in response to World War II and workers started returning to the Town boosting Winkelman's economy.

The Town of Winkelman has a long history in the mining industry and mining continues to be important to the economy today. With the quality of life and rich western heritage, the Town is promoting business diversification. The 2010 Census population for Winkelman was 353. The civilian labor force in August 2011 was 186 with an unemployment rate of 7.0 percent. Taxable sales in Winkelman decreased by 3.5 percent between 2000 and 2008. The principal employer within the Town is the school district. The biggest employer in the area is the mining operation and smelter owned by American Smelting and Refining Company (ASARCO), Inc. in Hayden.

[10] Arizona Department of Commerce, 2009, *Community Profile for Winkelman, Arizona*

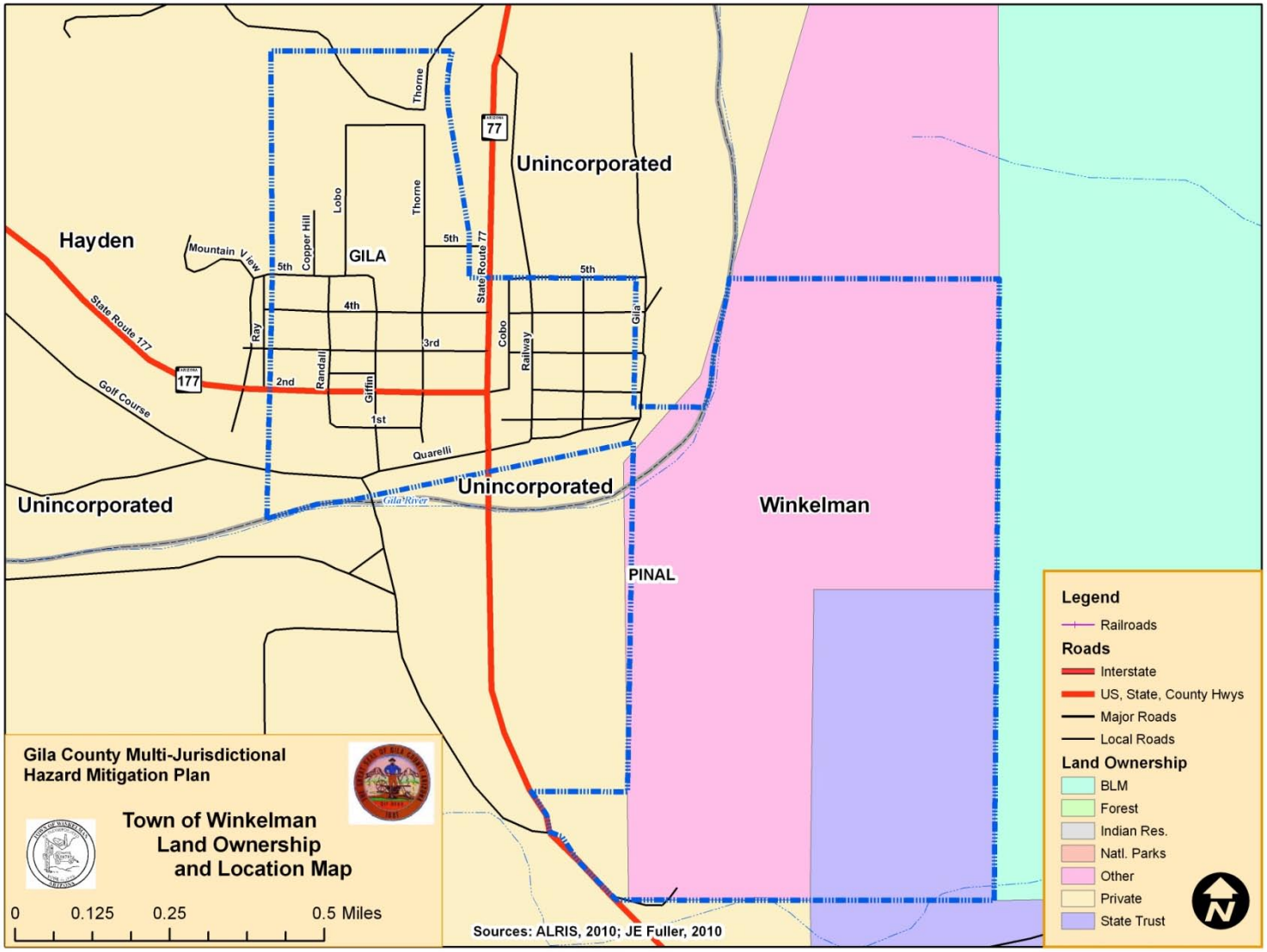

Figure 4-16: Town of Winkelman Land Ownership and Location Map

SECTION 5: RISK ASSESSMENT

> ***§201.6(c)(2):*** *[The plan shall include…] (2) A* ***risk assessment*** *that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:*
> *(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*
> *(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:*
> *(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;*
> *(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;*
> *(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*
> *(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

One of the key elements to the hazard mitigation planning process is the risk assessment. In performing a risk assessment, a community determines "what" can occur, "when" (how often) it is likely to occur, and "how bad" the effects could be[11]. According to DMA 2000, the primary components of a risk assessment that answer these questions are generally categorized into the following measures:

Hazard Identification and Screening

Hazard Profiling

Assessing Vulnerability to Hazards

The risk assessment for Gila County and participating jurisdictions was performed using a county-wide, multi-jurisdictional perspective, with much of the information gathering and development being accomplished by the Planning Team. This integrated approach was employed because many hazard events are likely to affect numerous jurisdictions within the County, and are not often relegated to a single jurisdictional boundary. The vulnerability analysis was performed in a way such that the results reflect vulnerability at an individual jurisdictional level, and at a countywide level.

5.1 Hazard Identification and Screening

Hazard identification is the process of answering the question; "*What hazards can and do occur in my community or jurisdiction?*" For this Plan, the list of hazards identified in the 2006 Plan were reviewed by the Planning Team with the goal of refining the list to reflect the hazards that pose the greatest risk to the jurisdictions represented by this Plan. The Planning Team also compared and contrasted the 2006 Plan list to the comprehensive hazard list summarized in the 2010 State Plan[12] to ensure compatibility with the State Plan. Table 5-1 summarizes the 2006 Plan and 2010 State Plan hazard lists.

[11] National Fire Protection Association, 2000, *Standard on Disaster/Emergency Management and Business Continuity Programs*, NFPA 1600.

[12] ADEM, 2007, *State of Arizona Multi-Hazard Mitigation Plan*

Table 5-1: Summary of initial hazard identification lists	
2006 Gila County Plan Hazard List	**2010 State Plan Hazard List**
• Flooding/Flash Flooding • Hazardous Materials Incidents • Thunderstorm/High Winds • Transportation Accident • Wildfires	• Dam Failure • Drought • Earthquake • Extreme Heat • Fissure • Flooding/Flash Flooding • Landslides/Mudslides • Levee Failure • Severe Wind • Subsidence • Wildfires • Winter Storms

The review included an initial screening process to evaluate each of the listed hazards based on the following considerations:

- Experiential knowledge on behalf of the Planning Team with regard to the relative risk associated with the hazard
- Documented historic context for damages and losses associated with past events (especially events that have occurred during the last plan cycle)
- The ability/desire of Planning Team to develop effective mitigation for the hazard under current DMA 2000 criteria
- Compatibility with the state hazard mitigation plan hazards
- Duplication of effects attributed to each hazard

One tool used in the initial screening process was the historic hazard database referenced in 2006 Plan. With this update, the 2006 Plan database was reviewed and revised to separately summarize declared disaster events versus non-declared events. Declared event sources included Gila County Department of Emergency Management (GCDEM), Arizona Division of Emergency Management (ADEM), Federal Emergency Management Agency (FEMA), and United States Department of Agriculture (USDA). Non-declared sources included Arizona State Land Department (ASLD), National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), United States Geological Survey (USGS), and United States Forest Service (USFS). Both data sets were updated with additional hazard events that have occurred over the last plan cycle. The declared events represent the period of February 1966 to August 2010. The undeclared event database Three tables are used in this update to summarize the historic hazard events. Table 5-2 summarizes the federal and state disaster declarations that included Greenlee County with data provided solely from ADEM, Recovery Section. Table 5-3 summarizes federal and state declarations with data provided by many sources that included fatalities, injuries, and property damages. Table 5-4 summarizes all non-declared hazard events that were considered to be a significant event to the jurisdiction(s). These events may have included:

- 1 or more fatalities
- 1 or more injuries
- Any dollar amount in property or crop damages
- Significant event, as expressed in historical records or according to defined criteria above

Table 5-2: State and Federally Declared Natural Hazard Events That Included Gila County – January 1966 to August 2010

2010 State Plan Hazard Categories	Arizona Declared Events That Included Gila County January 1966 to August 2010		
	No. of Events	Total Expenditures	
		State	Federal
Drought	5	$ 296,455	$ -
Flooding / Flash Flooding	15	$ 52,540,953	$ 392,129,377
Wildfire	21	$ 6,030,207	$ -
Winter Storm	3	$ 2,649,481	$ 5,109,724

NOTES:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
- Flood / Severe Wind - this category included for declarations that have both elements

Source: ADEM - Recovery Section, October 2010

Table 5-3: State and Federally Declared Events That Included Gila County January 1966 to August 2010

Hazard	No. of Declarations	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	7	0	0	$300,000,000
Flooding / Flash Flooding	15	42	1090	$1,332,950,000
Wildfire	22	6	28	$46,150,000
Winter Storm	4	8	0	$750,000

Notes:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
Sources: ADEM, FEMA, USDA

Table 5-4: Gila County Historic Hazard Events – February 1891 to August 2011				
Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	1	0	0	$0
Dam Failure	0	0	0	$0
Earthquake	2	0	0	$0
Extreme Heat	0	0	0	$0
Fissure	0	0	0	$0
Flooding / Flash Flooding	61	9	1	$2,150,000
Hazardous Materials Incident	103	3	10	$268,812
Landslide / Mudslide	0	0	0	$0
Levee Failure	0	0	0	$0
Severe Wind	101	7	18	$448,000
Subsidence	0	0	0	$0
Transportation Accident	18	4	16	$50,000
Wildfire	43	6	21	$0
Winter Storm	24	6	1	$9,000
Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage cost do not include the cost of suppression which can be quite substantial. Sources: ADEM, NCDC, NWCG, NWS, USFS, NRC				

Detailed historic hazard records are provided as digital files on CD.

The culmination of the review and screening process by the Planning Team resulted in a revised list of hazards that will be carried forward with this updated mitigation plan. All of the 2006 Plan hazards will be carried forward with this Plan, with some minor re-organization and renaming. For instance, ***Thunderstorms/High Winds*** will be renamed to ***Severe Winds*** to be comparative to the State Plan. The Planning Team also chose to add a few more hazards based on the historic record and the Planning Team's understanding of the hazard risk and mitigation needs of the county jurisdictions.

The following list summarizes the Planning Team's selection of hazards for profiling and updating based on the above explanations and screening process. Revised and updated definitions for each hazard are provided in Section 5.3 and in Section 8.2:

- **Drought**
- **Flooding/Flash Flooding**
- **HAZMAT**
- **Severe Wind**
- **Transportation Accident**
- **Wildfire**
- **Winter Storm**

5.2 Vulnerability Analysis Methodology

5.2.1 General

The following sections summarize the methodologies used to perform the vulnerability analysis portion of the risk assessment. For this Plan, the entire vulnerability analysis was either revised or updated to reflect the new hazard categories, the availability of new data, or differing loss estimation methodology. Specific changes are noted below and/or in Section 5.3. A comparison was made between the new vulnerability analysis and the 2006 Plan for Flooding/Flash Flooding and Wildfire and is noted in Section 5.3.

For the purposes of this vulnerability analysis, hazard profile maps were developed for Flooding/Flash Flooding, HAZMAT, Transportation Accident, Wildfire and Winter Storm to map the hazards' geographic variability relative to probability and magnitude risk, as estimated by the Planning Team. Hazard profile categories of HIGH, MEDIUM, and/or LOW were subjectively assigned to all of the mapped hazards except for Winter Storm per the factors discussed in the Probability and Magnitude sections below. Within the context of the county limits, the other hazards do not exhibit significant geographic variability and will not be categorized as such.

Unless otherwise specified in this Plan, the general cutoff date for new hazard profile data and jurisdictional corporate limits is the end of April 2011.

5.2.2 Calculated Priority Risk Index (CPRI) Evaluation

The first step in the vulnerability analysis (VA) is to assess the perceived overall risk for each of the plan hazards using a tool developed by the State of Arizona called the Calculated Priority Risk Index[13] (CPRI). The CPRI value is obtained by assigning varying degrees of risk to four (4) categories for each hazard, and then calculating an index value based on a weighting scheme. Table 5-5 summarizes the CPRI risk categories and provides guidance regarding the assignment of values and weighting factors for each category.

As an example, assume that the project team is assessing the hazard of flooding, and has decided that the following assignments best describe the flooding hazard for their community:

- Probability = Likely
- Magnitude/Severity = Critical
- Warning Time = 12 to 24 hours
- Duration = Less than 6 hours

The CPRI for the flooding hazard would then be:

CPRI = [(3*0.45) + (3*0.30) + (2*0.15) + (1*0.10)]

CPRI = 2.65

5.2.3 Asset Inventory

A detailed asset inventory was performed for the 2006 Plan to establish a fairly accurate baseline data-set for assessing the vulnerability of each jurisdiction's assets to the hazards previously identified. The asset inventory from the 2006 Plan was reviewed and updated by the Planning Team to reflect the facilities and infrastructure most important to the participating jurisdictions.

The 2010 State Plan defines assets as:

> *Any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.*

The 2006 Plan asset inventory database was generally categorized into critical and non-critical categories. The working definition for ***Critical facilities and infrastructure,*** adopted for the 2006 Plan and continuing with this Plan is as follows:

Systems, structures and infrastructure within a community whose incapacity or destruction would:

- *Have a debilitating impact on the defense or economic security of that community.*
- *Significantly hinder a community's ability to recover following a disaster.*

[13] ADEM, 2003, *Arizona Model Local Hazard Mitigation Plan*, prepared by JE Fuller/ Hydrology & Geomorphology, Inc.

Table 5-5: Summary of Calculated Priority Risk Index (CPRI) categories and risk levels

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	▪ Extremely rare with no documented history of occurrences or events. ▪ Annual probability of less than 0.001.	1	45%
	Possible	▪ Rare occurrences with at least one documented or anecdotal historic event. ▪ Annual probability that is between 0.01 and 0.001.	2	
	Likely	▪ Occasional occurrences with at least two or more documented historic events. ▪ Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	▪ Frequent events with a well documented history of occurrence. ▪ Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	▪ Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses are treatable with first aid and there are no deaths. ▪ Negligible quality of life lost. ▪ Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	▪ Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses do not result in permanent disability and there are no deaths. ▪ Moderate quality of life lost. ▪ Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	▪ Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and at least one death. ▪ Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	▪ Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and multiple deaths. ▪ Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hours	Self explanatory.	4	15%
	6 to 12 hours	Self explanatory.	3	
	12 to 24 hours	Self explanatory.	2	
	More than 24 hours	Self explanatory.	1	
Duration	Less than 6 hours	Self explanatory.	1	10%
	Less than 24 hours	Self explanatory.	2	
	Less than one week	Self explanatory.	3	
	More than one week	Self explanatory.	4	

Following the criteria set forth by the Critical Infrastructure Assurance Office (CIAO), the State of Arizona has adopted eight general categories[14] that define critical facilities and infrastructure:

1. **Communications Infrastructure:** Telephone, cell phone, data services, radio towers, and internet communications, which have become essential to continuity of business, industry, government, and military operations.
2. **Electrical Power Systems:** Generation stations and transmission and distribution networks that create and supply electricity to end-users.
3. **Gas and Oil Facilities:** Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.
4. **Banking and Finance Institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.
5. **Transportation Networks:** Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.
6. **Water Supply Systems:** Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.
7. **Government Services:** Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.
8. **Emergency Services:** Medical, police, fire, and rescue systems.

Other assets such as public libraries, schools, businesses, museums, parks, recreational facilities, historic buildings or sites, churches, residential and/or commercial subdivisions, apartment complexes, and so forth, are typically not classified as critical facilities and infrastructure unless they serve a secondary function to the community during a disaster emergency (e.g. - emergency housing or evacuation centers). As a part of the update process, each community was tasked with determining which of the previously identified "non-critical" assets, if any, were deemed critical by the community. The remaining "non-critical" assets were deleted from the database. New facilities were also added as appropriate and available. Each community was also tasked with making any needed changes to the geographic position, revision of asset names, updating replacement costs, etc. to bring the dataset into a current condition. The updated asset inventory is attributed with a descriptive name, physical address, geospatial position, and an estimated building/structure and contents replacement cost for each entry to the greatest extent possible and entered into a GIS geodatabase.

The 2006 Plan used a combination of the Asset Inventory and HAZUS®-MH[15] data to represent the critical facilities and general building stock and population for Gila County jurisdictions. Tools used by the Local Planning Team for the update included GIS data sets, on-line mapping utilities, insurance pool information, county assessors data, and manual data acquisition. Table 5-6 summarizes the facility counts provided by each of the participating jurisdictions in this Plan.

It should be noted that the facility counts summarized in Table 5-6 do not represent a comprehensive inventory of all the category facilities that exist within the county. They do represent the facilities inventoried to-date by each jurisdiction and are considered to be a work-in-progress that is to be expanded and augmented with each Plan cycle.

[14] Instituted via Executive Order 13010, which was signed by President Clinton in 1996.

[15] U.S. Department of Homeland Security, Federal Emergency Management Agency, HAZUS®-MH.

Table 5-6: Asset inventory structure counts by category and jurisdiction as of April 2011

	Communications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Educational [a]	Cultural [a]	Business [a]	Flood Control [a]	Residential [a]	Recreational [a]
County-Wide Totals	50	12	8	11	21	56	57	40	2	1	7	2	0	0
Globe	2	1	1	5	2	11	1	2	0	0	0	0	0	0
Hayden	2	1	0	0	0	6	3	2	0	0	3	1	0	0
Miami	2	1	0	0	2	2	3	1	0	1	1	0	0	0
Payson	5	1	3	6	3	21	8	9	2	0	3	0	0	0
Star Valley	1	0	0	0	0	1	3	1	0	0	0	0	0	0
Winkelman	0	0	2	0	2	3	4	1	0	0	0	0	0	0
Unincorporated Gila County	39	8	2	0	12	12	35	24	0	0	0	1	0	0

NOTES: a – Assets listed under these categories have been determined to be critical per the definition of this Plan by the corresponding jurisdiction .

5.2.4 Loss Estimations

In the original 2006 Plan, losses were estimated by either quantitative or qualitative methods. Quantitative methods consisted of intersecting hazard map layers with the asset inventory map layer and the HAZUS®-MH map layer. Other quantitative methods included statistical methods based on historic data. The loss estimates for this Plan represent the current hazard map layers and asset databases using the procedures discussed below.

Economic loss and human exposure estimates for each of the final hazards identified in Section 5.1 begins with an assessment of the potential exposure of asset inventory structures and human populations to those hazards. Exposure estimates of asset inventory structures identified by each jurisdiction is accomplished by intersecting the asset inventory with the hazard profiles in Section 5.3. Human or population exposures are estimated by intersecting the same hazards with the 2000 Census Data population statistics that have been re-organized into GIS compatible databases and distributed with HAZUS®-MH (HAZUS).

Additional exposure estimates for general residential, commercial, and industrial building stock not specifically identified with the asset inventory, are also accomplished using the HAZUS database, wherein the developers of the HAZUS database have made attempts to correlate building/structure counts to census block data. *It is duly noted that the HAZUS data population statistics may not exactly equate to the current population statistics provided in Section 4.2 due to actual changes in population counts associated with a particular census block, GIS positioning anomalies and the way HAZUS depicts certain census block data. It is also noted that the residential, commercial and industrial building stock estimates for each census block may severely under-predict the actual buildings present*

due to the substantial growth in the last decade, the general lack of commercial and industrial data for some of the more rural communities and counties, and the disparity of the HAZUS replacement cost estimates for these categories when compared to current market rates. However, without a detailed, site specific structure inventory of these types of buildings, the HAZUS database is still the best available and the results are representative of a general magnitude of population and residential, commercial and industrial facility exposures to the various hazards discussed. Combining the exposure results from the asset inventory and the HAZUS database provides a fairly comprehensive depiction of the overall exposure of building stock and the two datasets are considered complimentary and not redundant.

Economic losses to structures and facilities are estimated by multiplying the exposed facility replacement cost estimates by an assumed loss to exposure ratio for the hazard. The loss to exposure ratios used in this plan update are summarized by hazard in Section 5.3. It is important to note that the loss to exposure ratios are subjective and the estimates are solely intended to provide an understanding of relative risk from the hazards and potential losses. The reality is that uncertainties are inherent in any loss estimation methodology due to:

- Incomplete scientific knowledge concerning hazards and our ability to predict their effects on the built environment;
- Approximations and simplifications that are necessary for a comprehensive analysis; and,
- Lack of detailed data necessary to implement a viable statistical approach to loss estimations.

Several of the hazards profiled in this Plan will not include quantitative exposure and loss estimates. The vulnerability of people and assets associated with some hazards are nearly impossible to evaluate given the uncertainty associated with where these hazards will occur as well as the relatively limited focus and extent of damage. Instead, a qualitative review of vulnerability will be discussed to provide insight to the nature of losses that are associated with the hazard. For subsequent updates of this Plan, the data needed to evaluate these unpredictable hazards may become refined such that comprehensive vulnerability statements and thorough loss estimates can be made.

5.2.5 Development Trend Analysis

The 2006 Plan development trend analysis will require updating to reflect growth and changes in Gila County and jurisdiction boundaries over the last planning cycle. The updated analysis will focus on the potential risk associated with projected growth patterns and their intersection with the Plan identified hazards.

5.3 Hazard Risk Profiles

The following sections summarize the risk profiles for each of the Plan hazards identified in Section 5.1. For each hazard, the following elements are addressed to present the overall risk profile:

- **Description**
- **History**
- **Probability and Magnitude**
- **Vulnerability**
- **Sources**
- **Profile Maps (if applicable)**

Much of the 2006 Plan data has been updated, incorporated and/or revised to reflect current conditions and Planning Team changes, as well as an overall plan format change. County-wide and jurisdiction specific profile maps are provided at the end of the section (if applicable). Also, the maps are not included in the page count.

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5.3.1 Drought

Description

Drought is a normal part of virtually every climate on the planet, including areas of high and low rainfall. It is different from normal aridity, which is a permanent characteristic of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997).

Drought is a complex natural hazard which is reflected in the following four definitions commonly used to describe it:

- Meteorological – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological – drought is related to the effects of precipitation shortfalls on streamflows and reservoir, lake, and groundwater levels.
- Agricultural – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Socioeconomic – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

History

Arizona has experienced 17 droughts declared as drought disasters/emergencies and 93 drought events (droughts affecting multiple years are recorded as a distinct event for each year affected) since records have been kept. Figures 5-1 and 5-2 depict recent precipitation data from NCDC regarding average statewide precipitation variances from normal. Between 1849 and 1905, the most prolonged period of drought conditions in 300 years occurred in Arizona (Jacobs, 2003). Another prolonged drought occurred during the period of 1941 to 1965. The period from 1979-1983 appears to have been anomalously wet, while the rest of the historical records shows that dry conditions are most likely the normal condition for Arizona. Between 1998 and 2007, there have been more months with below normal precipitation than months with above normal precipitation.

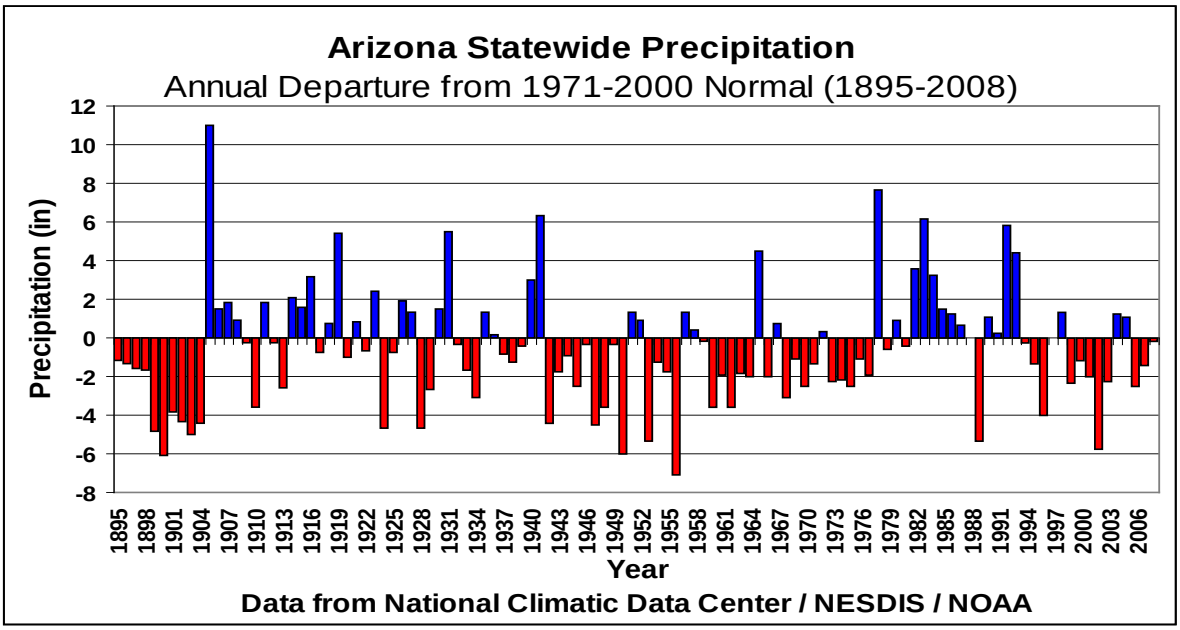


Figure 5-1: Average statewide precipitation variances from a normal based on 1971-2000 period.

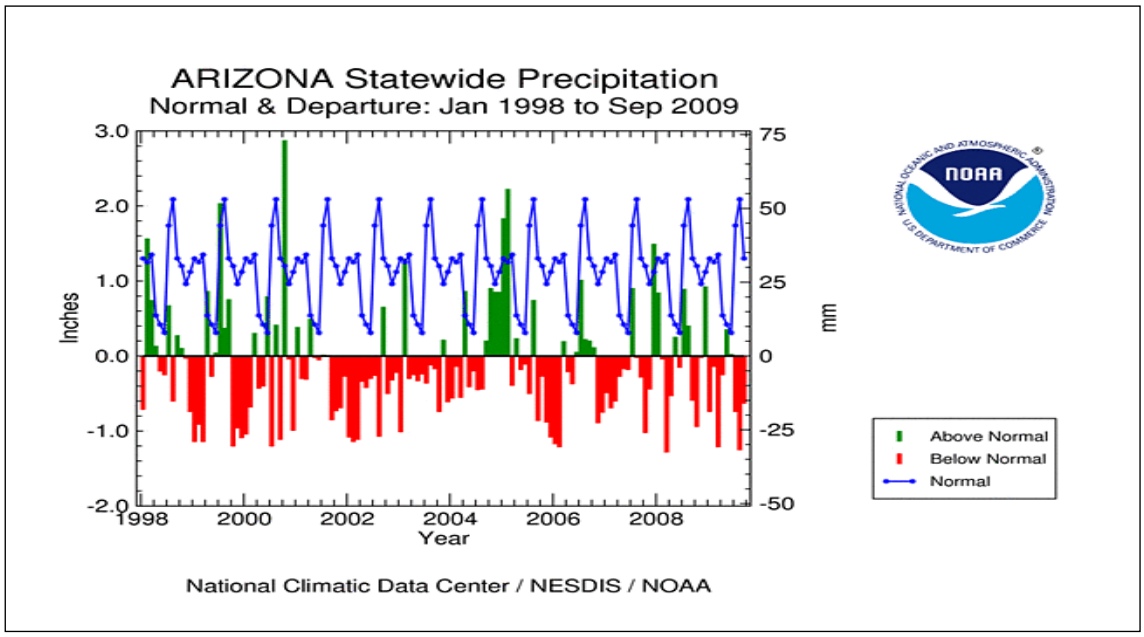
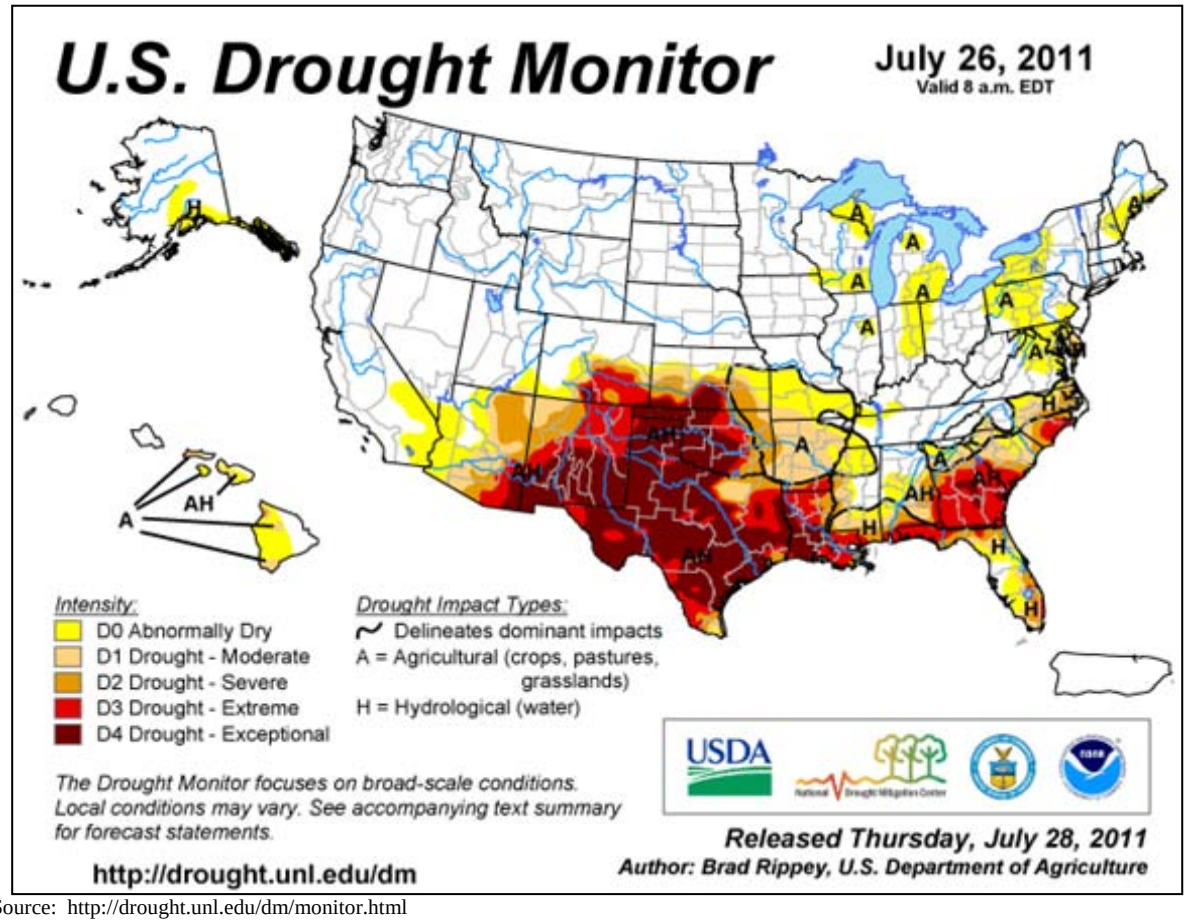


Figure 5-2: Average statewide precipitation variances from a normal based on 1998-2009 period

Probability and Magnitude

There is no commonly accepted return period or non-exceedance probability for defining the risk from drought (such as the 100-year or 1% annual chance of flood). The magnitude of drought is usually measured in time and the severity of the hydrologic deficit. There are several resources available to evaluate drought status and even project expected conditions for the very near future.

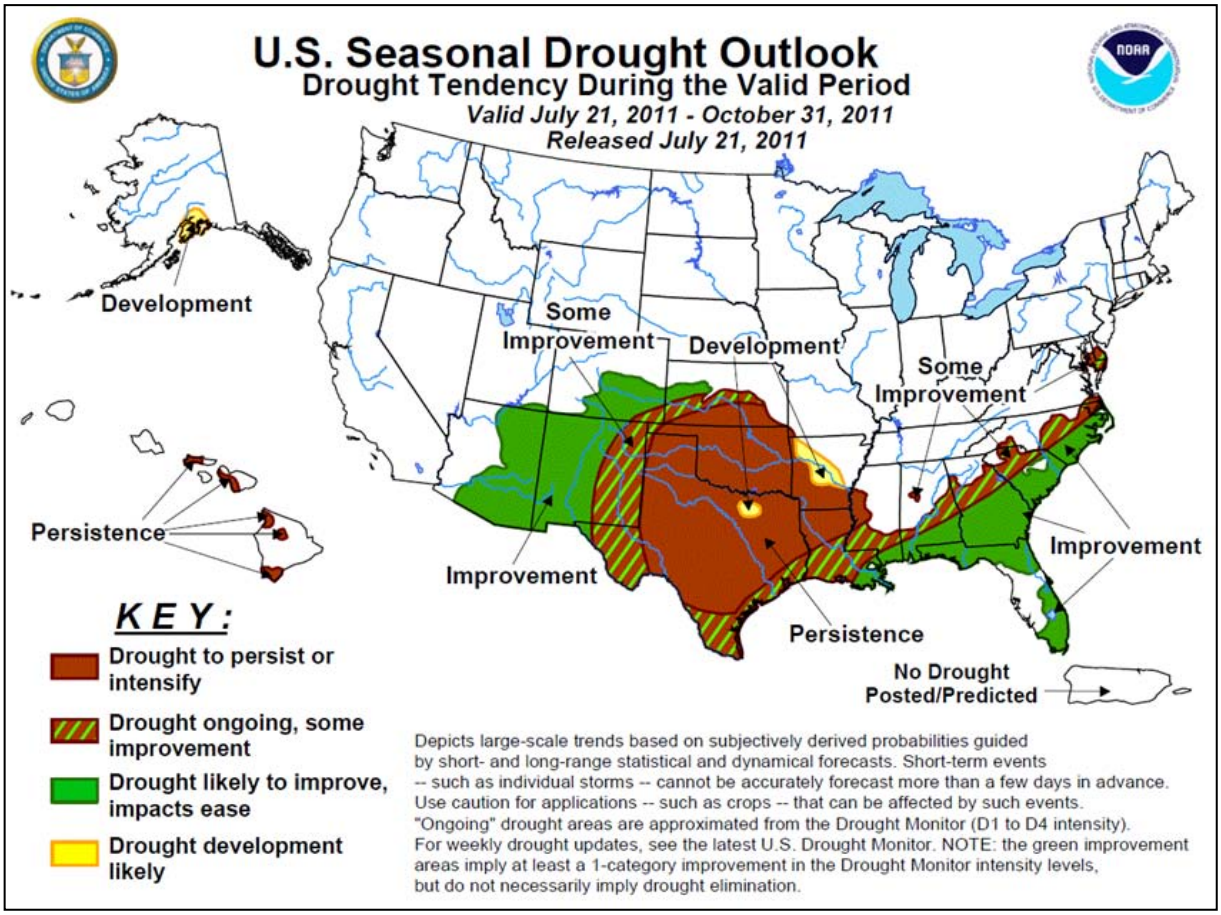
The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and early warning (NIDIS, 2007). The NIDIS maintains the U.S. Drought Portal[16] which is a centralized, web-based access point to several drought related resources including the U.S. Drought Monitor (USDM) and the U.S. Seasonal Drought Outlook (USSDO). The USDM, shown in Figure 5-3, is a weekly map depicting the current status of drought and is developed and maintained by the National Drought Mitigation Center. The USSDO, shown in Figure 5-4, is a six month projection of potential drought conditions developed by the National Weather Service's Climate Prediction Center. The primary indicators for these maps for the Western U.S. are the Palmer Hydrologic Drought Index and the 60-month Palmer Z-index. The Palmer Drought Severity Index (PSDI) is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the Palmer Index is not considered to be consistent enough to characterize the risk of drought on a nationwide basis (FEMA, 1997) and neither of the Palmer indices are well suited to the dry, mountainous western United States.



Source: http://drought.unl.edu/dm/monitor.html

Figure 5-3: U.S. Drought Monitor Map for July 26, 2011

[16] NIDIS U.S. Drought Portal website is located at: http://www.drought.gov/portal/server.pt/community/drought.gov/202



Source: http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Figure 5-4: U.S. Seasonal Drought Outlook, July to October, 2011

In 2003, Governor Janet Napolitano created the Arizona Drought Task Force (ADTF), led by ADWR, which developed a statewide drought plan. The plan includes criteria for determining both short and long-term drought status for each of the 15 major watersheds in the state using assessments that are based on precipitation and stream flow. The plan also provides the framework for an interagency group which reports to the governor on drought status, in addition to local drought impact groups in each county and the State Drought Monitoring Technical Committee. Twice a year this interagency group reports to the governor on the drought status and the potential need for drought declarations. The counties use the monthly drought status reports to implement drought actions within their drought plans. The State Drought Monitoring Technical Committee defers to the USDM for the short-term drought status and uses a combination of the Standardized Precipitation Index (SPI), evaporation and streamflow for the long-term drought status. Figures 5-5 and 5-6, present the most current short and long term maps available for Arizona as of the writing of this plan.

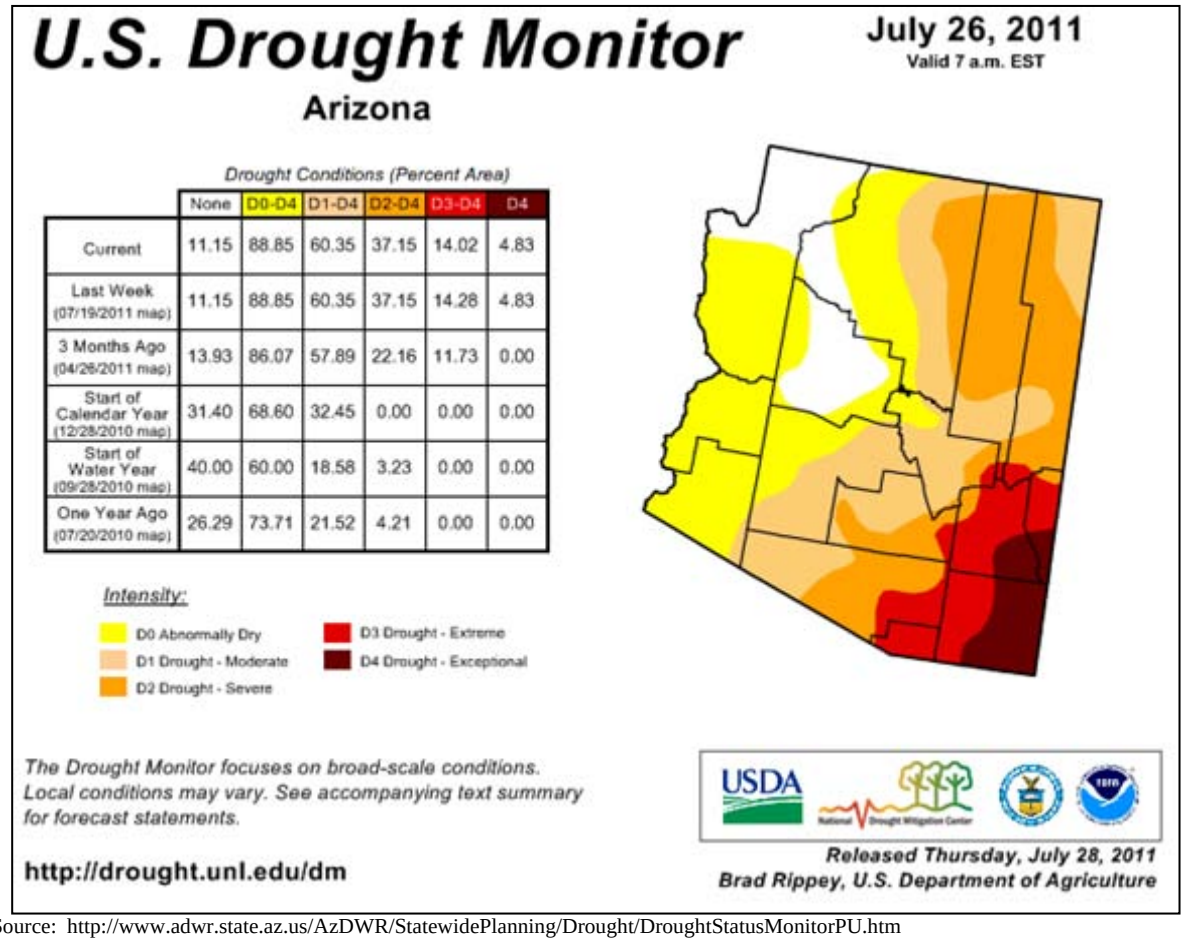
The current drought maps are in general agreement that Gila County is currently experiencing a abnormally dry to extreme drought condition for the short term and in a moderate drought condition for the long term. Figure 5-4 indicates that the drought conditions are project to improve and impact will ease for Gila County over the next few months.

Vulnerability – CPRI Results

Drought CPRI results for each community are summarized in Table 5-7 below.

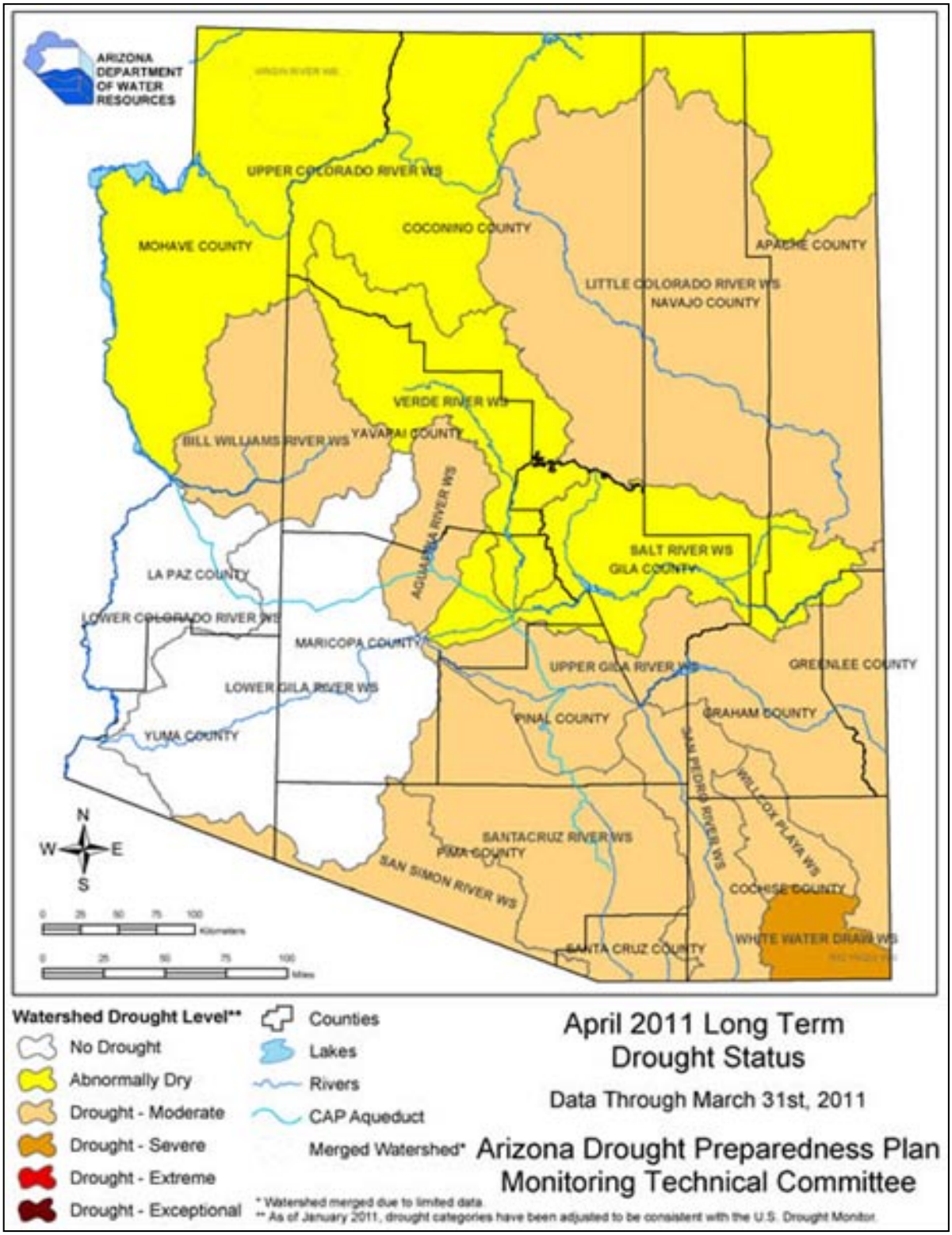
Table 5-7: CPRI results by jurisdiction for drought

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Highly Likely	Critical	> 24 hours	> 1 week	3.25
Hayden	Likely	Limited	> 24 hours	> 1 week	2.50
Miami	Possible	Limited	> 24 hours	> 1 week	2.05
Payson	Likely	Critical	> 24 hours	> 1 week	2.80
Unincorporated Gila County	Possible	Limited	> 24 hours	> 1 week	2.05
				County-wide average CPRI =	**2.53**



Source: http://www.adwr.state.az.us/AzDWR/StatewidePlanning/Drought/DroughtStatusMonitorPU.htm

Figure 5-5: Arizona short term drought status map as of July 26, 2011



Source: ADWR, 2011 as accessed at: http://www.azwater.gov/azdwr/StatewidePlanning/Drought/DroughtStatus2.htm

Figure 5-6: Arizona long term drought status map for April 2011

Vulnerability – Loss Estimations

No standardized methodology exists for estimating losses due to drought and drought does not generally have a direct impact on critical facilities and building stock. A direct correlation to loss of human life due to drought is improbable for Gila County. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the County economy and natural resources including:

- Crop and livestock agriculture
- Municipal and industrial water supply
- Recreation/tourism
- Wildlife and wildlife habitat

The Gila County farming and ranching industries are directly affected by extended drought conditions. There is very little farming within Gila County and the primary agricultural industry is rangeland ranching, which is dependent upon both groundwater and surface water. Numerous windmills are used across the county to provide stock water in otherwise dry rangeland. Perennial and intermittent surface water streams also serve as water sources. Stock tanks that capture rainfall runoff in otherwise arid areas are also employed by ranchers to provide water for rangeland stock. Extended drought conditions reduce rangeland grasses and other fodder. Stock tank water levels and replenishment are also significantly reduced. This forces ranchers to feed more hay and to truck in water to sustain their rangeland herds. The expense of these activities forces ranchers to drastically reduce herd sizes, flooding the markets with excess animals and tumbling livestock prices. Then supplies in following years are drastically reduced due to lack of rangeland and water and prices soar. These expenses are translated into the Gila County economy as a two-fold hardship. First, as an economic hardship for merchants and retailers that provide goods and services to the ranching community. Second, as increased costs due to a reduced supply in ranching commodities.

From 1995 to 2010, Gila County farmers and ranchers received $4,048,896 in disaster related assistance funding from the U.S Department of Agriculture (USDA) (EWG, 2011). The majority of those funds were received during the time period of 2000 to 2005 and are associated with livestock assistance and aid. The 2000-2005 time period also corresponds to the most severe period of the recent drought cycle for Gila County. Other direct impacts associated with increased pumping costs due to lowering of groundwater levels and costs to expand water infrastructure to compensate for reduced yields or to develop alternative water sources, are significant but very difficult to estimate due to a lack of documentation. There are also the intangible costs associated with lost tourism revenues, and impacts to wildlife habitat and animals. Typically, these impacts are translated into the general economy in the form of higher food and agricultural goods prices and increased utility costs.

Sustained drought conditions will also have secondary impacts by increasing risks associated with hazards such as fissures, flooding, subsidence and wildfire. Extended drought may weaken and dry the grasses, shrubs, and trees of wildfire areas, making them more susceptible to ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decrease the interception of rainfall and increase the flooding hazard. Subsidence and fissure conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharge from normal rainfall.

Vulnerability – Development Trends

Growth in Gila County over the past five years has been very small and is not anticipated to increase significantly over the next five years. Requirements for additional surface and ground water supplies is therefore expected to be minimal. It is also unlikely that significant growth will occur in the ranching and farming sectors given the current constraints on water rights, grazing rights, and available range land. However, drought planning should be a critical component of any domestic water system expansions or land development planning. The ADTF is also working cooperatively with water providers within the State to develop System Water Plans that are comprised of three components:

- *Water Supply Plan* – describes the service area, transmission facilities, monthly system production data, historic demand for the past five years, and projected demands for the next five, 10 and 20 years.
- *Drought Preparedness Plan* – includes drought and emergency response strategies, a plan of action to respond to water shortage conditions, and provisions to educate and inform the public.
- *Water Conservation Plan* – addresses measures to control lost and unaccounted for water, considers water rate structures that encourage efficient use of water, and plans for public information and education programs on water conservation.

The combination of these requirements will work to ensure that future development in Gila County will recognize drought as a potential constraint.

Sources

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NOAA, NWS, Climate Prediction Center, 2010, website located at: http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Profile Maps - No profile maps are provided.

5.3.2 Flood / Flash Flood

Description

For the purpose of this Plan, the hazard of flooding addressed in this section will pertain to floods that result from precipitation/runoff related events. Other flooding due to dam or levee failures are addressed separately. The three seasonal atmospheric events that tend to trigger floods in Gila County are:

- *Tropical Storm Remnants*: Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the State. These events occur infrequently and mostly in the early autumn, and usually bring heavy and intense precipitation over large regions causing severe flooding.
- *Winter Rains*: Winter brings the threat of low intensity; but long duration rains covering large areas that cause extensive flooding and erosion, particularly when combined with snowmelt.
- *Summer Monsoons*: A third atmospheric condition that brings flooding to Arizona is the annual summer monsoon. In mid to late summer the monsoon winds bring humid subtropical air into the State. Solar heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. The thunderstorm rains are mostly translated into runoff and in some instances, the accumulation of runoff occurs very quickly resulting in a rapidly moving flood wave referred to as a flash flood. Flash floods tend to be very localized and cause significant flooding of local watercourses.

Damaging floods in the County include riverine, sheet, alluvial fan, and local area flooding. Riverine flooding occurs along established watercourses when the bankfull capacity of a watercourse is exceeded by storm runoff or snowmelt and the overbank areas become inundated. Sheet flooding occurs in regionally low areas with little topographic relief that generate floodplains over a mile wide, Alluvial fan flooding is generally located on piedmont areas near the base of the local mountains and are characterized by multiple, highly unstable flowpaths that can rapidly change during flooding events. Local area flooding is often the result of poorly designed or planned development wherein natural flowpaths are altered, blocked or obliterated, and localized ponding and conveyance problems result. Erosion is also often associated with damages due to flooding.

Another major flood hazard comes as a secondary impact of wildfires, wherein dramatic increases in runoff from ordinary rainfall events occur on moderate to severely burned watersheds. Denuding of the vegetative canopy and forest floor vegetation, and development of hydrophobic soils are the primary factors that contribute to the increased runoff. Canopy and floor level brushes and grasses intercept and store a significant volume of rainfall during a storm event. They also add to the overall watershed roughness which generally attenuates the ultimate peak discharges. Soils in a wildfire burn area can be rendered hydrophobic, which according to the NRCS is the development of a thin layer of nearly impervious soil at or below the mineral soil surface that is the result of a waxy substance derived from plant material burned during a hot fire. The waxy substance penetrates into the soil as a gas and solidifies after it cools, forming a waxy coating around soil particles. Hydrophobic soils, in combination with a denuded watershed, will significantly increase the runoff potential, turning a routine annual rainfall event into a raging flood with drastically increased potential for soil erosion and mud and debris flows.

History

Flooding is clearly a major hazard in Gila County as shown in Tables 5-2 and 5-3. Gila County has been part of at least 16 disaster declarations for flooding, with four of those declarations occurring in the past five years. There have been at least fourteen other non-declared events of reported flooding incidents that met the thresholds outlined in Section 5.1, eight of which occurred in the last five years. The following incidents represent examples of major flooding that has impacted the County:

- In December of 2004, a strong Pacific storm system moved across Arizona December 28th and 29th with heavy rainfall. Northern Arizona Winter Storm: Arizona was impacted by a series of strong winter storms December 28, 2004 – January 12, 2005. Large amounts of rain and record levels of snow received during the initial storm were followed by January storms that tapped into warm, moist Pacific air. Rapid snow melt occurred as warm rains fell on snow at mid-level elevations, which, along with the rain falling on already saturated ground resulted in widespread flooding throughout the northern and central parts of the state. Arizona residents suffered both loss of life and property damage.
    - On December 29, 2005 the Governor declared a state of emergency for the Northern Arizona Winter Storm Emergency for Coconino County followed by 3 amendments on December 30, 2004 to include Yavapai County, on January 4, 2005 to include Gila and Navajo Counties and on January 11, 2005 to include Apache, Maricopa and Mohave Counties. The property losses totaled $2 million.
    - On February 17, 2005, the President declared a Major Disaster Declaration (FEMA-1581-DR-AZ) for Public Assistance and Mitigation Programs for Coconino, Gila, Mohave, Navajo and Yavapai Counties and the Hopi and Navajo Nations. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. The Small Business Administration (SBA) declared an emergency for Mohave, Coconino, La Paz and Yavapai Counties, making low interest loans available to homeowners, renters, businesses of all sizes and private, non-profit organizations whose property was damaged or destroyed by the storms. (ADEM, 2009; NCDC, 2008)
- In February of 2005, a strong storm system drew moist subtropical air from the Pacific to give northern Arizona widespread moderate to heavy rains. This precipitation event began Thursday night (02/10) and lasted through the early hours on Sunday (02/13). Rainfall totals of 2 to 3 inches were common in many locations, with locally heavier amounts found in portions of Yavapai and Northern Gila counties. Flooding caused road closures in Black Canyon City, Walker, Pinedale, and Globe. Paper Mill Road in Snowflake was washed out by the flood waters. Highway 377 was closed due to flooding between Heber and Holbrook. A trailer park in the community of Tonto Creek was evacuated. The damages totaled up to $1.5 million in property losses.
    - February 2005 Winter Storm and Flood: On February 16, 2005 the Governor declared a state of emergency due to the February 2005 Winter Storms and Flooding throughout central and eastern Arizona. Gila, Graham, Greenlee, Pinal and Yavapai Counties and the Town of Wickenburg (Maricopa County) all declared and were included in the Governor's declaration. On March 8, 2005, the declaration was amended to include all of Maricopa County and Mohave County.
    - On April 14, 2005 the President declared a Major Disaster Declaration (FEMA-1586-DR-AZ) for Public Assistance and Hazard Mitigation Grant Programs for the counties of Gila, Graham, Greenlee, Mohave, Pinal and Yavapai; the Havasupai Tribe, the Hopi Tribe, the San Carlos Apache Tribe; and the portion of the Navajo Tribal Nation within the State of Arizona. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. Maricopa County was not included in the Federal declaration. (ADEM, 2008; NCDC, 2008)
- Summer 2006 Monsoons and Flooding Emergency: On August 8, 2006, the Governor declared a state of emergency for a series of monsoon thunderstorms, spawning hail, damaging winds and flash floods throughout southeastern Arizona, specifically Pinal and Pima Counties from July 25 - August 4, 2006. Areas of the Santa Cruz, San Pedro and Gila watersheds exceeded their 1993 flood stages in portions of Pinal, Pima, Cochise, Graham and Gila Counties. On September 13, 2006, the Governor amended the declaration to include Gila, Graham, Greenlee and Navajo Counties. Five Tribal Governments were also heavily impacted

by the emergency: the Gila River Indian Community, the Hopi Tribe, the Navajo Nation, the San Carlos Apache Tribe and the Tohono O'Odham Nation.

- On September 7, 2006, the President declared a Major Disaster Declaration (FEMA-1660-DR-AZ) by approving Public Assistance for those counties and tribal nations that met FEMA's per capita impact criteria, which were: Pinal and Pima Counties, the Gila River Indian Community within Pinal County and the Tohono O'Odham Nation within Pima and Pinal Counties. His declaration was amended on September 29, 2006 to include Gila, Graham, Greenlee and Navajo Counties, the tribal areas of the Hopi Tribe within Navajo County, the Navajo Nation within Navajo County and the San Carlos Apache Tribe within Gila, Graham and Pinal Counties. On November 9, 2006, the declaration was amended once more to include the Navajo Nation within Apache and Coconino Counties. The President also approved Arizona's request for the Hazard Mitigation Grant Program. The portion of this program that is made available to all counties and political subdivisions statewide is administered by ADEM. This program is also made available to the Tribal Nations designated under this emergency and they will each administer their program with direct Federal assistance from FEMA.(ADEM, 2010; NCDC, 2008)

- On January 28, 2008, law enforcement reported about 80 people had to be evacuated as flood waters from the Tonto Creek affected portions of Tonto Basin. A spotter in Tonto Basin reported part of a road being washed out. A power outage affected about 2,300 homes and was blamed on flooding when power poles near the creek were taken down. A small dike gave way which resulted in additional flooding of homes and roads. At least $100,000 in property damage occurred. The Red Cross opened a shelter at the Tonto Basin Kiwanis Club and the Tonto Basin School. Gila County declared an emergency due to the flooding. Moderate to heavy rainfall amounts were reported over two days after a plume of subtropical air moved into Arizona. The heaviest amounts occurred over the higher terrain generally east and north of Phoenix, resulting in flooded roads and other low-lying areas. About 3 inches fell at McDowell Mountain Park near Fountain Hills. The peak release from Granite Reef Dam into the Salt River was about 22,000 cfs. (NCDC, 2010)
- On January 22, 2010, numerous reports of flooding in Southern Gila County. Residents were evacuated along the wash south of San Carlos. Residents near Tonto Basin were stranded for several days after flows of about 60,000 cfs were measured along the Tonto Creek. By Monday, January 25th, the flow was down to about 550 cfs. Widespread rain, heavy at times, resulted in numerous flooded streets, and low spots. Strong winds associated with a line of thunderstorms caused considerable damage to property totaling at least $200,000 and some minor injuries. Phoenix established a new all-time record low pressure of 29.20 inches on the 21st. (NCDC, 2010)

Numerous other flood related incidents are summarized in the historic hazard database provided in Appendix D and on the enclosed CD.

Probability and Magnitude

For the purposes of this Plan, the probability and magnitude of flood hazards in Gila County jurisdictions are primarily based on the 1% (100-year) and 0.2% (500-year) probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs), plus any provisional floodplain delineations used for in-house purposes by participating jurisdictions or Planning Team delineated areas. FEMA has recently completed a map modification program to update the FIRMs for the County into a digital FIRM (DFIRM) format. The effective date for the new DFIRM maps is December 4, 2007. DFIRM floodplain GIS base files were obtained from FEMA and are the basis for the flood hazard depictions in this Plan. Therefore, the vulnerability analysis results in this plan are likely conservative.

Two designations of flood hazard are used. Any "A" zone is designated as a high hazard area. Medium flood hazard areas are all "Shaded X" zones. All "A" zones (e.g. – A, A1-99, AE, AH, AO, etc.) represent areas with a 1% probability of being flooded at a depth of one-foot or greater in any given year. All "Shaded X" zones represent areas with a 0.2% probability of being flooded at a depth

of one-foot or greater in any given year. These two storms are often referred to as the 100-year and 500-year storm, respectively. High and medium hazard designations were also assigned to the non-FEMA areas by the Planning Team based on the anticipated level of flood hazard posed.

Maps 1A, 1B, and 1C show the flood hazard areas for the entire county. Maps 1D through 1I show the flood hazard areas for individual communities.

Vulnerability – CPRI Results

Flooding CPRI results for each community are summarized in Table 5-8 below.

Table 5-8: CPRI results by jurisdiction for flooding

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Possible	Limited	6 - 12 hours	< 6 hours	2.05
Hayden	Likely	Limited	< 6 hours	< 24 hours	2.75
Miami	Highly Likely	Critical	6 - 12 hours	> 1 week	3.55
Payson	Possible	Limited	< 6 hours	< 24 hours	2.30
Unincorporated Gila County	Highly Likely	Catastrophic	< 6 hours	< 1 week	3.90
				County-wide average CPRI =	**2.91**

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium flood hazards was accomplished by intersecting the human and critical facility assets with the flood hazard limits depicted on Maps 1A, 1B, and 1C. Loss estimates to all facilities located within the high and medium flood hazard areas were made based on loss estimation tables published by FEMA (FEMA, 2001). Most of the assets located within high hazard flood areas will be subject to three feet or less of flooding. Using the FEMA tables, it is assumed that all structural assets located within the high hazard areas will have a loss-to-exposure ratio of 0.20 (or 20%). A loss to exposure ratio of 0.05 (5%) is assumed for assets located in the medium hazard areas. Table 5-9 summarizes the Planning Team identified critical facilities potentially exposed to high and medium flood hazards, and the corresponding estimates of losses. Table 5-10 summarizes population sectors exposed to the high and medium flood hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium flood hazards are summarized in Tables 5-11 through 5-18.

In summary, $50 million and $2.1 million in asset related losses are estimated for high and medium flood hazards, for all the participating jurisdictions in Gila County. An additional $84.6 and $6.8 million in high and medium flood losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Gila County jurisdictions. Regarding human vulnerability, a total population of 3,321people, or 6.47% of the total population, is potentially exposed to a high hazard flood event. A total population of 1,061 people, or 2.07% of the total population, is potentially exposed to a medium hazard flood event. Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a storm event would occur that would flood all of the delineated high and medium flood hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above. Furthermore, it should be noted that any flood event that exposes assets or population to a medium hazard will also expose assets and populations to the high hazard flood zone. That is, the 100-year floodplain would be entirely inundated during a 500-year flood.

Table 5-9: Asset inventory exposure to high and medium hazard flooding and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x $1,000)	Estimated Structure Loss (x $1,000)
HIGH					
County-Wide Totals	**266**	**48**	**18.05%**	**$250,385**	**$50,077**
Globe	25	7	28.00%	$31,950	$6,390
Hayden	18	1	5.56%	$5,000	$1,000
Miami	13	11	84.62%	$27,619	$5,524
Payson	61	2	3.28%	$250	$50
Star Valley	6	0	0.00%	$0	$0
Unincorporated	133	23	17.29%	$179,066	$35,813
Winkelman	10	4	40.00%	$6,500	$1,300
MEDIUM					
County-Wide Totals	**266**	**13**	**4.89%**	**$43,420**	**$2,171**
Globe	25	3	12.00%	$3,250	$163
Hayden	18	1	5.56%	$5,000	$250
Miami	13	0	0.00%	$0	$0
Payson	61	4	6.56%	$4,920	$246
Star Valley	6	0	0.00%	$0	$0
Unincorporated	133	5	3.76%	$30,250	$1,513
Winkelman	10	0	0.00%	$0	$0

Table 5-10: Population sectors exposed to high and medium hazard flooding

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed
HIGH						
County-Wide Totals	**51,329**	**3,321**	**6.47%**	**10,222**	**793**	**7.76%**
City of Globe	7,399	414	5.59%	1,194	77	6.48%
San Carlos Indian Res.	4,783	0	0.00%	300	0	0.00%
Town of Hayden	904	0	0.02%	111	0	0.01%
Town of Miami	1,885	242	12.83%	305	49	16.20%
Town of Payson	13,457	225	1.67%	3,755	74	1.98%
Town of Star Valley	2,013	141	6.98%	512	35	6.74%
Town of Winkelman	419	21	5.06%	66	3	4.68%
Unincorporated	18,829	2,278	12.10%	3,860	554	14.36%
White Mtn Apache Indian	1,514	0	0.00%	94	0	0.00%
Yavapai Tonto Apache Res.	127	0	0.00%	25	0	0.00%
MEDIUM						
County-Wide Totals	**51,329**	**1,061**	**2.07%**	**10,222**	**229**	**2.24%**
City of Globe	7,399	218	2.95%	1,194	33	2.76%
San Carlos Indian Res.	4,783	0	0.00%	300	0	0.00%
Town of Hayden	904	108	11.97%	111	14	12.31%
Town of Miami	1,885	69	3.66%	305	16	5.22%
Town of Payson	13,457	329	2.44%	3,755	87	2.32%
Town of Star Valley	2,013	49	2.42%	512	10	2.02%
Town of Winkelman	419	8	1.83%	66	1	1.62%
Unincorporated	18,829	280	1.49%	3,860	68	1.76%
White Mtn Apache Indian	1,514	0	0.00%	94	0	0.00%
Yavapai Tonto Apache Res.	127	0	0.00%	25	0	0.00%

Table 5-11: Gila County HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Gila County HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
County-Wide Totals	**28,136**	**$3,880,633**	**822**	**$749,955**	**212**	**$223,733**	**$4,854,321**		
High Hazard Exposure	2,257	$277,996	119	$126,299	16	$19,167	$423,462	20%	$84,692
Medium Hazard Exposure	633	$81,898	51	$44,492	11	$11,085	$137,475	5%	$6,874
Gila County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	08.02%	07.16%	14.52%	16.84%	07.61%	08.57%			
Medium Hazard Exposure	02.25%	02.11%	06.15%	05.93%	05.19%	04.95%			

Table 5-12: City of Globe HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Globe HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**3,216**	**$474,198**	**200**	**$136,641**	**33**	**$41,189**	**$652,028**		
High Hazard Exposure	210	$29,488	39	$33,110	3	$9,517	$72,115	20%	$14,423
Medium Hazard Exposure	122	$14,851	23	$15,834	3	$1,395	$32,081	5%	$1,604
City of Globe HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	06.52%	06.22%	19.41%	24.23%	10.18%	23.11%			
Medium Hazard Exposure	03.80%	03.13%	11.42%	11.59%	09.45%	03.39%			

Table 5-13: Town of Hayden HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Hayden HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**382**	**$44,430**	**6**	**$2,567**	**5**	**$63,563**	**$110,560**		
High Hazard Exposure	1	$101	0	$190	0	$0	$291	20%	$58
Medium Hazard Exposure	42	$5,221	0	$51	0	$4,379	$9,651	5%	$483
Town of Hayden HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.13%	0.23%	05.91%	07.42%	0.0%	0.0%			
Medium Hazard Exposure	10.92%	11.75%	02.45%	01.97%	06.89%	06.89%			

Table 5-14: Town of Miami HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Miami HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**963**	**$116,969**	**34**	**$23,193**	**8**	**$6,440**	**$146,602**		
High Hazard Exposure	150	$15,824	21	$15,416	3	$3,948	$35,188	20%	$7,038
Medium Hazard Exposure	43	$4,445	1	$552	1	$1,268	$6,265	5%	$313
Town of Miami HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	15.58%	13.53%	62.84%	66.47%	43.80%	61.31%			
Medium Hazard Exposure	04.52%	03.80%	03.58%	02.38%	17.13%	19.69%			

Table 5-15: Town of Payson HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Payson HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**6,930**	**$985,722**	**357**	**$352,828**	**106**	**$58,078**	**$1,396,629**		
High Hazard Exposure	117	$17,824	7	$6,645	2	$1,507	$25,976	20%	$5,195
Medium Hazard Exposure	152	$23,304	25	$27,265	6	$3,914	$54,483	5%	$2,724
Town of Payson HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	01.68%	01.81%	02.0%	01.88%	01.66%	02.59%			
Medium Hazard Exposure	02.20%	02.36%	07.08%	07.73%	05.69%	06.74%			

Table 5-16: Town of Star Valley HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Star Valley HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**1,251**	**$170,990**	**6**	**$3,805**	**5**	**$972**	**$175,766**		
High Hazard Exposure	70	$9,213	0	$128	0	$10	$9,351	20%	$1,870
Medium Hazard Exposure	21	$2,356	0	$24	0	$3	$2,383	5%	$119
Town of Star Valley HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	05.62%	05.39%	01.47%	03.36%	01.25%	0.98%			
Medium Hazard Exposure	01.70%	01.38%	0.28%	0.62%	0.33%	0.32%			

Table 5-17: Town of Winkelman HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Winkelman HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**195**	**$18,502**	**9**	**$9,482**	**1**	**$778**	**$28,762**		
High Hazard Exposure	18	$1,683	0	$54	0	$171	$1,908	20%	$382
Medium Hazard Exposure	4	$398	0	$29	0	$24	$451	5%	$23
Town of Winkelman HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	09.0%	09.09%	04.07%	0.57%	21.96%	21.96%			
Medium Hazard Exposure	02.22%	02.15%	01.69%	0.30%	03.11%	03.11%			

Table 5-18: Unincorporated Gila County HAZUS building exposure to flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated Gila County HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**13,368**	**$1,870,289**	**202**	**$216,491**	**55**	**$52,678**	**$2,139,459**		
High Hazard Exposure	1,692	$203,862	51	$70,756	7	$4,015	$278,633	20%	$55,727
Medium Hazard Exposure	247	$31,323	1	$738	0	$101	$32,162	5%	$1,608
Unincorporated Gila County HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	12.66%	10.90%	25.25%	32.68%	13.40%	07.62%			
Medium Hazard Exposure	01.85%	01.67%	0.44%	0.34%	0.28%	0.19%			

A summary comparison of the 2006 Plan county-wide flooding vulnerability analysis results to the current plan is shown in Table 5-15. Changes shown in Table 5-19 are a result of revisions to the Planning Team asset inventory (several of the 2006 Plan assets did not have estimated replacement costs), a different flood hazard layer (DFIRM), a refinement of the GIS algorithms used to determine the HAZUS exposure, and a different loss to exposure ratio applied to the HAZUS exposure numbers.

Table 5-19: 2006 Plan county-wide flooding vulnerability analysis comparison to the 2011 Plan estimates

Exposure	2006 Plan	2011 Plan
Assets: High Hazard	$50.8 million	$50 million
Assets: Medium Hazard	$2.2 million	$2.1 million
HAZUS Facilities: High Hazard	$19 million	$84.6 million
HAZUS Facilities: Medium Hazard	$1.2 million	$6.8 million
Human: High Hazard	3,329	3,321
Human: Medium Hazard	1,056	1,061

Vulnerability – Repetitive Loss Properties

Repetitive Loss (RL) properties are those NFIP-insured properties that since 1978, have experienced multiple flood losses. FEMA tracks RL property statistics, and in particular to identify Severe RL (SRL) properties. RL properties demonstrate a track record of repeated flooding for a certain location and are one element of the vulnerability analysis. RL properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records dated January 2010 (provided by ADEM) indicate that there are 2 identified RL properties in Gila County, with a total of over $78,000 in associated building and contents value payments. Two of the payments have occurred within the last five years. Table 5-20 summarizes the RL property characteristics by jurisdiction.

Table 5-20: Repetitive Loss property statistics for Gila County jurisdictions

Jurisdiction	No. of Properties	No. of Properties Mitigated	Total Payments
Unincorporated Gila County	2	0	$78,878
Source: FEMA Region IX, 2010 (data as of January 31, 2010)			

Vulnerability – Development Trends

Many floodprone properties in Gila County pre-date the planning jurisdictions' entry into the NFIP and were constructed prior to current floodplain management practices. The development of new properties or substantial re-development of existing structures is now subject to regulatory review procedures implemented by each jurisdiction. New development, adequate planning and regulatory tools are in place to regulate future development. For many areas within the county, challenges for the management of new growth include the need for master drainage planning and additional floodplain delineations to identify and map the flood hazards within the growth areas where no mapping currently exists.

Sources

Arizona Division of Emergency Management, 2010, State of Arizona Multi-Hazard Mitigation Plan.

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JE Fuller/ Hydrology & Geomorphology, 2006, City of Globe Multi-Hazard Mitigation Plan

JE Fuller/ Hydrology & Geomorphology, 2006, Town of Hayden Multi-Hazard Mitigation Plan

JE Fuller/ Hydrology & Geomorphology, 2009, Town of Miami Multi-Hazard Mitigation Plan

JE Fuller/ Hydrology & Geomorphology, 2006, Town of Payson Multi-Hazard Mitigation Plan

JE Fuller/ Hydrology & Geomorphology, 2009, Town of Star Valley Multi-Hazard Mitigation Plan

JE Fuller/ Hydrology & Geomorphology, 2006, Town of Winkelman Multi-Hazard Mitigation Plan

NOAA, National Weather Service Forecast Office – Tucson, 2011, website data accessed via the following URL: http://www.wrh.noaa.gov/twc/hydro/floodhis.php

U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

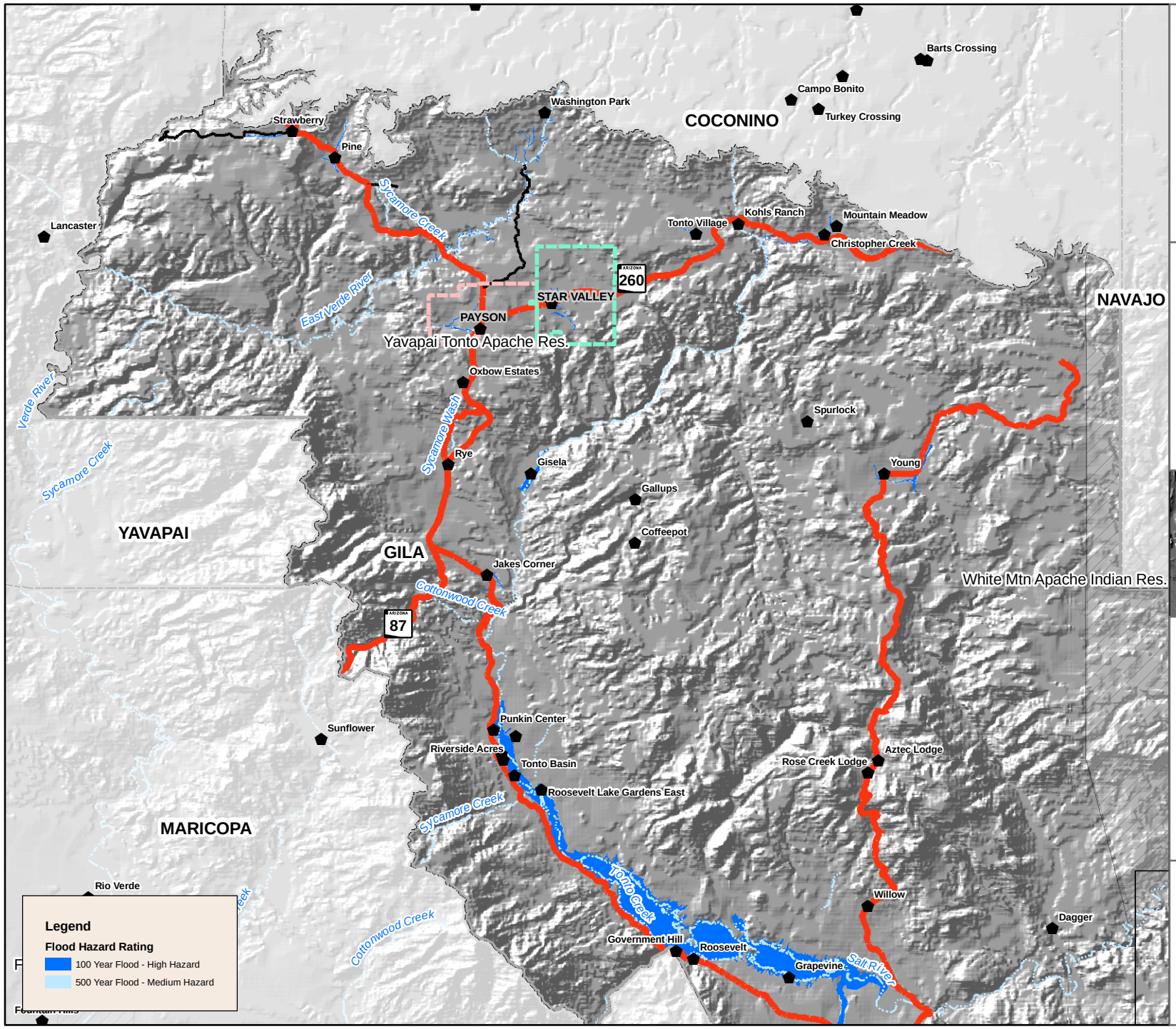
U.S. Army Corps of Engineers, Los Angeles District, 1994, Flood Damage Report, State of Arizona, Floods of 1993.

Profile Maps

Maps 1A, 1B, and 1C – County-Wide Flood Hazard Maps

Maps 1D through 1I – Individual Communities' Flood Hazard Maps

Gila County Multi-Jurisdictional Hazard Mitigation Plan



Legend

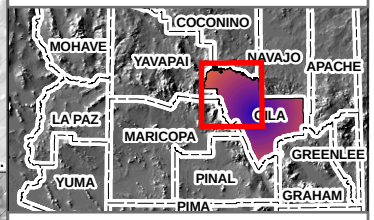
- Cities and Places
- County Boundary
- Indian Reservation
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

- Interstates
- Highways
- Arterials

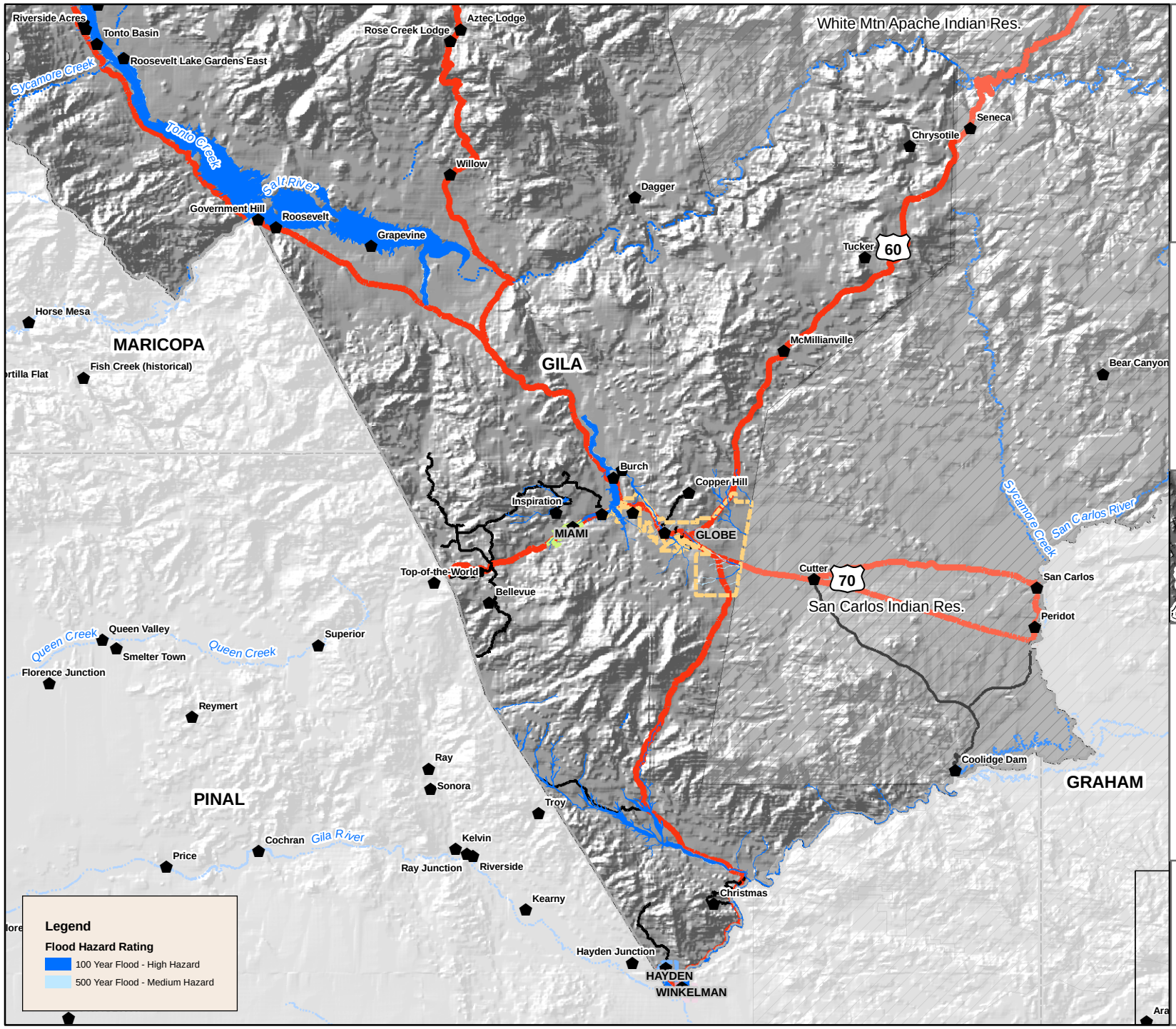


0 2 4 8 Miles

Map 1A
Gila County
Flood Hazard Map
as of December 2010

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009

Gila County Multi-Jurisdictional Hazard Mitigation Plan



Legend

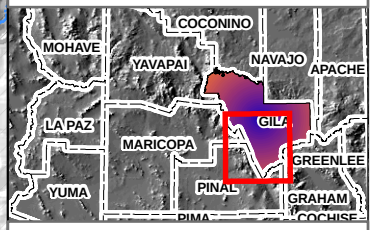
- Cities and Places
- County Boundary
- Indian Reservation
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

- Interstates
- Highways
- Arterials

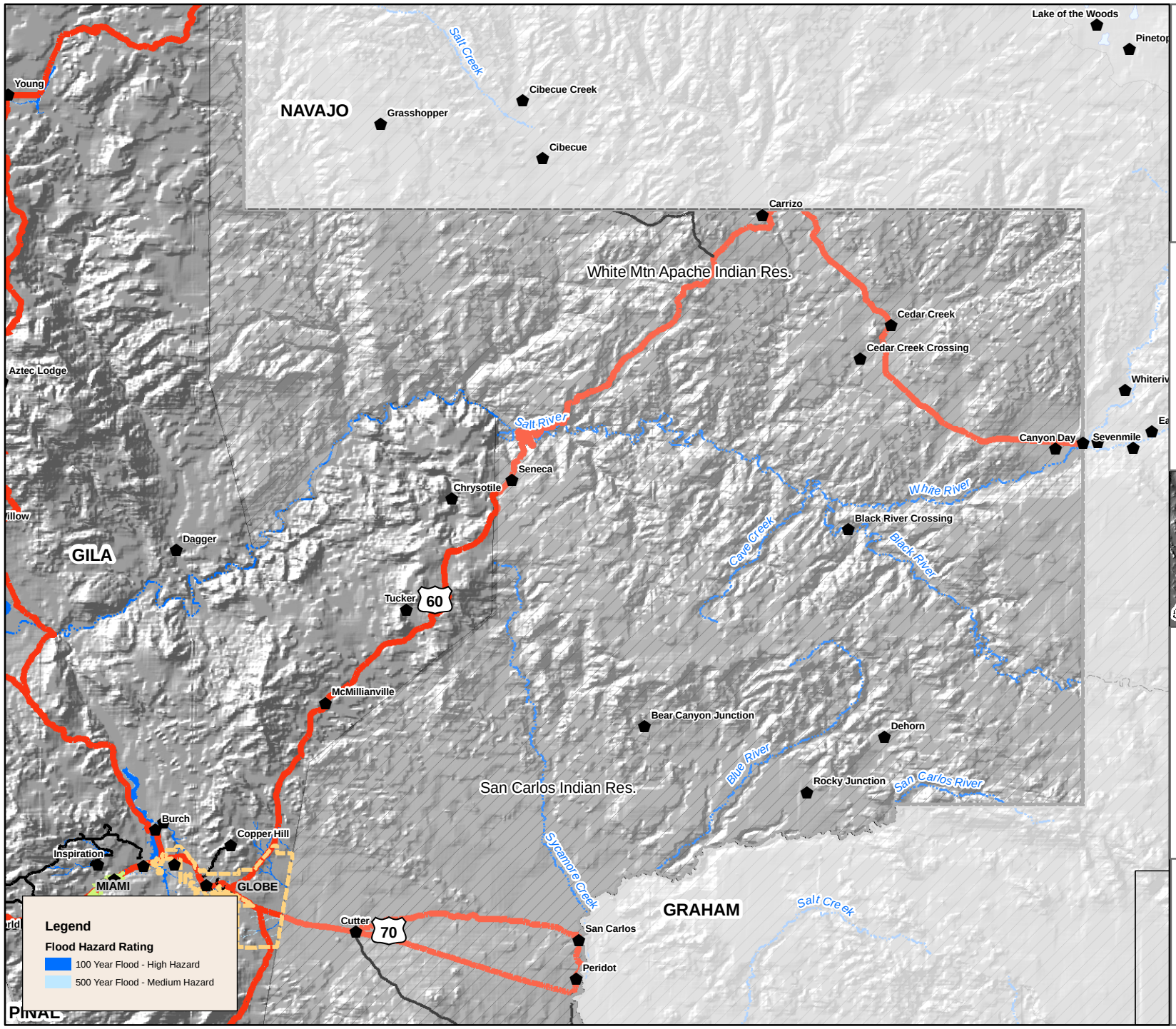


0 2 4 8 Miles

Map 3B
Gila County
Flood Hazard Map
as of December 2010

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009

Gila County Multi-Jurisdictional Hazard Mitigation Plan



Legend

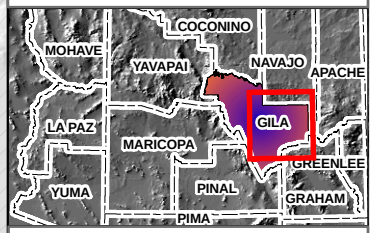
- Cities and Places
- County Boundary
- Indian Reservation
- Lakes
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

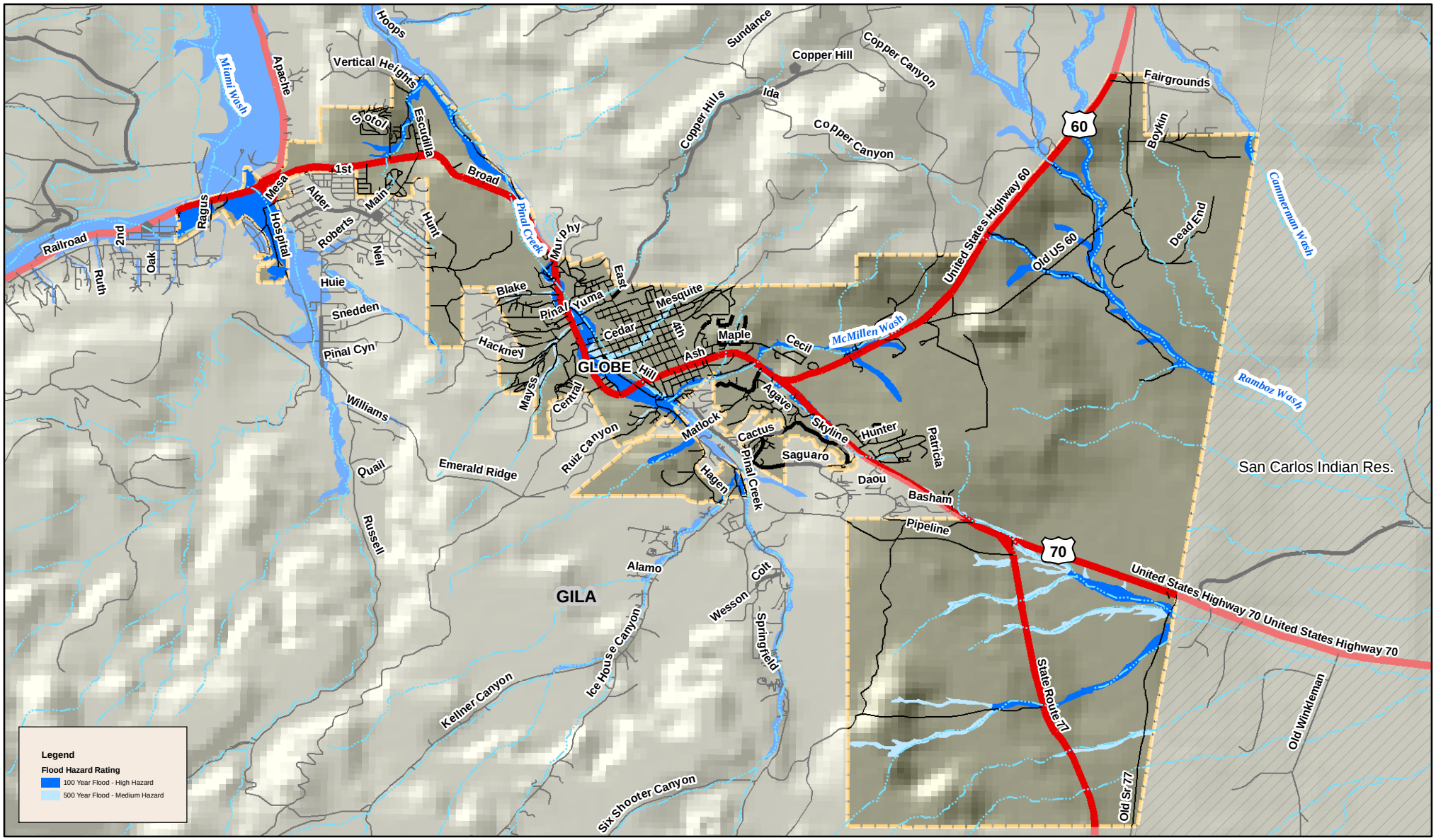
- Interstates
- Highways
- Arterials



0 2 4 8 Miles

Map 1C
Gila County
Flood Hazard Map
as of December 2010

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009



Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

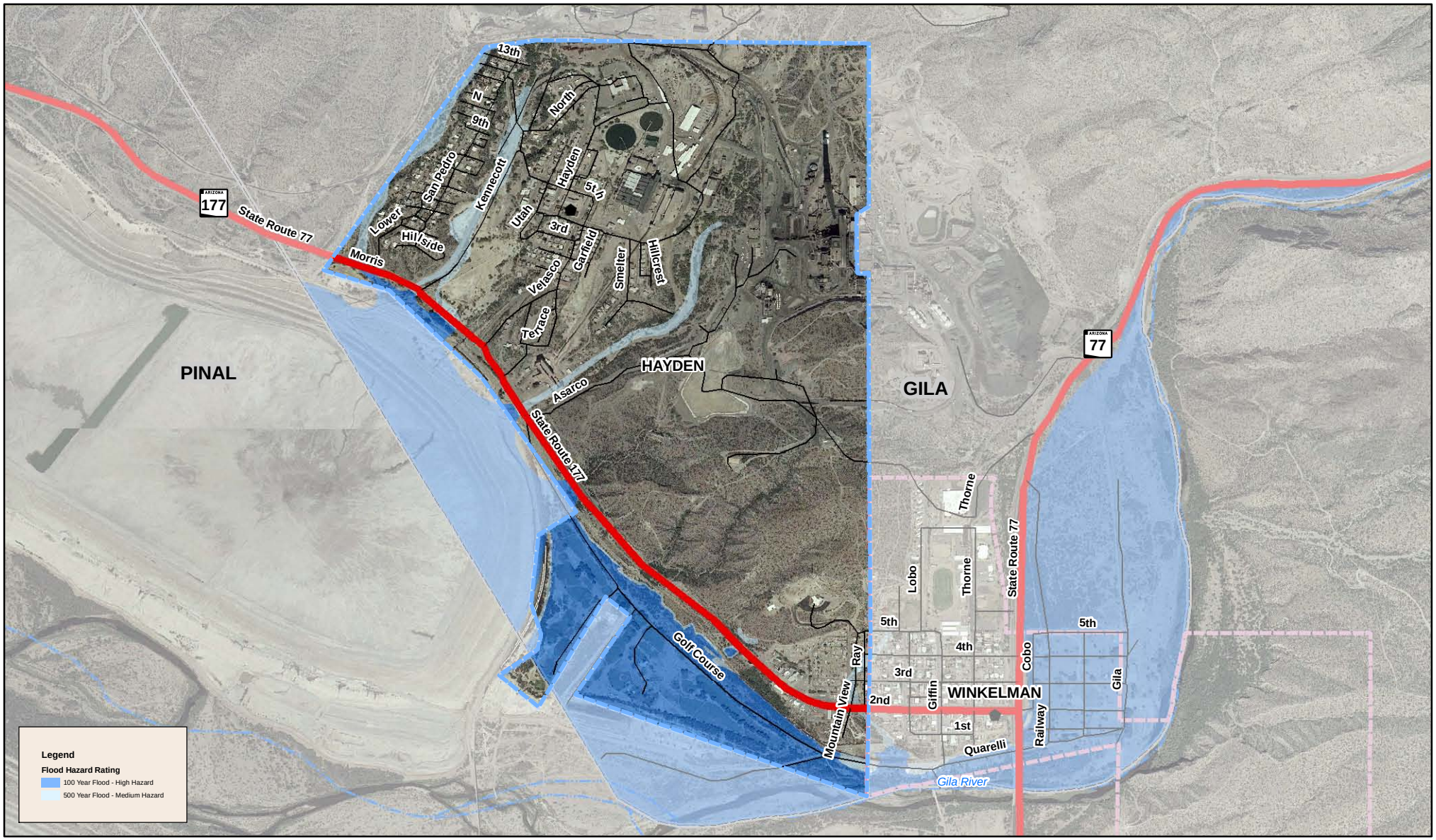
N

0 0.75 1.5 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009

Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1D
City of Globe
Flood
Hazard Map
as of December 2010



Legend

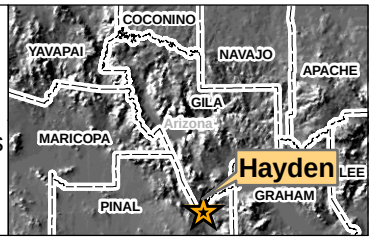
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

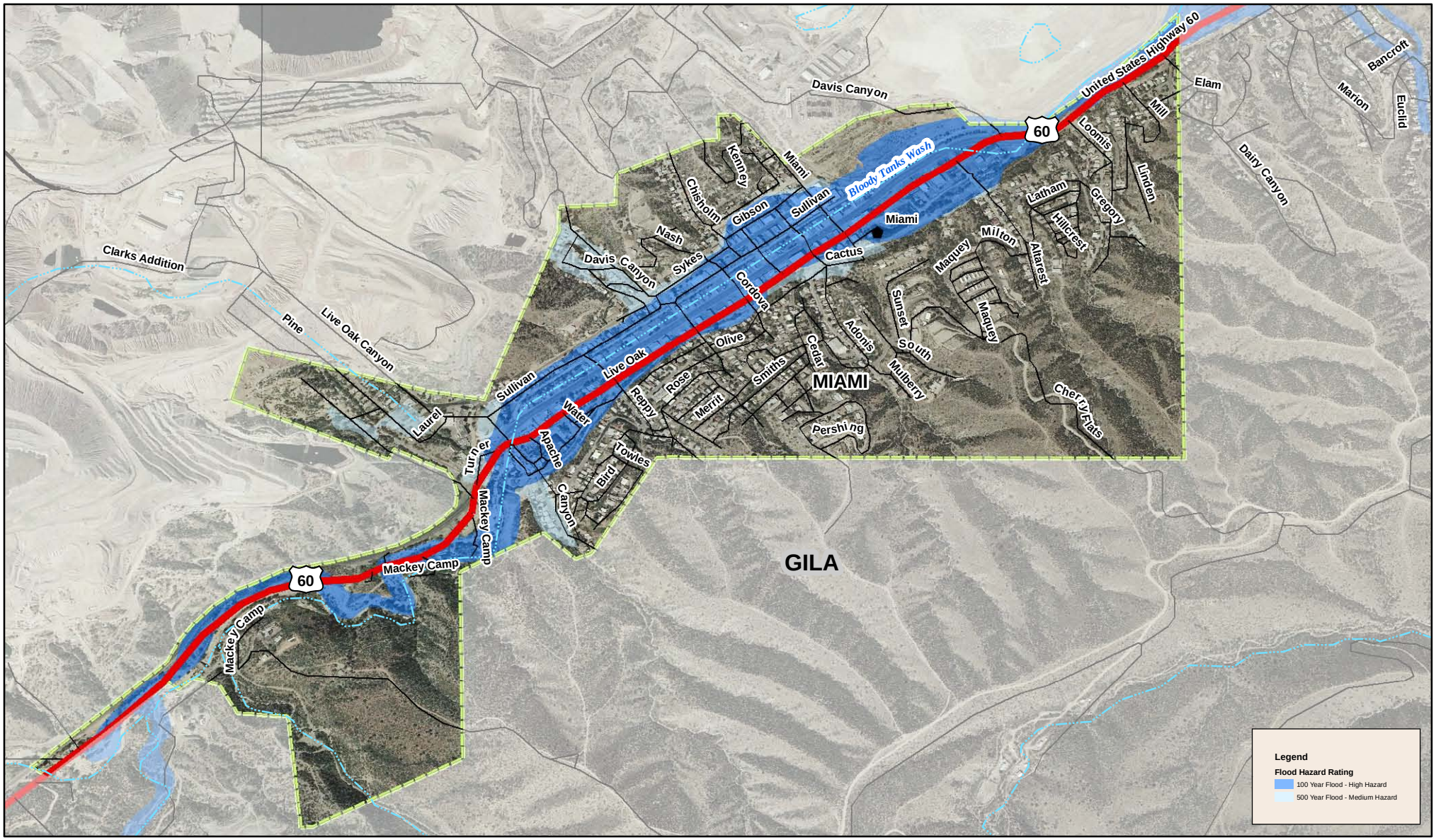
0 0.25 0.5 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009; ASLD, 2005



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1E
Town of Hayden
Flood
Hazard Map
as of December 2010



Legend

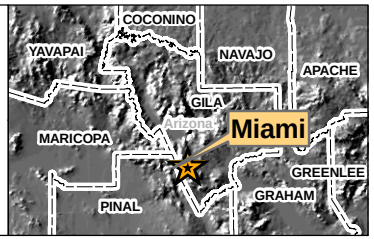
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

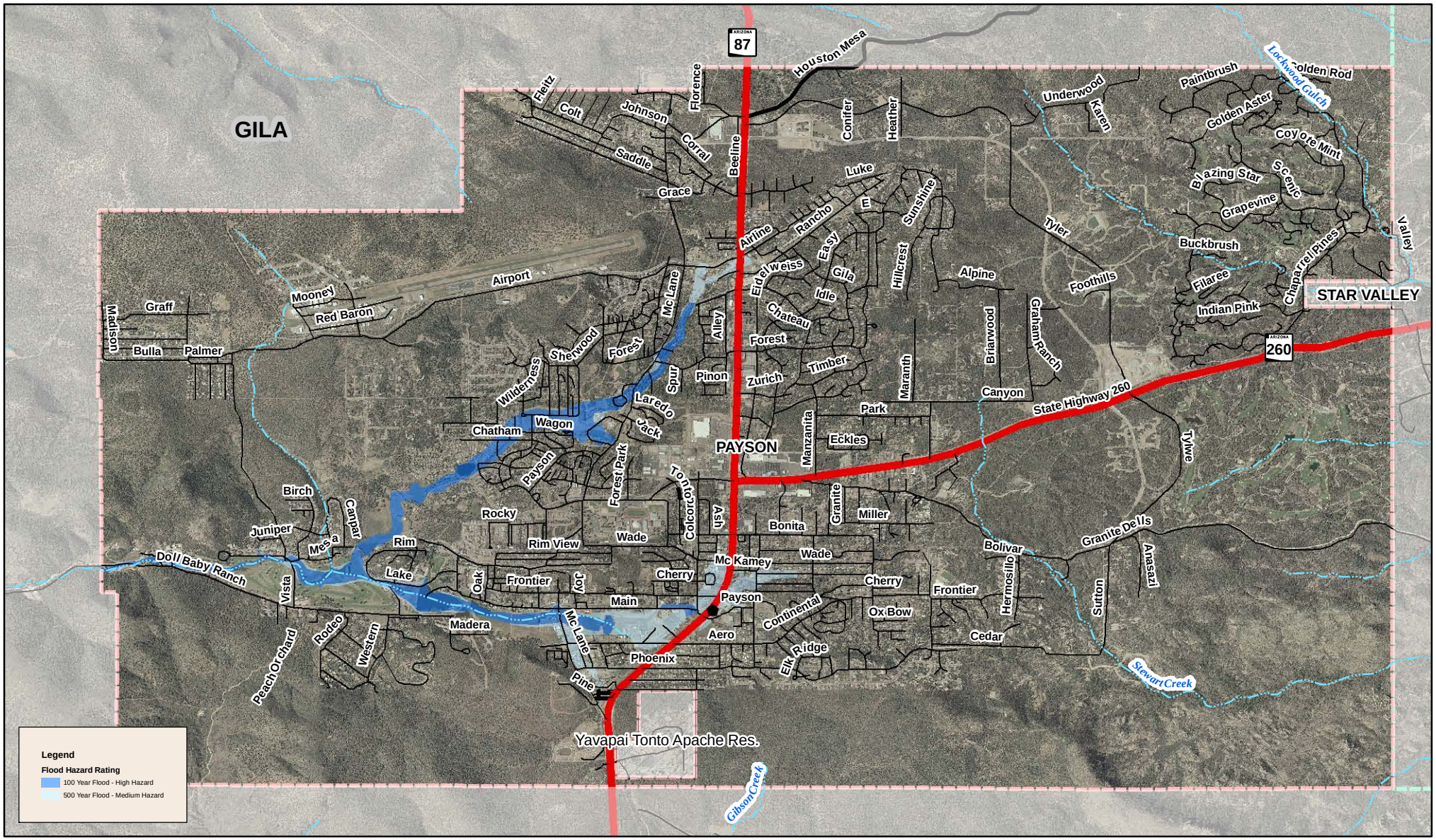
0 0.2 0.4 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009; ASLD, 2005



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1F
Town of Miami
Flood
Hazard Map
as of December 2010



Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

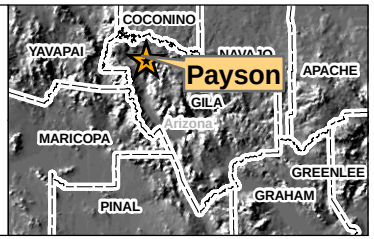
Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

N

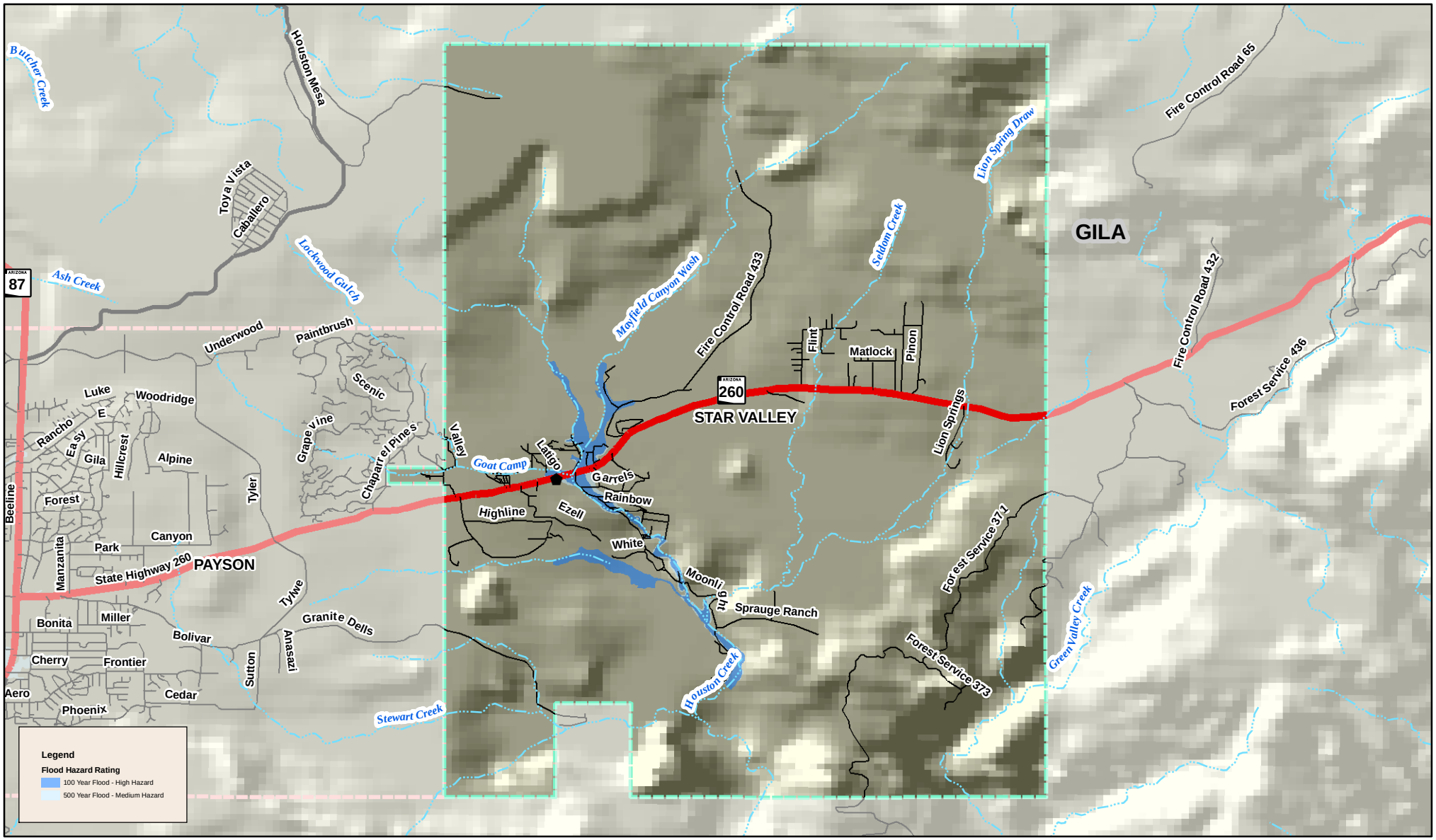
0 0.5 1 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009; ASLD, 2005



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1G
Town of Payson
Flood
Hazard Map
as of December 2010



Legend

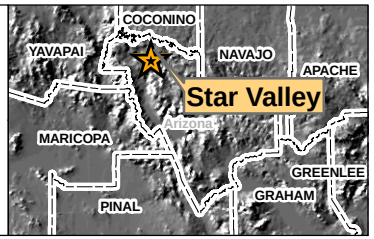
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

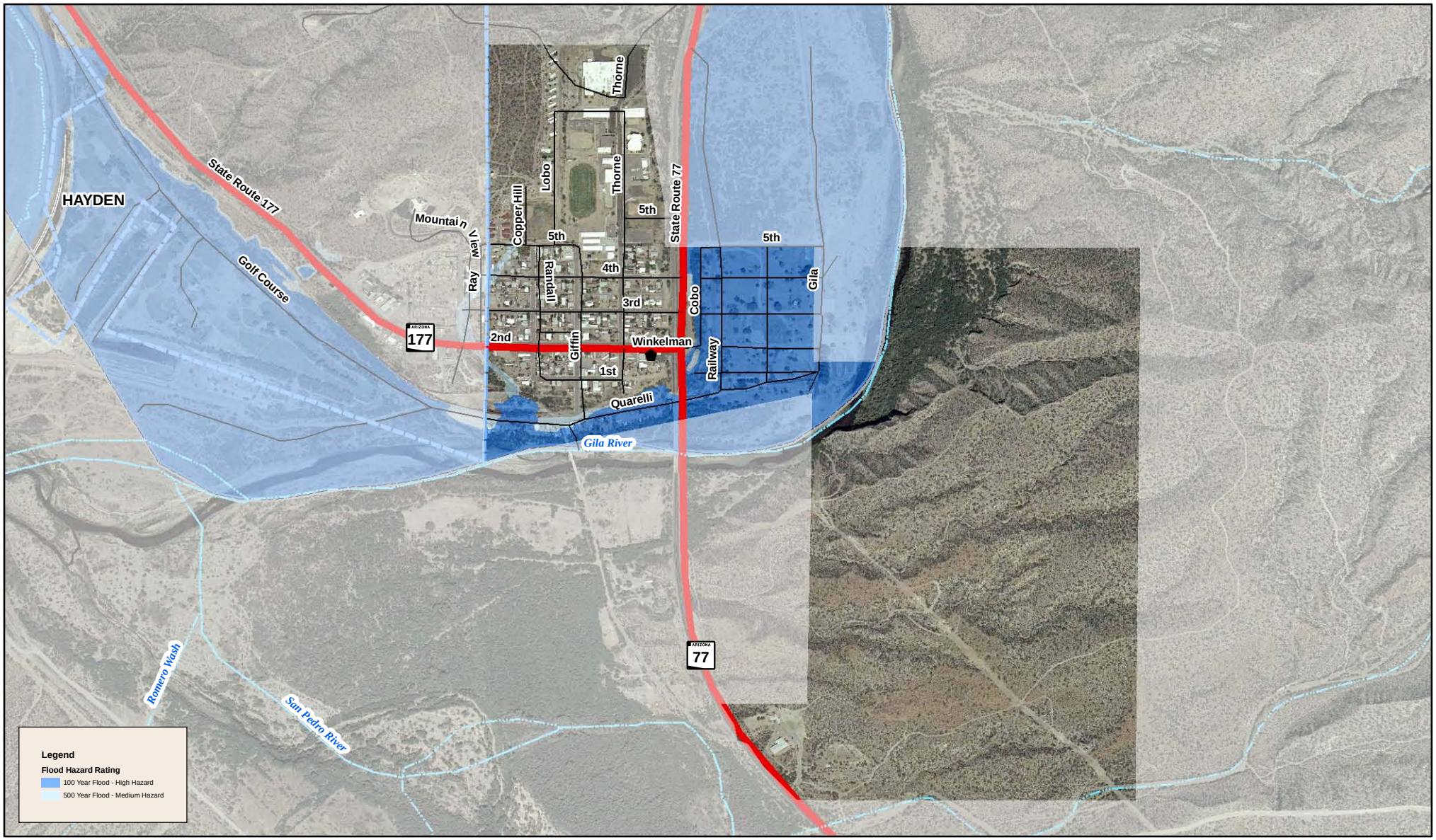
0 0.75 1.5 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1H
Town of Star Valley
Flood
Hazard Map
as of December 2010



Legend

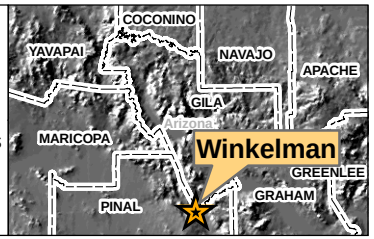
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

0 0.2 0.4 Miles

Sources:
ALRIS, 2010; JEF, 2010; FEMA, 2009; ASLD, 2005



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 1I
Town of Winkelman Flood Hazard Map
as of December 2010

5.3.3 Hazardous Materials Incidents

Description

The threat of exposure to Hazardous Materials (HAZMAT) in our modern society is prevalent nationwide and throughout Gila County. HAZMAT incidents can occur from either point source spills or from transportation related accidents. In Gila County, the primary areas of risk associated with HAZMAT incidents are located near or along Tier II facilities, major roads and rail lines, and pipelines that transport hazardous substances. These substances may be highly toxic, reactive, corrosive, flammable, explosive, radioactive or infectious, with potential to contaminate air, soil, and water resources and pose a serious risk to life, health, environment and property. HAZMAT incidents can result in the evacuation of a few people, a specific facility, or an entire neighborhood(s) depending on the size and magnitude of the release and environmental conditions.

The Arizona State Emergency Response Commission (AZSERC), established by Arizona Law (Arizona Revised Statutes-Title 26, Chapter 2, Article 3) is tasked with the implementation of the Emergency Planning and Community Right to Know Act (EPCRA) in Arizona. Local Emergency Planning Committees (LEPC) are appointed by AZSERC, as required by EPCRA, first to design, then to regularly review and update a comprehensive emergency plan for an emergency planning district. There are 15 LEPC's in Arizona - one in each county.

State statutes and Sections 311 and 312 of EPCRA set forth hazardous chemical storage reporting requirements and thresholds for facilities possessing hazardous materials. The legislation requires that facilities storing or producing hazardous materials in quantities that exceed a defined Threshold Planning Quantity (TPQ), submit an annual chemical inventory report (Tier II Hazardous Chemical Inventory Form) to AZSERC, the appropriate LEPC, and local fire department, by March 1 of each year. Facilities holding an Extremely Hazardous Substance (EHS) at quantities exceeding the Threshold Planning Quantities (TPQ) must provide the notifications as well as a representative to participate in the county emergency planning process.

For the purposes of this Plan, the Planning Team chose to focus only on those HAZMAT facilities and chemicals that are classified by the Environmental Protection Agency (EPA) as extremely hazardous substances (EHS) Typical EHS materials transported and stored routinely in the county include chlorine gas, sulphuric acid, and hydrogen flouride.

History

According to the National Response Commission database, there are at least 103 reported incidents of HAZMAT releases that have occurred since 1980 within Gila County that involved at least one injury/fatality or some amount of property damage. The Town of Payson reported 77 HAZMAT incidents which cost $68,812 for response. The majority of the reported incidents occurred in and around the mining towns of Claypool, Globe, Hayden and Miami. The Arizona Eastern Railway serves this southern region of Gila County and primarily transports in and out of this copper mining area sulfuric acid, copper concentrate, copper anode, and copper rod and other copper processing materials. The following incidents represent examples of hazardous materials incidents that has occurred in Gila County:

- In June 1991, while drilling for a groundwater well, workers hit a gas pocket of hydrogen sulfide which prompted the evacuation of 2,000 people in the surrounding area in Globe. In order to remediate the accident, a well team was called to blow the well casing and fill it with cement. (NRC, 2004)
- In December 1999, a tanker truck five miles south of Payson ran over an embankment and exploded causing 7,000 gallons of spilled diesel fuel. The clean-up and damages amounted to $50,000. (NRC, 2004)
- In February 2001, in the town of Hayden, 100 gallons of arsenic acid was released out of a four inch pipe line that runs from the stripper unit to the filter plant due to an unknown leak. (NRC, 2011)

- In May 2003, a tanker truck lost control while going downhill and overturned, catching fire and killing the driver and injuring two others in Payson. The truck was carrying 8,500 gallons of gasoline which was consumed in the fire. (NRC, 2004)
- In November 2003, an excavation contractor in Payson damaged a pad-mount electrical transformer and buried conduit. The transformer released 100 gallons of non-PCB mineral oil. (NRC, 2011)
- In November 2004, a fire occurred in Globe at a metal chemical facility causing a release of heavy metals to the atmosphere. The cause of the fire was unknown at the time of the call. (NRC, 2011)
- In June 2005, it was reported in the town of Hayden that an unknown material from an unknown source involved "chemicals running down the street and people are being told to get out of their homes. (NRC, 2011)
- In March 2006, due to a heavy snow storm, a utility pole was knocked over in the City of Globe. The pole held three transformers, one of the transformers broke causing a release of materials onto the ground. The rain moved the material to water-filled wash. (NRC, 2011)
- In October 2006, in the town of Miami, a caller reported the discovery of a large cloud of sulfur trioxide near her neighborhood coming from a near-by copper mine. (NRC, 2011)
- On January 2008, a train derailed in Cutter and released magnesium oxide powder and diesel fuel. The train derailment was caused due to a flood in the area which washed out the embankment area where the train ties into the bridge. The discharge of diesel fuel from a locomotive whose tanks had puncturing including one which totally ripped off when falling into Gilson Wash. The train was carrying magnesium based paint and about 2,000 gallons of diesel fuel on board at the time of the incident. (NRC, 2011)
- In March 2010, a caller reported suspected responsible party intentionally is dumping material onto the ground from either barrels or buckets. They cover it up with a slab of cement in the back of their property. The caller reports this has been occurring for the past two years and is continuing. (NRC, 2011)

Probability and Magnitude

There are no known probability statistics regarding HAZMAT incidents for Gila County.

Typically, the magnitude of impact from a HAZMAT incident can be projected by using models such as ALOHA and CAMEO with assumed incident characteristics such as chemical type and source amount, spill location and amount, release time and rate, surface type, temperature, humidity, wind direction and speed, chemical stability factors. Those modeling efforts, however, are beyond the scope of this Plan.

For the purpose of this Plan, the Planning Team chose to establish two (2) hazard classifications, high and medium, for profiling EHS hazards. High hazard exposure areas are assumed to be located within a one-mile radius or offset of any Tier II EHS facility, roadway and railway transportation corridor where EHS materials are known to be stored or transported on a somewhat regular basis. Similarly, the medium hazard exposure areas are assumed to be located within a second one-mile wide band that is offset from the High hazard area. All other areas are considered to be Low hazard.

Maps 2A, 2B, and 2C show the HAZMAT hazard areas for the entire county. Maps 2D through 2I show the HAZMAT hazard areas for each community.

Vulnerability – CPRI Results

HAZMAT CPRI results for each community are summarized in Table 5-21 below.

Table 5-21: CPRI results by jurisdiction for HAZMAT

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Unlikely	Critical	< 6 hours	< 24 hours	2.15
Hayden	Likely	Critical	< 6 hours	< 24 hours	3.05
Miami	Possible	Critical	< 6 hours	< 24 hours	2.60
Payson	Possible	Limited	< 6 hours	< 24 hours	2.30
Unincorporated Gila County	Likely	Critical	< 6 hours	< 1 week	3.05
				County-wide average CPRI =	**2.63**

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium HAZMAT hazards was accomplished by intersecting the human and critical facility assets with the HAZMAT hazard limits depicted on Map 2A, 2B and 2C. Table 5-22 summarizes the Planning Team identified critical facilities potentially exposed to high and medium HAZMAT hazards, and the corresponding estimates of losses. Table 5-23 summarizes population sectors exposed to the high and medium HAZMAT hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium HAZMAT hazards are summarized in Tables 5-24 through 5-34.

In summary, $1.8 billion and $46 million in county-wide assets are exposed for high and medium HAZMAT hazards, for all the participating jurisdictions in Gila County. An additional $3.9 billion and $487 million in high and medium flood hazard exposure of HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Gila County jurisdictions. Regarding human vulnerability, a total population of 42,231 people, or 82% of the total population, is potentially exposed to a high hazard HAZMAT event. A total population of 5,639 people, or 11% of the total population, is potentially exposed to a medium hazard HAZMAT event. It is recognized that EHS incidents typically occur in a single localized area and do not impact an entire county or community at one time. These numbers are intended to represent the collective community or county-wide exposure. Actual losses for an individual incident are likely to be only a fraction of the numbers presented here. Because of the nature of this hazard, structural damage is highly unlikely and decontamination costs related to replacements cost would only be a small fraction.

Table 5-22: Asset inventory exposure to high and medium hazard HAZMAT and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x $1,000)	Estimated Structure Loss (x $1,000)
HIGH					
County-Wide Totals	**266**	**217**	**81.58%**	**$1,857,767**	**$0**
Globe	25	25	100.00%	$55,650	$0
Hayden	18	18	100.00%	$1,033,728	$0
Miami	13	13	100.00%	$28,570	$0
Payson	61	60	98.36%	$168,508	$0
Star Valley	6	6	100.00%	$0	$0
Unincorporated	133	85	63.91%	$560,793	$0
Winkelman	10	10	100.00%	$10,517	$0
MEDIUM					
County-Wide Totals	**266**	**9**	**3.38%**	**$46,429**	**$0**
Globe	25	0	0.00%	$0	$0
Hayden	18	0	0.00%	$0	$0
Miami	13	0	0.00%	$0	$0
Payson	61	0	0.00%	$0	$0
Star Valley	6	0	0.00%	$0	$0
Unincorporated	133	9	6.77%	$46,429	$0
Winkelman	10	0	0.00%	$0	$0

Table 5-23: Population sectors exposed to high and medium hazard HAZMAT

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed
HIGH						
County-Wide Totals	**51,329**	**42,231**	**82.27%**	**10,222**	**8,598**	**84.11%**
City of Globe	7,399	7,231	97.74%	1,194	1,183	99.11%
San Carlos Indian Res.	4,783	3,498	73.13%	300	225	75.11%
Town of Hayden	904	904	100.00%	111	111	100.00%
Town of Miami	1,885	1,885	100.00%	305	305	100.00%
Town of Payson	13,457	13,051	96.99%	3,755	3,668	97.66%
Town of Star Valley	2,013	1,623	80.61%	512	420	82.04%
Town of Winkelman	419	418	99.64%	66	66	99.56%
Unincorporated	18,829	12,205	64.82%	3,860	2,516	65.19%
White Mtn Apache Indian	1,514	1,289	85.11%	94	79	83.55%
Yavapai Tonto Apache Res.	127	127	100.00%	25	25	100.00%
MEDIUM						
County-Wide Totals	**51,329**	**5,639**	**10.99%**	**10,222**	**963**	**9.42%**
City of Globe	7,399	168	2.26%	1,194	11	0.89%
San Carlos Indian Res.	4,783	1,082	22.62%	300	55	18.48%
Town of Hayden	904	0	0.00%	111	0	0.00%
Town of Miami	1,885	0	0.00%	305	0	0.00%
Town of Payson	13,457	270	2.01%	3,755	61	1.63%
Town of Star Valley	2,013	499	24.77%	512	113	22.12%
Town of Winkelman	419	0	0.00%	66	0	0.00%
Unincorporated	18,829	3,458	18.37%	3,860	714	18.49%
White Mtn Apache Indian	1,514	163	10.77%	94	9	9.41%
Yavapai Tonto Apache Res.	127	0	0.00%	25	0	0.00%

Table 5-24: Gila County HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Gila County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**28,136**	**$3,880,633**	**822**	**$749,955**	**212**	**$223,733**	**$4,854,321**		
High Hazard Exposure	22,378	$3,082,403	757	$706,427	184	$189,779	$3,978,609	%	$0
Medium Hazard Exposure	3,177	$457,284	33	$20,425	14	$9,414	$487,123	%	$0
Gila County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	79.54%	79.43%	92.14%	94.20%	86.83%	84.82%			
Medium Hazard Exposure	11.29%	11.78%	04.06%	02.72%	06.72%	04.21%			

Table 5-25: City of Globe HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Globe HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**3,216**	**$474,198**	**200**	**$136,641**	**33**	**$41,189**	**$652,028**		
High Hazard Exposure	3,179	$463,631	199	$136,364	32	$41,137	$641,131	%	$0
Medium Hazard Exposure	37	$10,568	1	$277	0	$52	$10,897	%	$0
City of Globe HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	98.84%	97.77%	99.53%	99.80%	99.04%	99.87%			
Medium Hazard Exposure	01.16%	02.23%	0.47%	0.20%	0.96%	0.13%			

Table 5-26: San Carlos Indian Reservation HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
San Carlos Indian Res. (Gila County) HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**1,350**	**$140,104**	**6**	**$4,467**	**0**	**$34**	**$144,605**		
High Hazard Exposure	1,053	$105,647	1	$1,011	0	$33	$106,691	%	$0
Medium Hazard Exposure	256	$28,323	1	$789	0	$1	$29,113	%	$0
San Carlos Indian Res. (Gila County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	77.99%	75.41%	21.57%	22.62%	90.81%	96.24%			
Medium Hazard Exposure	18.97%	20.22%	11.11%	17.67%	09.19%	03.76%			

Table 5-27: Town of Hayden HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Hayden HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**382**	**$44,430**	**6**	**$2,567**	**5**	**$63,563**	**$110,560**		
High Hazard Exposure	382	$44,430	6	$2,567	5	$63,563	$110,560	%	$0
Medium Hazard Exposure	0	$0	0	$0	0	$0	$0	%	$0
Town of Hayden HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Medium Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-28: Town of Miami HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Miami HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**963**	**$116,969**	**34**	**$23,193**	**8**	**$6,440**	**$146,602**		
High Hazard Exposure	963	$116,969	34	$23,193	8	$6,440	$146,602	%	$0
Medium Hazard Exposure	0	$0	0	$0	0	$0	$0	%	$0
Town of Miami HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			
Medium Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-29: Town of Payson HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Payson HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**6,930**	**$985,722**	**357**	**$352,828**	**106**	**$58,078**	**$1,396,629**		
High Hazard Exposure	6,724	$958,224	349	$348,723	102	$57,241	$1,364,188	%	$0
Medium Hazard Exposure	151	$20,962	5	$1,952	3	$662	$23,576	%	$0
Town of Payson HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	97.02%	97.21%	97.60%	98.84%	96.89%	98.56%			
Medium Hazard Exposure	02.18%	02.13%	01.46%	0.55%	02.49%	01.14%			

Table 5-30: Town of Star Valley HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Star Valley HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1,251**	**$170,990**	**6**	**$3,805**	**5**	**$972**	**$175,766**		
High Hazard Exposure	995	$136,890	4	$2,021	4	$716	$139,627	%	$0
Medium Hazard Exposure	297	$38,952	5	$3,674	2	$411	$43,037	%	$0
Town of Star Valley HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	79.54%	80.06%	59.81%	53.13%	74.98%	73.72%			
Medium Hazard Exposure	23.70%	22.78%	88.71%	96.57%	36.36%	42.28%			

Table 5-31: Town of Winkelman HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Winkelman HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**195**	**$18,502**	**9**	**$9,482**	**1**	**$778**	**$28,762**		
High Hazard Exposure	195	$18,435	9	$9,482	1	$778	$28,695	%	$0
Medium Hazard Exposure	0	$0	0	$0	0	$0	$0	%	$0
Town of Winkelman HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	99.69%	99.64%	100.0%	100.0%	100.0%	100.0%			
Medium Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-32: Unincorporated Gila County HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated Gila County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**13,368**	**$1,870,289**	**202**	**$216,491**	**55**	**$52,678**	**$2,139,459**		
High Hazard Exposure	8,478	$1,187,179	154	$182,586	32	$19,871	$1,389,636	%	$0
Medium Hazard Exposure	2,386	$352,130	21	$13,732	9	$8,288	$374,150	%	$0
Unincorporated Gila County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	63.42%	63.48%	76.30%	84.34%	57.78%	37.72%			
Medium Hazard Exposure	17.84%	18.83%	10.46%	06.34%	17.32%	15.73%			

Table 5-33: White Mountain Apache Indian HAZUS building exposure to HAZMAT									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
White Mtn Apache Indian (Gila County) HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**441**	**$55,614**	**0**	**$0**	**0**	**$0**	**$55,614**		
High Hazard Exposure	371	$47,184	0	$0	0	$0	$47,184	%	$0
Medium Hazard Exposure	50	$6,351	0	$0	0	$0	$6,351	%	$0
White Mtn Apache Indian (Gila County) HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	84.08%	84.84%	0.47%	0.44%	0.0%	0.0%			
Medium Hazard Exposure	11.34%	11.42%	02.39%	02.20%	0.0%	0.0%			

Table 5-34: Yavapai Tonto Apache Reservation HAZUS building exposure to HAZMAT

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Yavapai Tonto Apache Reservation HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**39**	**$3,815**	**1**	**$480**	**0**	**$0**	**$4,296**		
High Hazard Exposure	39	$3,815	1	$480	0	$0	$4,296	%	$0
Medium Hazard Exposure	0	$0	0	$0	0	$0	$0	%	$0
Yavapai Tonto Apache Reservation HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	99.99%	100.0%	100.0%	100.0%	100.0%	100.0%			
Medium Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

A summary comparison of the 2006 Plan county-wide HAZMAT vulnerability analysis results to the current plan is shown in Table 5-35. For this plan update, the planning team decided not to use exposure-to-loss ratio to determine the estimated losses as was done in the 2006 plan. Therefore, for the sake of comparison, the exposed replacement costs values are used in Table 5-35 from both plans. Changes shown in Table 5-35 are a result of revisions to the Planning Team asset inventory (several of the 2006 Plan assets did not have estimated replacement costs), a different HAZMAT hazard layer, and a refinement of the GIS algorithms used to determine the HAZUS exposure..

Table 5-35: 2006 Plan county-wide HAZMAT vulnerability analysis comparison to the 2011 Plan estimates

Exposure	2006 Plan	2011 Plan
Assets: High Hazard	$1.8 Billion	$1.85 Billion
Assets: Medium Hazard	$261 Million	$46 Million
HAZUS Facilities: High Hazard	$3.68 Billion	$3.97 Billion
HAZUS Facilities: Medium Hazard	$536 Million	$487 Million
Human: High Hazard	37,449 people	42,231 people
Human: Medium Hazard	4,386 people	5,639 people

Vulnerability – Development Trends

As the vulnerability analysis indicates, much of Gila County is exposed to some level of EHS threat. That exposure will only worsen as development increases. It may be advantageous to pursue designating certain roadways as EHS corridors to limit the exposure, and establishing buffer zones along corridors known to be frequent EHS transport routes. Development of high-density population land uses such as schools, nursing homes, apartment complexes, etc., should be discouraged within these zones.

EHS facilities that have potential for critical or catastrophic HAZMAT releases should be located on flat topography and take care to protect against negative climate and microclimate conditions; utilize shading from excessive sun in warm climate, and/or other best management practices.

Sources

Arizona Division of Emergency Management, 2010, State of Arizona Multi-Hazard Mitigation Plan.

JE Fuller/ Hydrology & Geomorphology, 2006, City of Nogales Multi-Hazard Mitigation Plan

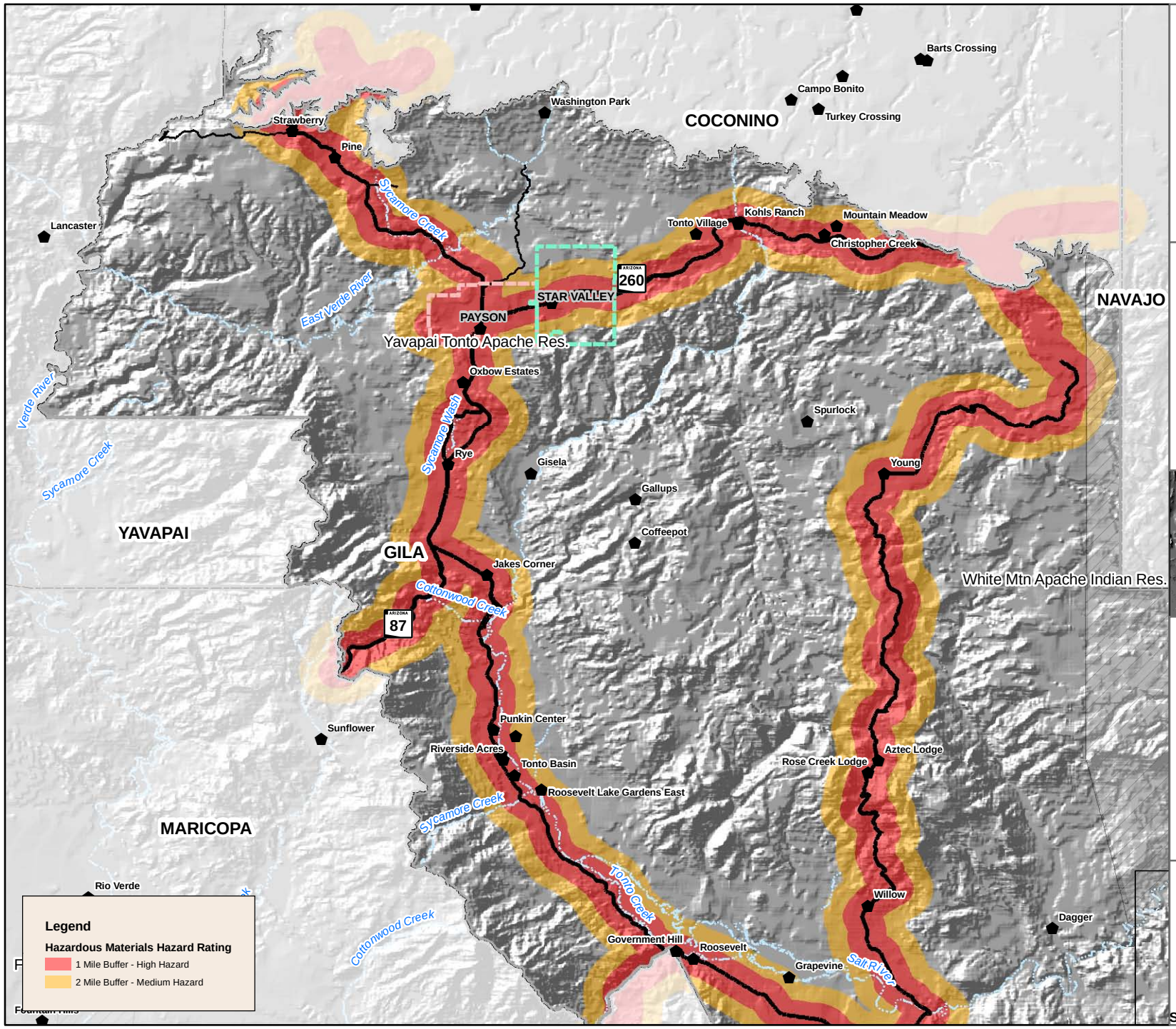
JE Fuller/ Hydrology & Geomorphology, 2006, Town of Patagonia Multi-Hazard Mitigation Plan

U.S. Department of Transportation, 1996, North American Emergency Response Guidebook

Profile Maps

Maps 2A, 2B, and 2C – County-Wide Hazardous Materials Hazard Maps

Maps 2D through 2H– Community Wide Hazardous Materials Hazard Maps



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Legend

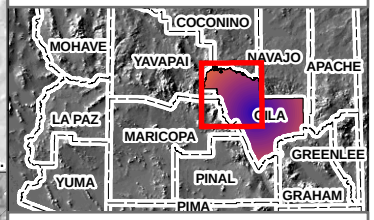
- Cities and Places
- County Boundary
- Indian Reservation
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

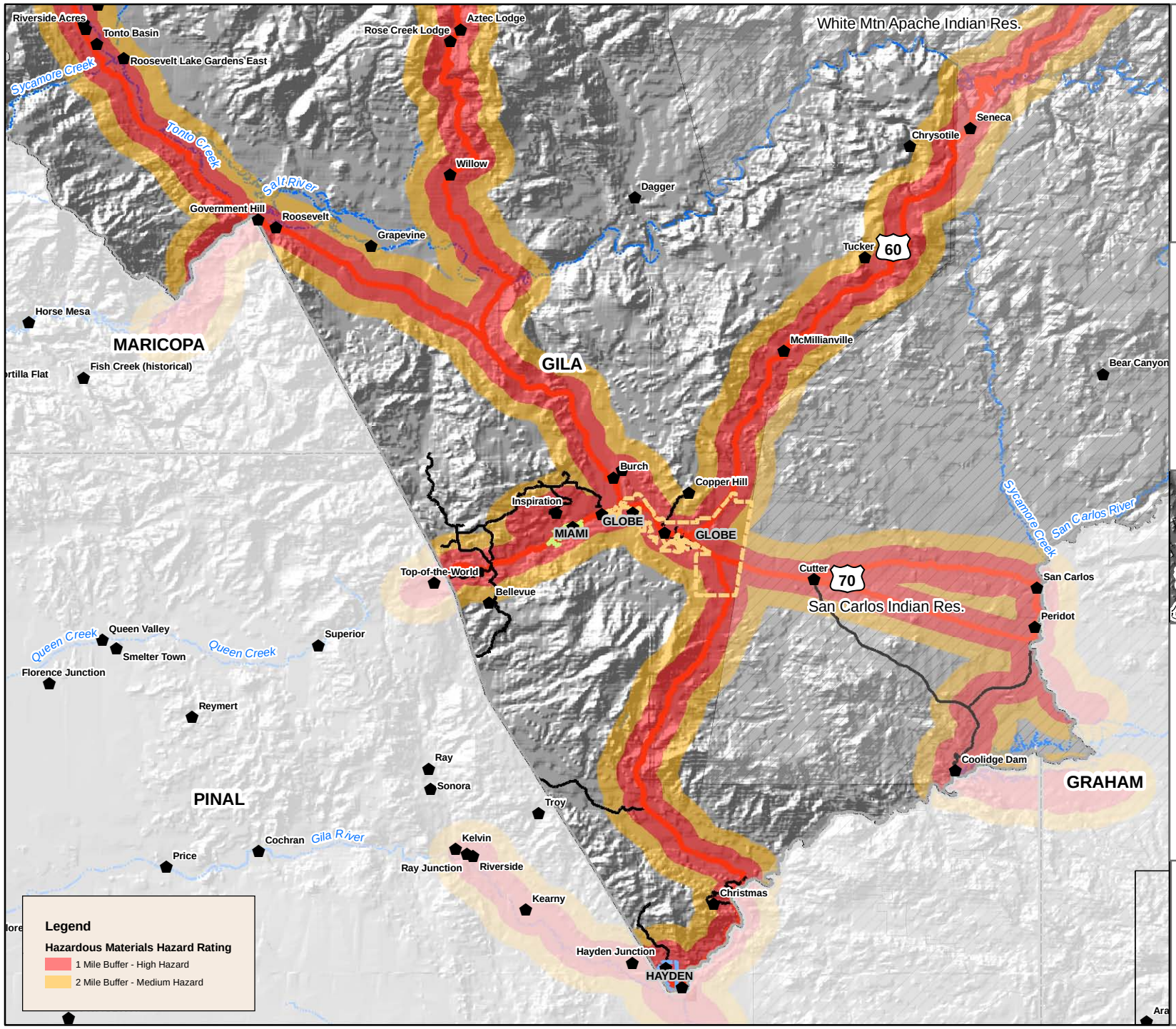
- Interstates
- Highways
- Arterials



0 2 4 8 Miles

Map 2A
Gila County
Hazardous Materials
Hazard Map
as of December 2010

Sources: ALRIS, 2010; JEF, 2010



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Legend

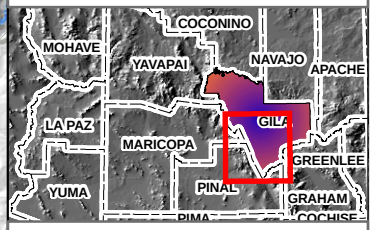
- Cities and Places
- County Boundary
- Indian Reservation
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

- Interstates
- Highways
- Arterials

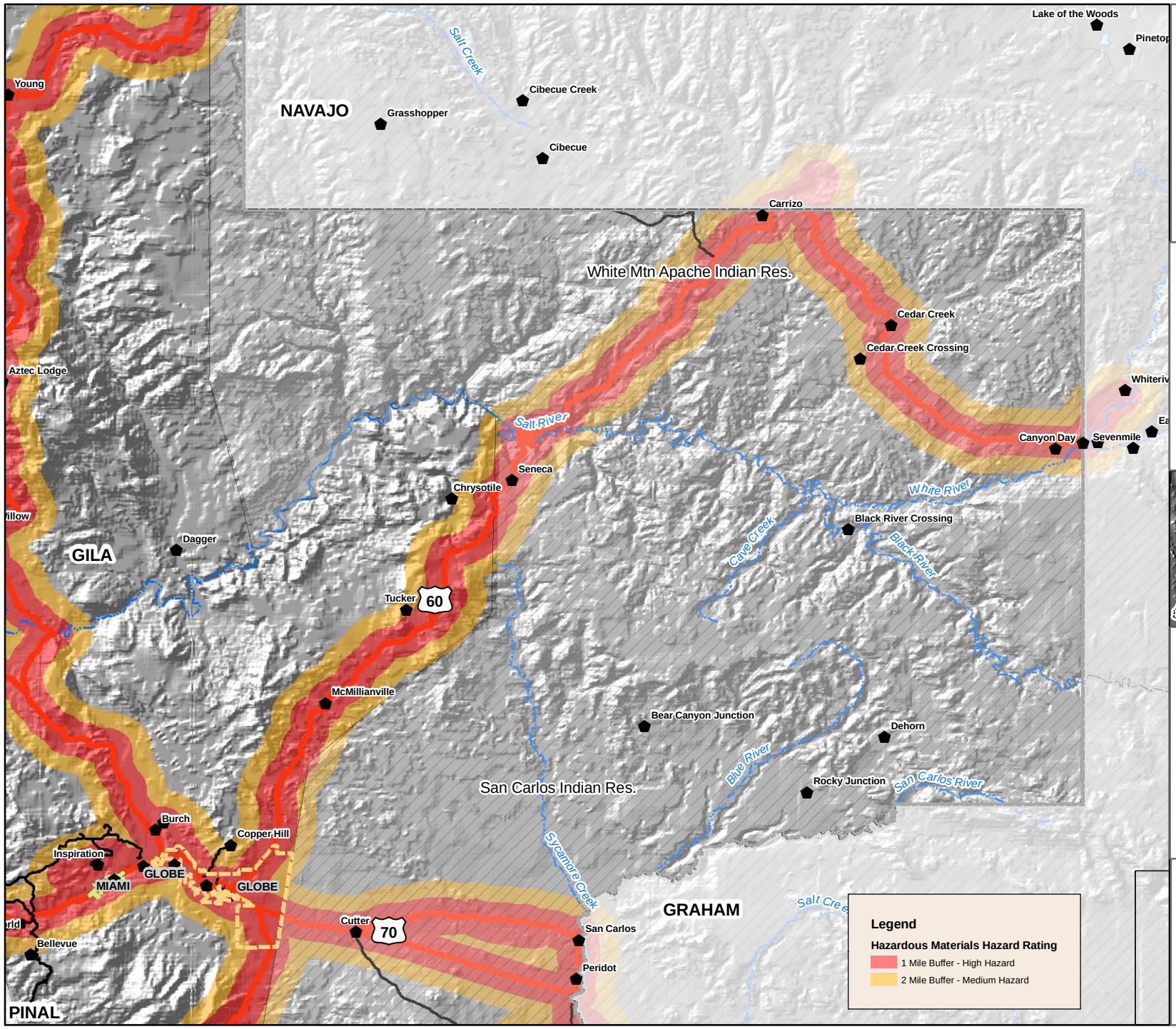


0 2 4 8 Miles

Map 2B
Gila County
Hazardous Materials
Hazard Map
as of December 2010

Sources: ALRIS, 2010; JEF, 2010

Gila County Multi-Jurisdictional Hazard Mitigation Plan



Legend

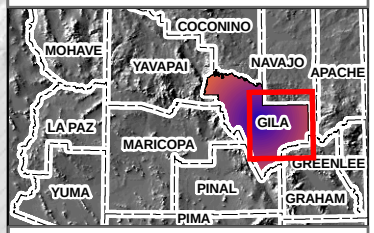
- Cities and Places
- County Boundary
- Indian Reservation
- Lakes
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

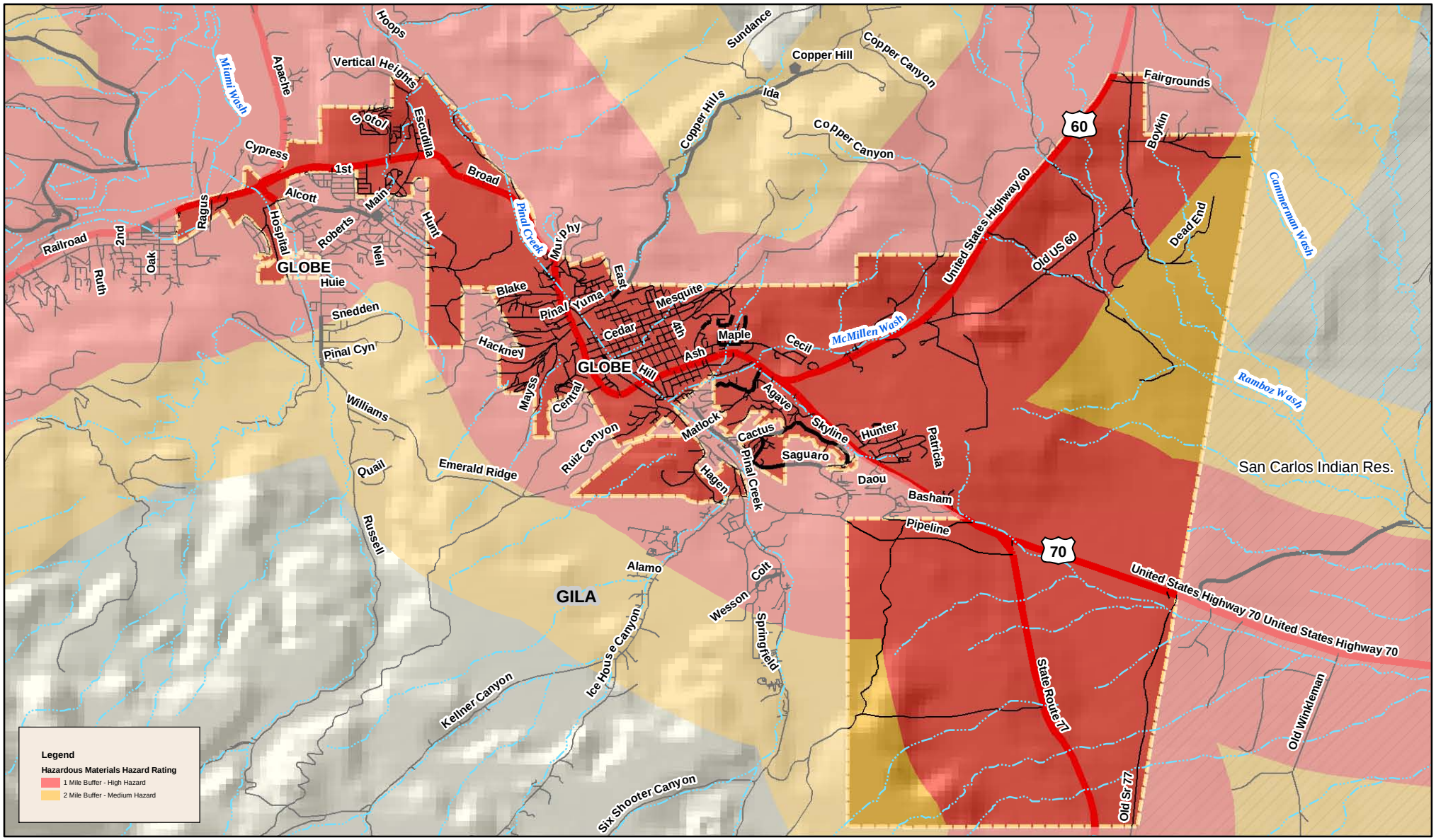
- Interstates
- Highways
- Arterials



0 2 4 8 Miles

Map 2C
Gila County
Hazardous Materials
Hazard Map
as of December 2010

Sources: ALRIS, 2010; JEF, 2010



Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

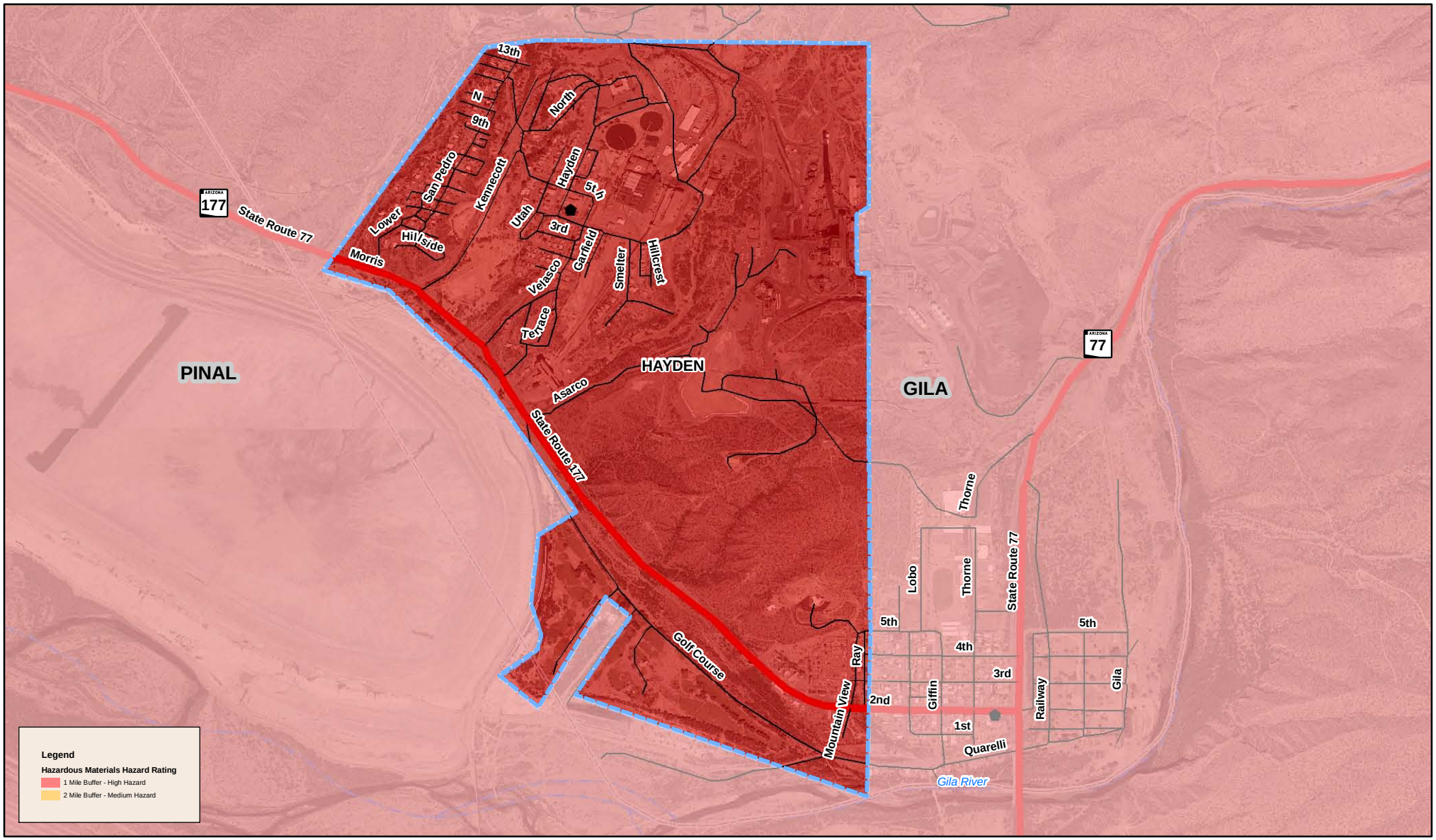
- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

0 0.75 1.5 Miles

Sources: ALRIS, 2010; JEF, 2010

Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 2D
City of Globe
Hazardous Materials
Hazard Map
as of December 2010



Legend

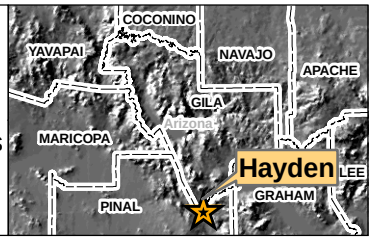
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

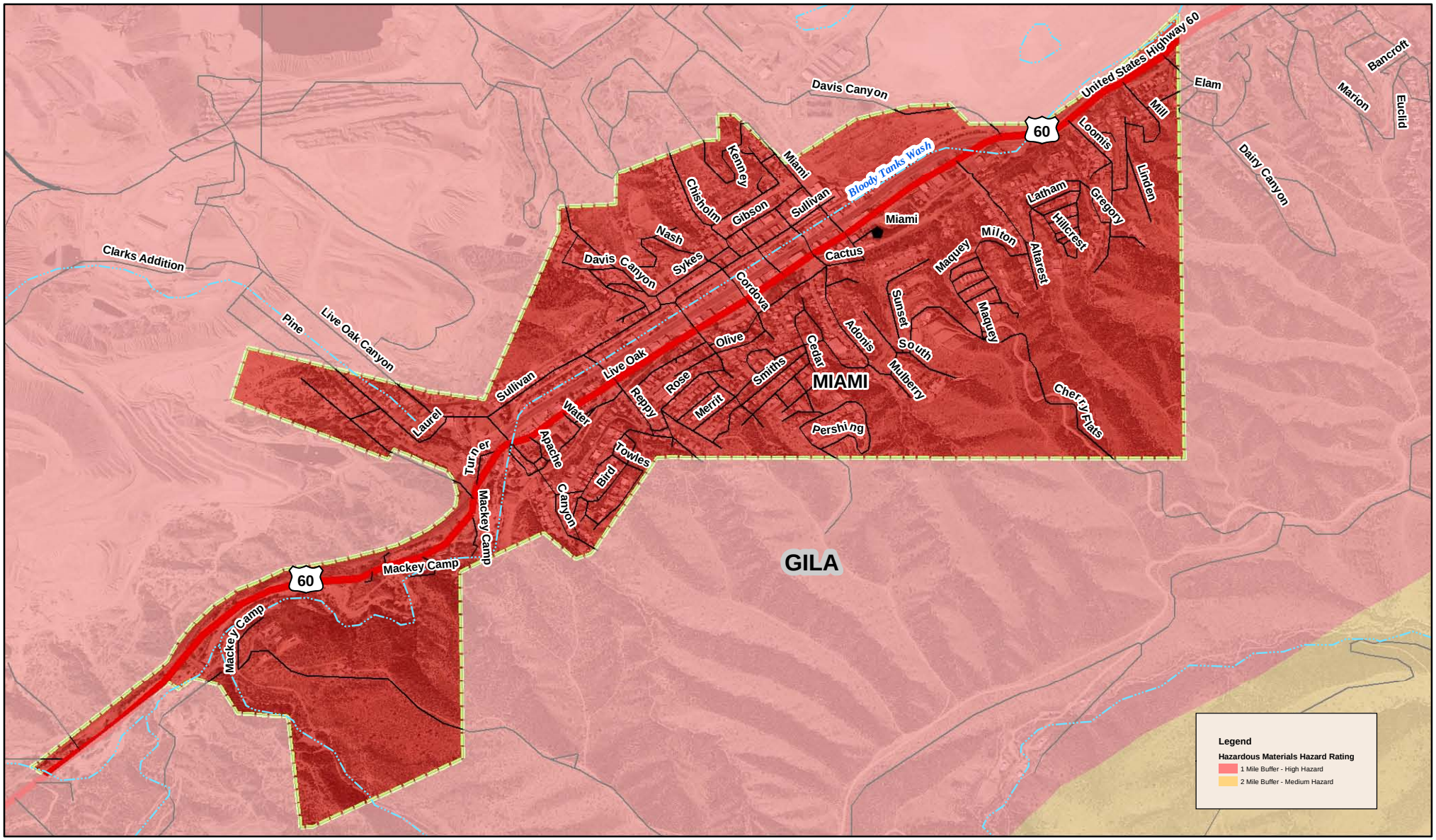
0 0.25 0.5 Miles

Sources: ALRIS, 2010; JEF, 2010



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 2E
Town of Hayden
Hazardous Materials
Hazard Map
as of December 2010



Legend

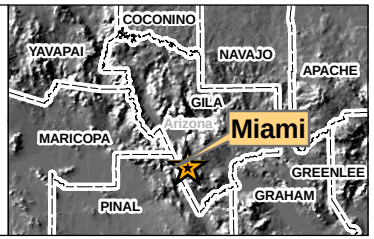
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

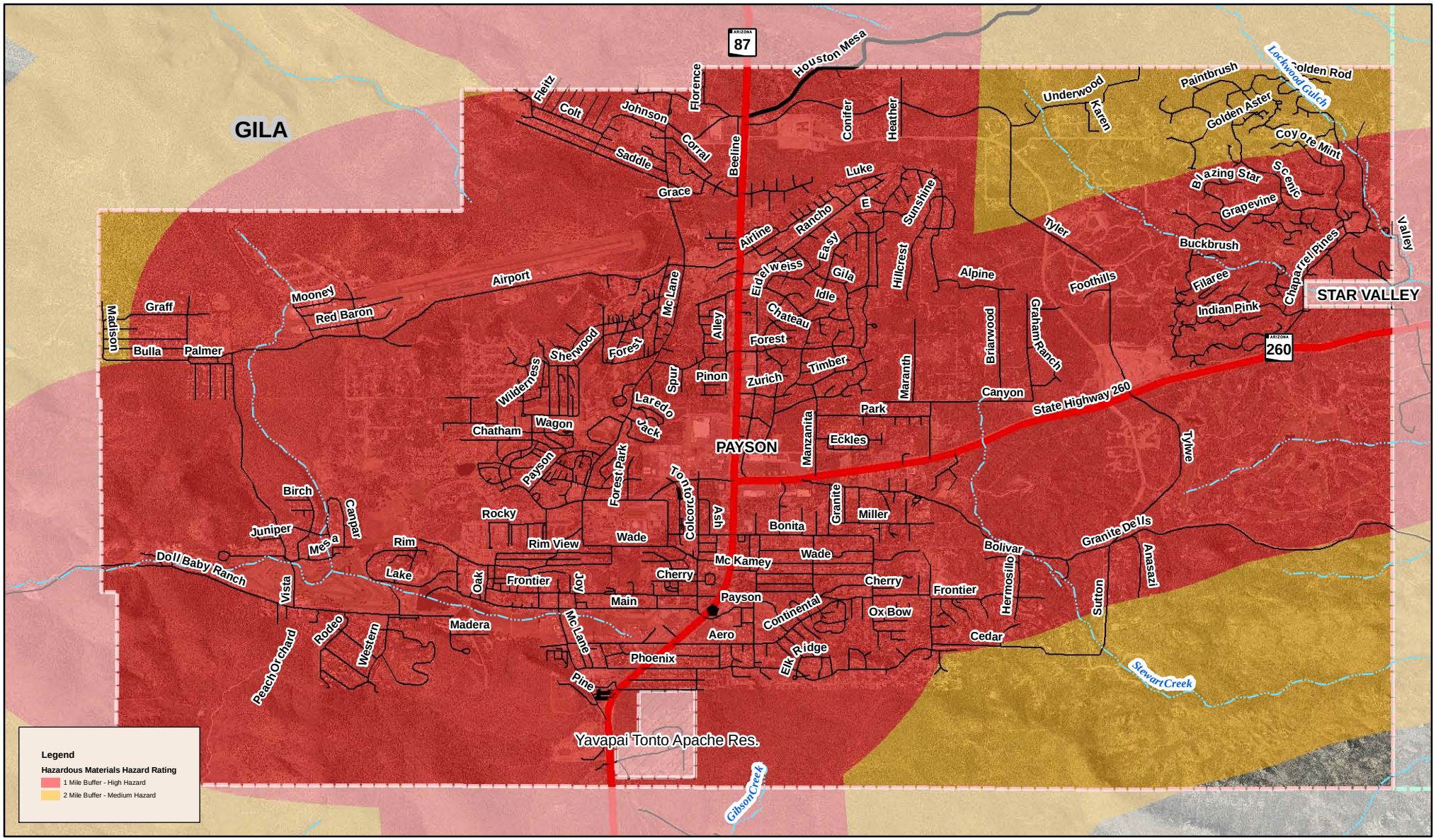
0 0.2 0.4 Miles

Sources: ALRIS, 2010; JEF, 2010



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 2F
Town of Miami
Hazardous Materials
Hazard Map
as of December 2010



Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

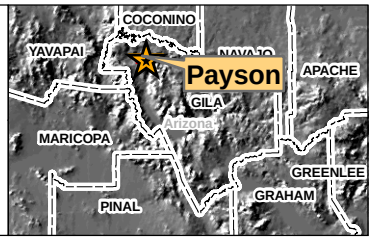
Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

N

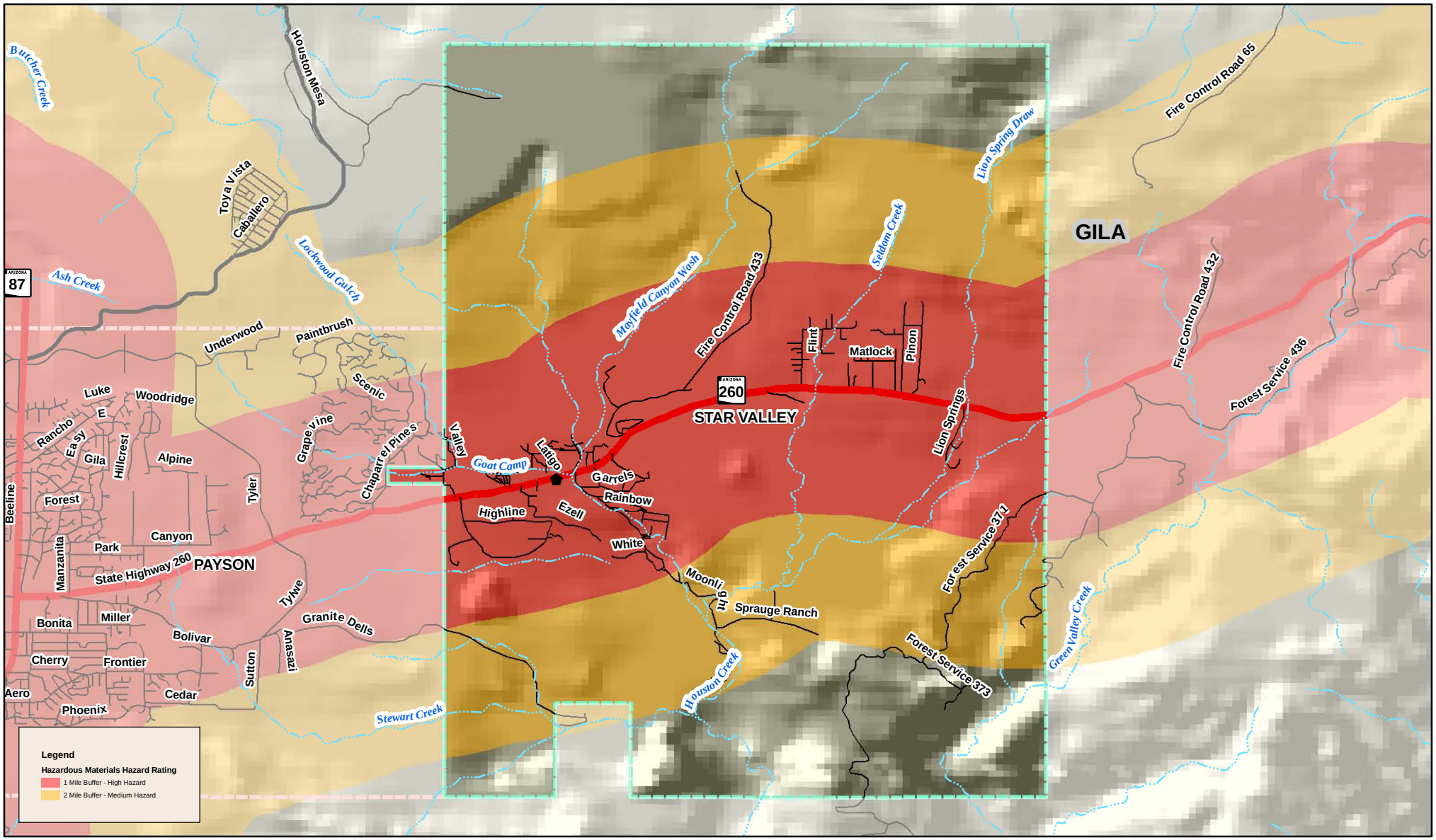
0 0.5 1 Miles

Sources: ALRIS, 2010; JEF, 2010; ASLD, 2005



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 2G
Town of Payson
Hazardous Materials
Hazard Map
as of December 2010



Legend

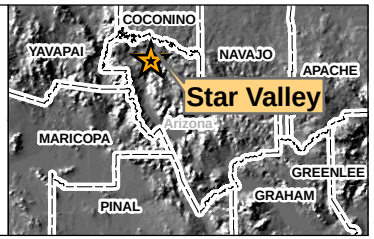
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

0 0.75 1.5 Miles

Sources: ALRIS, 2010; JEF, 2010



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 2H
Town of Star Valley
Hazardous Materials Hazard Map
as of December 2010

5.3.4 Severe Wind

Description

The hazard of severe wind encompasses all climatic events that produce damaging winds. For Gila County, severe winds usually result from either extreme pressure gradients that usually occur in the spring and early summer months, or from thunderstorms. Thunderstorms can occur year-round and are usually associated with cold fronts in the winter, monsoon activity in the summer, and tropical storms in the late summer or early fall.

Three types of damaging wind related features typically accompany a thunderstorm; 1) downbursts, 2) straight line winds, and infrequently, 3) tornadoes.

Downbursts are columns of air moving rapidly downward through a thunderstorm. When the air reaches the ground, it spreads out in all directions, creating horizontal wind gusts of 80 mph or higher. Downburst winds have been measured as high as 140 mph. Some of the air curls back upward with the potential to generate a new thunderstorm cell. Downbursts are called macrobursts when the diameter is greater than 2.5 miles, and microbursts when the diameter is 2.5 miles or less. They can be either dry or wet downbursts, where the wet downburst contains precipitation that continues all the way down to the ground, while the precipitation in a dry downburst evaporates on the way to the ground, decreasing the air temperature and increasing the air speed. In a microburst the wind speeds are highest near the location where the downdraft reached the surface, and are reduced as they move outward due to the friction of objects at the surface. Typical damage from downbursts includes uprooted trees, downed power lines, mobile homes knocked off their foundations, block walls and fences blown down, and porches and awnings blown off homes.

Straight line winds are developed similar to downbursts, but are usually sustained for greater periods as a thunderstorms reaches the mature stage, traveling parallel to the ground surface at speeds of 75 mph or higher. These winds are frequently responsible for generating dust storms and sand storms, reducing visibility and creating hazardous driving conditions.

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most funnel clouds do not touch the ground, but when the lower tip of the funnel cloud touches the earth, it becomes a tornado and can cause extensive damage. For Gila County, tornadoes are the least common severe wind to accompany a thunderstorm.

Figure 5-7 represents locations of recorded or reported severe wind events in or around Gila County.

History

According to Table 5-4, Gila County has been subject to over 104 severe wind events meeting the criteria listed in Section 5.1, with a combined economic loss of over $448,000 to structures and agriculture in the last 50 years. In that same period, there were at least 7 deaths and 18 injuries. In reality, severe wind events occur on a significantly more frequent basis throughout the county, but do not always have reported damages associated with every event. For example, a total of 14 severe wind events were noted in the NCDC database for period of July 2007 through January 2011, but not all of those events had reports of damages associate with them. The following are examples of documented past events that have occurred in the last five years:

- On July 4, 2008, winds knocked a 40 foot motor home on its side and took down power poles and trees in Punkin Center. Winds damaged a 20 foot section of a roof and blew down a TV antenna at Roosevelt Lakes Estates. Strong and locally severe thunderstorms slammed into the Punkin Center and Roosevelt areas on Friday evening. Property damage totaled to $25,000. (NCDC, 2010)
- On April 3, 2009, winds reached up to 46 mph at Deer Valley airport. At least one large tree was toppled by the strong winds. Winds increased to 30 to 45 mph by late Friday afternoon. Isolated wind gusts over 50 mph were reported in the Globe area. Property damage was estimated at $30,000. (NCDC, 2010)

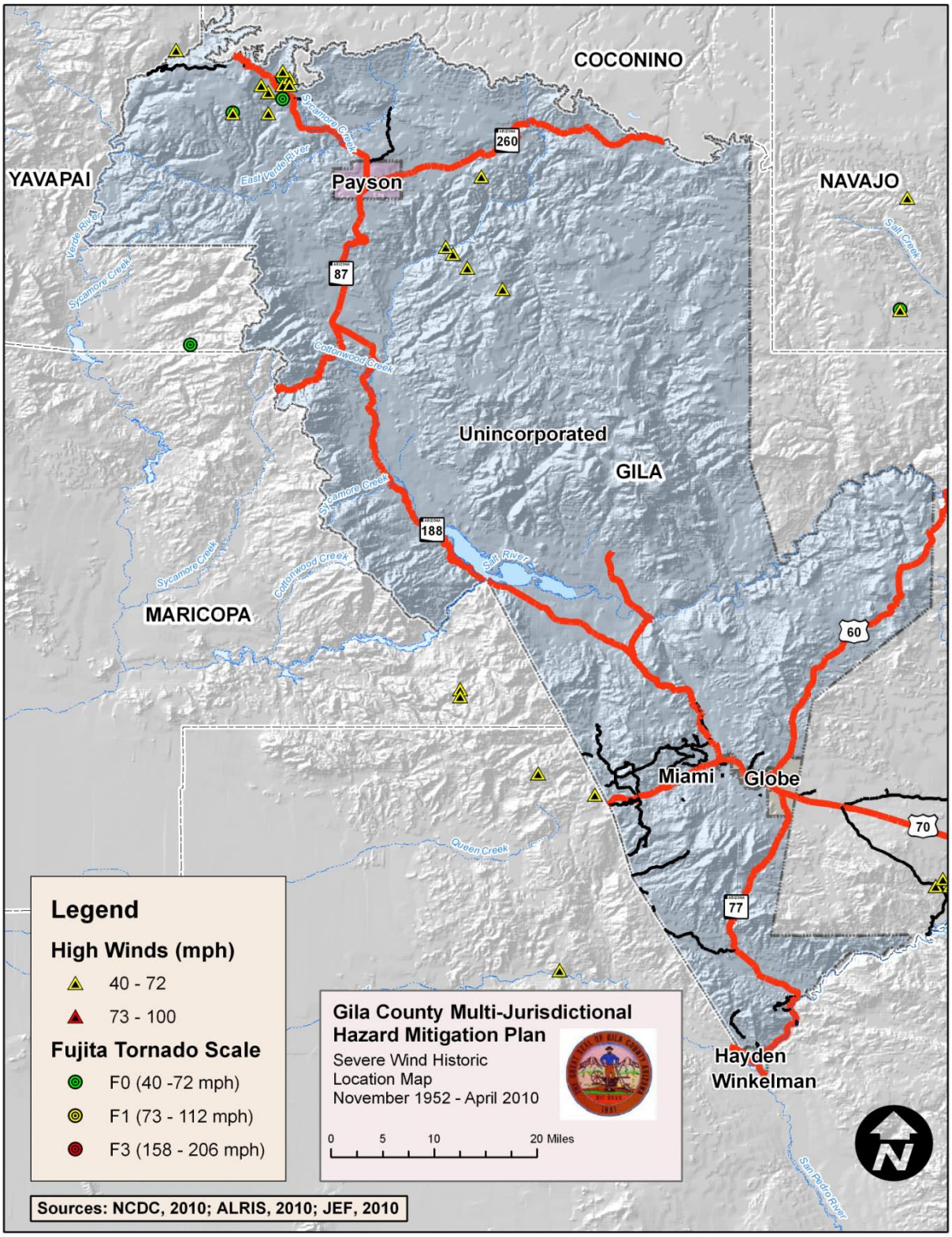


Figure 5-7: Severe Wind Events from 1952 to 2010

- On July 1, 2009, a power outage on Wednesday evening at the Frazier substation was due to very strong winds. Spotter reports included debris blowing around due to the strong wind. Heavy rain was also reported, with .98 inch in 45 minutes at Roosevelt Dam. Damage estimates were at $10,000. (NCDC, 2010)
- On July 17, 2009, lightning stuck one house and also knocked out power to street lights with damages estimated at $5,000. (NCDC, 2010)
- On September 19, 2009, lake patrol at Roosevelt Lake reported a lightning strike that caused a brief power outage at the marina. A small shed was also damaged. The damage estimates were estimated at $2,000. Showers and thunderstorms propagated off the mountains and into the Roosevelt area late in the afternoon Saturday.
- On December 7, 2009, strong winds caused extensive damage to the roof and porch of the Humane Society of Central Arizona in Payson early morning on December 8th as a strong cold front passed. The winds peeled the tin roof back, tore off shingles, and blew off two swamp coolers. Damages were estimated to exceed $20,000. (NCDC, 2010)
- On May 2, 2011, strong winds were reported at the time that a boat went down on Roosevelt Lake. One person slightly injured. A deep low pressure system brought widespread winds of 30 to 40 mph. Some damage of $5,000 was reported as gusts exceeded 50 mph. (NCDC, 2011)
- On December 29, 2010, high wind on the eastern side of the Kachina Peaks blew down a fence. An anemometer measured frequent wind gusts over 50 MPH with a peak gust of 60 MPH. A strong and extremely cold Pacific storm system moved across Arizona December 29th and 30th. Heavy snow and strong winds produced hazardous weather conditions across much of northern Arizona. Damages were estimated to exceed $1,000. (NCDC, 2011)
- On January 14, 2011, a trained weather spotter near Globe reported strong and gusty non-thunderstorm winds late Friday evening. Sustained winds approaching 40 mph were reported along with a measured gust to 60 mph. The winds caused two half-inch thick plywood sheds to be blown down. In addition, the Gila County sheriff's dispatch indicated that a motorist on highway 77, 15 miles south of Globe called in a report of very strong winds. The gusty winds caused rocks to be blown onto the highway. A dry low pressure system generated strong gusty winds across portions of south central Arizona during the evening hours on January 14, 2011. Peak gusts in southern Gila county were in excess of 50 mph, sufficient to blow rocks onto area highways. The damages report were estimated at $2,000. (NCDC, 2011)

Probability and Magnitude

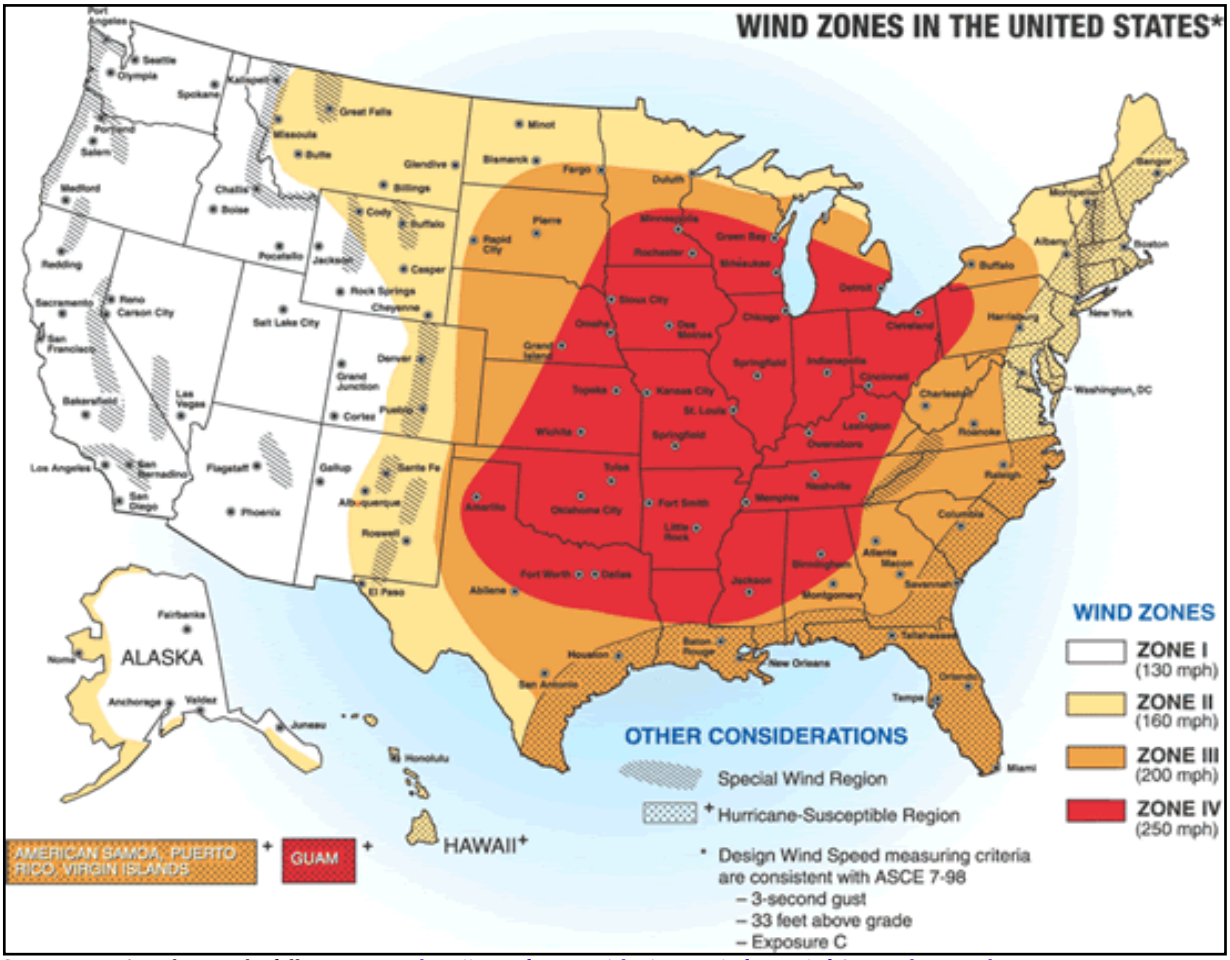
Most severe wind events are associated with thunderstorms as previously mentioned. The probability of a severe thunderstorm occurring with high velocity winds increases as the average duration and number of thunderstorm events increases. The average annual duration of thunderstorms in Gila County ranges from 90 to 100 minutes and is among the longest in the nation (ADEM, 2004). According to NCDC database records for the past five years, Gila County averages about 3 severe wind events a year. For that same five year time period for the events that reported, almost $180,000 in damages was estimated.

The NWS issues a severe thunderstorm watch when conditions are favorable for the development of severe thunderstorms. The local NWS office considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind of 58 mph or higher, or tornadoes. When a watch is issued for a region, residents are encouraged to continue normal activities but should remain alert for signs of approaching storms, and continue to listen for weather forecasts and statements from the local NWS office. When a severe thunderstorm has been detected by weather radar or one has been reported by trained storm spotters, the local NWS office will issue a severe thunderstorm warning. A severe thunderstorm warning is an urgent message to the affected counties that a severe thunderstorm is imminent. The warning time provided by a severe thunderstorm watch may be on the order of hours, while a severe thunderstorm warning typically provides an hour or less warning time.

The American Society of Civil Engineers (ASCE) has identified a 3-second wind gust speed as the most accurate measure for identifying the potential for damage to structures, and is recommended as a design standard for wind loading. Most of Arizona and all of Gila County is designated with a design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds (ASCE, 1999).

Likewise, FEMA identifies most of the county to be in design wind speed Zone I, as illustrated in Figure 5-8. In this zone, a design wind speed of 130 mph is recommended for the design and construction of community shelters. A small portion of the Navajo Nation is identified as a "Special Wind Region" and should be evaluated independently for design wind speeds.

Based on the historic record, the probability of tornados occurring in Gila County is limited. Tornado damage severity is measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, as shown in Table 5-36, with the letter F preceding the number (e.g., FO, F1, F2). Most tornadoes last less than 30 minutes, but some last for over an hour. The path of a tornado can range from a few hundred feet to miles. The width of a tornado may range from tens of yards to more than a quarter of a mile.



Source: FEMA Website at the following URL: http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

Figure 5-8
Illustration of FEMA Wind Zones

Table 5-36: Fujita Tornado Scale		
Category	**Wind Speed**	**Description of Damage**
F0	40-72 mph	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112 mph	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 mph	Severe damage. Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.
Source: FEMA, 1997.		

Vulnerability – CPRI Results

Severe Wind CPRI results for each community are summarized in Table 5-37 below.

Table 5-37: Summary of CPRI results by jurisdiction for severe wind					
Participating Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Score**
Globe	Possible	Limited	< 6 hours	< 6 hours	2.20
Hayden	Possible	Limited	< 6 hours	< 6 hours	2.20
Miami	Possible	Limited	6 - 12 hours	< 6 hours	2.05
Payson	Likely	Limited	< 6 hours	< 6 hours	2.65
Unincorporated Gila County	Possible	Limited	6 – 12 hours	< 6 hours	2.05
				County-wide average CPRI =	**2.23**

Vulnerability – Loss Estimations

The entire County is assumed to be equally exposed to the damage risks associated with severe winds. Typically, incidents are fairly localized and damages associated with individual events are relatively small. Based on the historic record over the last five years, it is feasible to expect average annual losses of $50,000 to $100,000 (county-wide) It is difficult to estimate losses for individual jurisdictions within the County due to the lack of discrete data.

Vulnerability – Development Trend Analysis

Future development will expand the exposure of life and property to the damaging effects of severe wind events. Enforcement and/or implementation of modern building codes to regulate new developments in conjunction with public education on how to respond to severe wind conditions are arguably the best way to mitigate against losses.

Sources

Arizona Division of Emergency Management, 2010, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update

Changnon, Jr. S.,1988, *Climatology of Thunder Events in the Conterminous U.S., Part I: Temporal Aspects* and *Part II: Spatial Aspects*, Journal of Climate, Vol. 1, No. 4, pp. 389-405.

U.S. Dept of Commerce, National Climatic Data Center, 2011, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Profile Maps

No profile maps provided.

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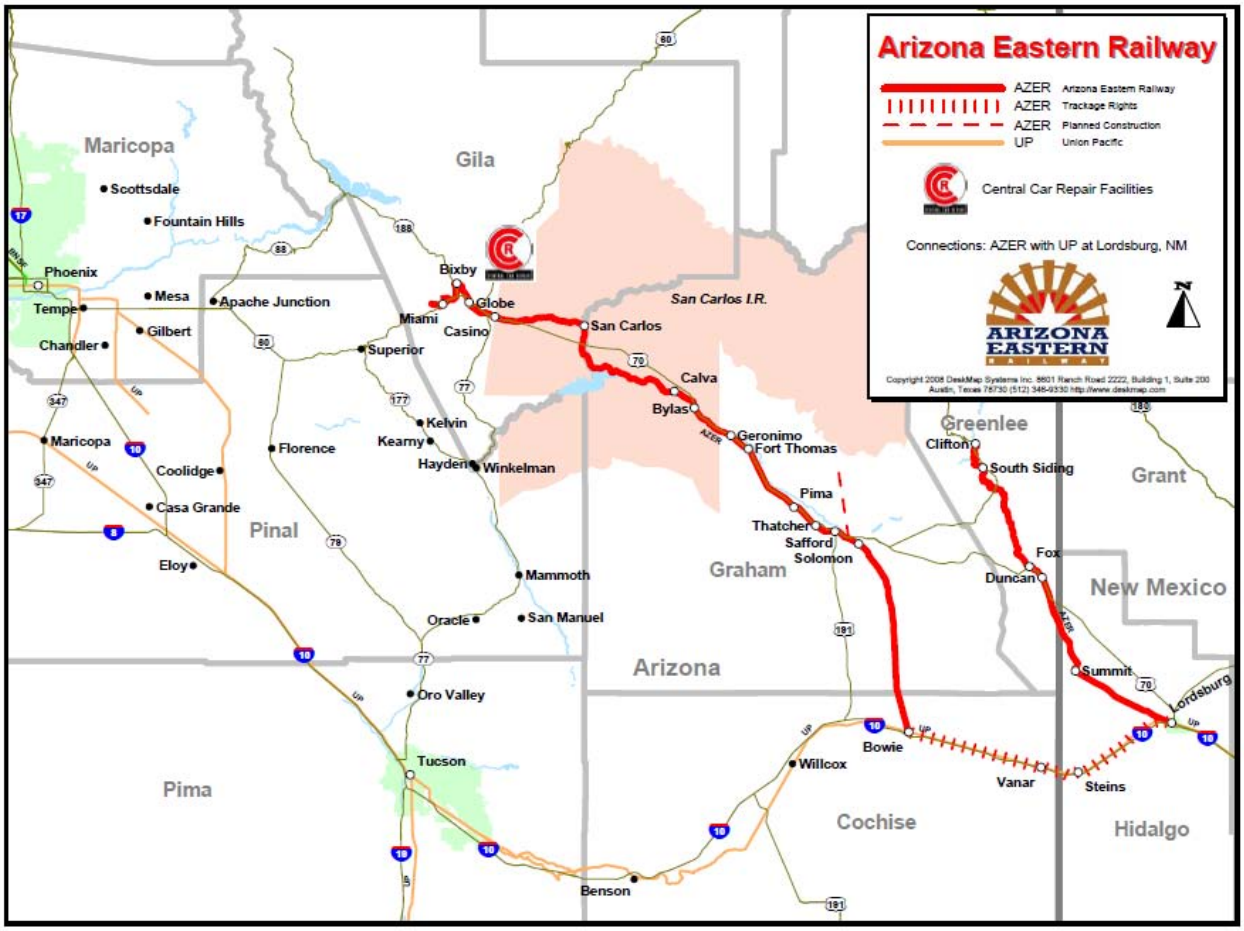
5.3.5 Transportation Accidents

Description

Gila County is home to several major transportation elements. State Highways 87 and 260 (via 377) connect to Interstate 40 as an alternate route out of metropolitan area of Phoenix through the Town of Payson. State Highway 170 traverses eastward out of Globe, a major mining area, towards Safford a major agricultural and mining region in eastern Arizona. Other highways include: U.S. Highway 60 and 70, State Highways 73, 77, 88, and 188. The Arizona Eastern Railway extends eastward from Miami to Globe through the southern portion of the county towards Lordsburg, New Mexico as illustrated in Figure 5-9. The Town of Payson operates the largest airport in the county and a couple of other airstrips exist in or near Globe and Cibecue. Heavy truck traffic to and from the mines located near the Towns of Hayden, Miami, and Winkelman also add to the traffic congestion within the county. The combined impact of all the air, roadway, and railway traffic presents an appreciable hazard potential to the urbanized areas of the County. Major transportation routes for other parts of the County are shown on Figure 4-2.



Source: http://www.iowapacific.net/arizona-eastern-railway.html

Figure 5-9: Arizona Eastern Railway Transportation Route

History

In the past, Gila County residents have been exposed to several train malfunctions, tanker trucks accidents, multiple car accidents due to winter storms and icy roadways, and aviation crashes. In most cases, the actual property damages at an incident level are limited to the vehicles involved and possible adjacent property losses. The greatest losses are human fatalities and injuries. Associated consequences may include hazardous material releases, emergency response capacity limitations, freeway/highway closures, and wildfire ignition. Given the size of the county, many of the rural and isolated portions of these transportation corridors are difficult to provide emergency services to and can often severely tax a community's emergency operational budget and capacity.

According to Table 5-4, Gila County has been subject to over 18 major transportation accidents with a combined loss of 4 deaths, and 16 injuries between September 1993 and April 2010 according primarily to the National Response Center database related to hazardous materials spills and transportation. The undeclared events and historic hazards only include those accidents that were reported. Based on the description of several of these events, the property damage would be considerable, although it was not reported. The Planning Team recognizes that traffic accidents occur almost every day and that Table 5-4 under represents the true historic account of transportation accidents in the County. The following are examples of documented past transportation accidents:

- In September 1993, two locomotives collided with a hopper car due to airbrake failure sustained by the locomotive crew members abandoned train. Three injuries occurred in this incident. (NRC, 2004)
- In June 1994, a helicopter from the Air Force Base crashed into the forest 65 miles northeast of Phoenix. Eight people were injured. (NRC, 2004)
- In December 1999, a tanker truck ran over an embankment and exploded causing 7,000 gallons to be released. The clean-up costs and damages amounted to $50,000. (NRC, 2004)
- In May 2003, a tanker truck lost control while going down a hill and overturned, catching fire and killing the driver and injuring two other individuals. The truck contained 8,500 gallons of gasoline which was consumed in the fire. (NRC, 2004)
- In July 2005, a tanker truck M306 was going northbound on State Road 77, at mile marker 147 it went off the road due to unknown causes and caught fire. Driver of the vehicle was killed. Most of the diesel fuel was released and burned in the fire. (NRC, 2011)
- In September 2007, a caller reported that a tractor trailer transporting 8,500 gallons of diesel fuel overturned due to the vehicle hitting the center divider on the road. The vehicle caught on fire and released material into the environment. Driver of the vehicle was fatally wounded. (NRC, 2011)
- In January 2008, a caller reported a discharge of diesel from the truck's saddle tank due to a head-on collision from another vehicle that ran into the truck causing a discharge of diesel onto the ground and into a rock embankment and drainage ditch. It is unknown if the drainage ditch leads to a body of water because the caller states that it was very dark, at the time of the accident. The driver of the vehicle died in this accident. (NRC, 2011)
- In April 2010, a commercial motor vehicle was transporting hot oil and had a mechanical failure that resulted in a fire. There were 10 gallons of transmission fluid and motor oil discharged of which 6 gallon went into a storm drain. (NRC, 2011)

ADEQ reported 197 hazardous material incidents within Gila County along highway or railroad corridors between January 1986 and November 2001 according to the Hazardous Material Incident Logbook. [17]

[17] http://azdeq.gov/databases/hwssearch.html

Probability and Magnitude

In many instances, transportation accidents are often caused by a combination of weather related events such as high winds, dust/sand storms, rain, snow, or ice and the corresponding human reactions to them. In Gila County, the two primary categories of accident potential are either ground based or air based. Ground based incidents include roadway and railway accidents. Air based incidents involve the failure of aircraft during take-off, flight, and/or landing sequences. For both types of incidents, it is reasonable to project that the entire County and community assets and population are potentially exposed to an accident in one form or another, and especially along road, rail and airport corridors.

High risk vehicular corridors include U.S Highway 60 and 70, and State Routes 87, 260, 377, 73,77, 88, and 188. The higher speeds and greater numbers of vehicles along these corridors combine to create an increased risk for major accidents, and especially around town and city population centers. Table 5-38 is an excerpt from vehicular crash statistics for Gila County, published by the Motor Vehicle Division of the Arizona Department of Transportation[18]. It is interesting to note that for nearly each subcategory, the statistics for the Unincorporated Gila County areas are triple those for incorporated areas. This is likely due to the higher rates of speed and increased potential for multiple vehicle accidents on rural roads.

Table 5-38: 2009 Crash Statistics for Gila County

Counties Cities	Number of Crashes				No. of Persons		Alcohol Related		
	Total	Fatal	Injury	PDO	Killed	Injured	Crashes	Killed	Injured
Unincorporated Gila County	608	16	190	402	16	286	53	6	49
Globe	194	1	63	130	1	84	18	0	7
Miami	15	0	3	12	0	3	0	0	0
Payson	167	0	47	120	0	67	10	0	1
TOTAL	**984**	**17**	**303**	**664**	**17**	**440**	**81**	**6**	**57**

Source: ADOT, 2009

High risk railway corridors are generally the areas where railroads pass through more densely populated towns and cities. Incidents typically involve either vehicular or pedestrian contact with moving trains and are often fatal to those struck by the train. According to the Federal Railroad Administration's Office of Safety Analysis, there are no reported incidents for the rail and highway crossing areas for Gila County for the period of 2002 to 2010. There were a total of 11 rail related accidents/incidents with most being derailments. Of those incidents, two fatalities and nine injuries were reported.

The highest risk areas associated with aviation corridors are the areas typically identified as runway protection zones (RPZ). These trapezoidal areas extend from either end of the runway for a sufficient distance to allow safe take-off and landing approach angles. They are also the areas with the highest risk of aircraft accidents outside of the runway itself. Figures 5-10 and 5-11 present depictions of the RPZs for the Payson and San Carlos Municipal Airports.

[18] ADOT, MVD, 2009, Arizona Motor Vehicle Crash Facts 2009

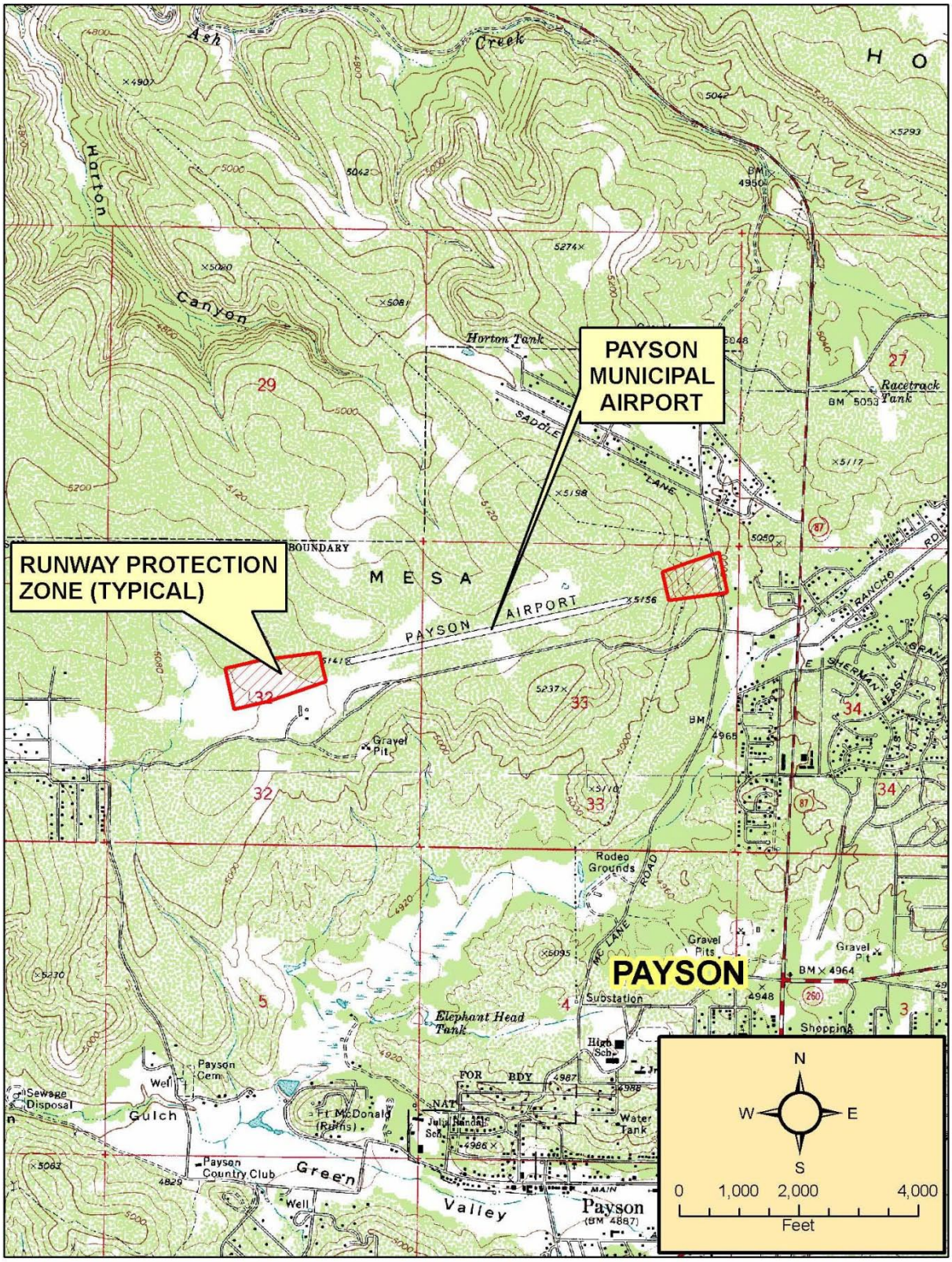


Figure 5-10: Runway Protection Zones for Payson Municipal Airport

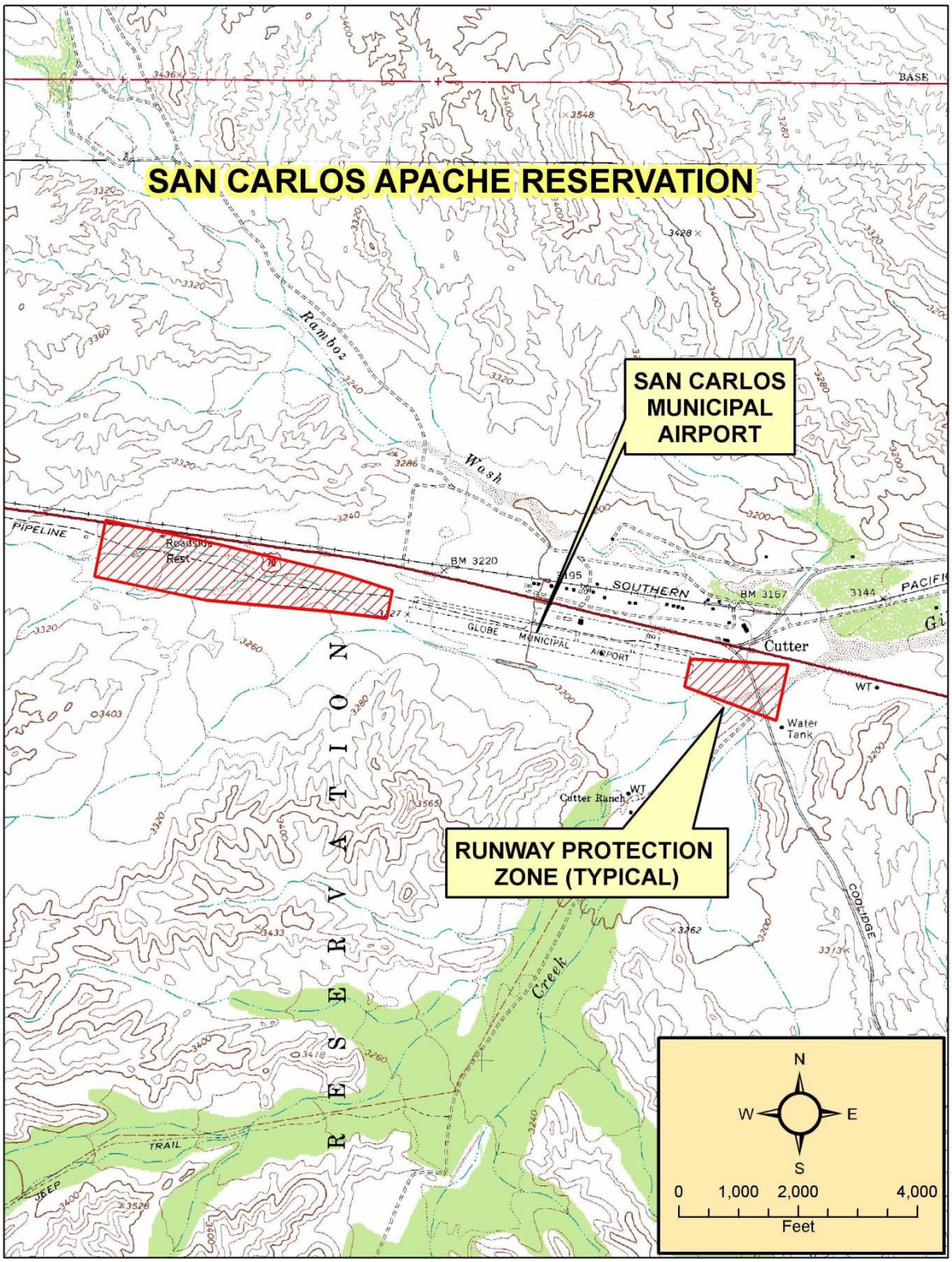


Figure 5-11: Runway Protection Zones for San Carlos Municipal Airport

Vulnerability – CPRI Results

Severe Wind CPRI results for each community are summarized in Table 5-30.

Table 5-39: Summary of CPRI results by jurisdiction for Transportation Accidents

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Possible	Limited	< 6 hours	< 6 hours	2.20
Hayden	Possible	Limited	< 6 hours	< 6 hours	2.20
Miami	Likely	Limited	< 6 hours	< 6 hours	2.65
Payson	Possible	Negligible	< 6 hours	< 6 hours	1.90
Unincorporated Gila County	Likely	Limited	< 6 hours	< 24 hours	2.75
				County-wide average CPRI =	**2.34**

Vulnerability – Loss Estimations

Potential losses and damages due to major transportation accidents are difficult to estimate without extensive research, compilation, and statistical analysis. No such studies currently exist for Gila County, therefore, no detailed estimates of potential human and property losses and damages will be made. Typically, incidents are fairly localized and damages associated with individual events are limited to the accident site itself. Based on the limited monetary historic record over the last 50 years, it is difficult to estimate annual monetary losses associated with Transportation Accidents. However, the historic record indicates a high number of fatalities and injuries have occurred, therefore, it is feasible to assume that multiple deaths and/or injuries are plausible in any given year.

Vulnerability – Development Trend Analysis

Any future development will require some level of expansion of the transportation systems, and will certainly increase traffic in the growth areas. Proposed development adjacent to the more heavily used corridors should strive to limit the human exposure to potential accidents through the use of setbacks and clear zones.

Sources

Arizona Division of Emergency Management, 2010, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update

Arizona Department of Transportation, Motor Vehicle Division, 2009, *Arizona Motor Vehicle Crash Facts 2009.*

JE Fuller/ Hydrology & Geomorphology, Inc., 2006, *Gila County Multi-Hazard Mitigation Plan*

U.S. Department of Transportation, Federal Railroad Administration, Office of Safety Analysis, online database access via: http://safetydata.fra.dot.gov/OfficeofSafety/Default.aspx

Profile Maps

No profile maps provided

5.3.6 Wildfire

Description

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties.

The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources and personal property, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may temporarily lose its capability to absorb moisture and support life. Exposed soils in denuded watersheds erode quickly and are easily transported to rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

History

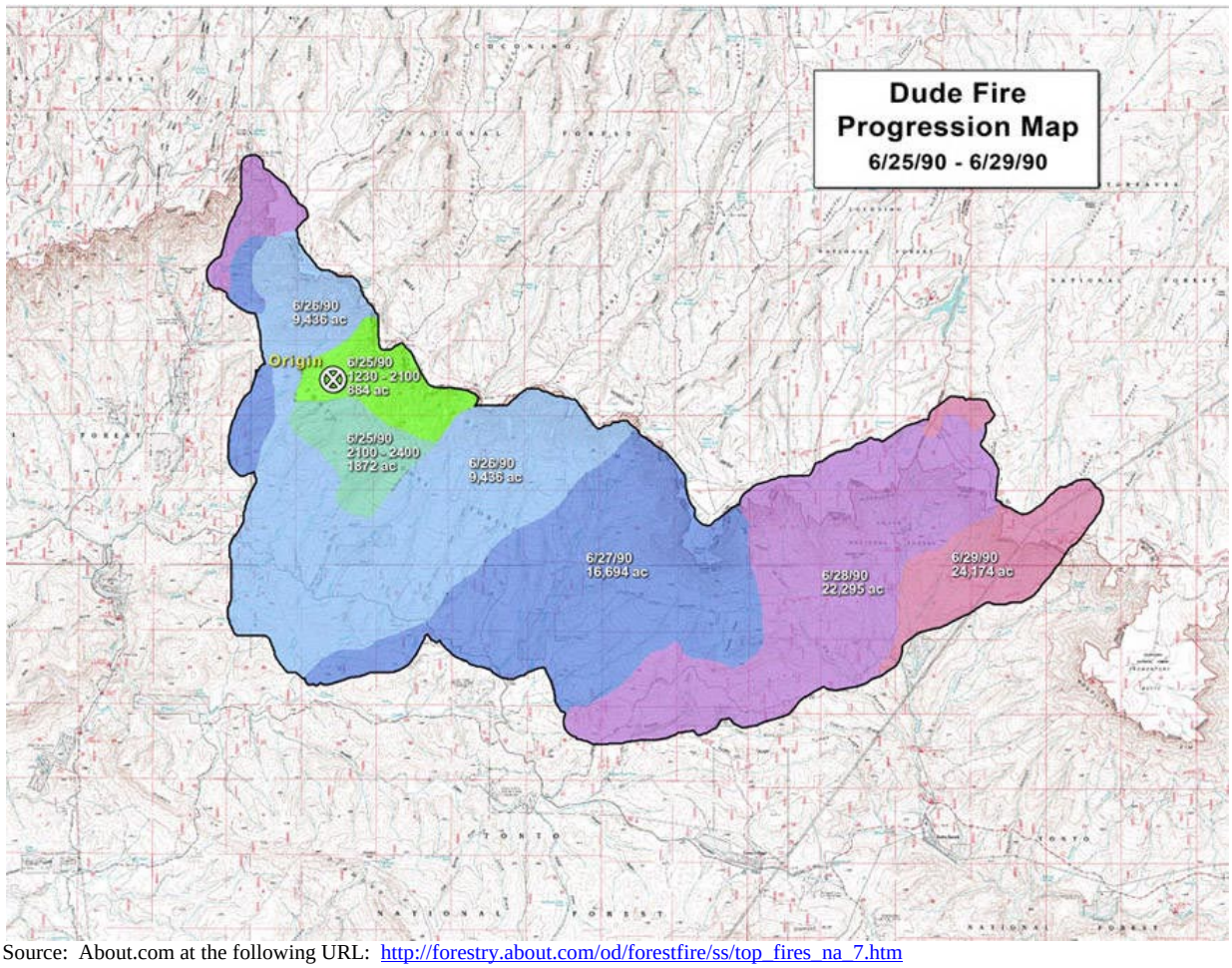
For the period of 1980 to 2008, data compiled by the Arizona State Forestry Division for the 2010 State Plan update indicates that at least 145 wildfires greater than 100 acres in size, have occurred in all of Gila County.

On June 25, 1990, perhaps the most deadly and costly wildfire in Gila County's history, the Dude Fire, began by a lightning strike in an area near the base of the Mogollon Rim and Bonita Creek Estates. The fire rapidly spread to over 28,000 acres and was finally contained on July 2nd. The Dude Fire claimed six human lives, with many other firefight related injuries. It destroyed 75 structures including the historic Zane Grey Cabin, two buildings at the Tonto Creek Fish Hatchery and 63 homes. A total of $12 million in losses were incurred and the firefight cost was over $7.5 million. Other losses included 25 elk and deer, 30 head of cattle, 14 miles of range fence, and approximately 36,000 mbf of timber (enough lumber to build 3,300 average American homes). The fire also forced the temporary evacuation of 1,153 people. Figure 5-12 illustrates the progression and burn area of the Dude Fire.

According to the National Wildfire Coordination Group (NWCG, 2010), there have been 166 wildfires in excess of 100 acres that have burned within Gila County for the period of 2002 to 2009, with four fires larger than 10,000 acres as described below in chronological order:

- In June of 2003, the Picture Fire was started by human causes and burned an area 10 miles northeast of Tonto Basin, Arizona. The fire started June 17, 2003 and burned a total of 12,529 acres with over $5.5 million in fire suppression costs.
- In July of 2003, the Kinishba Fire was started by lightning and burned an area two miles west of White River, Arizona. The fire started July 13, 2003 and burned a total of 25,000 acres with over $6.0 million in fire suppression costs.
- In June of 2005, the Three Fire Complex was started by lightning and burned an area eight miles northwest of Tonto Basin, Arizona. The fire started June 21, 2005 and was controlled July 4, 2005, burning a total of 19,370 acres with $1.9 million in fire suppression costs. There were also three firefight related injuries.
- In July of 2009, the Bear Canyon Fire was started by lightning and burned an area 23 miles north of San Carlos, Arizona. The fire started July 14, 2009 and was controlled August 31, 2009, burning a total of 20,029 acres with over $3.9 million in fire suppression costs.

Maps 3A, 3B and 3C provide a graphical depiction of the 100 acre plus wildfires.



Source: About.com at the following URL: http://forestry.about.com/od/forestfire/ss/top_fires_na_7.htm

Figure 5-12: Dude Fire Progression Map

The Planning Team recognized that the declared disaster and historic hazard data collected and summarized in Section 5.1 does not adequately reflect the true cost of a wildfire. Particularly, the cost of wildfire suppression efforts to prevent structure and human loss. For example, the Kinishba Fire did not result in any structure losses, however, the suppression costs exceeded $6 million. Furthermore, the County, State, Forest Service, and other agencies spend millions of dollars every year in wildfire mitigation in fuel treatment projects.

Probability and Magnitude

The probability and magnitude of wildfire incidents for Gila County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic aspect and slope, and remoteness of area. Two sources were used to map the wildfire risk for Gila County. The first is the data developed for the Rim Country Community Wildfire Protection Plan (LSD, 2004). The second is a statewide coverage developed by the State of Arizona as a part of the 2003/04 Arizona Wildland Urban Interface Assessment (AWUIA) project (Fisher, 2004).

Gila County and various cooperating stakeholders collaborated to prepare the Rim Country Community Wildfire Protection Plan (RCCWPP). The RCCWPP established the Wildland Urban Interface (WUI) areas for the County, and mapped various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior

treatment areas. Using these elements, a comprehensive fuels hazard risk map[19] was developed for the WUI and are shown in Figures 5-13. The High, Medium and Low hazard classifications are used for the Wildfire profile of this Plan in the WUI.

In 2004, the State of Arizona prepared the AWUIA to analyze wildfire risk at a statewide basis, using a common spatial model. The model results were used for validation of those communities listed in the federal register as WUI, and for further identification other communities possibly at risk. The AWUIA approach used four main data layers:

- TOPO – aspect and slope derived from 30 meter Digital Elevation Model data from USGS.
- RISK – historical fire density using point data from fire record years 1986–1996 from all wildland agencies.
- HAZARD – fuels, natural fire regimes and condition class.
- HOUSE – houses and/or structures

A value rating in the range of 1-15 was assigned for all layers to represent the level of risk.

Two separate results were developed. The first coverage used an applied weighting scheme that combined each of the four data layers to develop a ranking model for identifying WUI communities at greatest risk. The second coverage, referred to as the "Land Hazard", also applied a weighting scheme that combined only the TOPO, RISK, and HAZARD layers, as follows:

LAND HAZARD = (HAZARD*70%)+(RISK*20%)+(TOPO*10%)

Weighing percentages were determined through discussion with the Arizona Interagency Coordinating Group. The "Land Hazard" layer produced from this model is based on a 250-meter raster grid (some data originated at 1,000-meter). The resultant raster values range from 1-15 and were classified into three groups to depict wildfire hazard without the influence of structures: HIGH (values of 10-15), MEDIUM (values of 7-9), and LOW (values of 1-6).

The final wildfire hazard profile map for this Plan depicts a mosaic of the High, Medium and Low risk areas identified in the RCCWPP and the AWUIA. The RCCWPP risk areas are assigned to the WUI and the wildfire risk for the rest of the county, outside of the WUI, is assigned based on the statewide AWUIA "Land Hazard" layer. Maps 3A, 3B, and 3C indicates the various wildfire hazard areas for Gila County and the incorporated boundaries of communities.

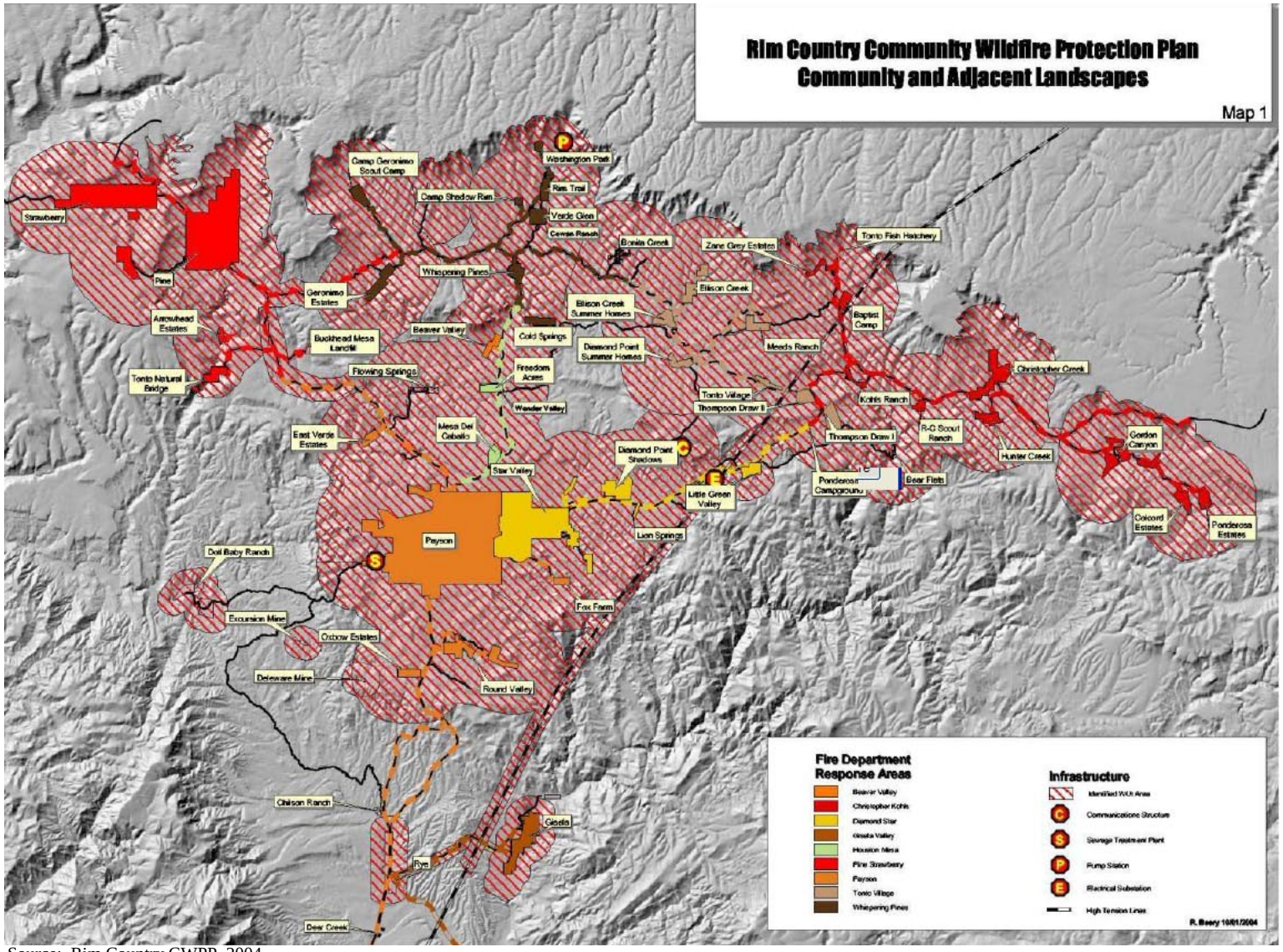
Vulnerability – CPRI Results

Wildfire CPRI results for each community are summarized in Table 5-40 below.

Table 5-40: CPRI results by jurisdiction for wildfire

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Likely	Critical	6 - 12 hours	< 1 week	3.00
Hayden	Possible	Limited	< 6 hours	< 24 hours	2.30
Miami	Likely	Critical	< 6 hours	< 1 week	3.15
Payson	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Unincorporated Gila County	Highly Likely	Critical	12 – 24 hours	> 1 week	3.40
				County-wide average CPRI =	**3.17**

[19] Figures 3.6 in the GCCWPP



Source: Rim Country CWPP, 2004

Figure 5-13: Rim Country CWPP Wildland Urban Interface Map

Vulnerability – Loss Estimations

The estimation of potential exposure to high and medium wildfire hazards was accomplished by intersecting the human and facility assets with the wildfire hazard limits depicted on Maps 3A – 3C. Loss to exposure ratios of 0.20 (20%) and 0.05 (5%) were assumed to estimate losses for all facilities located within the high and medium wildfire hazard areas, respectively. Table 5-41 summarizes the Planning Team identified critical and non-critical facilities potentially exposed to high and medium wildfire hazards, and the corresponding estimates of losses. Table 5-42 summarizes population sectors exposed to the high and medium wildfire hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium wildfire hazards are summarized in Tables 5-43 through 5-53.

In summary, $28 and $3.1 million in asset related losses are estimated for high and medium wildfire hazards, for all the participating jurisdictions in Gila County. An additional $200 and $32 million in high and medium hazard wildfire losses to HAZUS defined residential, commercial, and industrial facilities, is estimated for all participating Gila County jurisdictions. It should be noted that these exposure dollar amounts do not include the cost of wildfire suppression which can be substantial. For example, a Type 1 wildfire fighter crew costs about $1 million per day.

Regarding human vulnerability, a county-wide population of 7,091 and 10,285 people, or 15.3% and 20% of the total, is potentially exposed to a high and medium hazard wildfire event, respectively. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a wildfire would occur that would impact all of the high and medium wildfire hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above.

Vulnerability – Development Trend Analysis

By its very definition, the WUI represents the fringe of urban development as it intersects with the natural environment. As previously discussed, wildfire risks are significant for a sizeable portion of the county. Any future development will only increase the WUI areas and expand the potential exposure of structures to wildfire hazards. The GCCWPP addresses mitigation opportunities for expanding WUI areas and provides recommended guidelines for safe building and land-use practices in wildfire hazard areas.

Table 5-41: Asset inventory exposure to high and medium hazard wildfire and corresponding loss estimates

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x $1,000)	Estimated Structure Loss (x $1,000)
HIGH					
County-Wide Totals	**266**	**64**	**24.06%**	**$140,022**	**$28,004**
Globe	25	2	8.00%	$8,000	$1,600
Hayden	18	0	0.00%	$0	$0
Miami	13	0	0.00%	$0	$0
Payson	61	11	18.03%	$8,933	$1,787
Star Valley	6	1	16.67%	$0	$0
Unincorporated	133	50	37.59%	$123,089	$24,618
Winkelman	10	0	0.00%	$0	$0
MEDIUM					
County-Wide Totals	**266**	**20**	**7.52%**	**$62,452**	**$3,123**
Globe	25	5	20.00%	$4,200	$210
Hayden	18	0	0.00%	$0	$0
Miami	13	1	7.69%	$602	$30
Payson	61	2	3.28%	$2,500	$125
Star Valley	6	1	16.67%	$0	$0
Unincorporated	133	11	8.27%	$55,150	$2,758
Winkelman	10	0	0.00%	$0	$0

Table 5-42: Population sectors exposed to high and medium hazard wildfire

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed
HIGH						
County-Wide Totals	**51,329**	**7,901**	**15.39%**	**10,222**	**1,659**	**16.23%**
City of Globe	7,399	23	0.32%	1,194	1	0.12%
San Carlos Indian Res.	4,783	95	1.99%	300	13	4.47%
Town of Hayden	904	0	0.00%	111	0	0.00%
Town of Miami	1,885	0	0.00%	305	0	0.00%
Town of Payson	13,457	1,474	10.96%	3,755	365	9.73%
Town of Star Valley	2,013	617	30.67%	512	152	29.62%
Town of Winkelman	419	0	0.00%	66	0	0.00%
Unincorporated	18,829	5,174	27.48%	3,860	1,087	28.16%
White Mtn Apache Indian	1,514	499	32.94%	94	37	39.08%
Yavapai Tonto Apache Res.	127	17	13.69%	25	3	13.26%
MEDIUM						
County-Wide Totals	**51,329**	**10,285**	**20.04%**	**10,222**	**1,294**	**12.66%**
City of Globe	7,399	483	6.53%	1,194	39	3.26%
San Carlos Indian Res.	4,783	4,579	95.73%	300	253	84.45%
Town of Hayden	904	0	0.00%	111	0	0.00%
Town of Miami	1,885	344	18.25%	305	49	16.20%
Town of Payson	13,457	967	7.19%	3,755	244	6.49%
Town of Star Valley	2,013	344	17.09%	512	84	16.42%
Town of Winkelman	419	2	0.36%	66	0	0.44%
Unincorporated	18,829	2,659	14.12%	3,860	570	14.76%
White Mtn Apache Indian	1,514	894	59.03%	94	52	55.15%
Yavapai Tonto Apache Res.	127	14	10.62%	25	3	10.29%

Table 5-43: Gila County HAZUS building exposure to wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Gila County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**28,136**	**$3,880,633**	**822**	**$749,955**	**212**	**$223,733**	**$4,854,321**		
High Hazard Exposure	6,252	$911,512	81	$60,715	33	$28,005	$1,000,231	20%	$200,046
Medium Hazard Exposure	4,279	$582,548	59	$56,598	14	$10,174	$649,320	5%	$32,466
Gila County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	22.22%	23.49%	09.82%	08.10%	15.53%	12.52%			
Medium Hazard Exposure	15.21%	15.01%	07.23%	07.55%	06.45%	04.55%			

Table 5-44: City of Globe HAZUS building exposure to wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
City of Globe HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**3,216**	**$474,198**	**200**	**$136,641**	**33**	**$41,189**	**$652,028**		
High Hazard Exposure	6	$1,515	0	$38	0	$7	$1,560	20%	$312
Medium Hazard Exposure	135	$31,171	4	$1,489	1	$154	$32,814	5%	$1,641
City of Globe HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	0.17%	0.32%	0.06%	0.03%	0.13%	0.02%			
Medium Hazard Exposure	04.19%	06.57%	01.98%	01.09%	02.48%	0.38%			

Table 5-45: San Carlos Indian Res. (Gila County) HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
San Carlos Indian Res. (Gila County) HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**1,350**	**$140,104**	**6**	**$4,467**	**0**	**$34**	**$144,605**		
High Hazard Exposure	31	$2,586	2	$1,792	0	$1	$4,378	20%	$876
Medium Hazard Exposure	1,205	$129,536	4	$2,491	0	$1	$132,027	5%	$6,601
San Carlos Indian Res. (Gila County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	02.31%	01.85%	37.13%	40.12%	04.01%	01.64%			
Medium Hazard Exposure	89.26%	92.46%	60.30%	55.76%	06.54%	02.68%			

Table 5-46: Town of Hayden HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Hayden (Gila County) HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**382**	**$44,430**	**6**	**$2,567**	**5**	**$63,563**	**$110,560**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium Hazard Exposure	0	$0	0	$0	0	$0	$0	5%	$0
Town of Hayden (Gila County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

Table 5-47: Town of Miami HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Miami HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**963**	**$116,969**	**34**	**$23,193**	**8**	**$6,440**	**$146,602**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium Hazard Exposure	144	$18,070	2	$897	1	$299	$19,266	5%	$963
Town of Miami HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	14.99%	15.45%	05.21%	03.87%	11.08%	04.64%			

Table 5-48: Town of Payson HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Payson HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**6,930**	**$985,722**	**357**	**$352,828**	**106**	**$58,078**	**$1,396,629**		
High Hazard Exposure	789	$114,459	34	$24,415	12	$6,752	$145,626	20%	$29,125
Medium Hazard Exposure	546	$78,938	24	$18,086	5	$1,658	$98,682	5%	$4,934
Town of Payson HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	11.39%	11.61%	09.56%	06.92%	11.66%	11.63%			
Medium Hazard Exposure	07.88%	08.01%	06.58%	05.13%	04.58%	02.86%			

Table 5-49: Town of Star Valley HAZUS building exposure to wildfire									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Star Valley HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**1,251**	**$170,990**	**6**	**$3,805**	**5**	**$972**	**$175,766**		
High Hazard Exposure	403	$53,822	2	$1,616	3	$472	$55,910	20%	$11,182
Medium Hazard Exposure	212	$29,129	1	$636	1	$217	$29,981	5%	$1,499
Town of Star Valley HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	32.24%	31.48%	40.67%	42.47%	49.72%	48.59%			
Medium Hazard Exposure	16.95%	17.04%	13.94%	16.71%	18.49%	22.29%			

Table 5-50: Town of Winkelman HAZUS building exposure to wildfire									
Summary of Town of Winkelman (Gila County) HAZUS Building Exposure by hazard									
	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Town of Winkelman HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**195**	**$18,502**	**9**	**$9,482**	**1**	**$778**	**$28,762**		
High Hazard Exposure	0	$0	0	$0	0	$0	$0	20%	$0
Medium Hazard Exposure	1	$67	0	$0	0	$0	$67	5%	$3
Town of Winkelman HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Medium Hazard Exposure	0.31%	0.36%	0.0%	0.0%	0.0%	0.0%			

Table 5-51: Unincorporated Gila County HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated (Gila County) HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**13,368**	**$1,870,289**	**202**	**$216,491**	**55**	**$52,678**	**$2,139,459**		
High Hazard Exposure	4,873	$720,166	42	$32,854	18	$20,773	$773,792	20%	$154,758
Medium Hazard Exposure	1,771	$262,695	26	$32,999	6	$7,845	$303,540	5%	$15,177
Unincorporated (Gila County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	36.45%	38.51%	20.63%	15.18%	33.01%	39.43%			
Medium Hazard Exposure	13.25%	14.05%	12.68%	15.24%	11.36%	14.89%			

Table 5-52: White Mtn. Apache Indian (Gila County) HAZUS building exposure to wildfire

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
White Mtn Apache Indian (Gila County) HAZUS Summary	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Building Count**	**Potential Economic Impact (x$1000)**	**Total of All Economic Impact (x$1000)**	**Loss-to-Exposure Ratio**	**Total Estimated Loss (x$1000)**
Community-Wide Totals	**441**	**$55,614**	**0**	**$0**	**0**	**$0**	**$55,614**		
High Hazard Exposure	145	$18,412	0	$0	0	$0	$18,412	20%	$3,682
Medium Hazard Exposure	261	$32,514	0	$0	0	$0	$32,514	5%	$1,626
White Mtn Apache Indian (Gila County) HAZUS Summary	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**	**% Building Count**	**% Potential Economic Impact**			
High Hazard Exposure	32.93%	33.11%	58.43%	53.08%	0.0%	0.0%			
Medium Hazard Exposure	59.12%	58.46%	41.57%	46.92%	0.0%	0.0%			

Table 5-53: Yavapai Tonto Apache Res. HAZUS building exposure to wildfire

	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SUMMARY

Yavapai Tonto Apache Res. HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**39**	**$3,815**	**1**	**$480**	**0**	**$0**	**$4,296**		
High Hazard Exposure	5	$552	0	$0	0	$0	$552	20%	$110
Medium Hazard Exposure	4	$428	0	$0	0	$0	$428	5%	$21

Yavapai Tonto Apache Res. HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact
High Hazard Exposure	13.70%	14.47%	0.0%	0.0%	0.0%	0.0%
Medium Hazard Exposure	10.63%	11.23%	0.0%	0.0%	0.0%	0.0%

Sources

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White, Seth, 2004, *Bridging the Worlds of Fire Managers and Researchers: Lessons and Opportunities From the Wildland Fire Workshops*, USDA Forest Service, General Technical Report PNW-GTR-599, March 2004

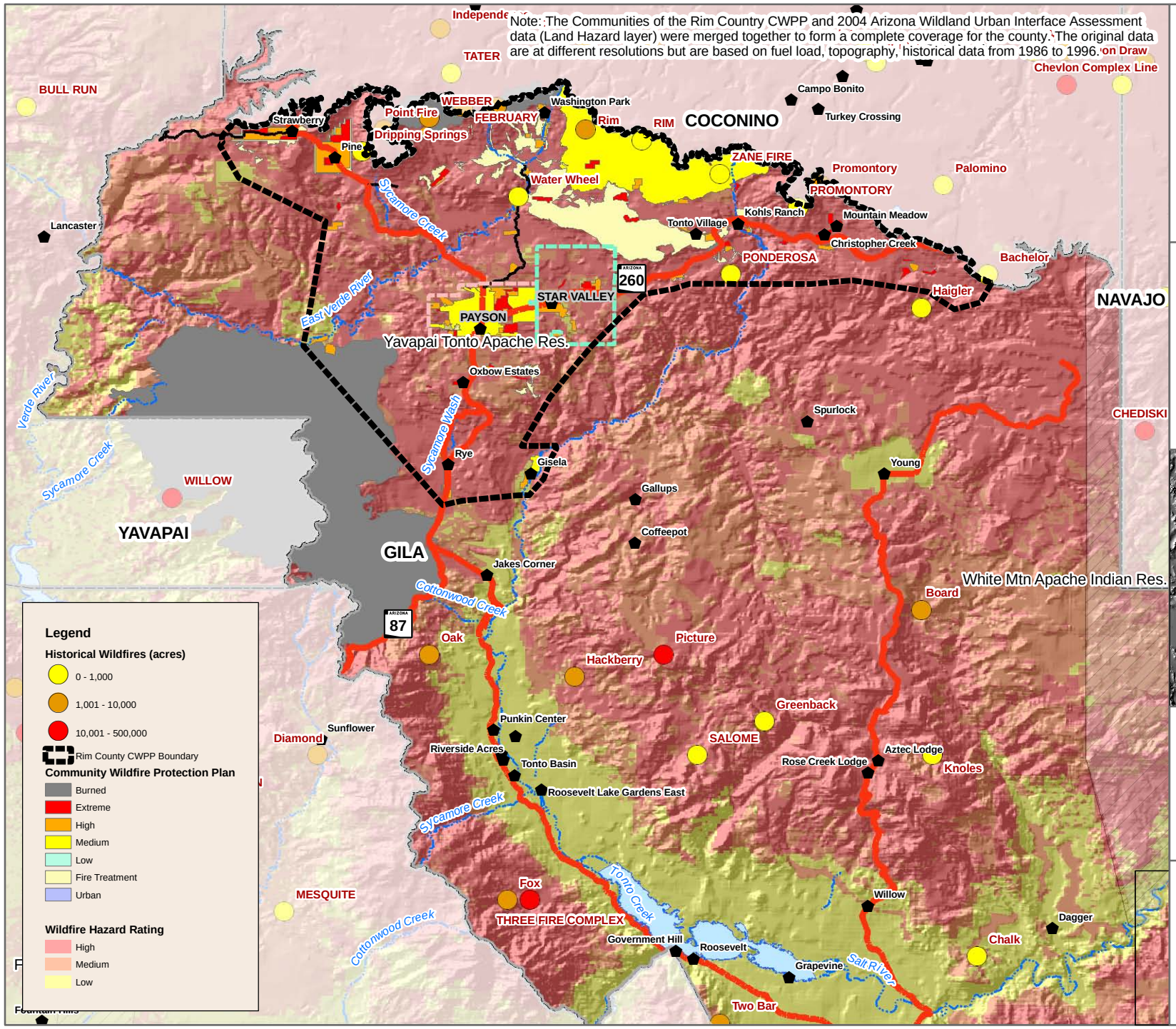
Profile Maps

Maps 3A , 3B and 3C – County-Wide Wildfire Hazard Maps

Maps 3D through 3I – Community Wildfire Hazard Maps

Gila County Multi-Jurisdictional Hazard Mitigation Plan

Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.



Legend

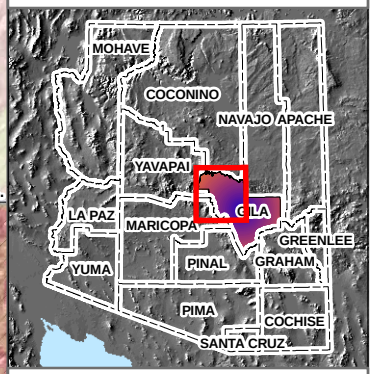
- Cities and Places
- County Boundary
- Indian Reservation
- Lakes
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

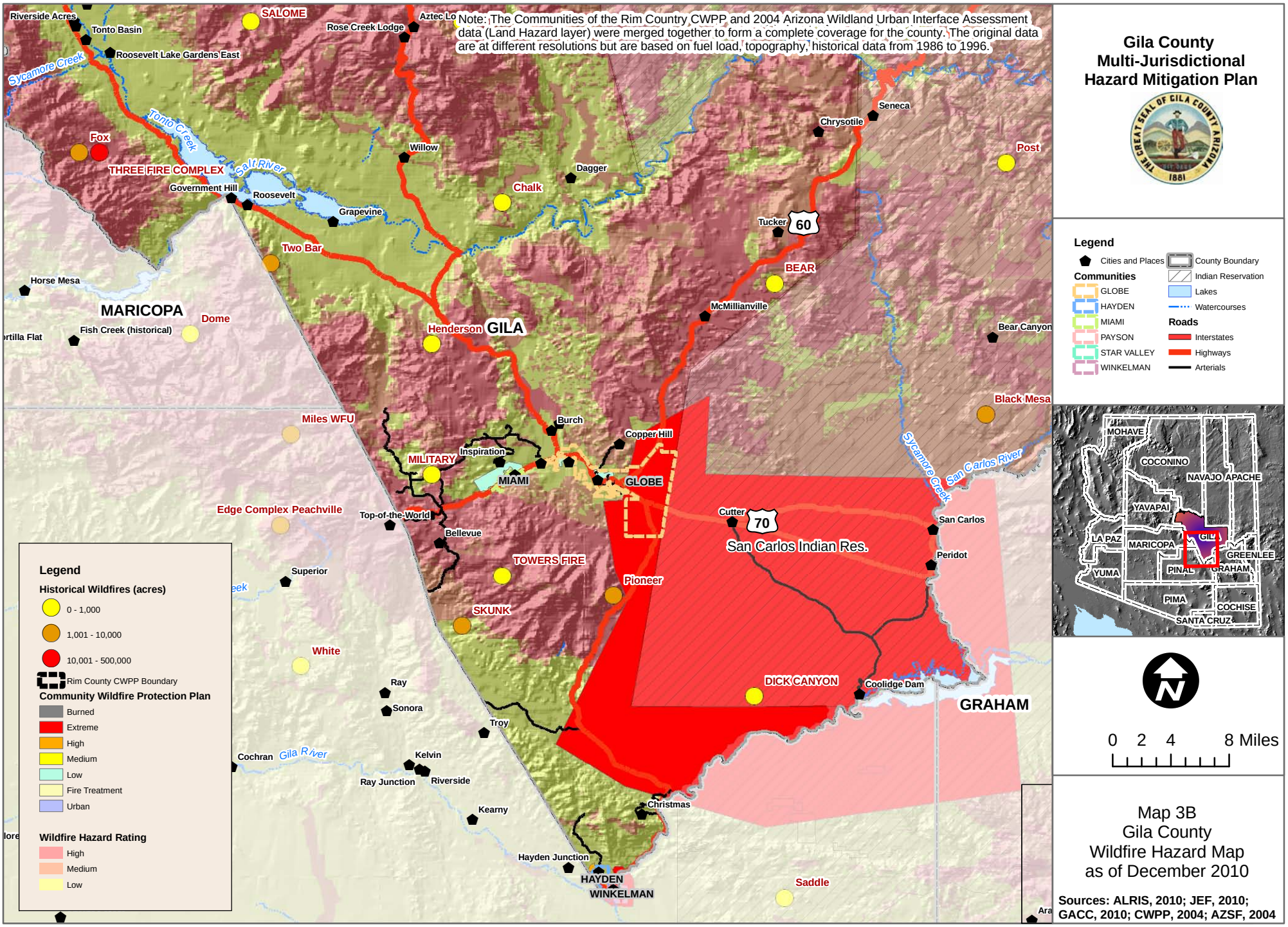
- Interstates
- Highways
- Arterials



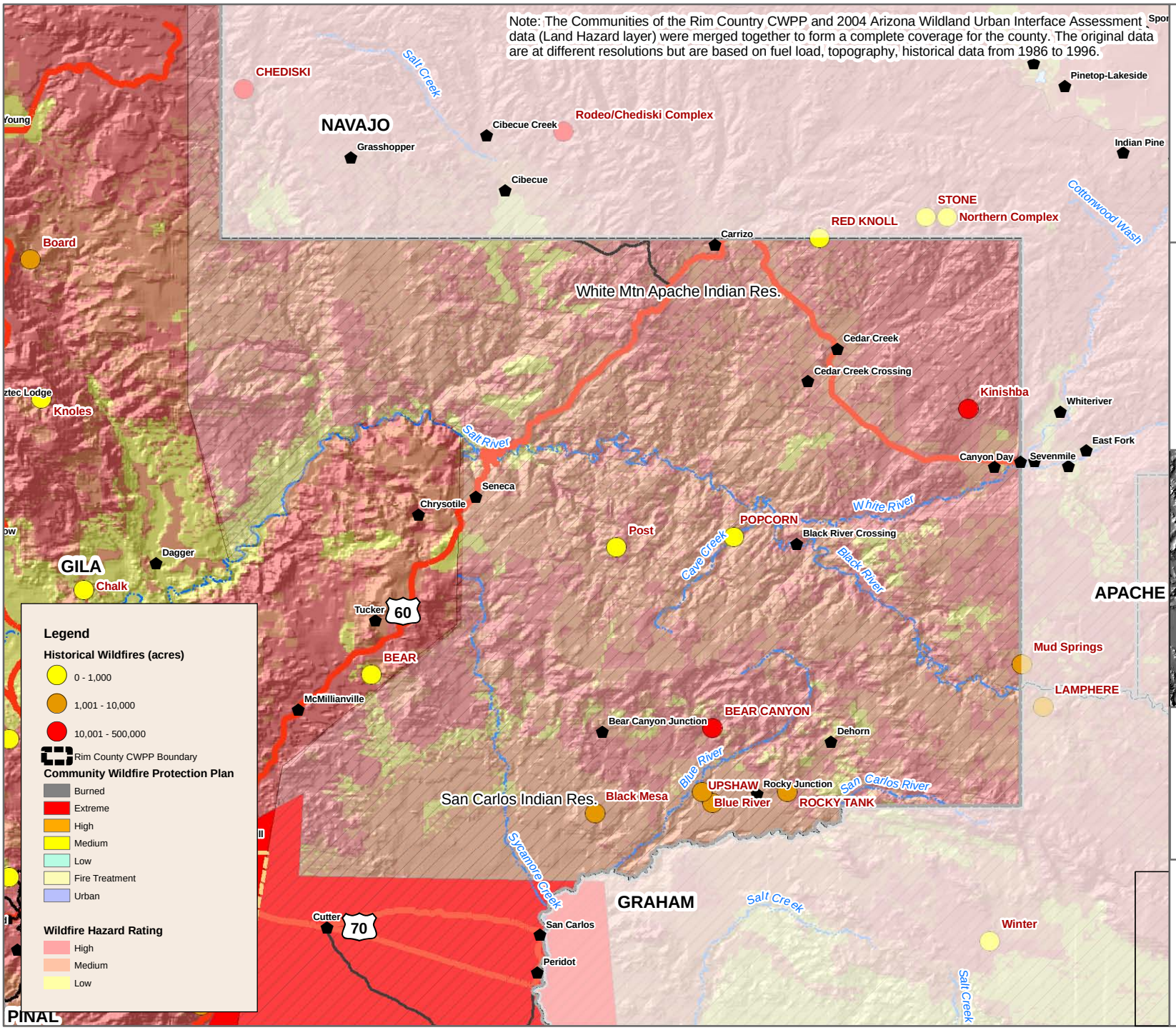
0 2 4 8 Miles

Map 3A
Gila County
Wildfire Hazard Map
as of December 2010

Sources: ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004


Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.
Gila County
Multi-Jurisdictional
Hazard Mitigation Plan
Legend
Cities and Places
Communities
GLOBE
HAYDEN
MIAMI
PAYSON
STAR VALLEY
WINKELMAN
County Boundary
Indian Reservation
Lakes
Watercourses
Roads
Interstates
Highways
Arterials
Legend
Historical Wildfires (acres)
0 - 1,000
1,001 - 10,000
10,001 - 500,000
Rim County CWPP Boundary
Community Wildfire Protection Plan
Burned
Extreme
High
Medium
Low
Fire Treatment
Urban
Wildfire Hazard Rating
High
Medium
Low
0 2 4 8 Miles
Map 3B
Gila County
Wildfire Hazard Map
as of December 2010
Sources: ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004
MOHAVE
COCONINO
NAVAJO
APACHE
YAVAPAI
LA PAZ
MARICOPA
GILA
GREENLEE
YUMA
PINAL
GRAHAM
PIMA
COCHISE
SANTA CRUZ
Riverside Acres
Tonto Basin
Roosevelt Lake Gardens East
Sycamore Creek
Tonto Creek
Salt River
Fox
THREE FIRE COMPLEX
Government Hill
Roosevelt
Grapevine
Two Bar
Horse Mesa
MARICOPA
Dome
Fish Creek (historical)
SALOME
Rose Creek Lodge
Aztec Lo
Willow
Chalk
Dagger
Henderson
GILA
Chrysotile
Seneca
Post
Tucker
60
BEAR
McMillianville
Bear Canyon
Black Mesa
Miles WFU
Burch
Copper Hill
Inspiration
MILITARY
MIAMI
GLOBE
Sycamore Creek
San Carlos River
Edge Complex Peachville
Top-of-the-World
Bellevue
Cutter
70
San Carlos Indian Res.
San Carlos
Peridot
TOWERS FIRE
Pioneer
Superior
SKUNK
White
Ray
Sonora
Troy
DICK CANYON
Coolidge Dam
GRAHAM
Cochran
Gila River
Kelvin
Ray Junction
Riverside
Kearny
Christmas
Hayden Junction
HAYDEN
WINKELMAN
Saddle

Gila County Multi-Jurisdictional Hazard Mitigation Plan



Legend

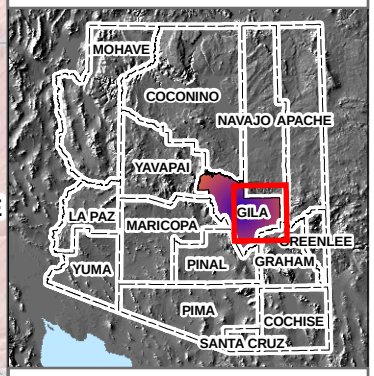
- Cities and Places
- County Boundary
- Indian Reservation
- Lakes
- Watercourses

Communities

- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads

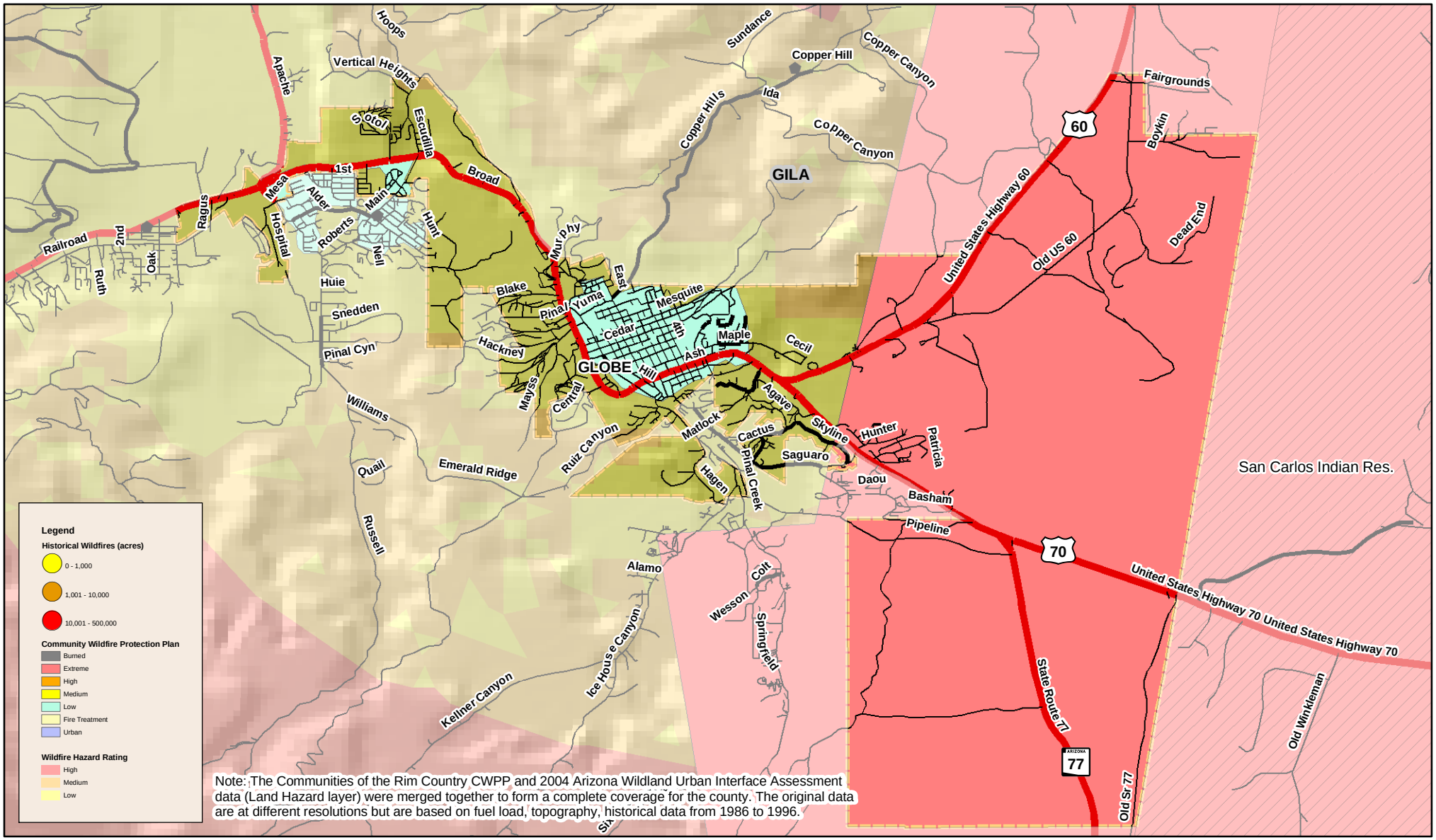
- Interstates
- Highways
- Arterials



0 2 4 8 Miles

Map 3C
Gila County
Wildfire Hazard Map
as of December 2010

Sources: ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

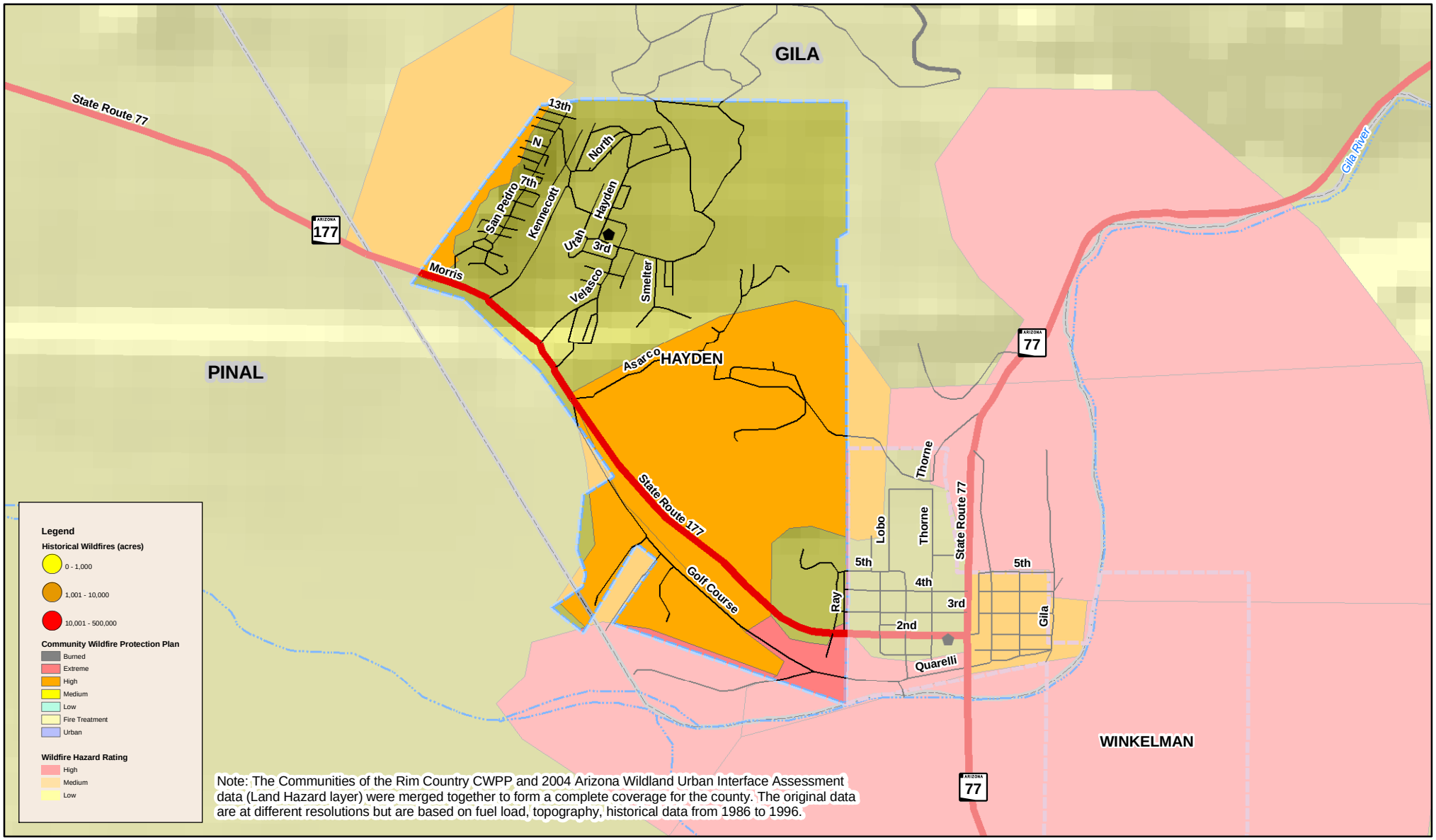
- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

0 0.75 1.5 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004

Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3D
City of Globe
Wildfire
Hazard Map
as of December 2010



Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.

Legend

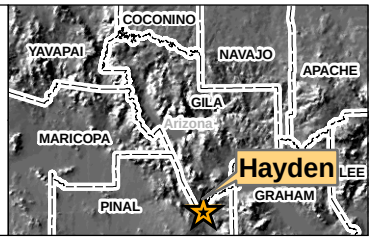
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

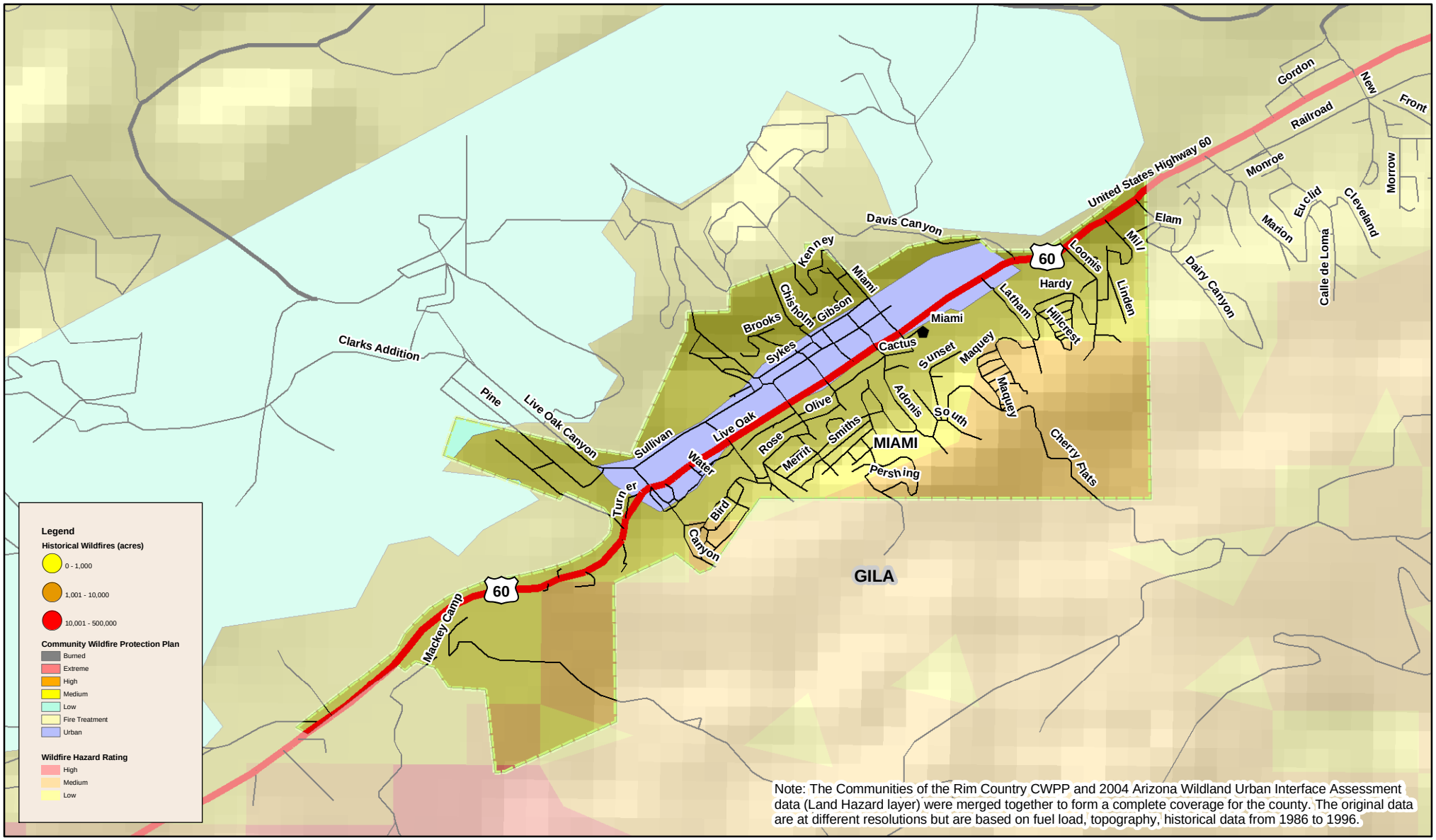
0 0.25 0.5 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3E
Town of Hayden
Wildfire
Hazard Map
as of December 2010



Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.

Legend

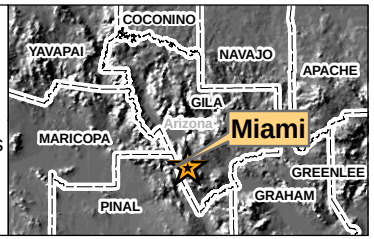
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

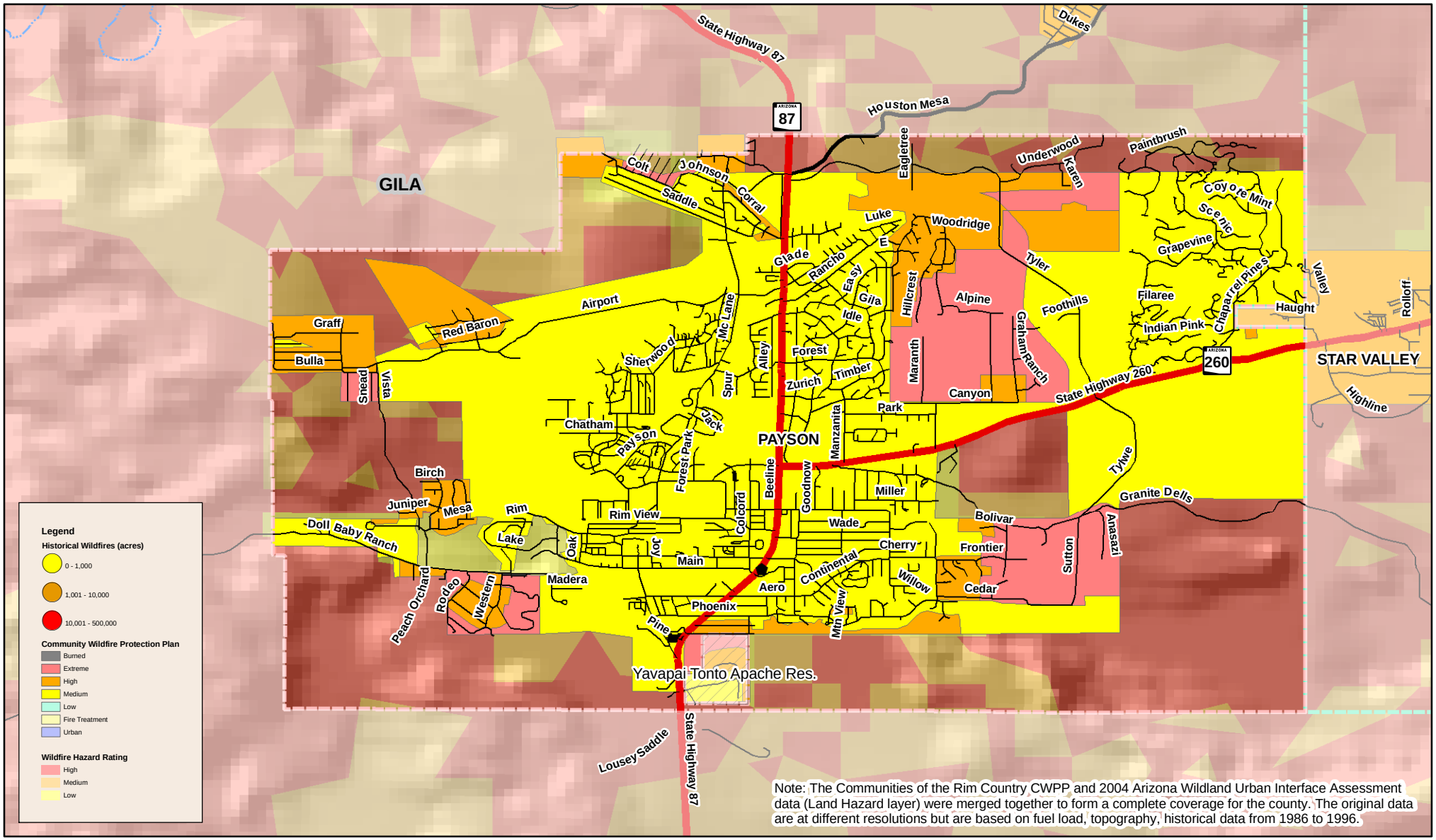
0 0.25 0.5 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3F
Town of Miami
Wildfire
Hazard Map
as of December 2010



Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.

Legend

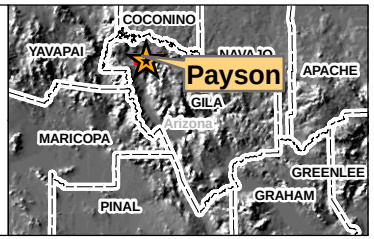
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

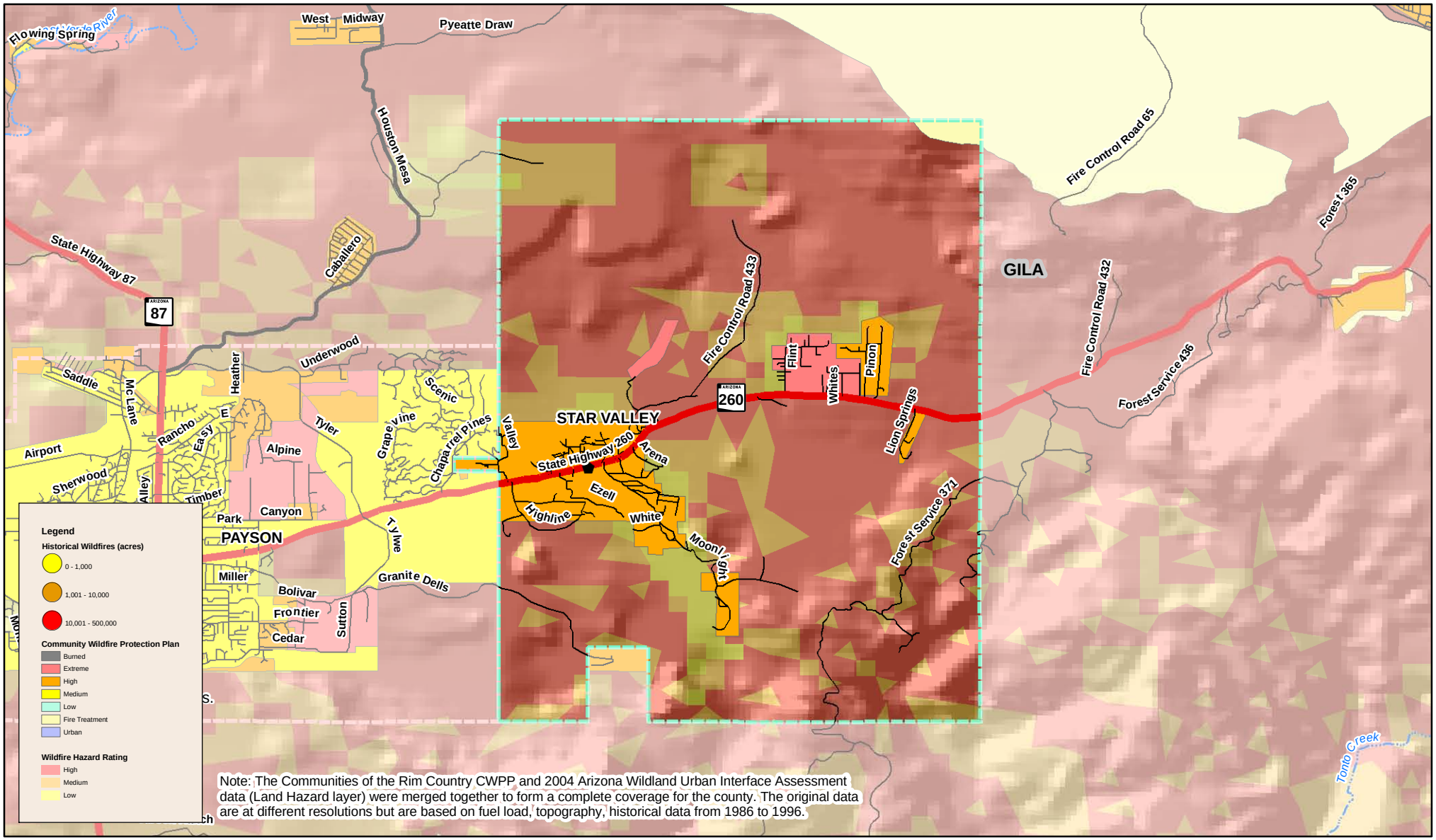
0 0.5 1 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3G
Town of Payson
Wildfire
Hazard Map
as of December 2010



Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.

Legend

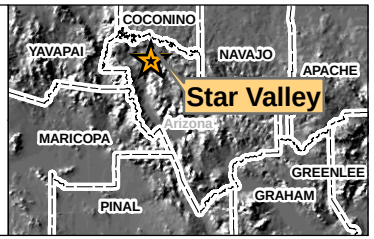
Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

Roads
- Interstates
- Major Highways
- Major Roads
- Local Streets

- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

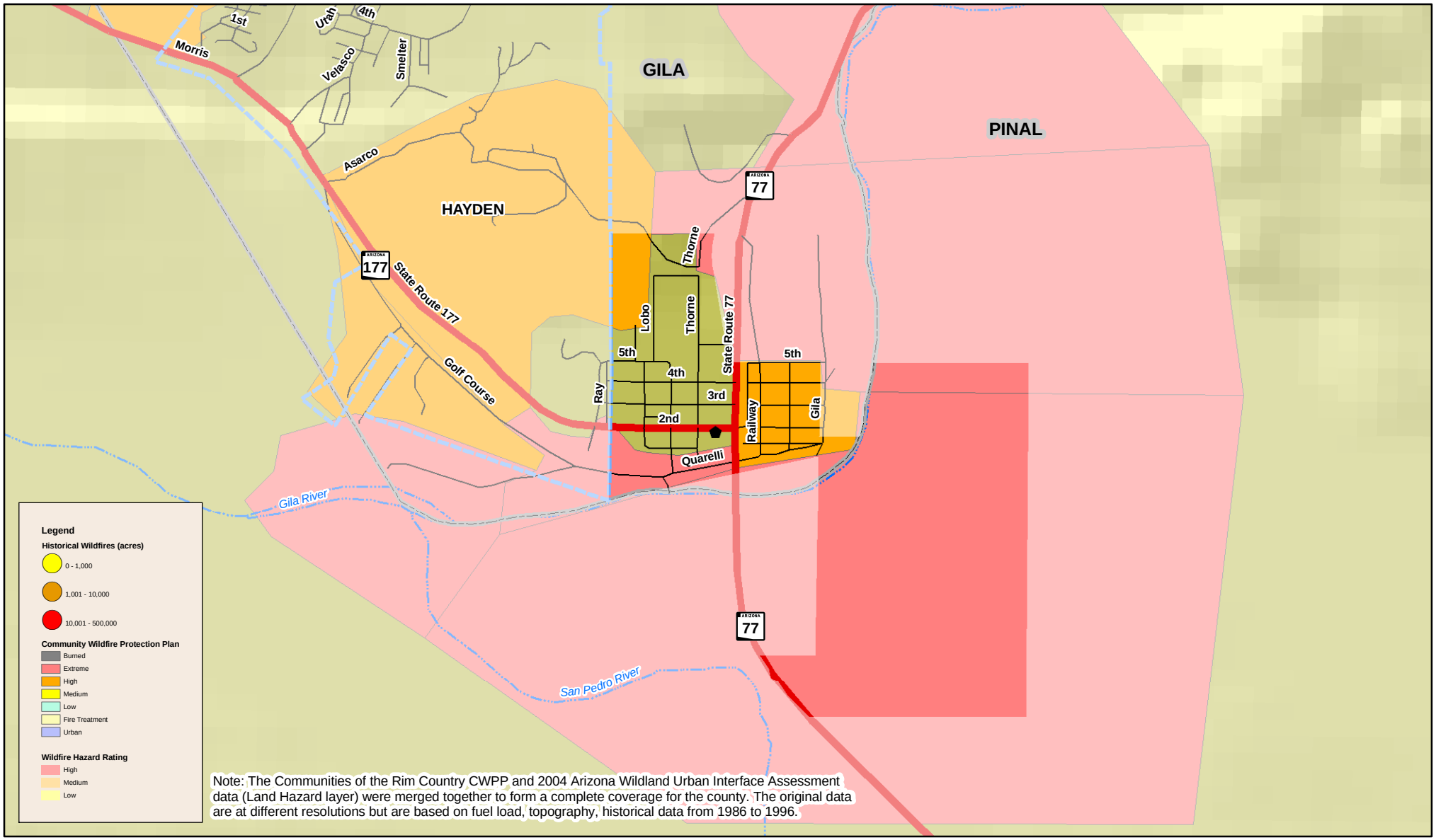
0 0.5 1 2 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3H
Town of Star Valley
Wildfire
Hazard Map
as of December 2010



Note: The Communities of the Rim Country CWPP and 2004 Arizona Wildland Urban Interface Assessment data (Land Hazard layer) were merged together to form a complete coverage for the county. The original data are at different resolutions but are based on fuel load, topography, historical data from 1986 to 1996.

Legend

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- Major Roads
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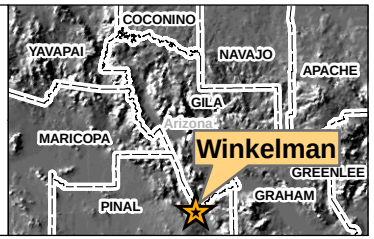
- Cities and Places
- Watercourses
- Lakes
- County Boundary
- Indian Reservation

0 0.25 0.5 Miles

Sources: NCDC, 2010; ALRIS, 2010; JEF, 2010; GACC, 2010; CWPP, 2004; AZSF, 2004



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Map 3I
Town of Winkelman
Wildfire
Hazard Map
as of December 2010

5.3.7 Winter Storm

Description

Severe winter storms affect many aspects of life in the county including; transportation, emergency services, utilities, agriculture and the supply of basic subsistence to isolated communities. U.S and state highways have produced numerous fatal multi-car accidents due to heavy winter snowfall and icy road conditions. Heavy snowfalls can also leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon-monoxide poisoning. Significant winter storms can also hinder both ground and air emergency services vehicles from responding to accidents or other emergencies. Remote areas and communities can be easily cut-off from basic resources such as food, water, electricity, and fuel for extended periods during a heavy storm. Extremely heavy snow storms can produce excessive snow loads that can cause structural damage to under-designed buildings. Agricultural livestock can also be vulnerable to exposure and starvation during heavy winter storms.

Freezing Rain is formed as snow falls through a warm zone in the atmosphere completely melting the snow. The melted snow then passes through another zone of cool air "super cooling" the rain below freezing temperature while still in a liquid state. The rain then instantly freezes when it comes in contact with the ground or other solid object. Because freezing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Sleet is similar to hail in appearance but is formed through atmospheric conditions more like Freezing Rain. The difference is the snowflakes don't completely thaw through the warm zone and then freeze through the cool air zone closer to the ground. Sleet typically bounces as it hits a surface similar to hail. Sleet is also informally used to describe a mixture of rain and snow and is sometimes used to describe the icy coating on trees and powerlines.

Sleet and freezing rain can cause slippery roadway surfaces and poor visibility leading to traffic accidents, and can leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon monoxide poisoning. Heavy sleet or freezing rain can produce excessive ice-loads on powerlines, telecommunication lines and other communication towers, tree limbs, and buildings causing power outages, communication disruptions, and other structural damage to under-designed facilities.

History

Winter snows are the lifeblood of water supplies for most of Gila County. However, according to the database summarized in Table 5-2, winter storms are also one the most deadly natural hazard to impact Gila County. According to both Tables 5-2 and 5-3, Coconino County has endured at least 3 declarations, 8 fatalities as a result of winter storms in the last 50 years. The following are highlights of the more prominent snow storm events impacting Gila County:

- In December 1967 to January of 1968, the worst winter storm to impact Gila County occurred paralyzing northern Arizona and brought snow to much of the state. It was actually two storms, with the second following closely on the heels of the first. However, at that time, most perceived it as one storm. On December 14, a state record of 38.0 inches fell at the Heber Ranger Station. Snowfall totals of the Rim Country included 102.7 inches at Hawley Lake, 99 inches at Greer, and 91.5 inches at the Heber Ranger Station, The Navajo Nation was extremely hard hit as two to three feet of snow fell across the community. Window Rock measured 33.5 inches. People on the reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Eight people died of exposure. The total disaster cost to the State of Arizona was $466,470. (ADEM, 2010)
- In February 2005 a severe winter storm and flood occurred which on February 16, 2005 the Governor declared a state of emergency due to the February 2005 Winter Storms and Flooding throughout central and eastern Arizona. Gila, Graham, Greenlee, Pinal and Yavapai Counties and the Town of Wickenburg (Maricopa County) all declared and were included in the Governor's declaration. On March 8, 2005, the declaration was amended to include all of Maricopa County and Mohave County.

- On April 14, 2005 the President declared a Major Disaster Declaration (FEMA-1586-DR-AZ) for Public Assistance and Hazard Mitigation Grant Programs for the counties of Gila, Graham, Greenlee, Mohave, Pinal and Yavapai; the Havasupai Tribe, the Hopi Tribe, the San Carlos Apache Tribe; and the portion of the Navajo Tribal Nation within the State of Arizona. The Tribal Governments work directly with DHS/FEMA and provide their own non-federal cost share. Maricopa County was not included in the Federal declaration. (ADEM, 2010)

- In January 2010 a Winter Storm Emergency was declared: About 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Strong gusty winds also affected many valley locations during the evening hours of the 19th and the early morning hours of the 20th. Heavy snow fell along the Eastern Mogollon Rim. Snowfall totals for this one storm include: Clints Well 16 inches, Heber 13 inches, Clay Springs 14 to 15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to between 5000 and 5500 feet elevation by the storm moved east. The Governor Jan Brewer signed a Declaration of Emergency and released $200,000 to pay for emergency responses and and recovery expenses from the weather events. Declared that a State of Emergency in Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai Counties due to the 2010 Winter Storm beginning January 21, 2010. President Obama approved the Governor's request for Emergency Declaration in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, has complicated delivery of assistance like fuel, food and medical provisions. An additional $1 million was approved by Governor Brewer to cover state-share costs. Response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, 5,475 blankets and over 800 wood bundles were delivered by air and ground transport. (ADEM, 2010, FEMA, 2010)

Probability and Magnitude

Snow level measurements are recorded daily across the United States and can be used to estimate the probability and frequency of severe winter storms. In Arizona, there is a 5% annual chance that snow depths between zero and 25 centimeters will be exceeded, a snowfall probability that is among the lowest in the nation (ADEM, 2009). For Gila County and other higher altitude areas of the state, this statistic is misleading, as snowfall extremes can occur. Especially for those areas located at elevations above 6,000 feet.

The NCDC maintains a snow climatology data set that contains maximum 1-day, 2-day, and 3-day duration snow depths at various weather stations across the nation (except Hawaii). The data reflects the maximum depth of snowfall recorded as of 2006. Maps 4A and 4B represent a graphical depiction of zones of historically maximum snow depths for the 1- and 3-day durations for the county. Bordering gage stations in California, Nevada, Utah, Colorado, and New Mexico were also used to ensure that no boundary effects were created.

The National Weather Service in Flagstaff[20], uses the following criteria for issuing warnings about winter storm weather:

1. **Blizzard Warning:** Sustained winds or frequent gusts of 35 mph or more, AND visibility frequently below 1/4 mile in considerable snow and/or blowing snow, AND above conditions are expected to prevail for 3 hours or longer.

[20] Based on information posted at the following NWS URL: http://www.wrh.noaa.gov/fgz/safety/criteria.php?wfo=fgz

2. **Winter Storm Warning:** Issued when more than one winter hazard is involved producing life threatening conditions, such as a combination of heavy snow, strong winds producing widespread blowing and drifting snow, freezing rain, or wind chill.

3. **Heavy Snow Warning Criteria:**

Above 8500 ft	12 inches/12 hrs	18 inches/24 hrs
7000 to 8500 ft	8 inches/12 hrs	12 inches/24 hrs
5000 to 7000 ft	6 inches/12 hrs *	10 inches/24 hrs*
Below 5000 ft	2 inches/12 hrs	4 inches/24 hrs

*(Payson is in this range)

4. **Snow Advisory Criteria:**

Above 8500 ft	6 to 12 inches/12hrs	12 to 18 inches/24 hrs
7000 to 8500 ft	4 to 8 inches/12 hrs	8 to 12 inches/24 hrs
5000-7000 ft	3 to 6 inches/12 hrs*	6 to 10 inches/24 hrs*
Below 5000 ft	1 to 2 inches/12 hrs	2 inches/24 hrs**

*(Payson's elevation)
**or snow accumulation in any location where it is a rare event.

5. **Blowing Snow Advisory Criteria:** Visibility frequently at or below 1/4 mile.

6. **High Wind Warning Criteria:** Issued for strong winds not associated with severe local storms. These include: gradient, mesoscale, and channeled winds; Foehn/Chinook/downslope winds; and winds associated with tropical cyclones. The criteria:

Sustained winds	40 mph or greater	last 1 hr or longer
Wind gusts	58 mph or greater	for any duration

7. **Wind Advisory:** Issued for the same types of wind events as a High Wind Warning, but at lower speed thresholds. The criteria:

Sustained winds	30-39 mph	last 1 hr or longer
Wind gusts	40-57 mph	for any duration

8. **Visibility Hazards:** Visibility reduced to 1/4 mile or less by fog, blowing dust/sand, and smoke.

9. **Wind Chill:** Issued for a wind chill factor of minus 20 ° Fahrenheit or colder.

10. **Freezing Rain/Drizzle, or Sleet:** widespread, dangerous, and damaging accumulations of ice or sleet.

11. **Frost or Freeze Warning:** Issued when temperatures are critical for crops and sensitive plants. Criteria is season dependent, but usually a freeze warning is appropriate when temperatures are expected to fall below freezing for at least 2 hours.

Vulnerability – CPRI Results

Snow storm CPRI results for each community are summarized in Table 5-54 below.

Table 5-54: CPRI results by jurisdiction for winter storms

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Globe	Highly Likely	Limited	12 - 24 hours	< 1 week	3.00
Hayden	Unlikely	Negligible	< 6 hours	> 1 week	1.00
Miami	Likely	Limited	6 - 12 hours	< 1 week	2.70
Payson	Likely	Critical	> 24 hours	< 1 week	2.70
Unincorporated Gila County	Likely	Limited	12 – 24 hours	< 1 week	2.55
				County-wide average CPRI =	**2.39**

Vulnerability – Loss Estimations

There are no standardized methods for estimating losses associated with winter storm events and none are made for this Plan. From a historical perspective, both human and infrastructure losses could be expected with any major winter storm event, and especially regarding traffic accidents and human exposure.

Vulnerability – Development Trend Analysis

Future development will expand the exposure of life and property to the hazard of winter storm events. Enforcement and/or implementation of modern building codes to regulate new developments in conjunction with public education on how to respond to hazardous winter conditions is probably the best way to mitigate against such losses.

Sources

Arizona Division of Emergency Management, 2010, State of Arizona Multi-Hazard Mitigation Plan, 2010 Update.

National Weather Service, Flagstaff Forecast Office, 2011, web information accessed at the following URL: http://www.wrh.noaa.gov/fgz/safety/criteria.php?wfo=fgz

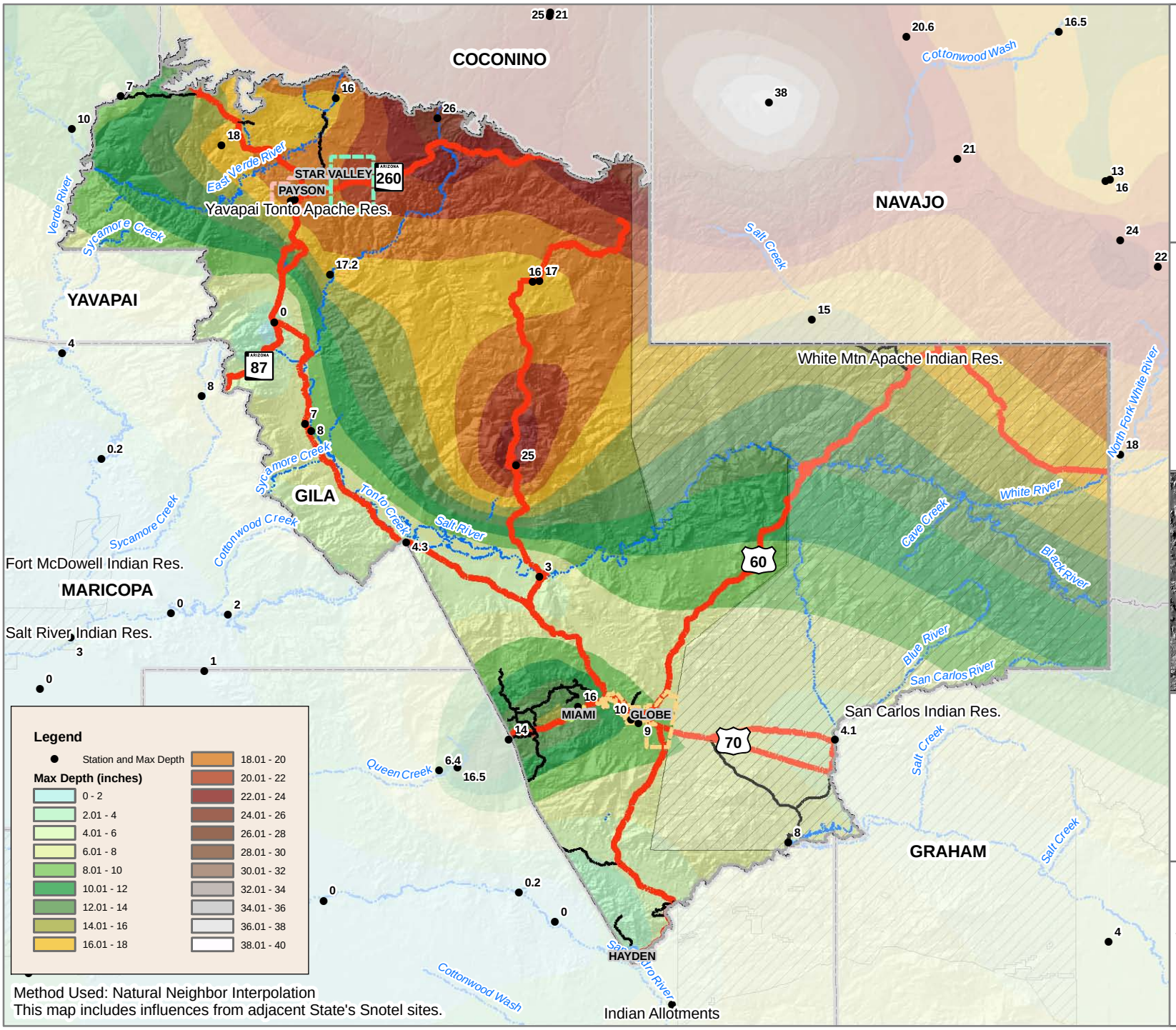
U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database, accessed via the following URL: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

U.S. Dept of Commerce, National Climatic Data Center, 2010, U.S. Snow Climatology Project, accessed via the following URL: http://www.ncdc.noaa.gov/ussc/USSCAppController?action=map

Profile Maps

Map 4A – County-wide Maximum 1-Day Snow Depths

Map 4B – County-wide Maximum 3-Day Snow Depths



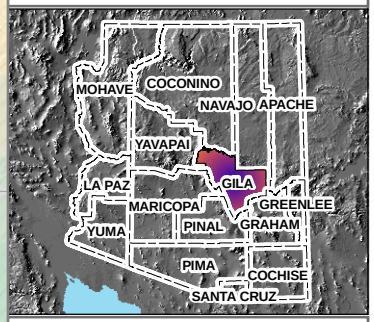
Gila County Multi-Jurisdictional Hazard Mitigation Plan

Legend

Communities
- GLOBE
- HAYDEN
- MIAMI
- PAYSON
- STAR VALLEY
- WINKELMAN

- County Boundary
- Indian Reservation
- Watercourses

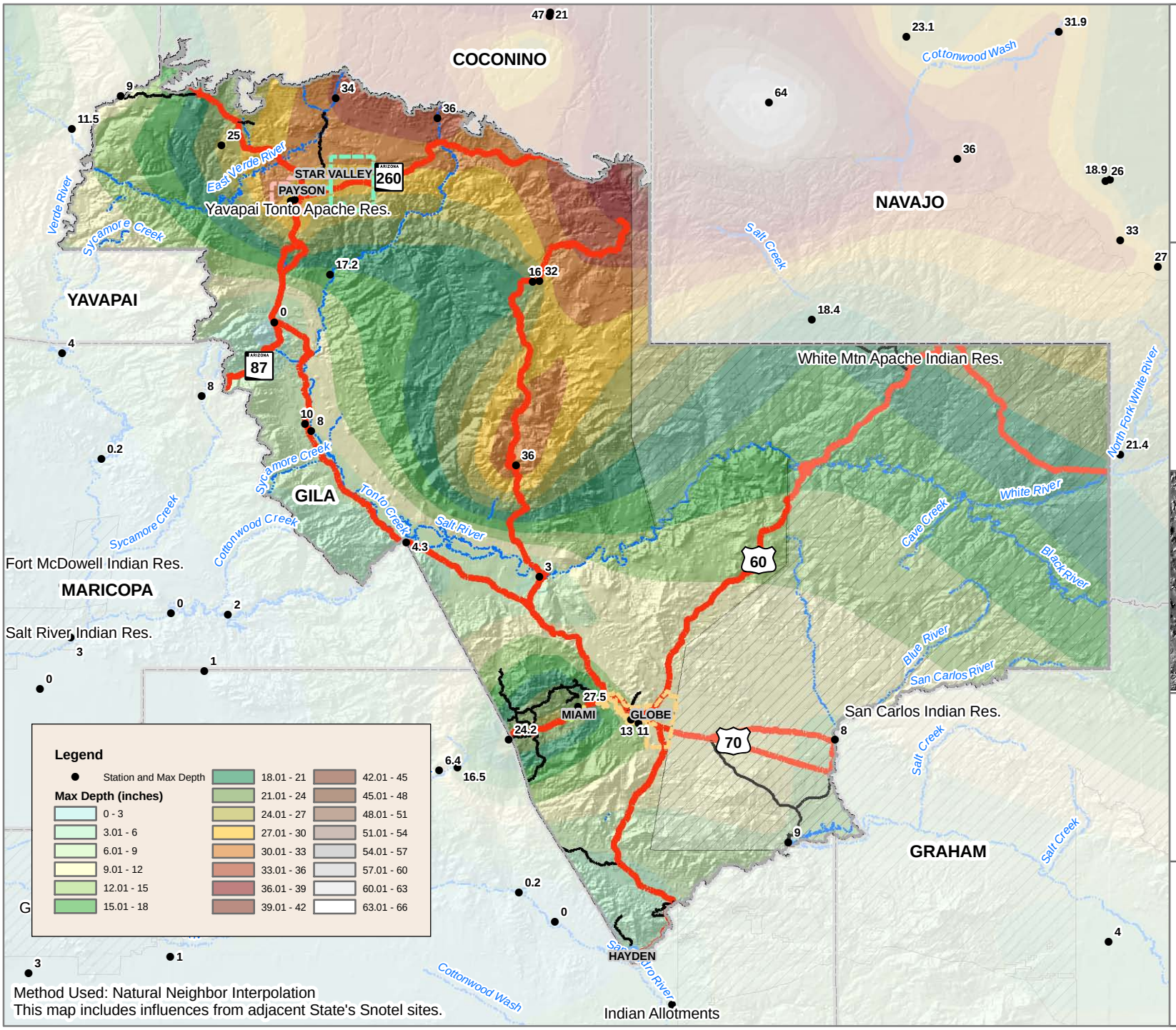
Roads
- Interstates
- Highways
- Arterials



0 4 8 16 Miles

Map 4A
Gila County
1-Day Maximum Snow Depth
Winter Storm Event Map
as of December 2010

Source: NCDC, 2009; ALRIS, 2006; JEF, 2010



Gila County Multi-Jurisdictional Hazard Mitigation Plan

Legend

Communities
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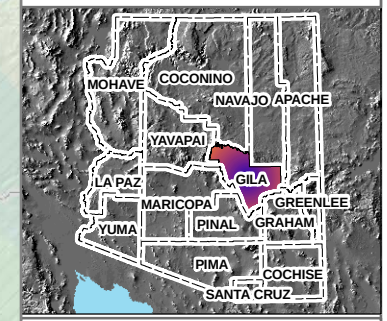

0 4 8 16 Miles

Map 4B
Gila County
3-Day Maximum Snow Depth
Winter Storm Event Map
as of December 2010

Source: NCDC, 2009; ALRIS, 2006; JEF, 2010

5.4 Risk Assessment Summary

The jurisdictional variability of risk associated with each hazard assessed in Section 5.3 is demonstrated by the various CPRI and loss estimation results. Accordingly, each jurisdiction has varying levels of need regarding the hazards to be mitigated, and may not consider all of the hazards as posing a great risk to their individual communities. Table 5-55 summarizes the hazards selected for mitigation by each jurisdiction and will be the basis for each jurisdictions mitigation strategy.

Table 5-55: Summary of hazards to be mitigated by each participating jurisdiction

Jurisdiction	Drought	Flooding / Flash Flooding	HAZMAT	Severe Wind	Transportation Accident	Wildfire	Winter Storm
Unincorporated Gila County	x	x	x	x	x	x	x
Globe	x	x	x	x	x	x	
Hayden		x		x			
Miami	x	x		x			
Payson	x	x	x	x	x	x	x

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SECTION 6: MITIGATION STRATEGY

§201.6(c)(3): *[The plan shall include…] (3) A* ***mitigation strategy*** *that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:*
(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

The mitigation strategy provides the "what, when, and how" of actions that will reduce or possibly remove the community's exposure to hazard risks. According to DMA 2000, the primary components of the mitigation strategy are generally categorized into the following:

Goals and Objectives

Capability Assessment

Mitigation Actions/Projects and Implementation Strategy

The entire 2006 Plan mitigation strategy was reviewed and updated by the Planning Team, including a major re-organization of the mitigation strategy elements into this multi-jurisdictional plan format. Specifics of the changes and updates are discussed in the subsections below.

6.1 Hazard Mitigation Goals and Objectives

According to the 2006 Plan, the 2006 Plan goals and objectives were developed using the 2004 State Plan[21] goals and objectives as a starting point. Each jurisdiction then edited and modified those goals and objectives to fit the mitigation planning vision for their community. An assessment of the 2006 Plan goals and objectives by the Planning Team and the Local Planning Team for each jurisdiction was made with consideration of the following[22]:

- Do the goals and objectives identified in the 2006 Plan reflect the updated risk assessment?
- Did the goals and objectives identified in the 2006 Plan lead to mitigation projects and/or changes to policy that helped the jurisdiction(s) to reduce vulnerability?
- Do the goals and objectives identified in the 2006 Plan support any changes in mitigation priorities?
- Are the goals and objectives identified in the 2006 Plan reflective of current State goals?

A copy of the 2010 State Plan's goals and objectives was distributed to the Planning Team for use in the assessment and addressing the above questions. The Planning Team then reviewed and assessed each of the 2006 Plan and 2010 State Plan goals and objectives, and the following comments were noted:

- The 2006 Plan goals and objectives were still appropriate and reflected the overall mitigation goals of the participating jurisdictions.
- The team discussed the possibility of adding another goal pertaining to winter storm using the same template as the 2006 Plan.

[21] State of Arizona, 2004, *State of Arizona All Hazard Mitigation Plan*, prepared by URS.

[22] FEMA, 2008, *Local Multi-Hazard Mitigation Planning Guidance*

- The majority of the planning team liked the simplicity of the 2010 State Plan goals and objectives and felt the 2010 State Plan list provided a very adequate representation of the team's goals for mitigation.
- Some concerns were raised regarding a loss of grant funding eligibility if a certain hazard was not addressed with a specific goal. For example, the planning team has not chosen earthquake as a priority hazard for mitigation. "What if" questions were raised regarding pursuing earthquake mitigation grant funds if it is not addressed. After much discussion, the planning team ultimately decided that having a list of goals and objectives like the State's would provide more flexibility and still address the overall mitigation goals.
- Some concerns were raised regarding a reluctance to discard the work done by the 2006 planning team. Further discussion concluded that it would not be a problem.

The planning team concluded that the 2006 Plan list of the goals and objectives would be dropped in favor of adopting the State's cleaner list. Edits were made to the State's goals and objectives to make the language reflect the participation of the county, cities, and town.

The discussions and edits resulted in the establishment of the following one goal and four clear objectives that will be used by all participating jurisdictions:

- **GOAL:** Reduce or eliminate the risk to people and property from natural hazards.
  - **Objective 1:** Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
  - **Objective 2:** Reduce risk to critical facilities and infrastructure from natural hazards.
  - **Objective 3:** Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
  - **Objective 4:** Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

6.2 Capability Assessment

While not required by DMA 2000, an important component of the Mitigation Strategy is a review of each participating jurisdiction's resources in order to identify, evaluate, and enhance the capacity of local resources to mitigate the effects of hazards. The capability assessment is comprised of several components:

- ✓ Legal and Regulatory Review – a review of the legal and regulatory capabilities, including ordinances, codes, plans, manuals, guidelines, and technical reports that address hazard mitigation activities.
- ✓ Technical Staff and Personnel – this assessment evaluated and describes the administrative and technical capacity of the jurisdiction's staff and personnel resources.
- ✓ Fiscal Capability – this element summarizes each jurisdiction's fiscal capability to provide the financial resources to implement the mitigation strategy.
- ✓ National Flood Insurance Program (NFIP) Participation – the NFIP contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments, but the program is promoted by FEMA as a basic first step for implementing and sustaining an effective flood hazard mitigation program, and is a key indicator for measuring local capability as part of this assessment.

- ✓ Prior Mitigation Actions – the final part of the capability assessment is a summary review of prior mitigation actions and/or projects that have been completed over the last five or so years.

The Planning Team reviewed the information provided in Section 5 of the 2006 Plan, and specifically Tables 5-1 through 5-4. The Planning Team chose to keep the format of Tables 5-2 and 5-3 for reporting the staff/personnel and fiscal resources. Table 5-1 and 5-4 were combined into a new table to not only report on the regulatory capabilities, but also to summarize the codes, plans, and studies/reports used by a jurisdiction. Therefore, Table 5-4 was dropped from the Plan.

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6.2.1 Jurisdictional Capabilities

Tables 6-1-1 through 6-1-5 summarize the legal and regulatory mitigation capability for each participating jurisdiction. Information provided includes a brief listing of current codes, mitigation relevant ordinances, plans, and studies/reports. Tables 6-2-1 through 6-2-5 summarize the staff and personnel resources employed by each jurisdiction that serve as a resource for hazard mitigation. Tables 6-3-1 through 6-3-5 summarize the fiscal capability and budgetary tools available to each participating jurisdiction. Each of these three tables are listed below by jurisdiction.

Table 6-1-1: Summary of legal and regulatory capabilities for Gila County

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
CODES	• Building Code Ordinance of the County of Gila amended June 28, 2011 • Minor Land Division Ordinance of the County of Gila • Gila County Planning & Zoning Ordinance-May 3, 2011	• Gila County Community Development
ORDINANCES	• Gila County Floodplain Management Ordinance • Gila County Grading and Drainage Ordinance No. 08-01 March 12, 2008 • Gila County Ordinance No. 11-02 Open Outdoor Fire • General Plan (2003) - General development plan for Gila County. • Gila County Grading and Drainage Ordinance #08-01 March 12, 2008	• Gila County Flood Control District • Gila County Public Works • Gila County Board of Supervisors
PLANS, MANUALS, and/or GUIDELINES	• Land Use and Resource Policy Plan-Sept 16, 2010 • Community Wildland Protection Plan (2003) - General forest remediation and subdivision protection plan, northern Gila County region. • Gila County Emergency Operations Plan (on-going, updated as needed, live document). • Gila County Multi-Hazard Mitigation Plan (2006)	• Gila County Planning & Zoning Commission • Gila County Emergency Management
STUDIES	• Flood Insurance Study-Dec 4, 2007 • Flood Insurance Rate Maps • US Army RGP reports for Emergency Protective Measures at: o Pinto Creek at Lopez Crossing o Tonto Creek at Gisela o Tonto Creek at Tonto Basin o Sycamore Creek at Tonto Basin o Campaign Creek at Roosevelt	• Gila County Floodplain Management/FEMA • Gila County Public Works

Table 6-2-1: Summary of technical staff and personnel capabilities for Gila County		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	P & Z, Public Works
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	P & Z, Public Works, Civil Engineer
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Public Works, P & Z, Emergency Management, Planners and Engineers
Floodplain Manager	☑	Public Works, Floodplain Manager
Surveyors	☑	Public Works
Staff with education or expertise to assess the community's vulnerability to hazards	☑	P & Z, Emergency Management, Planners and Deputy Director of EM
Personnel skilled in GIS and/or HAZUS	☑	Public Works, Emergency Management, GIS Analysis and EM Manager and Planner
Scientists familiar with the hazards of the community		Rely on Arizona Department of Environmental Quality
Emergency Manager	☑	Emergency Management Division Deputy Director and Planner
Grant writer(s)	☑	Various-Public Works, Emergency Management Sherriff's Department, Planners, Grant Writers, Deputy Director

Table 6-3-1: Summary of fiscal capabilities for Gila County		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	Yes, subject to Board of Supervisor's Approvals
Capital Improvements Project funding	Yes	Yes, subject to Board of Supervisor's Approvals
Authority to levee taxes for specific purposes	Yes	Yes, Property taxes, floodplain, utility services, fire response. Subject to Board of Supervisor's Approvals.
Fees for water, sewer, gas, or electric service	No	Not Available.
Impact fees for homebuyers or new developments/homes	Yes	Case by case review by P & Z and Board of Supervisors.
Incur debt through general obligation bonds	Yes	Yes, subject to Board of Supervisor's Approvals
Incur debt through special tax bonds	Yes	Yes, subject to Board of Supervisor's Approvals

Table 6-1-2: Summary of legal and regulatory capabilities for Globe		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2003 International Building Code • 2003 International Residential Code • 2003 International Plumbing Code • 2003 International Mechanical Code • 2003 International Fire Code • 2002 National Electric Code • 2008 City Code of the City of Globe	• Development Services • Building Safety • Planning and Zoning • Fire
ORDINANCES	• 2004 City of Globe Planning & Zoning • Ordinance • 2004 City of Globe Flood Damage Prevention • Ordinance (Amended July 2007) • 2008 City of Globe Subdivision Regulations	• Development Services • Planning and Zoning • Engineering • Flood Control District of Gila County • Arizona Department of Water Resources
PLANS, MANUALS, and/or GUIDELINES	• 2005 City of Globe General Plan Update • 1998 City of Globe Drainage Policy Manual • 2005 City of Globe Multi-Hazard Mitigation • Plan (currently being updated) • 2010 Wildfire Protection Plan	• Public Works • Engineering • Emergency Management • Planning and Zoning • Development Services
STUDIES	•	•

Table 6-2-2: Summary of technical staff and personnel capabilities for Globe		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Public Works – City Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Public Works – Public Works Director Public Works – City Engineer Administration – Planning & Zoning Administrator
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Administration – Planning & Zoning Administrator
Floodplain Manager	☑	Public Works – City Engineer
Surveyors	☑	Public Works – City Engineer
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Fire Department and the Planning & Zoning Department
Personnel skilled in GIS and/or HAZUS	☑	Public Works – City Engineer
Scientists familiar with the hazards of the community		none
Emergency Manager	☑	Administration – City Manager
Grant writer(s)	☑	Administration – Department Heads

Table 6-3-2: Summary of fiscal capabilities for Globe		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	No	

Table 6-1-3: Summary of legal and regulatory capabilities for Hayden		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• Hayden Town Codes	• Administration – General Superintendent
ORDINANCES	•	•
PLANS, MANUALS, and/or GUIDELINES	• Town of Hayden Multi-Hazard Mitigation Plan (2006)	• Administration – General Superintendent
STUDIES	• Flood Insurance Study for Gila County	• Gila County Flood Control District

Table 6-2-3: Summary of technical staff and personnel capabilities for Hayden		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices		
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Public Works – Operations Supervisor Administration – General Superintendent
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards		
Floodplain Manager		
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Police Department - Police Chief
Personnel skilled in GIS and/or HAZUS		
Scientists familiar with the hazards of the community		
Emergency Manager		
Grant writer(s)	☑	Administration – Magistrate Clerk

Table 6-3-3: Summary of fiscal capabilities for Hayden		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	5- year rotation
Authority to levee taxes for specific purposes	Don't Know	
Fees for water, sewer, gas, or electric service	Yes	Water and sewer
Impact fees for homebuyers or new developments/homes	No	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Table 6-1-4: Summary of legal and regulatory capabilities for Miami		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2003 International Building Codes	•
ORDINANCES	•	•
PLANS, MANUALS, and/or GUIDELINES	• Inter-Governmental Agreement Plans (12/2008) - Design review for new structures of building within the copper corridor-from west Miami to San Carlos Reservation. • Wastewater Treatment Plant Plan (On-going) - Replaces old water treatment plant with state of the art plant with assistance from the mining industry. Contractual agreement with Town of Miami. • Town of Miami Multi-Hazard Mitigation Plan (2009)	•
STUDIES	• Floodplain Study (Plan: 1947), (Maps: 2006) - Floodway and floodplain study through the Town of Miami. • Resurfacing of Live Oak Street, Hwy 60 (2009) - ADOT engineers road for proper drainage. • Preliminary Engineering Report for the Town of Miami Wastewater Collection System Improvements (AMEC, 2010)	•

Table 6-2-4: Summary of technical staff and personnel capabilities for Miami		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Development – Town Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Development – Town Inspector
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	☑	Administration – Town Manager
Floodplain Manager	☑	Administration – Town Manager
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Police Department - Chief
Personnel skilled in GIS and/or HAZUS		
Scientists familiar with the hazards of the community		
Emergency manager	☑	Administration – Town Manager
Grant writer(s)	☑	Department Heads Administration – Grant Writer

Table 6-3-4: Summary of fiscal capabilities for Miami		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	Eligible in 2010
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	
Impact fees for homebuyers or new developments/homes	Yes	Sewer fees only
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Table 6-1-5: Summary of legal and regulatory capabilities for Payson		
Regulatory Tools for Hazard Mitigation	**Description**	**Responsible Department/Agency**
CODES	• 2006 International Building Code • 2006 International Residential Code • 2006 International Mechanical Code • 2006 International Plumbing Code • 2006 International Fire Code • Unified Development Code	• Community Development Department • Fire Department • Building Department
ORDINANCES	• Town Code of Ordinances	• Fire Department • Building Department • Community Development Department • Police Department • Public Works Department
PLANS, MANUALS, and/or GUIDELINES	• Community Wildfire Protection Plan (updated 10-2006) - Plan describes risks, firefighting capabilities and projects for mitigation. • Emergency Operations Plan (2010). • Town of Payson Multi-Hazard Mitigation Plan (2006) • General Plan (amended 3-2010) • Capital Improvement Plan (2010) • Snow Removal Plan (revised 2010) • Evacuation Plan (revised 2010)	• Fire Department • Community Development Department • Police Department • Public Works Department
STUDIES	•	•

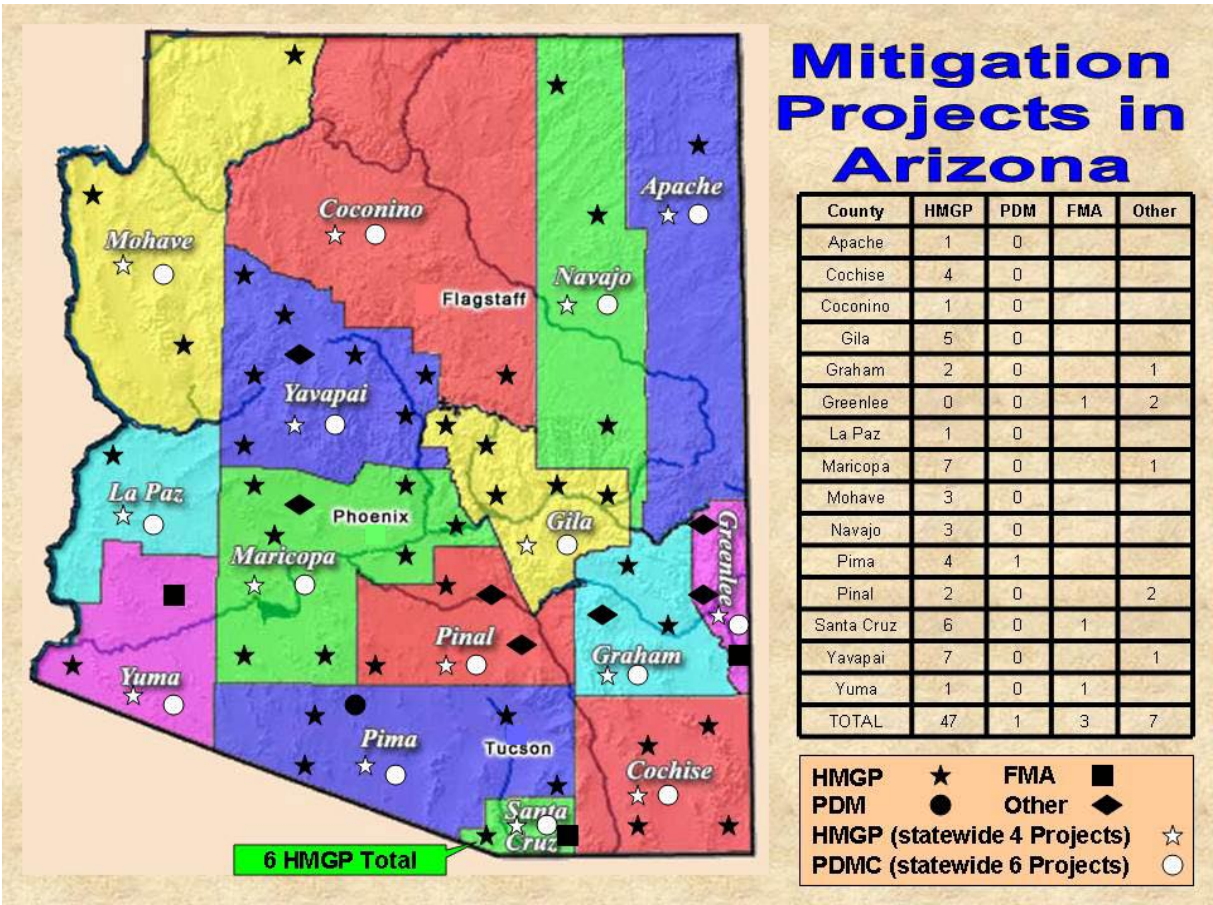
Table 6-2-5: Summary of technical staff and personnel capabilities for Payson		
Staff/Personnel Resources	☑	**Department/Agency - Position**
Planner(s) or engineer(s) with knowledge of land development and land management practices	☑	Town Engineer, Planning Department
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	☑	Town Engineer, Chief Building Official
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	☑	Town Engineer, Fire Chief, Police Chief
Floodplain Manager		
Surveyors		
Staff with education or expertise to assess the community's vulnerability to hazards	☑	Fire and Police Chiefs, Town Engineer, Public Works Director
Personnel skilled in GIS and/or HAZUS	☑	Fire Department, Town Engineer
Scientists familiar with the hazards of the community		
Emergency Manager		
Grant writer(s)	☑	Town Grant Coordinator

Table 6-3-5: Summary of fiscal capabilities for Payson		
Financial Resources	**Accessible or Eligible to Use (Yes, No, Don't Know)**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levee taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	Yes	Water fees
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Other	Yes	General fund revenue

6.2.2 Previous Mitigation Activities

During the last planning cycle many mitigation activities have been accomplished by the jurisdictions within Gila County. Table 6-4 provides an updated summary, by jurisdiction, of recent mitigation activities performed over the last planning cycle or generally within the last five to ten years.

Table 6-5 identifies past projects within Gila County that were funded using federal mitigation grant monies. Figure 6-1 is a graphical depiction of past federally funded mitigation projects in the State, as tracked by ADEM.



County	HMGP	PDM	FMA	Other
Apache	1	0		
Cochise	4	0		
Coconino	1	0		
Gila	5	0		
Graham	2	0		1
Greenlee	0	0	1	2
La Paz	1	0		
Maricopa	7	0		1
Mohave	3	0		
Navajo	3	0		
Pima	4	1		
Pinal	2	0		2
Santa Cruz	6	0	1	
Yavapai	7	0		1
Yuma	1	0	1	
TOTAL	47	1	3	7

Source: ADEM, 2010

Figure 6-1: Past Mitigation Projects in Arizona

Table 6-4: Previous mitigation activities for Gila County jurisdictions

Jurisdiction	Project Name	Project Description	Project Cost	Funding Source	Responsible Department	Completion Date
Gila County	Flood Warning	Construct flood warning gages in the Tonto Creek Watershed	$30,530	NOAA grant plus local cost share	Public Works – Flood Control District	August 2005
Gila County	Flood Warning	Construct flood warning gages in various areas throughout the County		County Funds	Public Works – Flood Control District	In Progress as of the Plan date
Gila County	Tonto Creek Bridge	Design and construct a bridge over Tonto Creek at Tonto Basin	$3 million (to-date)	Federal Funds (Congressional)	Public Works	In Progress as of the Plan date

Table 6-5: Previous projects in Gila County jurisdictions receiving federal mitigation grant funding

Applicant	Project Title	Project Type	Year Begun	Year Ended	Total Cost (x $1,000)	75% Fed Cost (x $1,000)	25% Non-Fed Cost (x $1,000)	Program
Gila County	977-1, Winkelman Flats Relocation	Acquisition/relocation- open space project	1993	1994	$1,800.0	$1,350.0	$450.0	HMGP
Gila County	Gila County Jail in Payson	Storm drain/structural	1994	1996	$38.9	$29.2	$9.7	HMGP
Pine-Strawberry Fire Dist	977-29, Community Warning System	Warning System	1998	2000	$81.0	$60.8	$20.2	HMGP
Gila County	1422-13-12R Gila	Roosevelt Estate Acquisition	2005	2007	$298.4	$223.8	$74.6	HMGP
AZGS Tucson	1581-7 AZGS	Debris Flow – Near or around Slate Creek on Hwy 87	2006	2008	$26.6	$20.0	$6.7	HMGP

6.2.3 National Flood Insurance Program Participation

Participation in the NFIP is a key element of any community's local floodplain management and flood mitigation strategy. Gila County and the 6 other incorporated jurisdictions participate in the NFIP. Joining the NFIP requires the adoption of a floodplain management ordinance that requires jurisdictions to follow established minimum standards set forth by FEMA and the State of Arizona, when developing in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by the 100-year flood, and that new floodplain development will not aggravate existing flood problems or increase damage to other properties. As a participant in the NFIP, communities also benefit from having Flood Insurance Rate Maps (FIRM) that map identified flood hazard areas and can be used to assess flood hazard risk, regulate construction practices and set flood insurance rates. FIRMs are also an important source of information to educate residents, government officials and the private sector about the likelihood of flooding in their community. Table 6-6 summarizes the NFIP status and statistics for each of the jurisdictions participating in this Plan.

Table 6-6: NFIP status and statistics for Gila County and participating jurisdictions as of March 24, 2011

Jurisdiction	Community ID	NFIP Entry Date	Current Effective Map Date	Number of Policies	Amount of Coverage (x $1,000)	Floodplain Management Role
Gila County	040028	9/27/1985	12/4/2007	361	$59,166	Floodplain management provided by the Gila County Flood Control District for the Unincorporated County areas and the Towns of Hayden, Star Valley and Winkelman.
Globe	040029	5/1/1980	12/4/2007	47	$9,690	Provides floodplain management for the incorporated areas of the city.
Hayden	040104	9/14/1979	12/4/2007	1	$175	Defers floodplain management responsibilities to Gila County. Will take a first look to screen and then forward to the County for permits.
Miami	040030	5/1/1980	12/4/2007	28	$2,798	Provides floodplain management for the incorporated areas of the town.
Payson	040107	3/18/1980	12/4/2007	44	$9,474	Provides floodplain management for the incorporated areas of the town.
Star Valley	040022	4/11/2008	12/4/2007	13	$1,920	Defers floodplain management responsibilities to Gila County. Will take a first look to screen and then forward to the County for permits.
Winkelman	040031	9/14/1971	12/4/2007	0	$0	Defers floodplain management responsibilities to Gila County. Will take a first look to screen and then forward to the County for permits.

Source: http://bsa.nfipstat.com/reports/1011.htm (8/31/2010); FEMA Community Status Report in NFIP (2/16/2011)

6.3 Mitigation Actions/Projects and Implementation Strategy

Mitigation actions/projects (A/P) are those activities identified by a jurisdiction, that when implemented, will have the effect of reducing the community's exposure and risk to the particular hazard or hazards being mitigated. The implementation strategy addresses the "*how, when, and by whom?*" questions related to implementing an identified A/P.

The process for defining the list of mitigation A/Ps for the Plan was accomplished in three steps. First, an assessment of the actions and projects specified in Section 5 of the 2006 Plan was performed, wherein each jurisdiction reviewed and evaluated their jurisdiction specific list. Second, a new list of A/Ps for the Plan was developed by combining the carry forward results from the assessment with new A/Ps. Third, an implementation strategy for the combined list of A/Ps was formulated. Details of each step and the results of the process are summarized in the following sections.

6.3.1 Previous Mitigation Actions/Projects Assessment

The Planning Team and Local Planning Team for each jurisdiction reviewed and assessed the actions and projects listed in Tables 5-5 and 5-6 of their corresponding 2006 Plans. The assessment included evaluating and classifying each of the previously identified A/Ps based on the following criteria:

STATUS		***DISPOSITION***	
Classification	Explanation Requirement:	Classification	Explanation Requirement:
"***No Action***"	Reason for no progress	***"Keep"***	None required
"***In Progress***"	What progress has been made	***"Revise"***	Revised components
"***Complete***"	Date of completion and final cost of project (if applicable)	***"Delete"***	Reason(s) for exclusion.

Any A/P with a disposition classification of "Keep" or "Revise" was carried forward to become part of the A/P list for the Plan. All A/Ps identified for deletion were removed and are not included in this Plan. The results of the assessment for each of the 2006 Plan A/Ps is summarized by jurisdiction in Tables 6-7-1 through 6-7-5.

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
9.C.1	Collaborative Transportation Accident Response Plan	Develop a plan to mitigate the length of transportation delays and the secondary effects of a transportation accident, including hypothermia, dehydration, carbon monoxide poisoning, road rage and other accidents. Coordination with ADOT and other agencies.	• Gila County Emergency Management • $25,000 • 2006	No Action	Delete	Project is more response oriented and is not something the County will pursue over the next 5 years as a part of its mitigation strategy.
3.A.1	Enhance Emergency Alert System Capability	Obtaining and installing weather gauges, stream flow gauges, and data linkage between multiple agencies for early warning of adverse weather, flooding, wildfire, HAZMAT, and other natural and human caused hazards to notify emergency responders and the public to prevent loss of life or property in the Northern Tonto Basin.	• Gila County Emergency Management, Gila County Flood Control District • $75,000 • 2006	In Progress	Keep	Est. $75,000 expended to date; plans for additional installations pending radio studies for data linkage and forest service permits. Additional funding sources are currently undetermined.
6.A.1	Continued Community Wildfire Protection Planning	Continue progress on the Rim Country CWPP and foster development of southern Gila County CWPP.	• Regional Payson Area Project (RPAP) • $100,000 • Undetermined	In Progress	Keep	The Southern Gila County CWPP is developed. County adoption of the plan is pending signatures from participating jurisdictions. Estimated completion 12/31/2011. RPAP continues to administer community projects as identified in the Rim Country CWPP.
10.A.1	Drought Contingencies	Maintain drought contingencies of water tanker deployment and conservation plans.	• Gila County Emergency Management • $50,000 • Ongoing	In Progress	Keep	3-400 gallon potable water tanks were acquired in 2010; potable water tank inventory and deployment plan are under development.

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
8.A.1	HAZMAT Transportation Route Study	Study traffic patterns of Hazardous Materials transporters within the County to identify transportation corridors being used in the County.	• Gila County Emergency Management • $100,000 • 2008	In Progress	Keep	2 studies (Hwy 60, Hwy 60/70) completed through MOU of Hazardous Materials Emergency Planning funding to AZ State Emergency Response Commission; funding for additional studies identification of funding source.
3.A.1	Remote Mobile Radio Station	Research and acquire remote low power mobile radio station to notify public of potential hazards.	• Gila County Emergency Management • $20,000 • 2006	In Progress	Keep	Funding source being sought
6.B.1	Regional Wildfire Fuel Reduction	Partner with multiple agencies and Regional Payson Area Project (RPAP) to educate the public on wildfire fuel reduction on private property within the County. Use DOJ inmate workforce to perform wildfire fuel reduction projects within the County to protect existing and future buildings and infrastructure.	• Regional Payson Area Project (RPAP) • $750,000 • Undetermined	In Progress	Keep	Public education and functional fuel reduction programs are an on-going commitment to the protection of life, property and the economy within Gila County. Funding to support these programs is on-going.
8.A.2	First Responder Training and Equipment for HAZMAT Incidents	Advanced training for first responders and basic equipment to identify hazardous materials and clean-up to protect the public and infrastructure.	• Gila County Emergency Management • $400,000 • 2008	In Progress	Keep	Project is on-going and supported by various grant funded sources.
5.B.5	Tonto Creek: Tonto Basin Bridge	Construct bridge across Tonto Creek at Tonto Basin to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $20,000,000 • Undetermined	In Progress	Keep	60% engineered; NEPA complete; Design Concept Report approved by ADOT; phase II of design in progress, plans, specs, bid documents estimated completion April 2012; construction grants pending

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.7	Russell Gulch Bridge	Reconstruct bridge on hospital access road across Russell Gulch to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $500,000 • Undetermined	No Action	Delete	City of Globe project
5.B.11	East Verde River - Houston Mesa Road 3rd Crossing	Consruct bridge to replace failing at-grade crossing to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $750,000 • Undetermined	In Progress	Keep	Funded through Central Federal Lands (CFL) Division of the Federal Highway Administration; construction dates estimated 2012-2017; Gila County Public Works holds easement on roads with limited involvement.
5.B.12	East Verde River - East Verde Estates Crossing	Construct bridge to replace failing vented ford crossing on access road to East Verde Estates to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $1,000,000 • Undetermined	In Progress	Keep	Funding source pending determination of grant availability and/or ½ cent transportation excise tax.
5.B.14	Thompson Draw: FS405 bridge	Construct bridge on Thompson Draw to replace at-grade crossing to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $1,500,000 • Undetermined	No Action	Delete	Plans for new road alignment nullified previous project.
5.B.15	Thompson Draw: Control Road Bridge	Construct bridge to replace at-grade crossing on Thompson Draw at the Control Road to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $450,000 • Undetermined	In Progress	Keep	Funded through Central Federal Lands (CFL) Division of the Federal Highway Administration; construction dates estimated 2012-2017; Gila County Public Works holds easement on roads with limited involvement

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.17	Christopher Creek Bridge Replacement	Replace old undersized inadequately-designed box culvert with a new bridge on Christopher Creek at the Christopher Creek Loop (old SR-260) to provide all weather access to residents and emergency personnel in the community.	• Gila County Public Works • $400,000 • Undetermined	In Progress	Keep	Intermittent flash flooding continues to be a concern; funding source being sought.
7.B.1	Enforce Current Building Codes	Continue to enforce building codes to mitigate against high wind damage to existing and future buildings and infrastructure . 5-year cost.	• Gila County • $1,250,000 • Ongoing	No Action	Delete	Revised plan update functions included in the Mitigation A-P.
9.A.1	Fixed Variable Message Signs	Identify locations and install fixed variable message signs at the SR 87 and 188 junction to notify motorists of tranportation accidents.	• Gila County Public Works • $100,000 • Undetermined	No Action	Delete	ADOT is responsible for state hwy improvements.
5.B.18	Roosevelt Estates Buyout	Buyout remaining homes between Ash St and Campaign Creek at Roosevelt Lake Estates	• Gila County Flood Control District • $1,000,000 • 2008	In Progress	Keep	Project is depended on sufficient grant funding; Sources are being sought; Completion date is estimated.
5.B.1	Roosevelt Levees	Reconstruct / Construct levees on Pinto Creek, Campaign Creek, Wildcat Wash near Roosevelt Lake Estates, Roosevelt Resort, Sportsman's Haven to protect existing and future buildings and infrastructure.	• Gila County Flood Control District • $5,500,000 • Undetermined	In progress	Revise	Revise language from 'levee' to Bank Protection; Private property erosion protection; funding source being researched but are as yet undetermined
5.B.2	Tonto Creek: Tonto Basin Levees	Construct 9 miles of riprap-lined levees, approx 23 ft high along Tonto Creek	• Gila County Flood Control District • $66,000,000 • Undetermined	In Progress	Revise	Revise language from 'levee' to Bank Protection; Private property erosion protection; funding source being researched but are as yet undetermined

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.3	Miami Wash and Pinal Creek Channel Widening and Levees	Widen channel (approx 600') for approx 6.5 miles from the SR-188 bridge to Horseshoe Bend Wash, construct 7.5 miles of levee	• Gila County Flood Control District • $30,000,000 • Undetermined	In Progress	Revise	Revise language from 'levee' to Bank Protection; Private property erosion protection; funding source being researched but are as yet undetermined
5.B.4	Tonto Creek: Gisela Levee	Construct/reconstruct 2.5 miles of riprap-lined levee along Tonto Creek	• Gila County Flood Control District • $6,500,000 • Undetermined	In Progress	Revise	Revise language from 'levee' to Bank Protection; Private property erosion protection; funding source being researched but are as yet undetermined
5.B.6	Russell Gulch Channel Widening and Levees	Widen 2.75 miles of Russel Gulch and construct levees near Cobre Valley Hospital	• Gila County Flood Control District • $3,500,000 • Undetermined	In Progress	Revise	Revise language from 'levee' to Bank Protection; Private property erosion protection; funding source being researched but are as yet undetermined
5.B.8	Bloody Tanks Wash Channel Widening and Lining	Widen and riprap line 2.25 miles of the Bloody Tanks Wash channel	• Gila County Flood Control District • $5,500,000 • Undetermined	No Action	Delete	Town of Miami Jurisdiction
5.B.9	Star Valley Channel Widening / Lining	Widen and riprap line the Houston Creek, Mayfield Canyon and Goat Camp Creek channels through Star Valley, for a total of approx 6 miles of channel	• Gila County Flood Control District • $44,000,000 • Undetermined	No Action	Delete	Star Valley Jurisdiction
5.B.13	Cherry Creek: Reconstruct Cherry Creek Estates Levees	Replace old levees with riprap-lined levees on Cherry Creek at Cherry Creek Estates in Young vicinity	• Gila County Flood Control District • $6,300,000 • Undetermined	No Action	Delete	Private/Forest jurisdiction; bank protection-emergency protective measures only
5.B.16	Thompson Draw: channel widening and lining with 3 bridge replacements	Widen and riprap line the Thompson Draw Channel for 2 miles through Tonto Village and replace 3 undersized culvert/bridge crossings with bridges	• Gila County Flood Control District • $30,300,000 • Undetermined	In Progress	Keep	Searching for funding sources which are as yet undetermined

Table 6-7-1
Gila County assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.10	East Verde River - Houston Mesa Road 2nd Crossing	Consruct bridge to replace failing at-grade crossing	• Gila County Flood Control District • $750,000 • Undetermined	In Progress	Keep	Funded through Central Federal Lands (CFL) Division of the Federal Highway Administration; construction dates estimated 2012-2017; Gila County Public Works holds easement on roads with limited involvement

Table 6-7-2
Globe assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.B.1	Back up Generators	Purchase and install backup generators to provide power in the event of a power outage related to thunderstorms/high winds. Install back up power systems for Emergency Operations Center (Municipal Building).	• City of Globe • $50,000 • Undetermined	Completed	Delete	All generators are up and running and were installed in January 2007.
5.B.3	Pinal Creek Debris Removal	Remove debris in the Pinal Creek watershed that gets mobilized during flooding events, clogging drainage facilities in the City, making roadways impassable, and increasing flooding potential. 5 year cost.	• City of Globe • $1,000,000 • Undetermined	In Progress	Keep	The debris removal lasts for approximately one month and it is completed in October or November of each year at a cost of $5,000 annually.
7.B.2 (5.B) (6.B)	Enforce Current Building Codes	Continue to enforce building codes to mitigate against high wind, wildfire, and flooding damage to existing and future buildings and infrastructure. 5 year cost.	• Globe Planning and Zoning Department • $500,000 • Ongoing	In Progress	Keep	Updated to IBC 2003 per City Council Resolution passed on February 23, 2009

Table 6-7-2
Globe assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.A.1	Fire Wise Community Programs	Develop Fire Wise programs for all neighborhoods within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies. Program to include controlled burns and weed abatement and necessary equipment. 5 year cost.	• City of Globe • $50,000 • Ongoing	In Progress	Keep	Completed Plan Dec 2010
5.B.2	Drainage Study for known Problem Areas	Assess drainage problems in known problem areas and develop mitigation projects to reduce damage to the community. Then implement and construct drainage solutions to protect existing and future buildings and infrastructure.	• Globe Engineering and Planning and Zoning Departments • $250,000 • Undetermined	In Progress	Keep	Activities include removal of brush, garbage, and sediment from the drainage facilities (channels, culverts, etc.) at a total cost of $8,000 over the last 5 years.
9.B.1	Variable Message Signs	Acquire two variable message signs for traffic control to mitigate transportation accident potential and re-route traffic around accident site.	• City of Globe • $40,000 • Undetermined	In Progress	Keep	Purchased arrow board from Arizona state surplus at a cost of $800 in February 2003. Still need message signs.
6.B.2	Wildland Fire Fuels Reduction Crew	Support part-time, two man crew dedicated to wildfire hazard fuel reduction and fire suppression in Globe and surrounding areas to protect existing and future buildings and infrastructure. 5 year cost.	• City of Globe • $50,000 • Undetermined	In Progress	Keep	Have dedicated men for program
8.B.1	HAZMAT Technician Recruitment	Recruit two HAZMAT technicians. Identify and purchase first responder advanced technology personal protection and detection equipment for chemical and biological incidents. Train public safety personnel. 5 year cost.	• City of Globe • $120,000 • Undetermined	In Progress	Keep	Have men and equipment for first response. More training needed.

Table 6-7-3
Hayden assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.B.2	Back up Generators	Purchase and install backup generators to provide power in the event of a power outage related to thunderstorms/high winds. Install backup power systems for Civic Center, Town Hall, Police Department, and Schools in Hayden and Winkelman.	• Town of Hayden, Town of Winkelman • $425,000 • Undetermined	In Progress	Revise	Installed back-up power for PD and sewer lift stations around 2006-2007. Revise to remove schools and PD from list.
3.B.2	Evacuation Plan	Develop evacuation plan to better deal with a required evacuation in the event of a disaster.	• Town of Hayden, Town of Winkelman, Town of Kearny • $10,000 • Undetermined	Completed	Delete	Evacuation Plan was completed in 2006-2007.
3.B.1	Emergency Operation Plan	Update and revise emergency operation plan to comply with NIMS criteria.	• Town of Hayden, Town of Winkelman • $25,000 • Undetermined	No Action	Delete	Not a priority for Town at this time.
9.C.1	Collaborative Transportation Accident Response Plan and Exercise	Develop a plan to mitigate the length of transportation delays, emergency response, and the secondary effects of transportation accidents.	• Town of Hayden, Town of Winkelman • $35,000 • Undetermined	No Action	Delete	Not a priority for Town at this time.
7.B.1	Enforce Current Building Codes	Continue to cooperate with Gila County to enforce building codes to mitigate high wind damage to protect existing and future buildings and infrastructure. 5 year cost.	• Town of Hayden, Town of Winkelman • $100,000 • Ongoing	In Progress	Keep	Town has done this over past five years and plans to continue to do so.

Table 6-7-3
Hayden assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.1	Dike Rehabilitation	Dike stability study leading to the rehabilitation of the dike to protect existing and future buildings and infrastructure and the Winkelman Sewer Plant.	• Town of Hayden, Town of Winkelman • $100,000 • Undetermined	No Action	Delete	Project is a Town of Winkelman responsibility.
6.B.1	Wildland Fire Fuel Reduction	Create defensible space on private property in wildland interface areas including the San Pedro Wash area to protect existing and future buildings and infrastructure. 5 year cost.	• Hayden and Winkelman Fire Departments • $1,000,000 • Undetermined	Complete	Delete	Completed as stated in 2008 at a cost of $10,000
6.B.2	Wildland Fire Fuel Reduction in the Flats Phase 2	Create defensible space on private property in wildland interface areas along the banks of the Gila River by thinning wildfire fuel to protect existing and future buildings and infrastructure. 5 year cost.	• Hayden and Winkelman Fire Departments • $900,000 • Undetermined	No Action	Delete	Project is a Town of Winkelman responsibility.
8.A.1	First Responder Training and Equipment	Through advanced training and use of equipment first responders are better able to identify hazardous materials and protect the public.	• Town of Hayden, Town of Winkelman, Town of Kearny • $100,000 • Undetermined	No Action	Delete	Project is not mitigation.
6.B.1	Wildland Fire Fuel Reduction in the Flats Phase 1	Create defensible space on private property in wildland interface areas along the banks of the Gila River by removing debris piles to protect existing and future buildings and infrastructure.	• Hayden and Winkelman Fire Departments • $100,000 • 2007	No Action	Delete	Project is a Town of Winkelman responsibility.
6.A.1	Fire Wise Community Programs	Develop Fire Wise programs for all neighborhoods within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies	• U of A Coop Ext • $10,000 • July 2006	No Action	Delete	Project is not a priority for the Town at this time.

Table 6-7-3
Hayden assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
3.A.1	Emergency Warning Siren	Rehabilitate the town warning siren to alert the community of impending disasters. Upgrade the siren to facilitate multiple hazard warnings. Install data linkage between sirens in Kearny, Hayden, and Winkelman.	• Hayden and Kearny Police Departments • $50,000 • Undetermined	Complete	Delete	Project was completed around 2007 at a cost of $50,000

Table 6-7-4
Miami assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
1	Replace and Expansion of Sewer and Stormwater Lines	Engineering studies and video assessment to include replace and expansion of sewer/stormwater lines to wastewater/stormwater treatment plant.	• Town Administration • $25,000,000 • June 2012	In Progress	Keep	FMMI has constructed a wastewater treatment plant and will turn it over to the Town in May of 2011. The Town has hired a project manager and design engineer to produce plans and construct a new sewer collection system for the Town. The Town has applied for USDA Rural Development Grants to fund the construction.
2	Enforcement of Building Codes	Continue to enforce building codes to mitigate against high wind damage to existing and future buildings and infrastructure. Extend building inspector to code enforcement and implement with inspections, warnings and follow-up with letters and citations.	• Town Inspector Office • $1,000 • December 2010	Completed	Keep	The Town has a building inspector for new construction and remodeling and has hired a code enforcement officer to monitor compliance of existing structures and issue letters or citations as required.

Table 6-7-4
Miami assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
3	NFIP Compliance Strategy	Identify and prioritize NFIP compliance strategy and coordinate with the State NFIP Coordinator during the Community Assisted Visits to remain compliant in NFIP.	• Town Administration • $1,000 • July 2011	No Progress	Keep	Miami has hired a new Town Manager. As soon as he has become familiar with Town operations he can proceed with this task.
4	New Floodplain Study and LOMR	Develop new floodplain study to re-submit to FEMA for a Letter of Map Revision based on natural flow changes to watershed and streams to reduce the flood hazard.	• Town Administration • $30,000 • June 2012	No Progress	Keep	Miami has hired a new Town Manager. As soon as he has become familiar with Town operations he can proceed with this task. The Town will seek grants to fund the study.
5	Provide Outreach Brochures	Provide outreach brochures provided by ADEM through distribution at City Hall, Library, Senior Center, newspapers, and Town Website. Will send out brochures annually.	• Town Administration • No Cost • Begin June 2011	No Progress	Keep	The Town will work with ADEM and Gila County to obtain needed materials and articles to inform the public.

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
3.A.1	Reverse 911 System	Purchase and implement Reverse 911 type system to warn public of emergency situations.	• Payson Police and Fire, GCSO • $50,000 • December 2012	No Action	Revise	No funds available. Still a viable project.

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.D.1	Public Education Program	Providing 40 public education sessions in partnership with AZ Forestry Division, U of A coop. extension, Forest Service and Gila Community College to provide property owner education for Fire Wise. 5 year cost.	• Town of Payson • $20,000 • Ongoing	In Progress	Keep	20 sessions have been held in the past 5 years and funded by Town of Payson federal hazardous fuels reduction grants.
6.B.3	Brush Disposal Pits	Town of Payson, Gila County and Forest Service partnership to construct 4 sites where private property owners can dispose of wildland fire fuels. 5 year cost.	• Town of Payson • $100,000 • Ongoing	In Progress	Keep	4 brush disposal pits are in operation and were funded by Town of Payson, Gila County and federal hazardous fuels reduction grants
3.B.1	Payson Emergency Operation Plan	Update and revise emergency operation plan to comply with NIMS criteria.	• Town of Payson • No cost • Ongoing	Complete	Delete	Adopted by Town Council in January 2010. Revisions to be done annually.
3.B.2	Tonto Apache Emergency Response Plan	Update and revise emergency response plan including bioterrorism events to comply with NIMS criteria.	• Tonto Apache Tribe • $25,000 • 2006	No Action	Delete	Tonto Apache Tribe not participating. No way to assess project.
3.B.5	Payson Emergency Stockpile	Establish an emergency supply of food, water and first aid supplies to sustain Payson emergency personnel during a disaster event.	• Town of Payson • $50,000 • Undetermined	No Action	Delete	No funds available. Project is more response oriented and will be dropped.
6.B.2	Wildland Fire Fuel Reduction within Right of Ways	Use Department of Correction crews to remove fuels within Payson and Tonto Apache Tribal Reservation to protect existing and future buildings and infrastructure. 5 year cost.	• Town of Payson, Tonto Apache Tribe • $25,000 • Ongoing	No Action	Delete	Project will probably be abandoned

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
7.B.2	Uninterrupted Power System for Traffic Signals	Install battery backup power systems at major traffic intersections.	• Town of Payson, Tonto Apache Tribe, ADOT • $225,000 • Undetermined	No Action	Keep	No funds available. Still a viable project.
9.A.1	Fixed Variable Message Signs	Identify locations and install fixed variable message signs along north SR 87, south SR 87 and east 260 to notify motorists of transportation accidents.	• Town of Payson, Tonto Apache Tribe, ADOT • $250,000 • Undetermined	No Action	Keep	No funds available. Still a viable project.
2.A.1	Public Disaster Education Video	Produce videos for local cable providing discussions of the dangers and losses and mitigation measures for disaster events.	• Town of Payson, Tonto Apache Tribe • $12,000 • 2006	No Action	Revise	No funds available. Still a viable project using available materials.
7.B.1	Enforce Current Building Codes	Continue to enforce building codes to protect against high wind damage to existing and future buildings and infrastructure. 5 year cost.	• Town of Payson • $1,250,000 • Ongoing	In progress	Keep	Building code enforcement is routine part of city business
3.B.3	Payson GIS Mapping and Emergency Vehicle Locator	Establish and maintain a Town GIS Mapping and Real Time Emergency Vehicle Locator to better respond and mitigate potential natural and human caused hazards. Project to include vehicle computer systems to access GIS mapping.	• Town of Payson • $250,000 • Undetermined	Complete	Delete	There is a need to maintain, improve and expand this system.
3.B.6	Tonto Apache Emergency Stockpile	Establish an emergency supply of food, water, first aid supplies ~~medication~~ to sustain Tribal emergency personnel and the Tribal community during a disaster event.	• Town of Payson, Tonto Apache Tribe • $100,000 • Undetermined	No Action	Delete	Tonto Apache Tribe not participating. No way to assess project.

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
6.B.1	Defensible Space Fuel Reduction	Create defensible space on private property in Rim Country CWPP wildland fire prone areas. Cost share with owners. 5 year cost.	• Town of Payson • $500,000 • Ongoing	In progress	Keep	Funded by federal hazardous fuels reduction grants over 200 properties and 535 acres have been treated
3.B.4	Tonto Apache Computer Aided Dispatch, GIS Mapping and Emergency Vehicle Locator	Acquire CAD/RMS in conjunction with the Town of Payson. Establish and maintain a Tribal GIS Mapping and Real Time Emergency Vehicle Locator to better respond and mitigate potential natural and human caused hazards. Project to include vehicle computer systems to access GIS mapping.	• Town of Payson, Tonto Apache Tribe • $1,000,000 • Undetermined	No Action	Delete	Tonto Apache Tribe not participating. No way to assess project.
6.E.1	Dead Tree Ordinance	Adopt and enforce a dead tree ordinance with the Town of Payson to require private property owners to remove and dispose of dead trees to mitigate wildland fire fuels. 5 year cost.	• Town of Payson • $25,000 • 2006	Complete	Delete	We used an existing ordinance to accomplish this objective. Approximately 55 trees were removed through a partnership with property owners that was funded by a combination of town and federal hazardous fuels reduction grants
6.B.4	Fuel Breaks	Fuel break around the boundary of the Payson and Tonto Apache Reservation limits to mitigate wildland fire to protect existing and future buildings and infrastructure. 5 year cost.	• Town of Payson, Tonto Apache Tribe • $5,000,000 • Undetermined	Complete	Delete	Completed 485 acre fuel break in 2007 at a cost of $271,845 Funded by a combination of town, county, private and federal funds. Forest Service will maintain the fuel breaks.
8.B.1	HAZMAT Protection and Detection Equipment and Training	Establish a regional HAZMAT team. Identify and purchase first responder advanced technology, personal protection and detection equipment for chemical and biological incidents. Train public safety personnel. 5 year cost.	• Town of Payson • $1,250,000 • Ongoing	No Action	Delete	No funding available. Project will be dropped since HAZMAT is not addressed in updated mitigation plan

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
3.B.1	Alternate Tribal Access Road	Construct an alternate access road to the Tonto Apache Reservation for emergency vehicles and/or evacuation in the event of a disaster.	• Town of Payson, Tonto Apache Tribe • $1,200,000 • Undetermined	No Action	Delete	Tonto Apache Tribe not participating. No way to assess project.
5.B.3	Payson Ranchos	Flood prone area encompassing 96 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event to protect existing and future buildings and infrastructure.	• Town of Payson • $506,730 • Undetermined	No Action	Keep	Cost vs. benefit is questionable for federal funding. Other sources may be helpful.
5.B.4	East Aero Drive	Flood prone area encompassing 52 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	• Town of Payson • $184,160 • Undetermined	No Action	Keep	Cost vs. benefit is questionable for federal funding. Other sources may be helpful.
5.B.5	Country Club Vista	Flood prone area encompassing 565 acres, multiple historic flooding complaints, and limited access during flooding events. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	• Town of Payson • $402,590 • Undetermined	No Action	Keep	Cost vs. benefit is questionable for federal funding. Other sources may be helpful.
5.B.1	West Bonita Road Area	Flood prone area encompassing 609 acres, 120 buildings vulnerable including SR 87. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	• Town of Payson • $3,703,070 • Undetermined	No Action	Keep	Cost vs. benefit is questionable for federal funding. Other sources may be helpful.

Table 6-7-5
Payson assessment of previous plan cycle mitigation actions/projects

ID	Name	Description	• Lead Agency • Proposed Cost • Proposed Comp Date	Status	Disposition	Explanation
5.B.2	South Bentley Road Area	Flood prone area encompassing 410 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	• Town of Payson • $1,160,450 • Undetermined	No Action	Keep	Cost vs. benefit is questionable for federal funding. Other sources may be helpful.

6.3.2 New Mitigation Actions / Projects and Implementation Strategy

Upon completion of the assessment summarized in Section 6.3.1, each jurisdiction's Local Planning Team developed new A/Ps using the goals and objectives, results of the vulnerability analysis and capability assessment, and the planning team's institutional knowledge of hazard mitigation needs in the community. The A/Ps can be generally classified as either structural or non-structural. Structural A/Ps typify a traditional "bricks and mortar" approach where physical improvements are provided to effect the mitigation goals. Examples may include forest thinning, channels, culverts, bridges, detention basins, dams, emergency structures, and structural augmentations of existing facilities. Non-structural A/Ps deal more with policy, ordinance, regulation and administrative actions or changes, buy-out programs, and legislative actions. For each A/P, the following elements were identified:

- **Description** – a brief description of the A/P including a supporting statement that tells the "what" and "why" reason for the A/P.
- **Hazard(s) Mitigated** – a list of the hazard or hazards mitigated by the A/P.
- **Community Assets Mitigated** – a brief descriptor to qualify the type of assets (existing, new, or both) that the proposed mitigation A/P addresses.
- **Estimated Costs** – concept level cost estimates that may be a dollar amount or estimated as staff time.

Once the full list of A/Ps was completed to the satisfaction of the Local Planning Team, the team then developed the implementation strategy for those A/Ps. The implementation strategy addresses the *"priority, how, when, and by whom?"* questions related to the execution and completion of an identified A/P. Specific elements identified as a part of the implementation strategy included:

- **Priority Ranking** – each A/P was assigned a priority ranking of either "High", "Medium", or "Low". In the case of the Town of Miami, the projects were ranked in numerical sequence of priority, with 1 being the top priority A/P. The assignments were subjectively made using a simple process that assessed how well the A/P satisfied the following considerations:
  - A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
  - A direct beneficial impact on the ability to protect life and/or property from natural hazards.
  - A mitigation solution with a long-term effectiveness
- **Planning Mechanism(s) for Implementation** – where applicable, a list of current planning mechanisms or processes under which the A/P will be implemented. Examples could include CIPs, General Plans, Area Drainage Master Plans, etc.
- **Anticipated Completion Date** – a realistic and general timeframe for completing the A/P. Examples may include a specific target date, a timeframe contingent upon other processes, or recurring timeframes.
- **Primary Agency and Job Title Responsible for Implementation** –the agency, department, office, or other entity and corresponding job title that will have responsibility for the A/P and its implementation.
- **Funding Source** – the source or sources of anticipated funding for the A/P.

Tables 6-8-1 through 6-8-5 summarize the current mitigation A/P and implementation strategy for each participating Plan jurisdiction. Projects listed in *italics font* are recognized as being more response and recovery oriented, but are considered to be a significant part of the overall hazard management goals of the community.

Table 6-8-1: Summary of mitigation actions and projects and implementation strategy for Gila County

GOAL: Reduce or eliminate the risk to people and property from natural hazards.

Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
National Flood Insurance Policy Education/Outreach Program. Gila County will provide education to residents about floodplain locations, repetitive flood risk areas and the benefits of purchasing a flood insurance policy through a variety of informational outlets such as community preparedness events, printed materials and media outlets.	Flooding	New	Staff	High	NFIP Compliance	Ongoing	Gila County Emergency Management	Grant funds as available
Conduct a FIREWISE Communities Program through the promotion of public education, planning support and guidance to communities on wildfire mitigation and preparedness.	Wildfire	Both	Staff	High	Firewise Program	2015	Gila County Emergency Management	Grant funds as available
Gisela Bank Protection. Construct/reconstruct 2.5 miles of riprap-lined bank protection along Tonto Creek	Flood	Both	$6,500,000	High	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued
Buyout remaining homes between Ash St and Campaign Creek at Roosevelt Lake Estates	Flood	Both	$750,000	High	Gila County Multi-Hazard Mitigation Plan 2006	3 years after funding is appropriated	Gila County Emergency Management	Applications for FEMA PDA grant funds pending
Reconstruct / Construct bank protection on Pinto Creek, Campaign Creek, Wildcat Wash near Roosevelt Lake Estates, Roosevelt Resort, Sportsman's Haven to protect existing and future buildings and infrastructure.	Flood	Both	$5,500,00	High	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued
Construct 9 miles of riprap-lined bank protection, approx 23 ft high along Tonto Creek in the Tonto Basin	Flood	Both	$66,000,000	High	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued

Table 6-8-1: Summary of mitigation actions and projects and implementation strategy for Gila County

GOAL: Reduce or eliminate the risk to people and property from natural hazards.

Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Construct bridge across Tonto Creek at Tonto Basin to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$20,000,000	High	USDA 1993 Engineering Study; USACOE 2004 Evaluation and Management Plan; FEMA 2004 Hydrological Analysis	3 years after federal funding is appropriated	Gila County Public Works	Multiple funding sources are actively being pursued
Update of International Building Code	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	New	$100,000	High	Gila County Development Codes	2015	Gila County Community Development	Staff budget
Update of the Gila County Comprehensive Development Plan	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	New	$250,000	High	Required by the State of Arizona Community Development	2015	Gila County Community Development	Staff budget
Update of the Gila County Zoning Ordinance-combining codes into one document.	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	New	$150,000	High	ARS Title 11	2014	Gila County Community Development	Staff budget
East Verde River - East Verde Estates Crossing. Construct bridge to replace failing vented ford crossing on access road to East Verde Estates to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$100,000	High	Gila County Small Area Transportation Study 2006	3 years after funding is appropriated	Gila County Public Works	Multiple funding sources are actively being pursued
Partner with state and federal agencies to provide advanced training for first responders and basic equipment to identify hazardous materials and clean-up to protect the public and infrastructure.	*HAZMAT (Response)*	*(Response)*	*$100,000*	*High*	*SARA Title III ARS Title 26*	*On-going*	*Gila County Emergency Management*	*Grant funds*

Table 6-8-1: Summary of mitigation actions and projects and implementation strategy for Gila County

GOAL: Reduce or eliminate the risk to people and property from natural hazards.

Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
East Verde River – Houston Mesa Road 3rd Crossing. Construct bridge to replace failing at-grade crossing to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$750,000	Medium	Gila County Small Area Transportation Study 2006	3 years after funding is appropriated	Public Works and Central Federal Lands Division of the Federal Highway Administration	Grant from Central Federal Lands Division of the Federal Highway Administration
Improve all weather access on FS 512 from Hwy 260 to Hwy 288 by paving existing dirt road.	Flood, Wildfire, HAZMAT, Winter Storm	New	$10,000,000	Medium	Gila County Small Area Transportation Study 2006	2016	Gila County Public Works	Research and apply for available mitigation grant funds
Control Road all weather access from SR 87 to SR 260	Flood, Wildfire, HAZMAT, Winter Storm	New	$15,000,000	Medium	Gila County Small Area Transportation Study 2006	2016	Gila County Public Works	Research and apply for available mitigation grant funds
Obtain and install weather gauges, stream flow gauges, and data linkage between multiple agencies for early warning of adverse weather, flooding, wildfire, HAZMAT, and other natural and human caused hazards to notify emergency responders and the public to prevent loss of life or property in the Northern Tonto Basin.	Flood, Wildfire, HAZMAT, Severe Wind, Winter Storm	Both	Staff	Medium	Gila County Multi-Hazard Mitigation Plan 2006	Within 2 years of obtaining funding	Gila County Flood Control; Gila County Emergency Management	Applications for FEMA PDA grant funds pending
Continue maintenance of the Rim Country CWPP and pursue final adoption of southern Gila County CWPP.	Wildfire	Both	Staff	Medium	Healthy Forests Restoration Act (HFRA) of 2003	On-going	Rim Country CWPP-Regional Payson Area Project SGC-CWPP pending plan adoption	Research and apply for a variety of available mitigation grant funds
Study traffic patterns of Hazardous Materials transporters within the County to identify transportation corridors being used in the County.	HAZMAT	Both	$50,000	Medium	SARA Title III	2015	Gila County Emergency Management	Research and apply for available mitigation grant funds

Table 6-8-1: Summary of mitigation actions and projects and implementation strategy for Gila County

GOAL: Reduce or eliminate the risk to people and property from natural hazards.

Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Partner with multiple agencies and Regional Payson Area Project (RPAP) to educate the public on wildfire fuel reduction on private property within the County. Use DOJ inmate workforce to perform wildfire fuel reduction projects within the County to protect existing and future buildings and infrastructure.	Wildfire	Both	$100,000	Medium	Rim Country Community Wildland Protection Plan; Southern Gila County Wildland Protection Plan	On-going	Gila County Emergency Management; Gila County Public Works	Research and apply for available mitigation grant funds
Thompson Draw: Control Road Bridge. Construct bridge to replace at-grade crossing on Thompson Draw at the Control Road to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$450,000	Medium	Gila County Small Area Transportation Study 2006	3 years after funding is appropriated	Public Works and Central Federal Lands Division of the Federal Highway Administration	Grant from Central Federal Lands Division of the Federal Highway Administration
Replace old undersized inadequately-designed box culvert with a new bridge on Christopher Creek at the Christopher Creek Loop (old SR-260) to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$400,000	Medium	Gila County Small Area Transportation Study 2006	3 years after funding is appropriated	Gila County Public Works	Multiple funding sources are actively being pursued
Miami Wash and Pinal Creek Channel Widening and Bank Protection. Widen channel (approx 600') for approx 6.5 miles from the SR-188 bridge to Horseshoe Bend Wash, construct 7.5 miles of bank protection	Flood	Both	$30,000,000	Medium	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued
Russell Gulch Channel Widening and Bank Protection. Widen 2.75 miles of Russell Gulch and construct bank protection near Cobre Valley Hospital	Flood	Both	$3,500,000	Medium	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued
Widen and riprap line the Thompson Draw Channel for 2 miles through Tonto Village and replace 3 undersized culvert/bridge crossings with bridges	Flood	Both	$300,000	Medium	Gila County Flood Control Berm Repair Project 2006	3 years after funding is appropriated	Gila County Flood Control District	Multiple funding sources are actively being pursued

Table 6-8-1: Summary of mitigation actions and projects and implementation strategy for Gila County

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
East Verde River – Houston Mesa Road 3rd Crossing. Construct bridge to replace failing at-grade crossing to provide all weather access to residents and emergency personnel in the community.	Flood	Both	$750,000	Medium	Gila County Small Area Transportation Study 2006	3 years after funding is appropriated	Public Works and Central Federal Lands Division of the Federal Highway Administration	Grant from Central Federal Lands Division of the Federal Highway Administration
Maintain drought contingencies of water tanker deployment and conservation plans.	Drought	Both	Staff	Low	Emergency Operations Plan SOP	On-going	Gila County Emergency Management	Department general fund plus FEMA EMPG
Research and acquire remote low power mobile radio station to notify public of potential hazards.	*All Hazards (Response)*	*(Response)*	*$20,000*	*Low*	*Gila County Multi-Hazard Mitigation Plan 2006*	*2015*	*Gila County Emergency Management*	*Research and apply for funding sources to support feasibility study*

Table 6-8-2: Summary of mitigation actions and projects and implementation strategy for Globe

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Remove debris in the Pinal Creek watershed that gets mobilized during flooding events, clogging drainage facilities in the City, making roadways impassable, and increasing flooding potential. 5 year cost.	Flood	Both	$25,000	High	ADOT Biennial Bridge Report; Public Works Department Work Plan	ONGOING	Public Works	City Budget or Grants

Table 6-8-2: Summary of mitigation actions and projects and implementation strategy for Globe

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Continue to enforce building codes to mitigate against severe wind, wildfire, and flooding damage to existing and future buildings and infrastructure. 5 year cost.	Flood, Severe Wind, Wildfire	Both	$5,000	High	IBCs; Globe City Code and Ordinances	ONGOING	Planning and Zoning; Code Enforcement	City Budget
Assess drainage problems in known problem areas and develop mitigation projects to reduce damage to the community. Then implement and construct drainage solutions to protect existing and future buildings and infrastructure in accordance with NFIP requirements.	Flood	Both	$75,000	High	Drainage Reports; City Floodplain Ordinance; IGAs; Public Works Department Work Plan	ONGOING	Public Works; Engineering	IGAs; City Budget; Grants
Provide mitigation outreach brochures developed by ADEM for distribution at City Hall, Library, Senior Center, newspapers, and Town Website. Will send out brochures annually.	All Hazards	Both	$10,000	High	City Code; A.R.S	ONGOING	All City Departments; Local Newspapers and Radio Stations	City Budget; Private Donations; Grants
Identify and purchase first responder advanced technology personal protection and detection equipment for chemical and biological incidents. Train public safety personnel. 5 year cost.	*HAZMAT*	*Both*	*$100,000*	*High*	*City Code; A.R.S.*	*Purchase: SEPTEMBER 2013; Training: ONGOING*	*Fire Department; Police Department; Globe Public Works*	*City Budget; Grants*
Develop Fire Wise programs for all neighborhoods within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies. Program to include controlled burns and weed abatement and necessary equipment. 5 year cost.	Wildfire	Both	$25,000	Medium	IBCs, IGAs, Globe City Code and Ordinances	ONGOING	Fire Department; Public Works; Code Enforcement	City Fire Department Budget; Grants; IGAs
Acquire two variable message signs for traffic control to mitigate transportation accident potential and re-route traffic around accident site.	Traffic Accident	Both	$75,000	Medium	City Code; A.R.S	SEPTEMBER 2013	Public Works Department; Finance Department	City Budget

Table 6-8-2: Summary of mitigation actions and projects and implementation strategy for Globe

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Support part-time, two man crew dedicated to wildfire hazard fuel reduction and fire suppression in Globe and surrounding areas to protect existing and future buildings and infrastructure. 5 year cost.	Wildfire	Both	$100,000	Medium	City Personnel Rules and Regulations; City Code; Applicable City Ordinances	ONGOING	Fire Department	City Budget

Table 6-8-3: Summary of mitigation actions and projects and implementation strategy for Hayden

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Rehabilitate the existing flood protection dike along the Gila River that protects the golf course and ASARCO Raw Water Plant.	Flooding	Existing	$500,000	High	N/A	FY 2014	Administration / General Superintendent	Federal Grants
Work with Gila County to enforce floodplain management requirements in accordance with the NFIP, including regulating all and substantially improved construction in floodplains to reduce the losses to property and people.	Flooding	Both	Staff Time	High	N/A	Annual – Ongoing	Administration / General Superintendent	General Fund
Purchase and install backup generators to provide power in the event of a power outage related to natural hazard events such as severe winds and flooding. Install backup power systems for Civic Center and Town Hall.	Flooding, Severe Wind	Existing	$10,000	Medium	N/A	FY 2014	Administration / General Superintendent	General Fund

Table 6-8-3: Summary of mitigation actions and projects and implementation strategy for Hayden

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Continue to cooperate with Gila County to enforce building codes to mitigate severe wind damage to protect existing and future buildings and infrastructure. 5 year cost.	Severe Wind	Both	Staff Time	Low	N/A	Annual – Ongoing	Administration / General Superintendent	General Fund

Table 6-8-4: Summary of mitigation actions and projects and implementation strategy for Miami

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Conduct engineering studies and video assessment to replace and expand the current sewer/stormwater lines to the wastewater/stormwater treatment plant.	Flood	Both	$25 Million	1	Waste Water Advisory Board	June 2014	Town Manager	WIFA Loans USDA Grant and Loan
Continue to enforce building codes to mitigate against severe wind damage to existing and future buildings and infrastructure.	Severe Wind	Both	$5,000	2	General Plan	Ongoing	Building Inspector	General Fund
Continue to enforce zoning and blight codes with inspections, warnings and follow-up with letters and citations.	Severe Wind	Both	$10,000	3	General Plan	Ongoing	Code Enforcement Officer	General Fund

Table 6-8-4: Summary of mitigation actions and projects and implementation strategy for Miami

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Identify and prioritize NFIP compliance strategy and coordinate with the State NFIP Coordinator during the Community Assisted Visits to remain compliant in NFIP.	Flood	Both	$1,000	4	General Plan	Ongoing	Town Manager	General Fund
Develop new floodplain study to re-submit to FEMA for a Letter of Map Revision based on natural flow changes to watershed and streams.	Flood	Both	$30,000	5	General Plan	June 2013	Town Manager	Planning Grant
Provide mitigation outreach brochures developed by ADEM for distribution at City Hall, Library, Senior Center, newspapers, and Town Website. Will send out brochures annually.	All Hazards	Both	No Cost	6	N/A	Ongoing	Town Manager	N/A

Table 6-8-5: Summary of mitigation actions and projects and implementation strategy for Payson

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Provide public education sessions in partnership with AZ Forestry Division, U of A Cooperative Extension, U.S. Forest Service and Gila Community College, to provide property owner education for Fire Wise program. Estimate 20 sessions over the next 5 years.	Wildfire	Both	$10,000	High	Community Wildfire Protection Plan	On going	Payson Fire Department	Grants, TOP

Table 6-8-5: Summary of mitigation actions and projects and implementation strategy for Payson

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Continue to operate and maintain 4 sites where private property owners can dispose of wildland fire fuels. Project is a cooperative effort of Payson, Gila County, Fire Districts and U.S. Forest Service. 5 year cost.	Wildfire	Both	$80,000	High	Community Wildfire Protection Plan	On going	Payson Fire Department	Grants
Continue to enforce building and other codes to protect against flooding, sever wind and winter storm damage to existing and future buildings and infrastructure that is compliant with NFIP and other authorities. 5 year cost.	Flooding, Severe Wind, Winter Storm	Both	$250,000	High	Corporate Strategic Plan	On going	Payson Fire, Zoning & Building Departments	TOP
Create defensible space on private property in Rim Country CWPP wildland fire prone areas. Cost share with owners. 5 year cost.	Wildfire	Both	$500,000	High	Community Wildfire Protection Plan	On going	Payson Fire Department	Grants
East Aero Drive is a flood prone area encompassing 52 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	Flooding	Both	$184,160	High	Capital Improvement Plan	Undetermined	Payson Public Works Department	Grants, Payson
West Bonita Road Area is a flood prone area encompassing 609 acres, 120 buildings vulnerable including SR 87. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	Flooding	Both	$3,703,070	High	Capital Improvement Plan	Undetermined	Payson Public Works Department	Grants, Payson
South Bentley Road Area is a flood prone area encompassing 410 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	Flooding	Both	$1,160,450	High	Capital Improvement Plan	Undetermined	Payson Public Works Department	Grants, Payson
Identify locations and install fixed variable message signs along north SR 87, south SR 87 and east 260 to notify motorists of transportation accidents.	Transportation Accident	Both	$30,000	Medium	Capital Improvement Plan	Undetermined	Payson Fire & ADOT	Grants

Table 6-8-5: Summary of mitigation actions and projects and implementation strategy for Payson

GOAL: Reduce or eliminate the risk to people and property from natural hazards.
Objective 1: Reduce or eliminate risks that threaten life and property in the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 2: Reduce risk to critical facilities and infrastructure from natural hazards.
Objective 3: Promote hazard mitigation throughout the incorporated, unincorporated, and Tribal jurisdictions within Gila County.
Objective 4: Increase public awareness of hazards and risks that threaten the incorporated, unincorporated, and Tribal jurisdictions within Gila County.

Mitigation Action/Project				Implementation Strategy				
Description	**Hazard(s) Mitigated**	**Community Assets Mitigated (Ex/New)**	**Estimated Cost**	**Priority Ranking**	**Planning Mechanism(s) for Implementation**	**Anticipated Completion Date**	**Primary Agency / Job Title Responsible for Implementation**	**Funding Source(s)**
Produce disaster education videos for playback on local cable providing discussions of the dangers, potential losses and mitigation measures for disaster events.	All Hazards	Both	$5,000	Medium	Corporate Strategic Plan	Undetermined	Payson Fire Department	Grants
Payson Ranchos is a flood prone area encompassing 96 acres. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event to protect existing and future buildings and infrastructure.	Flooding	Both	$506,730	Medium	Capital Improvement Plan	Undetermined	Payson Public Works Department	Grants, Payson
Country Club Vista is a flood prone area encompassing 565 acres, multiple historic flooding complaints, and limited access during flooding events. A conceptual drainage solution was prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.	Flooding	Both	$402,590	Medium	Capital Improvement Plan	Undetermined	Payson Public Works Department	Grants, Payson
Install battery backup power systems at major traffic intersections to mitigate the potential for traffic accidents during power outages caused by severe wind, winter storm, or other hazards.	Severe Wind, Winter Storm, Transportation Accident	Both	$50,000	Low	Capital Improvement Plan	Undetermined	Payson Public Works Department & ADOT	Grants

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SECTION 7: PLAN MAINTENANCE PROCEDURES

§201.6(c)(4): *[The plan shall include…] (4) A* ***plan maintenance process*** *that includes:*
(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
(iii) Discussion on how the community will continue public participation in the plan maintenance process.

§201.6(d)(3): *Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding.*

According to the DMA 2000 requirements, each plan must define and document processes or mechanisms for maintaining and updating the hazard mitigation plan within the established five-year planning cycle. Elements of this plan maintenance section include:

Monitoring and Evaluating the Plan

Updating the Plan

Implementing the Plan by Incorporation into Other Agency or Jurisdictional Planning Mechanisms

Continued Public Participation

Gila County and the participating jurisdictions recognize that this hazard mitigation plan is intended to be a "living" document with regularly scheduled monitoring, evaluation, and updating.

Section 6 of the 2006 Plan outlined specific steps for plan maintenance. A poll of the Planning Team indicated that few formal reviews or maintenance occurred over the past five years. The mitigation actions/projects in the 2006 Plan were referred to by Gila County and Payson on a periodic basis when considering the pursuit of grant funding. Reasons for the lack of review included:

- Staff turnover that caused a lack of continuity from the original planning team to current
- For several jurisdictions, planning in general is not prioritized and often falls to the bottom of the "to-do" pile.
- The usefulness of the 2006 Plan in the day-to-day operations is not realized and without continual reference, the 2006 Plan fell off the radar screen.
- A general lack of staffing and/or resources to effectively maintain the Plan.

Recognizing the need for improvement, the Planning Team discussed ways to make sure that the Plan review and maintenance process will occur over the next five years. The results of those discussions are outlined in the following sections and the plan maintenance strategy.

7.1 Monitoring and Evaluation

Switching to a true multi-jurisdictional plan will aide in the Plan monitoring and evaluation by the consolidation of information for all county jurisdictions into one document. The Planning Team has established the following monitoring and evaluation procedures:

- **Schedule** – The Plan shall be reviewed on at least an annual basis or following a major disaster. The Gila County Office of Emergency Management (GCOEM) will take the lead to reconvene the Planning Team. The GCOEM will schedule the review meeting within 90 days of the Plan anniversary by contacting the Planning Team members or their replacements. If no replacement can be identified, then GCOEM will contact the City/Town Clerk. ADEM has also committed to help with reminders to the County as a double accountability.

- **Review Content** – he content and scope of the Plan review and evaluation will address the following questions:

- ***Hazard Identification:*** *Have the risks and hazards changed?*
- ***Goals and objectives:*** *Are the goals and objectives still able to address current and expected conditions?*
- ***Mitigation Projects and Actions:*** *Has the project been completed? If not complete but started, what percent of the project has been completed? How much money has been expended on incomplete projects? Did the project require additional funds over the expected amount or were the costs less than expected?*

Each jurisdiction will review the Plan as it relates to their community prior to the actual review meeting and document responses to the above questions in the form of an informal memorandum. During the annual meeting, each jurisdiction will have the opportunity to summarize their review findings to the group and discuss concerns or successes. Documentation of the annual meeting will include a compilation of the memorandums generated by each jurisdiction plus any notes on the meeting discussions and conclusions. Copies of the annual review report will be included in Appendix E.

7.2 Plan Update

According to DMA 2000, the Plan requires updating and approval from FEMA every five years. The plan updates will adhere to that set schedule using the following procedure:

- ✓ One year prior to the plan expiration date, the Planning Team will re-convene to review and assess the materials accumulated in Appendix E.
- ✓ The Planning Team will update and/or revise the appropriate or affected portions of the plan and produce a revised plan document.
- ✓ The revised plan document will be presented before the respective councils and boards for an official concurrence/adoption of the changes.
- ✓ The revised plan will be submitted to ADEM and FEMA for review, comment and approval.

7.3 Incorporation into Existing Planning Mechanisms

Incorporation of the Plan into other planning mechanisms, either by content or reference, enhances a community's ability to perform natural hazard mitigation by expanding the scope of the Plan's influence. A poll of the participating jurisdictions revealed that success of incorporating the 2006 Plan elements over the past planning cycle into other planning programs, has varied. Ways in which the 2006 Plans have been successfully incorporated or referenced into other planning mechanisms for each jurisdiction are summarized below:

Gila County:

- Referenced during the development of the Southern Gila County Community Wildfire Protection Plan (which was in the adoption process during the Plan update).
- Referenced in the Homeland Security Target Capability Assessment as it relates to HAZMAT and Transportation Accident.
- The 2006 Plan was used in the development of flood mitigation project lists for the Gila County Flood Control District.
- Referred to during the annual update of the county's Emergency Operations Plan, and particularly the risk assessment elements.

City of Globe:

- No references were recalled by Globe representatives on the Planning Team

Town of Hayden:

- No references were recalled by Hayden representatives on the Planning Team

Town of Miami:

- No references were recalled by Miami representatives on the Planning Team

Town of Payson:

- Consulted during updates of the Rim Country Community Wildfire Protection Plan.
- Referred to during the development of the Town's CIP.
- Referred to during the annual update of the Town's Emergency Operations Plan, and particularly the risk assessment elements.
- Referred to during annual Town budget planning to check for potential funding opportunities or needs.

In all of the above instances, the 2006 Plan was found to be beneficial, and especially with regard to the critical facility inventories, vulnerability analysis results, and the mitigation strategy. Obstacles to further incorporation of the 2006 Plan for some of the communities were generally tied to a lack of awareness of the Plan by departments outside of the emergency management community, and the relative "newness" of the Plan with regard to other, more commonplace planning mechanisms such as comprehensive or general plans. Other specific insights and lessons learned shared by various participating jurisdictions include:

- Several of the communities just do not have much in the way of "plans" that correlate to the mitigation plan.

Typical ways to use and incorporate the Plan over the next five-year planning cycle, discussed by the Planning Team, included:

- Use of, or reference to, Plan elements in updates to general and comprehensive planning documents, codes, and ordinances.
- Addition of defined mitigation A/Ps to capital improvement programming.
- Inclusion of Plan elements into development planning and practices.
- Resource for developing and/or updating emergency operations plans, community wildfire protection plans, emergency response plans, etc.

The Plan will continue to function as a standalone document subject to its own review and revision schedule presented in Sections 7.1 and 7.2. The Plan will also serve as a reference for other mitigation and land planning needs of the participating jurisdictions. Whenever possible, each jurisdiction will endeavor to incorporate the risk assessment results and mitigation actions and projects identified in the Plan, into existing and future planning mechanisms. At a minimum, each of the responsible agencies/departments noted in Tables 6-1-1 through 6-1-5 will review and reference the Plan and revise and/or update the legal and regulatory planning documents, manuals, codes, and ordinances summarized in Tables 6-1-1 through 6-1-5, as appropriate. Specific incorporation of the Plan risk assessment elements into the natural resources and safety elements of each jurisdictions' general plans (county comprehensive plan) and development review processes, adding or revising building codes, adding or changing zoning and subdivision ordinances, and incorporating mitigation goals and strategies into general and/or comprehensive plans, will help to ensure hazard mitigated future development. In addition, an implementation strategy outlining assignments of responsibility and completion schedules for specific actions/projects proposed in this plan are summarized in Tables 6-8-1 through 6-8-5.

7.4 Continued Public Involvement

All of the participating jurisdictions were successful to varying degrees, in their efforts to elevate hazard mitigation awareness in the general public and community on an ongoing basis. Gila County and the other participating jurisdictions remain committed to keeping the public informed about the hazard mitigation planning efforts, actions and projects. Table 7-1 summarizes successful public involvement efforts previously conducted by the participating jurisdictions, and proposed activities for public involvement and dissemination of information that shall be pursued whenever possible and appropriate.

Table 7-1: Past and proposed continued public involvement activities or opportunities identified by Gila County jurisdictions

Jurisdiction	Public Involvement Activity or Opportunity	
	PAST	**PROPOSED**
Gila County	• Provided periodic summary updates of hazard mitigation A/P measures being implemented using local media. • Presented all proposed mitigation A/P measures to the Gila County Board of Supervisors for review and approval. • Participated in annual events such as the County Fair in the fall and the Health Fair in the spring.	• Provide periodic summary updates of hazard mitigation A/P measures being implemented using local media. • Present all proposed mitigation A/P measures to the Gila County Board of Supervisors for review and approval. • Participate in periodic public events such as the County Fair in the fall and the Health Fair in the spring. • Maintain a permanent website posting of the Plan with contact information to the GCOEM provided for any comments or suggestions.
Globe	• The Fire Department manned a booth at Car Shows in April • The Fire Department manned a booth at the County Fair in September • Presented all proposed mitigation A/P measures to the city council for review and approval.	• The Fire Department will man a booth at the April Car Shows and provide mitigation brochures developed by ADEM. • The Fire Department will man a booth at the September County Fair and provide mitigation brochures developed by ADEM. • Present all proposed mitigation A/P measures to the city council for review and approval. • Maintain a permanent website posting of the Plan with contact information provided for any comments or suggestions.
Hayden	• Participated in the annual Fiesta celebration held every September.	• Participate in the annual Fiesta celebration held every September and distribute mitigation brochures developed by ADEM.
Miami	• Discussed flood mitigation opportunities during recent public meetings that followed some of the recent flooding events.	• Provide the ADEM mitigation brochures at the annual Boomtown Spree (spring) and the town Fiesta (fall).
Payson	• Participated in the Xeroscape Festival in May to raise awareness for both drought and wildfire mitigation. • Presented all proposed mitigation A/P measures to the city council for review and approval.	• Provide an update to the town council and run a short newspaper article summarizing the annual Plan review. • Post Plan to the town website and provide contact information for any public comment. • Provide mitigation brochures (especially those related to drought and wildfire) at the Xeroscape Festival in May. • Maintain copies of the ADEM mitigation brochures at the Town Hall and Fire Stations.

SECTION 8: PLAN TOOLS

8.1 Acronyms

A/P.....Mitigation Action/Project
ADEM .....Arizona Division of Emergency Management
ADEQ .....Arizona Department of Environmental Quality
ADWR .....Arizona Department of Water Resources
AGFD .....Arizona Game and Fish Department
ARS .....Arizona Revised Statutes
ASCE .....American Society of Civil Engineers
ASERC .....Arizona State Emergency Response Commission
ASLD .....Arizona State Land Department
ASU .....Arizona State University
AZGS .....Arizona Geological Survey
BLM .....Bureau of Land Management
CAP .....Central Arizona Project
CAP .....Community Assistance Program
CFR .....Code of Federal Regulations
CRS .....Community Rating System
CWPP .....Community Wildfire Protection Plan
DEMA .....Arizona Department of Emergency and Military Affairs
DFIRM .....Digital Flood Insurance Rate
DMA 2000 .....Disaster Mitigation Act of 2000
DOT .....Department of Transportation
EHS .....Extremely Hazardous Substance
EPA .....Environmental Protection Agency
EPCRA .....Emergency Planning and Community Right to Know Act
FEMA .....Federal Emergency Management Agency
FMA .....Flood Mitigation Assistance Grant Program
GIS .....Geographic Information System
HAZMAT .....Hazardous Material
HAZUS-99 .....Hazards United States1999
HAZUS-MH .....Hazards United States Multi-Hazard
IFCI .....International Fire Code Institute
LEPC .....Local Emergency Planning Committee
MJHMP .....Multi-Jurisdictional Hazard Mitigation Plan
MMI .....Modified Mercalli Intensity
NCDC .....National Climate Data Center
NDMC .....National Drought Mitigation Center
NESDIS .....National Environmental Satellite, Data and Information Service
NFIP .....National Flood Insurance Program
NFPA .....National Fire Protection Association
NHC .....National Hurricane Center
NIBS .....National Institute of Building Services
NID .....National Inventory of Dams
NIST .....National Institute of Standards and Technology
NSF .....National Science Foundation
NOAA .....National Oceanic and Atmospheric Administration
NRC .....National Response Center
NWCG.....National Wildfire Coordination Group
NWS .....National Weather Service
PSDI .....Palmer Drought Severity Index
RL .....Repetitive Loss
SARA .....Superfund Amendments and Reauthorization Act

SRLP .....Severe Repetitive Loss Properties
SRL .....Severe Repetitive Loss
SRP .....Salt River Project
UBC .....Uniform Building Code
USACE .....United States Army Corps of Engineers
USDA .....United States Department of Agriculture
USFS .....United States Forest Service
USGS .....United States Geological Survey
VA .....Vulnerability Analysis
WUI .....Wildland Urban Interface

8.2 Definitions

The following terms and definitions are provided for reference and are taken from the 2010 State Plan with a few minor modifications.

ARIZONA HAZARDS

Dam Failure
A dam failure is a catastrophic type of failure characterized by the sudden, rapid and uncontrolled release of impounded water. Dam failures are typically due to either overtopping or piping and can result from a variety of causes including natural events such as floods, landslides or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures or improper design and construction. Such a failure presents a significant potential for a disaster as significant loss of life and property would be expected in addition to the possible loss of power and water resources.

Drought
A drought is a deficiency of precipitation over on extended period of time, resulting in water shortage for some activity, group or environmental sector. "Severe" to "extreme" drought conditions endanger livestock and crops, significantly reduce surface and ground water supplies, increase the potential risk for wildland fires, increase the potential for dust storms, and cause significant economic loss. Humid areas are more vulnerable than arid areas. Drought may not be constant or predictable and does not begin or end on any schedule. Short term droughts are less impacting due to the reliance on irrigation and groundwater in arid environments.

Earthquake
An earthquake is a naturally-induced shaking of the ground, caused by the fracture and sliding of rock within the Earth's crust. The magnitude is determined by the dimensions of the rupturing fracture (fault) and the amount of displacement that takes place. The larger the fault surface and displacement, the greater the energy. In addition to deforming the rock near the fault, this energy produces the shaking and a variety of seismic waves that radiate throughout the Earth. Earthquake magnitude is measured using the Richter Scale and earthquake intensity is measured using the Modified Mercalli Intensity Scale.

Fissure
Earth fissures are tension cracks that open as the result of subsidence due to severe overdrafts (i.e., pumping) of groundwater, and occur about the margins of alluvial basins, near exposed or shallow buried bedrock, or over zones of differential land subsidence. As the ground slowly settles, cracks form at depth and propagate towards the surface, hundreds of feet above. Individual fissures range in length from hundreds of feet to several miles, and from less than an inch to several feet wide. Rainstorms can erode fissure walls rapidly causing them to widen and lengthen suddenly and dangerously, forming gullies five to 15- feet wide and tens of feet deep.

Flooding

Flooding is an overflowing of water onto normally dry land and is one of the most significant and costly of natural disasters. Flooding tends to occur in Arizona during anomalous years of prolonged, regional rainfall (typical of an El Nino year), and is typified by increased humidity and high summer temperatures.

Flash flooding is caused excessive rain falling in a small area in a short time and is a critical hazard in Arizona. Flash floods are usually associated with summer monsoon thunderstorms or the remnants of a tropical storm. Several factors contribute to flash flooding: rainfall intensity and duration, topography, soil conditions, and ground cover. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area and can occur within a few minutes or hours of excessive rainfall, or a quick release from a dam or levee failure. Thunderstorms produce flash flooding, often far from the actual storm and at night when natural warnings may not be noticed.

Landslide / Mudslide

Landslides like avalanches are massive downward and outward movements of slope-forming materials. The term landslide is restricted to movement of rock and soil and includes a broad range of velocities. Slow movements, although rarely a threat to life, can destroy buildings or break buried utility lines. A landslide occurs when a portion of a hill slope becomes too weak to support its own weight. The weakness is generally initiated when rainfall or some other source of water increases the water content of the slope, reducing the shear strength of the materials. A mud slide is a type of landslide referred to as a flow. Flows are landslides that behave like fluids: mud flows involve wet mud and debris.

Levee Failure / Breach

Levee failures are typically due to either overtopping or erosive piping and can result from a variety of causes including natural events such as floods, hurricane/tropical storms, or earthquakes, deterioration of foundation or compositional materials, penetration by vegetative roots or animal burrows, fissures, or improper design, construction and maintenance. A levee breach is the opening formed by the erosion of levee material and can form suddenly or gradually depending on the hydraulic conditions at the time of failure and the type of material comprising the levee.

Severe Wind

Thunderstorms are characterized as violent storms that typically are associated with high winds, dust storms, heavy rainfall, hail, lightning strikes, and/or tornadoes. The unpredictability of thunderstorms, particularly their formation and rapid movement to new locations heightens the possibility of floods. Thunderstorms, dust/sand storms and the like are most prevalent in Arizona during the monsoon season, which is a seasonal shift in the winds that causes an increase in humidity capable of fueling thunderstorms. The monsoon season in Arizona typically is from late-June or early-July through mid-September.

Tornadoes are violently rotating columns of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds in excess of 250 mph. Damage paths can exceed a mile wide and 50 miles long. The damage from tornadoes is due to high winds. The Fujita Scale of Tornado Intensity measures tornado / high wind intensity and damage.

Tropical Storms are storms in which the maximum sustained surface wind ranges from 39-73 mph. Tropical storms are associated with heavy rain and high winds. High intensity rainfall in short periods is typical. A tropical storm is classified as a hurricane when its sustained winds reach or exceed 74 mph. These storms are medium to large in size and are capable of producing dangerous winds, torrential rains, and flooding, all of which may result in tremendous property damage and loss of life, primarily in coastal populated areas. The effects are typically most dangerous before a hurricane makes landfall, when most damage occurs. However, Arizona has experienced a number of tropical storms that caused extensive flooding and wind damage.

Subsidence

Land subsidence in Arizona is primarily attributed to substantial groundwater withdrawal from aquifers in sedimentary basins. As the water is removed, the sedimentary layers consolidate resulting in a general lowering of the corresponding ground surface. Subsidence frequently results in regional bowl-shaped depressions, with loss of elevation greatest in the center and decreasing towards the perimeter. Subsidence can measurably change or reverse basin gradients causing expensive localized flooding and adverse impacts or even rupture to long-baseline infrastructure such as canals, sewer systems, gas lines and roads. Earth fissures are the most spectacular and destructive manifestation of subsidence-related phenomena.

Wildfire
Wildfire is a rapid, persistent chemical reaction that releases heat and light, especially the exothermic combination of a combustible substance with oxygen. Wildfires present a significant potential for disaster in the southwest, a region of relatively high temperatures, low humidity, low precipitation, and during the spring moderately strong daytime winds. Combine these severe burning conditions with people or lightning and the stage is set for the occurrence of large, destructive wildfires.

Winter Storm
Winter storms bring heavy snowfall and frequently have freezing rain and sleet. Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Freezing rain begins as snow at higher altitudes and melts completely on its way down while passing through a layer of air above freezing temperature, then encounters a layer below freezing at lower level to become supercooled, freezing upon impact of any object it then encounters. Because freeing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Snow is generally formed directly from the freezing of airborne water vapor into ice crystals that often agglomerates into snowflakes. Average annual snowfall in Arizona varies with geographic location and elevation, and can range from trace amounts to hundreds of inches. Severe snow storms can affect transportation, emergency services, utilities, agriculture and basic subsistence supply to isolated communities. In extreme cases, snowloads can cause significant structural damage to under-designed buildings.

GENERAL PLAN TERMS

Asset
Any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

Building
A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Critical Facilities and Infrastructure
Systems or facilities whose incapacity or destruction would have a debilitating impact on the defense or economic security of the nation. The Critical Infrastructure Assurance Office (CIAO) defines eight categories of critical infrastructure, as follows:

Telecommunications infrastructure: Telephone, data services, and Internet communications, which have become essential to continuity of business, industry, government, and military operations.

Electrical power systems: Generation stations and transmission and distribution networks that create and supply electricity to end-users.

Gas and oil facilities: Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.

Banking and finance institutions: Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.

Transportation networks: Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.

Water supply systems: Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.

Government services: Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.

Emergency services: Medical, police, fire, and rescue systems.

Disaster Mitigation Act of 2000 (DMA2K)
A law signed by the President on October 30, 2000 that encourages and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening statewide mitigation planning.

Emergency Preparedness and Response (EPR) Directorate
One of five major Department of Homeland Security Directorates which builds upon the formerly independent Federal Emergency Management Agency (FEMA). EPR is responsible for preparing for natural and human-caused disasters through a comprehensive, risk-based emergency management program of preparedness, prevention, response, and recovery. This work incorporates the concept of disaster-resistant communities, including providing federal support for local governments that promote structures and communities that reduce the chances of being hit by disasters.

Emergency Response Plan
A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

Federal Emergency Management Agency (FEMA)
Formerly independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery. As of March 2003, FEMA is a part of the Department of Homeland Security's Emergency Preparedness and Response (EPR) Directorate.

Flood Insurance Rate Map (FIRM)
Map of a community, prepared by FEMA that shows the special flood hazard areas and the risk premium zones applicable to the community.

Frequency
A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1% chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

Geographic Information Systems (GIS)
A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

Hazard
A source of potential danger or adverse condition. Hazards include both natural and human-caused events. A natural event is a hazard when it has the potential to harm people or property and may include events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. Human-caused hazard events originate from human activity and may include technological hazards and terrorism. Technological hazards arise from human activities and are assumed to be accidental and/or have unintended consequences (e.g., manufacture, storage and use of hazardous materials). While no single definition of terrorism exists, the Code of Federal Regulations defines terrorism as "…unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

Hazard Event
A specific occurrence of a particular type of hazard.

Hazard Identification
The process of identifying hazards that threaten an area.

Hazard Mitigation
Cost effective measures taken to reduce or eliminate long-term risk associated with hazards and their effects.

Hazard Profile
A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.

HAZUS
A GIS-based nationally standardized earthquake, flood and high wind event loss estimation tool developed by FEMA.

Mitigate
To cause to become less harsh or hostile; to make less severe or painful. Mitigation activities are actions taken to eliminate or reduce the probability of the event, or reduce its severity of consequences, either prior to or following a disaster/emergency.

Mitigation Plan
A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in a defined geographic area, including a description of actions to minimize future vulnerability to hazards.

100-Hundred Year Floodplain
Also referred to as the Base Flood Elevation (BFE) and Special Flood Hazard Area (SFHA). An area within a floodplain having a 1% or greater chance of flood occurrence in any given year.

Planning
The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

Probability
A statistical measure of the likelihood that a hazard event will occur.

Promulgation
To make public and put into action the Hazard Mitigation Plan via formal adoption and/or approval by the governing body of the respective community or jurisdiction (i.e. – Town or City Council, County Board of Directors, etc.).

Q3 Data
The Q3 Flood Data product is a digital representation of certain features of FEMA's Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and Geographic Information Systems technology. The digital Q3 Flood Data are created by scanning the effective FIRM paper maps and digitizing selected features and lines. The digital Q3 Flood Data are designed to serve FEMA's needs for disaster response activities, National Flood Insurance Program activities, risk assessment, and floodplain management.

Repetitive Loss Property
A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1,000 each have been paid within any 10 year period since 1978.

Risk
The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage beyond a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Substantial Damage
Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceeds 50% of the market value of the structure before the damage.

Vulnerability
Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power–if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Vulnerability Analysis
The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability analysis should address impacts of hazard events on the existing and future built environment.

Vulnerable Populations
Any segment of the population that is more vulnerable to the effects of hazards because of things such as lack of mobility, sensitivity to environmental factors, or physical abilities. These populations can include, but are not limited to, senior citizens and school children.

Goals
General guidelines that explain what you want to achieve. Goals are usually broad statements with long-term perspective.

Objectives
Defined strategies or implementation steps intended to attain the identified goals. Objectives are specific, measurable, and have a defined time horizon.

Actions/Projects
Specific actions or projects that help achieve goals and objectives.

Implementation Strategy
A comprehensive strategy that describes how the mitigation actions will be implemented.

GENERAL HAZARD TERMS

Fujita Scale of Tornado Intensity
Rates tornadoes with numeric values from F0 to F5 based on tornado winds peed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained.

Liquefaction
The phenomenon that occurs when ground shaking (earthquake) causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.

Modified Mercalli Intensity Scale
The Modified Mercalli Intensity Scale is commonly used in the United States by seismologists seeking information on the severity of earthquake effects. Intensity ratings are expressed as Roman numerals between I at the low end and XII at the high end. The Intensity Scale differs from the Richter Magnitude Scale in that the effects of any one earthquake vary greatly from place to place, so there may be many Intensity values (e.g.: IV, VII) measured from one earthquake. Each earthquake, on the other hand, should have just one Magnitude, although the several methods of estimating it will yield slightly different values (e.g.: 6.1, 6.3).

Monsoon
A monsoon is any wind that reverses its direction seasonally. In the Southwestern U.S., for most of the year the winds blow from the west/northwest. Arizona is located on the fringe of the Mexican Monsoon which during the summer months turns the winds to a more south/southeast direction and brings moisture from the Pacific Ocean, Gulf of California, and Gulf of Mexico. This moisture often leads to thunderstorms in the higher mountains and Mogollon Rim, with air cooled from these storms often moving from the high country to the deserts, leading to further thunderstorm activity in the desert. A common misuse of the term monsoon is to refer to individual thunderstorms as monsoons.

Richter Magnitude Scale
A logarithmic scale devised by seismologist C.F. Richter in 1935 to express the total amount of energy released by an earthquake. While the scale has no upper limit, values are typically between 1 and 9, and each increase of 1 represents a 32-fold increase in released energy.

Appendix A

Official Resolution of Adoption

Appendix B

Planning Process Documentation

TOMMIE MARTIN, District I
P.O. Box 2297, Payson AZ 85547

MICHAEL A. PASTOR, District II
1400 East Ash Street, Globe AZ 85501

SHIRLEY L. DAWSON, District III
1400 East Ash Street, Globe AZ 85501

DON E. McDANIEL Jr.
County Manager

MATT BOLINGER
Director/ Epidemiologist

Gila County
Division of Emergency Management

5515 S. Apache Avenue, Suite 400, Globe Arizona 85501
Voice: 928-402-8764 Fax: 928-425-7714

October 28, 2010

[**Recipient Name**], [**Title**]
[**Company Name**]
[**Street Address**]
[**City, ST ZIP Code**]

Subject: Gila County Multi-Jurisdiction Hazard Mitigation Plan Update

Dear [**Recipient Name**]

Gila County officials and public servants recognize that natural and human-caused hazards pose a significant threat at varying degrees of magnitude and frequency, to the safety and economic stability of the County and its residents. Often, the potential reality of hazards within the County is not fully understood or realized until a major disaster occurs, and then significant resources are required to respond and recover from the damages. County officials also understand that responding to hazards on a post-incident basis can result in increased costs, in terms of both financial and human losses. Accordingly, Gila County has prepared the **Gila County Multi-Hazard Mitigation Plan** to assess the County's vulnerability to natural and human caused hazards, and to develop mitigation strategies that reduce the risks associated with those hazards. The current plan was created in 2006 and adopted by Gila County Resolution No. 06-05-02 on May 23, 2006.

The AZ Division of Emergency Management is providing funding and assistance to update our current plan which is due to be approved by FEMA no later than September 2011. This update will provide

In order to be eligible for FEMA funds this plan must be up dated and approved by FEMA. Failure to participate in this process could prevent you from receiving future FEMA funding.

You are invited to attend the first meeting to be held on November 30, 2010 at 1:00pm. The meeting should last about four hours. The location is the Gila County Emergency Operations Center located at 5515 S. Apache Ave., Suite 400 in Globe. Please RSVP to 928-402-8764 at your earliest convenience. We appreciate your time and look forward to your participation.

Respectfully,

Debra L. Williams, Risk Analyst
Gila County Emergency Management

Gila County Multi-Jurisdiction Hazard Mitigation Plan
Participation Request List

AGENCY

1 Arizona Department of Housing
2 Arizona Department of Transportation
3 Arizona Department of Water Resources
4 Arizona Geological Survey
5 Arizona Public Service
6 Army Corp of Engineers
7 Asarco Mining
8 Beaver Valley Fire Department
9 Bureau of Indian Affairs
10 Canyon Fire Department
11 Christopher Kohls Fire Department
12 City of Globe
13 Freeport McMoran Miami Mining
14 Gila County Community Development
15 Gila County Emergency Management
16 Gila County Public Works
17 Gisela Volunteer Fire Department
18 Globe Fire Department
19 Globe Police Department
20 Hayden Police Department
21 Hellsgate Fire Department
22 Houston Mesa Fire Department
23 Miami Fire Department
24 Miami Police Department
25 Payson Fire Department
26 Payson Police Department

AGENCY

27 Phelps Dodge
28 Pine-Strawberry Fire Department
29 Pleasant Valley Fire Department
30 Salt River Project
31 San Carlos Apache Environmental Protection Agency
32 San Carlos Apache Tribe
33 San Carlos Forestry
34 San Carlos Police Department
35 State of Arizona Department of Forestry
36 Tonto Apache Tribe
37 Tonto Basin Fire Department
38 Tonto National Forest
39 Town of Hayden
40 Town of Miami
41 Town of Payson
42 Town of Star Valley
43 Town of Winkelman
44 Tri-City Fire Department
45 U.S. Army Corp of Engineers
46 U.S. Bureau of Reclamation
47 U.S. Department of Agriculture
48 U.S. Environmental Protection Agency
49 U.S. Fish & Wildlife
50 University of Arizona Cooperative Extension
51 Whispering Pines Fire Department
52 Winkelman Fire Department

Memorandum **JE Fuller/ Hydrology & Geomorphology, Inc.**

MEETING DATE: November 18, 2010

MEETING TIME: 1:00PM TO 5:00PM

MEETING LOCATION: Gila County Community Services Facility
Emergency Operations Center
Globe, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Gila County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 1

ATTENDEES: Ed Copp – SRP Emergency Management
Martin de Masi – Town of Payson Fire Dept
Darde de Roulhac – Gila County Flood Control
Larry Dorame – Gila County EMS
Bryan Goslin - APS
Kurt Hinkle – Freeport McMoRan
Chris Jones – U of A Coop Extension
Dale Metz – Town of Miami Engineering
Scott Ogden – JE Fuller/ Hydrology & Geomorphology, Inc.
Marc Richardson – ASARCO
Ron Sattelmaier – Whispering Pines Fire District
Russ Shumate – Arizona State Forestry
Debra Williams – Gila County Emergency Management
Mike Williamson – Beaver Valley Fire District
Sue Wood – ADEM
Ann Youberg - AZGS

NOTE: No Representatives from Globe, Hayden, Star Valley, or Winkleman

AGENDA

1. **INTRODUCTIONS / GREETING**
2. **MITIGATION PLANNING OVERVIEW**
3. **CURRENT MITIGATION PLAN REVIEW**
4. **PLANNING PROCESS**
    a. **MJ Planning Team Roles**
    b. **Public Involvement Strategy**
5. **RISK ASSESSMENT**
    a. **Hazard Identification / Profiling**
    b. **Asset Inventory**
6. **PREVIOUS MITIGATION PROJECTS**

7. **OTHER DATA NEEDS**
8. **NEXT MEETING DATES**

ACTION ITEM SUMMARY

DISCUSSION

Agenda Item 1:

- Introductions were made for each member of the planning team. S. Wood explained the role of JEF and ADEM.
- A poll was taken of attendees as to who had been a part of the original planning team. There were several.
- It was noted that nobody representing the City of Globe or the Towns of Hayden, Star Valley, or Winkleman were in attendance. D Williams confirmed that an invitation had been sent and the consequences of not participating were communicated to each jurisdiction. D. Williams and S. Wood will follow up with the missing jurisdictions to ensure they either attend future meetings or confirm their desire not to participate.

Agenda Item 2:

- S. Wood distributed a mitigation planning folder with miscellaneous mitigation related materials, brochures, fact sheets and meeting handouts to each team member. She then presented an overview/review of the DMA2K mitigation process and purpose for preparing a mitigation plan. The discussion included a review of impacted grant eligibility including HMGP and PDM.

Agenda Item 3:

- S. Wood led a summary review of the 2006 Gila County Multi-Hazard Mitigation Plan (2006 Plan). Highlights of the discussion and comments included:
    - All of the individual jurisdictional plans are very similar to the county plan. All of the single jurisdiction plans will be discontinued and a single, multi-jurisdictional plan will be prepared.
    - Plan format will change slightly to reflect a version that is more compatible to the format of the current State of Arizona Mitigation Plan and to accommodate the new multi-jurisdictional format.
    - Details of Sections 3, 4, 5, and 6 and their updates will be discussed later in the meeting today and in subsequent meetings.

Agenda Item 4a:

- S. Ogden led a discussion / presentation of the planning team roles and responsibilities including:
    - The primary point of contact (PPOC)
    - The community representative
    - The local planning resources (other staff, outside agencies, business, school, non-profit reps, etc. contacted or referred to).

- D. Williamson of Gila County was identified as the PPOC. The community representatives were identified as follows:
    - Globe – (not in attendance)
    - Hayden – (not in attendance)
    - Miami – Dale Metz
    - Payson – Martin de Masi
    - Star Valley – (not in attendance)
    - Winkleman – (not in attendance)
- S. Ogden presented the planning team with a list of possible local resources that could be invited to participate in the planning process at either the local level or on the multi-jurisdictional planning team. A good representation from various major public and private entities was in attendance and each were welcomed. D. Williams will provide a list of all the invited organizations to JEF.
- S. Ogden presented a template for each jurisdiction to use during the planning process for documenting the local resources involved in the plan update outside of the main planning team. He will email the digital version of the template to the team.

Agenda Item 4b:

- S. Ogden led a discussion/presentation of the public involvement requirements of DMA2K.
- The planning team reviewed the previous public involvement efforts that included posting an announcement to the county website and various presentations to the county board of supervisors and individual city/town councils and planning and zoning commissions. To the best of the veteran team member's knowledge, there was no public response to the 2006 Plan effort.
- The planning team discussed various options for pre-draft public involvement including a repeat of using the county website, press releases, public service announcements and articles in local newspapers. A decision was made to do the following:
    - D. Williams will work with county personnel to develop a webpage on the Gila County website announcing the planning process and providing contact information for further inquiries.
    - D. Williams will submit notification articles to the Payson Roundup and Arizona Silver Belt newspapers.
    - Martin de Masi will get a webpage posing on the town's website with a link to the county website.
    - D. Williams will provide a PSA slide to the local theatres.
- Documentation of all public involvement activities is to be provided to JEF as appropriate, and as they occur. Examples include links to websites, copies of news release, copies of newspapers running the news release, dates of PSA broadcasts, copies of newsletters or papers, etc.
- Once the draft plan is ready, a second round of notifications will be used and the website notice will be updated with specific instructions for viewing a draft of the plan.

- ADEM has developed template language for the county to use in the web and newspaper announcements and has included it in the planning folders.

Agenda Item 5a:

- S. Ogden presented an overview of what a risk assessment is and its purpose in the overall scheme of mitigation planning. He discussed the approach that the planning team will ultimately step through.
- The planning team reviewed the list of hazards previously evaluated in 2006 Plan as well as a comprehensive list of hazards identified in the 2010 State Plan.
- S. Ogden presented the results of a historic hazard event search and database compilation performed by ADEM and JEF that looks at declared and undeclared hazard events. JEF will provide digital copies of the Excel spreadsheets to the planning team for updating and closer review.
- The planning team reviewed the hazard lists and historic records and discussed which hazards could be eliminated off-hand and which should be evaluated further. The following is a brief summary of that discussion:
    - All of the 2006 Plan hazards were retained (noting that the Thunderstorm/High Wind category is now included under the Severe Wind category)
    - Drought and Winter Storm will be added as a new hazards.
    - There was much discussion regarding post-wildfire flooding and whether that should be included under flooding/flash flooding or wildfire. It was determined that post-fire flooding will be addressed as part of flooding/flash flooding.
    - Landslide/Mudslide was briefly discussed. The planning team wanted to ensure that heavy sediment and debris flows associated with denuded watersheds (either by wildfire or severe drought) were accounted for, but decided this could be adequately addressed with the flooding/flash flooding as these occurrences are usually tied to a precipitation / runoff event.. The team noted that there are some areas of concern regarding landslide/mudslide, but significant study would be required to analyze and map those areas. The planning team decided that the level of concern was insufficient to warrant a vulnerability analysis and prepare a mitigation strategy.
    - The resulting list of hazards to be carried forward to profiling and a vulnerability analysis are:
        - Drought
        - Flooding / Flash Flooding
        - Hazardous Materials Incidents
        - Severe Wind
        - Transportation Accidents
        - Wildfire
        - Winter Storm
- S. Ogden presented information regarding application and development of the Calculated Priority Risk Index (CPRI). The planning team worked through an

example calculation for Flooding/Flash Flooding. S. Ogden will provide CPRI worksheets to each participating jurisdiction for completion and return to JEF.

Agenda Item 5b:

- S. Ogden presented an overview of the asset inventory data that was developed for the 2006 plan and how it was used in the 2006 Plan vulnerability analysis.
- Classification of some items in the list regarding "critical" versus "non-critical" status (e.g. – schools that are also identified as evacuation shelters) was discussed and the planning team was encouraged to decide what was critical for their communities using the definitions of critical facilities spelled out in Section 4.3.1 of the 2006 Plans, and eliminate the non-critical facilities.
- S. Ogden will provide the 2006 Plan list of identified assets to each respective jurisdiction for review, editing, completing and updating.

Agenda Item 6:

- The planning team briefly reviewed the current list of mitigation actions/projects (A/Ps) listed in the 2006 Plans.
- S. Ogden explained that a part of the plan update process will include an evaluation of the 2006 Plan's mitigation actions/projects.
- S. Ogden provided evaluation worksheets to each participating jurisdiction listing all of the 2006 Plan A/Ps for that community, and explained to the planning team the evaluation parameters and appropriate responses. Each jurisdiction will complete the worksheet and provide to JEF at the next meeting.

Agenda Item 7:

- S. Ogden discussed the need for using accurate city/town boundaries in the vulnerability assessment. S. Ogden will email boundary plots developed from 2010 ALRIS data to each jurisdiction for verification. Each jurisdiction shall review the plot and either validate the limits shown or provide edited limits by either a redlined map, or CAD/GIS files.
- S. Ogden requested current Tier 2 facility files from Gila County. S. Wood stated she would get them from her sources at ADEM.

Agenda Item 8:

- The next planning team meetings (Planning Meeting Nos. 2, 3, and 4) are scheduled for :
    - Meeting No. 2 – January 6th, 2011, 8AM to Noon, Gila County Community Services Facility, Emergency Operations Center, Globe, AZ.
    - Meeting No. 3 – February 17th, 2011, 8AM to Noon, Gila County Community Services Facility, Emergency Operations Center, Globe, AZ.
    - Meeting No. 4 – March 17th, 2011, 8AM to Noon, Gila County Community Services Facility, Emergency Operations Center, Globe, AZ.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
1	D. Williams and S. Wood will follow up with the missing jurisdictions to ensure they either attend future meetings or confirm their desire not to participate	D. Williams; S. Wood [12/17/10]
2	D. Williams to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	D. Williams [12/30/10]
3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [12/7/10]
4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]
5	D. Williams will: • Work with county personnel to develop a webpage on the Gila County website announcing the planning process and providing contact information for further inquiries. • Submit notice articles to the Payson Roundup and Arizona Silver Belt newspapers. • Provide a PSA slide to run in local theaters	D. Williams [12/30/10]
6	M. deMasi will include a notice on Payson's webpage with a link pointing to the county's webpage for more information.	M. deMasi [1/6/11]
7	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [12/7/10]
8	All team members are to review and update the historic hazard database as appropriate.	All Jurisdictions [12/30/10]
9	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [12/7/10]
10	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/30/10]
11	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [12/7/10]
12	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/30/10]
13	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [12/7/10]
14	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [1/6/11]
15	JEF shall distribute city/town boundary maps for each jurisdiction to review.	JEF [12/7/10]

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
16	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/30/10]

Memorandum **JE Fuller/ Hydrology & Geomorphology, Inc.**

MEETING DATE: February 17, 2011

MEETING TIME: 8:00AM - NOON

MEETING LOCATION: Gila County Community Services Facility
Emergency Operations Center
Globe, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Gila County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 2

ATTENDEES: Chris Collopy – Globe Planning & Zoning Administrator
Leon Cons – Globe Public Works Director
Ed Copp – SRP Emergency Management
Carlos Estrada – Hayden Public Works Operations Supervisor
Lee Kinnard – Globe Police Chief
Martin de Masi – Town of Payson Fire Dept
Matt Rencher – Globe City Engineer
Nick Renon – Globe Fire Deputy Chief
Darde de Roulhac – Gila County Flood Control
Larry Dorame – Gila County EMS
Kurt Hinkle – Freeport McMoRan
Dale Metz – Town of Miami Engineering
Scott Ogden – JE Fuller/ Hydrology & Geomorphology, Inc.
Ron Sattelmaier – Whispering Pines Fire District

NOTE: No Representatives from Star Valley or Winkleman

AGENDA

1. **ACTION ITEM STATUS REVIEW**
2. **HAZARD PROFILE MAP REVIEW**
3. **CAPABILITY ASSESSMENT**
    a. **Jurisdictional Capabilities**
    b. **Prior Mitigation Activities**
    c. **NFIP Participation and Status**
    d. **Repetitive Loss Properties**
4. **MEETING ENDING**
    a. **Review of action items**
    b. **Next meeting reminder/verification**

DISCUSSION

Agenda Item 1:

- Action Items from Meeting No. 1 were reviewed and discussed. A summary of the disposition of those items as of February 16, 2011 was provided to the planning team and is included at the end of these minutes. Noteworthy discussions included:
    - M. DeMasi had tried to send information via an email but JEF did not receive it. M. DeMasi provided Payson's completed items on a thumb drive. JEF will review and respond as needed.
    - D. Williams was not present to report on some action items.
    - S. Ogden briefly discussed and reviewed the requirements for Action Items 1-4, 1-8, 1-10, and 1-12 with the whole team, partly as a benefit for City of Globe and Town of Hayden attendees and partly to refresh the rest of the planning team's memory.
    - Action Item 1-10 – S. Ogden will be resending the CPRI worksheet to each jurisdiction (except Payson) for use by the planning team. The old version was experiencing problems with email exchanges and needed to be updated.
    - Action Item 1-12 – Gila County and Globe both requested delivery of asset data in GIS and excel spreadsheet to assist in their verification and update process.
- Following the regular agenda, S. Ogden met with representatives from Globe and Hayden to review the other Meeting No. 1 assignments and topics to bring both jurisdictions up to speed with the rest of the team.

Agenda Item 2:

- S. Ogden presented draft hazard profile maps/data for drought, flood, HAZMAT, severe wind, transportation accident, wildfire, and winter storm to the planning team for feedback. The coverages presented will be used for the vulnerability analysis. Noteworthy comments included:
    - Gila County inquired about adding non-FEMA delineated flood hazard areas. S. Ogden responded that the county could provide those separately in GIS or marked up on maps with enough monuments to digitize from. ***Any additional data would need to be delivered to JEF by no later than March 11, 2011.***
    - No other data was known or available to augment the severe wind and transportation accident profiles.
    - The team was OK with moving forward with profiles as presented

Agenda Item 3a:

- S. Ogden led the planning team in a review of the 2006 Plan's capability assessment and distributed worksheet examples for discussing. He explained that the new Plan will include the same material, but will be reformatted somewhat to combine the information in current Tables 5-1 and 5-4 into a single table. The format of the combined table was discussed and needed information was outlined.

- The format of current Tables 5-2 and 5-3 will remain unchanged except for new table numbers.
- S. Ogden will pre-populate and distribute the worksheet file containing the updated tables to each jurisdiction using the 2006 Plan information as a starting point. Each jurisdiction was directed to review and revise/update each table as necessary.

Agenda Item 3b:

- S. Ogden led the planning team in a discussion of documenting prior mitigation activities as a part of the overall capability assessment.
    - The Capability Assessment portion of the updated Plan will be expanded to include 2 new sets of data will be added to.
    - The first will be a paragraph summarizing prior mitigation activities involving HMGP or PDM funds that are currently tracked by ADEM.
    - The second will be a table summarizing past mitigation activities that have been completed by each jurisdiction over the past 5-10 years.
- S. Ogden reviewed the HMGP/PDM projects from ADEM that were done in Gila County polled the planning team for more information on the projects.
- S. Ogden reviewed the format of the worksheet for summarizing past mitigation activities that have been completed by each jurisdiction over the past 5-10 years and talked through an example.
- JEF will provide a worksheet for each jurisdiction to document past mitigation activities. May include past projects, outreach, studies, etc., funded by any source (not just grants).

Agenda Item 3c:

- S. Ogden presented a table showing NFIP participation statistics and insurance data that was current as of August 2010.
- Each jurisdiction was polled with regard to management roles and the data was recorded in a table that will ultimately be included in the Plan.

Agenda Item 3d:

- S. Ogden presented a summary of NFIP repetitive loss property information that was provided by FEMA through ADEM and was current as of January 2010.
- Gila County inquired about specifics of the properties and S. Ogden directed them to either ADWR (Brian Cosson or Maureen Towne) or FEMA RIX to get the most current database.

Agenda Item 8:

- The next planning team meeting is scheduled for: **March 17th, 2011, 8AM to Noon, Gila County Community Services Facility, Emergency Operations Center, Globe, AZ**.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
2-1	JEF to resend Mtg No. 1 materials to Globe and Hayden team members.	JEF [2/25/11]
2-2	JEF to send GIS and Excel spreadsheet versions of the asset inventory to Globe and Gila County for their verification and update	JEF [2/25/11]
2-3	JEF will send the Capability Assessment worksheet files containing pre-populated capability assessment tables to each jurisdiction	JEF [2/25/11]
2-4	Each jurisdiction shall review, revise, and/or complete the capability assessment tables as needed/appropriate	All Jurisdictions [3/11/11]
2-5	JEF to distribute Past Mitigation Activity worksheets to each jurisdiction	JEF [2/25/11]
2-6	Each jurisdiction to complete the Past Mitigation Activity worksheet and provide to JEF	All Jurisdictions [3/11/11]

Gila County MJHMP Update – Action Item Status Report
as of February 16, 2011

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	GILA COUNTY	GLOBE	HAYDEN	MIAMI	PAYSON	STAR VALLEY	WINKELMAN	EXPLANATION
1-1	D. Williams and S. Wood will follow up with the missing jurisdictions to ensure they either attend future meetings or confirm their desire not to participate	D. Williams; S. Wood [12/17/10]	C	NA	NA	NA	NA	NA	NA	• 1/3/11 – S. Wood sent correspondence to D. Williams to coordinate getting attendance from Globe, Hayden, Star Valley and Winkelman. • 2/15/11 – ADEM reported that contact had been made or repeatedly attempted with each missing jurisdiction and directed JEF to move forward with meetings and update.
1-2	D. Williams to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	D. Williams [12/30/10]	NC	NA	NA	NA	NA	NA	NA	•
1-3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]	IP	NA	NA	IP	IP	NA	NA	•
1-5	D. Williams will: • Work with county personnel to develop a webpage on the Gila County website announcing the planning process and providing contact information for further inquiries. • Submit notice articles to the Payson Roundup and Arizona Silver Belt newspapers. • Provide a PSA slide to run in local theaters	D. Williams [12/30/10]	IP	NA	NA	NA	NA	NA	NA	• 1/5/11 – County website is up and running.
1-6	M. deMasi will include a notice on Payson's webpage with a link pointing to the county's webpage for more information.	M. deMasi [1/6/11]	NA	NA	NA	NA	C	NA	NA	• 1/5/11 – Payson's website notice with link is up and running.
1-7	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-8	All team members are to review and update the historic hazard database as appropriate.	All Jurisdictions [12/30/10]	NC	NA	NA	NC	NC	NA	NA	•
1-9	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-10	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/30/10]	NC	NA	NA	NC	NC	NA	NA	•

STATUS KEY	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

Gila County MJHMP Update – Action Item Status Report
as of February 16, 2011

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	GILA COUNTY	GLOBE	HAYDEN	MIAMI	PAYSON	STAR VALLEY	WINKELMAN	EXPLANATION
1-11	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-12	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/30/10]	NC	NA	NA	NC	NC	NA	NA	•
1-13	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-14	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [1/6/11]	NC	NA	NA	NC	NC	NA	NA	•
1-15	JEF shall distribute city/town boundary maps for each jurisdiction to review.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-16	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/30/10]	NA	NA	NA	NC	NC	NA	NA	•

STATUS KEY	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

Memorandum **JE Fuller/ Hydrology & Geomorphology, Inc.**

MEETING DATE: March 17, 2011

MEETING TIME: 8:00AM - NOON

MEETING LOCATION: Gila County Community Services Facility
Emergency Operations Center
Globe, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Gila County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 3

ATTENDEES: Chris Collopy – Globe Planning & Zoning Administrator
Leon Cons – Globe Public Works Director
Ed Copp – SRP Emergency Management
Carlos Estrada – Hayden Public Works Operations Supervisor
Kurt Hinkle – Freeport McMoRan EMS
Martin de Masi – Town of Payson Fire Dept
Dale Metz – Town of Miami Engineering
Rosann Moya – Globe Police Lieutenant
Matt Rencher – Globe City Engineer
Marc Richardson – ASARCO Environmental Engineer
Darde de Roulhac – Gila County Flood Control
Dale Metz – Town of Miami Engineering
Scott Ogden – JE Fuller/ Hydrology & Geomorphology, Inc.
Debra Williams – Gila County Deputy EM Diredtor

NOTE: No Representatives from Star Valley or Winkleman

AGENDA

1. **ACTION ITEM STATUS REVIEW**
2. **GOALS & OBJECTIVES REVIEW/UPDATE**
3. **PLAN MAINTENANCE PROCEDURES**
    a. **Monitoring and Evaluation**
    b. **Plan Update**
    c. **Plan Incorporation**
    d. **Continued Public Involvement**
4. **MEETING ENDING**
    a. **Review of action items**
    b. **Next meeting reminder/verification**

DISCUSSION

Agenda Item 1:

- Action Items from previous meetings were reviewed and discussed. A summary of the disposition of those items as of March 16, 2011 was provided to the planning team and is included at the end of these minutes. Noteworthy discussions included:
    - Action Item 1-5: D. Williams indicated that the county will not run the PSA at the theatres, but will get the other tasks completed ASAP.
    - Action Item 1-16: Globe will provide updated information for boundary. Miami, Hayden, and Payson all confirmed boundaries were good.
    - D. Metz has already sent several of the assignments, but apparently they have not been received. S. Ogden requested a resend.
    - Globe and Payson provided some of the assignments digitally via a thumb drive, at the meeting.
- Following the regular agenda, S. Ogden met with representatives from Hayden to assist the community in getting the tasks completed.

Agenda Item 2:

- S. Ogden led the planning team in a review of the 2006 Plan's goals & objectives (G&Os). He also presented and reviewed a copy of the State Plan's goals and objectives for the team to use in ensuring compatibility between the state and local Plans.
- The planning team discussed both sets of G&Os and the following are highlights of that discussion:
    - During the review, the planning team felt the 2006 Plan's G&Os were still appropriate and reflected the overall mitigation goals of the participating jurisdictions.
    - The team discussed possibility of adding another goal pertaining to winter storm.
    - The majority of the planning team liked the simplicity of the State's G&Os and felt the list provided a very adequate representation of the team's goals for mitigation.
    - Some concerns were raised regarding losing eligibility if a certain hazard was not addressed with a specific goal. For example, the planning team has not chosen earthquake as a priority hazard for mitigation. "What if" questions were raised regarding pursuing earthquake mitigation grant funds if it is not addressed. After much discussion, the planning team ultimately decided that having a list of G&Os like the State's would provide more flexibility and still address the overall mitigation goals.
    - Some concerns were raised regarding a reluctance to discard the work done by the 2006 planning team. Further discussion concluded that it would not be a problem.
    - The planning team concluded that the 2006 Plan list of G&Os would be dropped in favor of adopting the State's cleaner list. Edits will be made to

the State's G&Os to make the language reflect the participation of the county, city, and towns.

Agenda Item 3a:

- S. Ogden led the planning team in a review of Section 6.1 in the 2006 Plans. This information will be in Section 7.1 of the new Plan.
- A poll of each jurisdiction was conducted regarding past plan monitoring and evaluation. All reported that none was formally accomplished. Reasons were mostly due to:
    - staffing issues - changes in personnel, turnover, insufficient numbers.
    - lack of continuity to the 2006 planning team
    - the activity was not prioritized and that planning efforts in general have a tendency to fall to the "bottom of the list."
    - the Plan is not referred to all that much.
- A new monitoring and evaluation schedule was discussed with an acute awareness of the lack of action over the past 4 years. The following was the result:
    - ADEM will take the lead for initiating/prompting the need for review on or around the anniversary of the Plan approval date.
    - ADEM will contact the County Emergency Manager to initiate the review process.
    - The County EM will contact each Planning Team member listed in the Plan or their equivalent to set a date for a review meeting within 90 days of receiving the reminder from ADEM.
    - A brief memorandum will be used to document the reviews conducted over the next planning cycle and will be included in an appendix placeholder.
    - The scope of the review will remain the same from the 2006 Plan.

Agenda Item 3b:

- The planning team reviewed the plan update strategy of Section 6 in the 2006 Plans and found it acceptable with one minor change. The time to initiate the update process will be changed from 6 months to 1-year in advance of the Plan expiration date. Also, responsibility for initiating the update process will fall to the County EM. This information will be documented in Section 7 of the new Plan.

Agenda Item 3c:

- A poll of the jurisdictions was conducted to identify ways in which the 2006 Plans were incorporated into other planning mechanisms within each jurisdiction. The following were the responses:
    - Payson
        - Referenced in the update of the Town's EOP.
        - Consulted during the update of the Rim Country CWPP
        - Referred to during development of the Town's CIP
        - Referred to during annual budget planning
    - Globe, Hayden and Miami – none to report

- Gila County
  - Referred to in the development of the Southern Gila County CWPP, which is currently in the adoption process.
  - Risk assessment data for the HAZMAT and Transportation Accident hazards were referenced in the Homeland Security Target Capability Assessment.
  - Used by the FCD to assist in identifying and defining flood mitigation projects.
  - Referenced during the annual update of the EOP.

- Reasons for the lack of success were discussed and were found to be similar to the reasons for the lack of plan maintenance. The planning team concluded that a greater awareness of the plan was needed and that hopefully a more regular review of the plan would help in the awareness and implementation of the plan in other planning mechanisms. It was also noted, that due to the small size of the participating jurisdictions, there is really not all that much other planning being done.
- Future opportunities included updates to general plans by Globe and Payson, updates to the county comprehensive plan, code and ordinance updates by Globe and Miami, and CIP formulation by Globe, Payson and Gila County.
- This information will be documented in Section 7 of the new Plan.

Agenda Item 3d:

- A poll of the jurisdictions was conducted to identify ways in which past public involvement opportunities were provided relative to the 2006 Plans. The following are opportunities that were offered on a regular basis over the last 4 years:
  - Gila County:
    - Booth at county fair and the health fair in Payson
    - Board approval for all mitigation actions/projects
    - Continuous availability of website posting.
  - Hayden:
    - Annual Fiesta in September – provide mitigation information
  - Globe:
    - Car show in April – FD booth with mitigation information
    - County Fair in September – FD booth with mitigation information
    - Presentation of all mitigation actions/projects being implemented to council.
  - Miami:
    - Discussed mitigation opportunities during public meetings held in response to recent flood events.
  - Payson:
    - Presentation of all mitigation actions/projects being implemented to council.

- Future public involvement opportunities were discussed and the following were offered:
  - Gila County:

        - Provide periodic summary updates of hazard mitigation A/P measures being implemented using local media.
        - Conduct periodic presentations of hazard mitigation planning discoveries, progress, or proposed A/P measures at the Gila County Board of Supervisors Meetings.
        - Provide mitigation brochures at a booth at the annual County Fair (September) and the Health Fair (April).
        - Maintain a webpage with the Plan posted for review and download.
    - Hayden:
        - Annual Fiesta in September – provide mitigation information
    - Globe:
        - Car show in April – FD booth with mitigation information
        - County Fair in September – FD booth with mitigation information
        - Present all mitigation actions/projects being implemented to council.
    - Miami:
        - Provide mitigation brochures at the annual Boomtown Spree (spring) and Town Fiesta (September).
    - Payson:
        - Maintain website posting that points to county website for copy of the Plan.
        - Provide mitigation brochures and information (especially drought and wildfire) at the annual Xeriscape Festival in May.
        - Provide mitigation brochures at Fire Stations and Town Hall.
        - Provide a council update on annual review and also include a short article in the local paper.
        - Present all mitigation actions/projects being implemented to council.

Agenda Item 4:

- The next planning team meeting is scheduled for: **Thursday, April 21st, 2011, 9AM to Noon, Gila County Community Services Facility, Emergency Operations Center, Globe, AZ**.

ACTION ITEM SUMMARY:

No new action items from this meeting.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

MEETING DATE: April 21, 2011

MEETING TIME: 9:00AM - NOON

MEETING LOCATION: Gila County Community Services Facility
Emergency Operations Center
Globe, AZ

DISTRIBUTION: Meeting Attendees

FROM: W. Scott Ogden - JEF

RE: **Gila County Multi-Jurisdictional Hazard Mitigation Plan**
Planning Team Meeting No. 4

ATTENDEES: Chris Collopy – Globe Planning & Zoning Administrator
Leon Cons – Globe Public Works Director
Ed Copp – SRP Emergency Management
Carlos Estrada – Hayden Public Works Operations Supervisor
Martin de Masi – Town of Payson Fire Dept
Dale Metz – Town of Miami Engineering
Matt Rencher – Globe City Engineer
Marc Richardson – ASARCO Environmental Engineer
Darde de Roulhac – Gila County Flood Control
Dale Metz – Town of Miami Engineering
Scott Ogden – JE Fuller/ Hydrology & Geomorphology, Inc.
Debra Williams – Gila County Deputy EM Diredtor

NOTE: No Representatives from Star Valley or Winkleman

AGENDA

1. **ACTION ITEM REVIEW/STATUS**
2. **VULNERABILITY ANALYSIS REVIEW**
3. **MITIGATION ACTION/PROJECT FORMULATION AND IMPLEMENTATION STRATEGY**
4. **END OF MEETING DISCUSSION**

DISCUSSION

Agenda Item 1:

- Action Items from previous meetings were reviewed and discussed. A summary of the disposition of those items as of April 20, 2011 was provided to the planning team and is included at the end of these minutes.

Agenda Item 2:

- S. Ogden presented maps depicting the dam failure, flood, HAZMAT, and wildfire hazard areas and the assets provided by the planning team. County-wide and community specific maps were provided for review and reference when reviewing the results of the vulnerability analysis.
- S. Ogden will provide the digital versions of the maps to the planning team via the JEF ftp site.
- D. deRoulhac requested the base GIS data used to prepare the maps. S. Ogden informed him that the request must go through ADEM (Sue Wood). Darde will follow-up with ADEM.
- Several tables showing exposure/loss estimates to critical facilities, general HAZUS based residential, commercial, and industrial structures, and HAZUS based population estimates, were presented to the planning team for review. Tables detailing hazard exposure data for each critical asset were also provided and S. Ogden explained how the table data correlated to the workmaps.
- S. Ogden explained how HAZUS based population and residential, commercial and industrial building exposure counts were derived and summarized in the tables.
- Each planning team member was assigned the task of reviewing the data and maps and to provide comments/corrections as appropriate.

Agenda Item 3:

- S. Ogden reviewed the process of updating the overall mitigation strategy and specifically the mitigation action/project formulation and implementation strategy.
- S. Ogden led a review/explanation of the various categories of possible mitigation actions/projects and presented information from the 2010 State Plan summarizing various sources of grant funding that may be used for hazard mitigation.
- S. Ogden presented the table/worksheet that will be used to document the actions/projects and implementation strategy. JEF will provide a copy of the table with the actions/projects from the 2006 Plan that were designated as “Keep” or “Revise” already entered.
- Each jurisdiction was instructed to complete the worksheet per the guidelines discussed during the meeting and provide to S. Ogden.
- S. Ogden also explained the new requirement that each jurisdiction participating in the NFIP program, must include at least one mitigation action/project that addresses continued compliance with NFIP requirements. S. Ogden provided a sheet of example of NFIP compliance mitigation action/projects for reference and/or ideas.

Agenda Item 4:

- Action Items for this meeting are summarized below.
- This was the last meeting. The next steps will be to finish all outstanding assignments, and get the draft of the Plan completed and in review with the State and Planning Team.

ACTION ITEM SUMMARY:

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]
4-1	Planning Team to review VA results and respond with any comments/corrections to S. Ogden	All Jurisdictions [5/13/11]
4-2	S. Ogden to upload the VA workmaps to the JEF ftp and send note to planning team informing of their availability.	S. Ogden [5/5/11]
4-3	JEF to pre-enter the "Keep" and "Revise" designated projects from the Existing Mitigation A/P Evaluation into the Mitigation Action/Project and Implementation Strategy worksheet and send the worksheet to each respective jurisdiction.	JEF [5/5/11]
4-4	Each jurisdiction shall complete the Mitigation Action/Project and Implementation Strategy worksheet, including the addition of any new Mitigation A/Ps and at least one A/P addressing NFIP compliance, and return it JEF	ALL Jurisdictions [5/27/11]

Gila County MJHMP Update – Action Item Status Report
as of March 14, 2011

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	GILA COUNTY	GLOBE	HAYDEN	MIAMI	PAYSON	STAR VALLEY	WINKELMAN	EXPLANATION
1-1	D. Williams and S. Wood will follow up with the missing jurisdictions to ensure they either attend future meetings or confirm their desire not to participate	D. Williams; S. Wood [12/17/10]	C	NA	NA	NA	NA	NA	NA	• 1/3/11 – S. Wood sent correspondence to D. Williams to coordinate getting attendance from Globe, Hayden, Star Valley and Winkelman. • 2/15/11 – ADEM reported that contact had been made or repeatedly attempted with each missing jurisdiction and directed JEF to move forward with meetings and update.
1-2	D. Williams to provide a list of all organizations invited to Planning Team Meeting No. 1 and a copy of the correspondence used, to JEF	D. Williams [12/30/10]	NC	NA	NA	NA	NA	NA	NA	•
1-3	JEF will email electronic version of Local Resources List template to each jurisdiction to track contributors to the plan update.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-4	Each jurisdiction shall record and document all people contacted or involved as a planning resource at the local level, using the template provided by JEF	All Jurisdictions [prior to draft]	IP	IP	IP	IP	C	NA	NA	• 2/17/11 – Payson provided list on thumb drive at Mtg No. 2
1-5	D. Williams will: • Work with county personnel to develop a webpage on the Gila County website announcing the planning process and providing contact information for further inquiries. • Submit notice articles to the Payson Roundup and Arizona Silver Belt newspapers. • Provide a PSA slide to run in local theaters	D. Williams [12/30/10]	IP	NA	NA	NA	NA	NA	NA	• 1/5/11 – County website is up and running.
1-6	Payson and Globe will include a notice on their webpage with a link pointing to the county's webpage for more information.	Payson and Globe [1/6/11]	NA	NC	NA	NA	C	NA	NA	• 1/5/11 – Payson's website notice with link is up and running.
1-7	JEF will provide digital copies of the historic hazard database files to the planning team for review and update as needed.	JE Fuller [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-8	All team members are to review and update the historic hazard database as appropriate.	All Jurisdictions [12/30/10]	NC	NC	NC	NC	C	NA	NA	• 2/17/11 – Payson provided additions to database on a thumb drive at Mtg No. 2
1-9	JEF to provide CPRI calculation sheets (digitally) to each participating jurisdiction	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-10	Each jurisdiction to perform a CPRI evaluation on each of the selected hazards and return the worksheet to JEF	All Jurisdictions [12/30/10]	NC	NC	NC	NC	C	NA	NA	• 2/17/11 – Payson provided on thumb drive at Mtg No. 2

STATUS KEY	Required for Plan Approval	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

Gila County MJHMP Update – Action Item Status Report
as of March 14, 2011

ITEM NO.	DESCRIPTION	RESPONSIBILITY [DUE DATE]	GILA COUNTY	GLOBE	HAYDEN	MIAMI	PAYSON	STAR VALLEY	WINKELMAN	EXPLANATION
1-11	JEF to provide asset inventory data sets to each community for update, correction, or provision of missing data.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-12	All jurisdictions shall review the 2006 asset inventory and make updates, corrections, and/or provide missing data such as replacement costs.	All Jurisdictions [12/30/10]	NC	NC	NC	NC	C	NA	NA	• 2/17/11 – Payson provided updated asset inventory file.
1-13	JEF will provide the Existing Mitigation Action/Project Evaluation worksheet to each respective jurisdiction for completion.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-14	All jurisdictions shall complete the Existing Mitigation A/P Evaluation worksheet and return to JEF.	All Jurisdictions [1/6/11]	NC	NC	NC	NC	IP	NA	NA	• 2/17/11 – Payson provided first cut at Mtg No. 2. JEF commented and sent back to Payson for responses on 3/1/11.
1-15	JEF shall distribute city/town boundary maps for each jurisdiction to review.	JEF [12/7/10]	NA	NA	NA	NA	NA	NA	NA	• 12/7/10 – Data and files sent by email
1-16	Each jurisdiction to review city/town boundary verification plots and provide either validation of accuracy or a revised corporate limit via either redlined map, CAD, or GIS	All Jurisdictions [12/30/10]	NA	NC	NC	NC	C	NA	NA	• 2/17/11 – Payson confirmed boundary OK at Mtg No. 2
2-1	JEF to resend Mtg No. 1 materials to Globe and Hayden team members.	JEF [2/25/11]	NA	NA	NA	NA	NA	NA	NA	• 3/2/11 – Sent via email
2-2	JEF to send GIS and Excel spreadsheet versions of the asset inventory to Globe and Gila County for their verification and update	JEF [2/25/11]	NA	NA	NA	NA	NA	NA	NA	• 3/2/11 – Sent via email
2-3	JEF will send the Capability Assessment worksheet files containing pre-populated capability assessment tables to each jurisdiction	JEF [2/25/11]	NA	NA	NA	NA	NA	NA	NA	• 3/2/11 – Sent via email
2-4	Each jurisdiction shall review, revise, and/or complete the capability assessment tables as needed/appropriate	All Jurisdictions [3/11/11]	NC	NC	NC	NC	NC	NA	NA	•
2-5	JEF to distribute Past Mitigation Activity worksheets to each jurisdiction	JEF [2/25/11]	NA	NA	NA	NA	NA	NA	NA	• 3/2/11 – Sent via email
2-6	Each jurisdiction to complete the Past Mitigation Activity worksheet and provide to JEF	All Jurisdictions [3/11/11]	NC	NC	NC	NC	NC	NA	NA	•

STATUS KEY	Required for Plan Approval	(NC) Not Complete	(IP) In Progress	(C) Complete	(NA) Not Assigned

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Dardo de Roulhac	Gila County Flood Ctrl.		Chief Engr.	928-474-7116		dderoulhac@co.gila.az.us
* Martin deMasi	Town of Payson		Fire Chief	928 474-5242 x3	928 595 0250	mdemasi@paysonaz.gov
Ron Sattelmaier	Whispering Pines Fire Dist.		Fire Chief	928-474-3088	623-337 2576	ronsatt@wpfd.us
Mike Williamson	Beaver Valley Fire		Fire Chief	928-472-4711	928 961 3051	BeaverValleyFD@HotMail.Com
Chris Jones	UA Gila Co Cooperative Extension (U of A)		Extension Agent	928 402 8586		ckjones@cals.arizona.edu
Bryan Goslin	A.P.S		DDPL	928 425-8041		Bryan.Goslin@APS.com
Larry Dorame	Gila County	EMS	Addresser	928-402-8597		ldorame@co.gila.az.us
Ed Copp	SRP	Emergency Mgt	Manager	602-236-8106	602-332-5635	Ed.Copp@srpnet.com
Kurt Hinkle	Freeport McMoRan	Ems/ Security	Safety/Health	—	602 527-1813	Kurt_Hinkle@Fmi.com
Russ Shumate	Az State Forestry		AFMU	928 778 9567		russshumate@azstatefire.org
Marc Richardson	Asarco	Environmental	Env. Eng	520-356-3296	520-686 1869	MRichardson@ASARCO.com
* Dale Mek	Town of Miami		Eng. Tech	928 4739024	602 663 0836	miamiengineering@cableone.net
Ann Youberg	AZ Geological Survey		Research Geologist	520-209-4142		ann.youberg@azgs.az.gov

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Chris Collopy	City of Globe	P&Z	P&Z Administrator	928 425-7146	928 812-2144	ccollopy@globeaz.gov
LEON CONS	City of GLOBE	P/works	Public Works Director	928-475-4989	9288820551	LCONS@globeaz.gov.
Darde de Roulliac	Gila Co. ~~Flood Ctrl~~	Flood Ctrl. District	Chief Engineer	928-474-7116	928-970-1474	dderoulhac@co.gila.az.us
CARLOS ESTRADA	TONTO DRUPAL	PUBLIC WORKS	OPERATIONS SUPER.	520-356-7801	520-342-7422	—
Lawrence Dorame	Gila County	EM	Analyst	928 402-8587		ldorame@co.gila.az.us
Nick Renon	Globe Fire	~~Pol~~ Deputy chief		928-425-4433		
LEE KINNARD	GLOBE POLICE DEPT.	POLICE	CHIEF	928-425-5751		LKINNARD@GLOBEAZ.GOV
Matt Rencher	City of Globe	Engineering	City Engineer	928-425-8346	928-200-4114	mrencher@globeaz.gov

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Ed Copp	Salt River Project	Emergency Management	Manager	602-236-8106	602-332-5635	ed.copp@srpnet.com
Martin de Masi	Town of Payson	Fire Department	Fire Chief	928-474-5242 x 3	928-595-0250	mdemasi@paysonaz.gov
Darde de Roulhac	Gila County	Flood Control District	Chief Engineer	928-474-7116		dderoulhac@co.gila.az.us
Larry Dorame	Gila County	Emergency Management Services	Addresser	928-402-8597		ldorame@co.gila.az.us
Bryan Goslin	Arizona Public Service		DPZ	928-425-8041		bryan.goslin@aps.com
Kurt Hinkle	Freeport McMoRan	Emergency Management Services / Security	Safety / Health	928-701-1040	~~602-527-1813~~ 928-701-1040	kurt_hinkle@fmi.com
Chris Jones	University of Arizona	Gila County Cooperative Extension	Extension Agent	928-402-8586		ckjones@cals.arizona.edu
Dale Metz	Town of Miami		Engineering Technician	928-473-9024	602-663-0836	miamiengineering@cableone.net
Scott Ogden	JE Fuller / Hydrology & Geomorphology, Inc.		Project Manager	480-222-5717	480-299-3394	scott@jefuller.com
Marc Richardson	ASARCO	Environmental Department	Environmental Engineer	520-356-3296	520-686-1868	mrichardson@asarco.com
Ron Sattelmaier	Whispering Pines Fire District		Fire Chief	928-474-3088	623-337-2576	ronsatt@wpfd.us
Russ Shumate	State of Arizona	Land Department / Forestry Division	AFMU	928-778-9567		russ.shumate@azstatefire.org
Debra Williams	Gila County	Emergency Management	Deputy Director	928-402-8763	928-701-1811	dwilliams@co.gila.az.us
Mike Williamson	Beaver Valley Fire District		Fire Chief	928-472-4711	928-961-3051	beavervalleyfd@hotmail.com
Sue Wood	Arizona Division of Emergency Management	Migitation Branch	Program Manager	602-464-6518		susan.wood@azdema.gov
Ann Youberg	Arizona Geological Survey		Research Geologist	520-209-4142		ann.youberg@azgs-az.gov

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Office Phone	Cell Phone	E-Mail Address
Chris Collopy	City of Globe	Planning & Zoning	P&Z Administrator	928-425-7146	928-812-2194	ccollopy@globeaz.gov
Leon Cons	City of Globe	Public Works	Public Works Director	928-425-4989	928-812-0551	lcons@globeaz.gov
Ed Copp	Salt River Project	Emergency Management	Manager	602-236-8106	602-332-5635	ed.copp@srpnet.com
Martin de Masi	Town of Payson	Fire Department	Fire Chief	928-474-5242 x 3	928-595-0250	mdemasi@paysonaz.gov
Darde de Roulhac	Gila County	Flood Control District	Chief Engineer	928-474-7116		dderoulhac@co.gila.az.us
Larry Dorame	Gila County	Emergency Management Services	Addresser	928-402-8597		ldorame@co.gila.az.us
Carlos Estrada	Town of Hayden	Public Works	Operations Supervisor	520-356-7801	520-342-7922	hayden@theriver.com
Bryan Goslin	Arizona Public Service		DPZ	928-425-8041		bryan.goslin@aps.com
Kurt Hinkle	Freeport McMoRan	Emergency Management Services / Security	Safety / Health		602-527-1813	kurt_hinkle@fmi.com
Chris Jones	University of Arizona	Gila County Cooperative Extension	Extension Agent	928-402-8586		ckjones@cals.arizona.edu
Lee Kinnard	City of Globe	Police Department	Police Chief	928-425-5751		lkinnard@globeaz.gov
Dale Metz	Town of Miami		Engineering Technician	928-473-9024	602-663-0836	miamiengineering@cableone.net
Scott Ogden	JE Fuller / Hydrology & Geomorphology, Inc.		Project Manager	480-222-5717	480-299-3394	scott@jefuller.com
Matt Rencher	City of Globe	Engineering	City Engineer	928-425-8346	928-200-~~4141~~ 4114	mrencher@globeaz.gov
Nick Renon	City of Globe	Fire Department	Deputy Chief	928-425-4433		
Marc Richardson	ASARCO	Environmental Department	Environmental Engineer	520-356-3296	520-686-1868	mrichardson@asarco.com
Ron Sattelmaier	Whispering Pines Fire District		Fire Chief	928-474-3088	623-337-2576	ronsatt@wpfd.us
Russ Shumate	State of Arizona	Land Department / Forestry Division	AFMU	928-778-9567		russ.shumate@azstatefire.org
Debra Williams	Gila County	Emergency Management	Deputy Director	928-402-8763	928-701-1811	dwilliams@co.gila.az.us
Mike Williamson	Beaver Valley Fire District		Fire Chief	928-472-4711	928-961-3051	beavervalleyfd@hotmail.com
Sue Wood	Arizona Division of Emergency Management	Migitation Branch	Program Manager	602-464-6518		susan.wood@azdema.gov
Ann Youberg	Arizona Geological Survey		Research Geologist	520-209-4142		ann.youberg@azgs-az.gov
ROSANN MOYA	CITY of GLOBE	POLICE DEPT	POLICE LT	928-4255752		rmoya@globeaz.gov

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Chris Collopy	City of Globe	Planning & Zoning	P&Z Administrator	928-425-7146	928-812-2194	ccollopy@globeaz.gov
Leon Cons	City of Globe	Public Works	Public Works Director	928-425-4989	928-812-0551	lcons@globeaz.gov
Ed Copp	Salt River Project	Emergency Management	Manager	602-236-8106	602-332-5635	ed.copp@srpnet.com
Martin de Masi	Town of Payson	Fire Department	Fire Chief	928-474-5242 x 3	928-595-0250	mdemasi@paysonaz.gov
Darde de Roulhac	Gila County	Flood Control District	Chief Engineer	928-474-7116		dderoulhac@co.gila.az.us
Larry Dorame	Gila County	Emergency Management Services	Addresser	928-402-8597		ldorame@co.gila.az.us
Carlos Estrada	Town of Hayden	Public Works	Operations Supervisor	520-356-7801	520-342-7922	hayden@theriver.com
Bryan Goslin	Arizona Public Service		DPZ	928-425-8041		bryan.goslin@aps.com
Kurt Hinkle	Freeport McMoRan	Emergency Management Services / Security	Safety / Health		602-527-1813	kurt_hinkle@fmi.com
Chris Jones	University of Arizona	Gila County Cooperative Extension	Extension Agent	928-402-8586		ckjones@cals.arizona.edu
Lee Kinnard	City of Globe	Police Department	Police Chief	928-425-5751		lkinnard@globeaz.gov
Dale Metz	Town of Miami		Engineering Technician	928-473-9024	602-663-0836	miamiengineering@cableone.net
Rosann Moya	City of Globe	Police Department	Lieutenant	928-425-5752		rmoya@globeaz.gov
Scott Ogden	JE Fuller / Hydrology & Geomorphology, Inc.		Project Manager	480-222-5717	480-299-3394	scott@jefuller.com
Matt Rencher	City of Globe	Engineering	City Engineer	928-425-8346	928-200-~~4141~~ 4114	mrencher@globeaz.gov
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Russ Shumate	State of Arizona	Land Department / Forestry Division	AFMU	928-778-9567		russ.shumate@azstatefire.org
Debra Williams	Gila County	Emergency Management	Deputy Director	928-402-8763	928-701-1811	dwilliams@co.gila.az.us
Mike Williamson	Beaver Valley Fire District		Fire Chief	928-472-4711	928-961-3051	beavervalleyfd@hotmail.com
Sue Wood	Arizona Division of Emergency Management	Migitation Branch	Program Manager	602-464-6518		susan.wood@azdema.gov
Ann Youberg	Arizona Geological Survey		Research Geologist	520-209-4142		ann.youberg@azgs-az.gov

GILA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
GILA COUNTY				
Darde de Roulhac	City of Globe	Flood Control District	Chief Engineer	Planning team participant, resource for all phases of the plan update
Larry Dorame	City of Globe	Emergency Management Services	Addresser	Planning team participant, resource for all phases of the plan update
Debra Williams	City of Globe	Emergency Management	Deputy Director	Community Primary Contact, planning team participant, resource for all phases of the plan update
GLOBE				
Chris Collopy	City of Globe	Planning & Zoning	P&Z Administrator	Planning team participant, resource for all phases of the plan update
Leon Cons	City of Globe	Public Works	Public Works Director	Planning team participant, resource for all phases of the plan update
Lee Kinnard	City of Globe	Police Department	Police Chief	Resource for human-caused hazards in risk assessment and mitigation strategy
Rosann Moya	City of Globe	Police Department	Lieutenant	Resource for human-caused hazards in risk assessment and mitigation strategy
Matt Rencher	City of Globe	Engineering	City Engineer	Community Primary Contact, planning team participant, resource for all phases of the plan update
Nick Renon	City of Globe	Fire Department	Deputy Chief	Resource for human-caused and wildfire hazards in risk assessment and mitigation strategy
HAYDEN				
Laura Romero	Town of Hayden	Administration	Clerk	General resource for all plan elements
Robert Lorona	Town of Hayden	Administration	General Superintendent	General resource for all plan elements
Carlos Estrada	Town of Hayden	Public Works	Operations Supervisor	Community Point of contact and lead for Town

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
MIAMI				
Rosemary Castaneda	Town of Miami	Town Council	Mayor	Provide public involvement newspapers. Coordinate and identify hazards for the community.
Susan Hanson	Town of Miami	Town Council	Vice-Mayor	Assist in planning and identify problems within the community.
Jesus "Chuy" Canizales	Town of Miami	Town Council	Councilman	Assist in planning and identify problems within the community.
Mike Black	Town of Miami	Town Council	Councilman	Assist in planning and identify problems within the community.
Darryl Dalley	Town of Miami	Town Council	Councilman	Assist in planning and identify problems within the community.
Don Reiman	Town of Miami	Town Council	Councilman	Assist in planning and identify problems within the community.
Robert Baeza	Town of Miami	Town Council	Councilman	Assist in planning and identify problems within the community.
Jerry Barnes	Town of Miami	Town Administration	Town Manager	Coordinate and identify hazards for the community.
Sandy Elycio	Town of Miami	Town Administration	Grant Writer	Identify and seek funding opportunities for the community.
Richard Canizales	Town of Miami	Town Administration	Town Clerk	Identify problems within the community and prepare plans.
Dan Rodriguez	Town of Miami	Police Department	Police Chief	Assist in planning and hazard identification.
Mark Clark	Town of Miami	Police Department	Detective	Assist in planning and hazard identification.
Steve Craig	Town of Miami	Police Department	Detective	Assist in planning and hazard identification.
Wes Sukosky	Town of Miami	Public Works	Director	Responsible for identifying building hazards and community planning.
Dale Metz	Town of Miami	Engineering	Engineering Technician	Provide GIS data and information
Jay Spehar	Town of Miami	Freeport McMoRan Miami	Environmental Manager	Provide mining industry project information. Provide environmental information.
Jacob Leverance	Town of Miami	Fire Department	Fire Chief	Identify and prioritize hazards.

Name	Jurisdiction/Agency/Organization	Department/Division/Branch	Title	Contributions
PAYSON				
LaRon Garrett	Town of Payson	Public Works	Town Engineer	Reviewed asset inventory, projects, map
Don Engler	Town of Payson	Police Department	Chief	Reviewed asset inventory, projects
Martin DeMasi	Town of Payson	Fire Department	Chief	Primary community contact, organizer for local planning team, involved in all aspects of the plan update
SALT RIVER PROJECT(SRP)				
Ed Copp	Salt River Project	SRP/Business Continuity & Emerg Mgt	Manager	Team member and coordinated SRP data
Floyd Hardin	Salt River Project	SRP/Line Asset Management	Manager	Overall mitigation comments
Karen Powell	Salt River Project	SRP/Line Maintenance Services	Manager	Vegetation management

Appendix C

Public Involvement Records

Gila County Government Relations & Emergency Management

SERVICES

Search

Goverment Relations & Emergency Management

Emergency Operations Center

Emergency Preparedness

Training

Homeland Security

Rural Addressing

Rural Addressing FAQs

RACES

MJHMPP

Emergency Management FAQs

Weather in Your Area

Fire Information

Volunteer Opportunities

MULTI-JURISDICTION HAZARD MITIGATION PLANNING PROJECT

The following cities, towns, and tribes are currently participating with Gila County to develop a multi-jurisdictional all-hazard mitigation plan for each community:
Globe Miami Payson Hayden Winkelman San Carlos Apache Tribe White Mountain Apache Tribe

What is hazard mitigation planning?
Some Definitions…
HAZARD – A source of potential danger or adverse condition. Hazards include both natural (floods, earthquakes, winter storms, landslides, wildfires, drought, etc.) and human-caused events (hazardous materials, dam/levee failure, terrorism, transportation accidents, biological, etc.).
HAZARD MITIGATION – Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.
PLANNING – the act or process of making or carrying out plans; specifically, the establishment of goals, policies, and procedures for a social or economic unit.

Why are the communities doing this hazard mitigation planning?
The process of hazard mitigation planning is a very important part of any community's planning program for sustainability. For most communities, mitigation programs for hazards that occur infrequently are usually funded and initiated on a post-disaster basis with solutions that are generally reactionary to the most recent event. This form of hazard mitigation programming is typically more costly, both in property and human losses, on a long-term basis. Congress recognized the deficiency of the current system and in October 2000, passed the Disaster Mitigation Act of 2000 (DMA2K). The overall purpose of DMA2K was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at both the federal and state levels, and control federal costs of disaster assistance. In general, the DMA2K legislation requires all local, county, and tribal governments to develop a hazard mitigation plan for their respective community in order to be eligible to receive federal pre- and post-disaster mitigation assistance funds. Each community's hazard mitigation plan must be submitted to and approved by the State of Arizona and FEMA. The deadline for obtaining that approval is November 1, 2004.

How will the plan be developed?
A planning team comprised of planning and engineering representatives from the cities, tribes, and county, as well as public utilities, hospitals, police, fire and sheriff's departments, and other public and private entities, will be meeting regularly to work through a hazard mitigation planning process that involves the following tasks:

- Identify hazards that may impact or have impacted the community
- Develop a profile of the most relevant hazard events
- Assess Vulnerability to Hazards
- Assess the communities capability to mitigate hazards
- Establish hazard mitigation activity goals and objectives for the community
- Develop hazard mitigation actions and/or projects
- Develop an implementation strategy for the plan
- Write and officially adopt plan

How can I get involved or obtain more information?
For more information on this hazard mitigation planning process, please contact:

Matt Bolinger, M.D.
Division Director
928-425-3231 x 8764
mbolinger@co.gila.az.us

Debra Williams
Risk Management Analyst
928-425-3231 x8763
dwilliams@co.gila.az.us

Upcoming Events

Links

CDL Application

Documents

Asset Inventory Worksheet
Capability Assessment Worksheet
CPRI Worksheet
Historical Hazard Worksheet
MJHMP Oct 15 2004
MJHMP Nov 10 2004
MJHMP Dec 10 2004

Home - Webmaster - Links

Payson
Arizona's Cool Mountain Town

TOWN GOVERNMENT | DEPARTMENTS | COMMUNITY | VISITORS | BUSINESSES | I WANT TO ...

search

Town of Payson
303 N. Beeline Hwy.
Payson, AZ 85541
(928) 474-5242

Town Hall Hours:
7:00 am - 5:00 pm
Monday - Friday

Treecycling

Moving to our community?
Watch Our
Community
Videos

AccuWeather.com
WEATHER FORECAST

RESIDENT RESOURCES

OPEN TOWN HALL
Citizen's Online Participation Forum

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PUBLIC NOTICE INFORMATION

OUR **AGENDAS & MINUTES PAGE** PROVIDES A LIST OF **AGENDAS, ACTIONS, & MINUTES** FOR **ALL TOWN OF PAYSON PUBLIC MEETINGS**.

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PUBLIC NOTICES ARE PHYSICALLY **POSTED** AT THE FOLLOWING **LOCATIONS**:

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DO YOU WANT ADDITIONAL INFORMATION ABOUT **ARIZONA'S OPEN MEETING LAW**?
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TOWN NEWS

- REQUEST FOR PROPOSALS -
The Town is seeking proposals for the **Microfiltration Treatment Equipment** to be used at the future C.C. Cragin Water Treatment Plant.
Proposals must be received no later than 3:00 PM on January 28, 2011. (**MORE...**)

The Town of Payson is working with Gila County and the Arizona Division of Emergency Management to meet FEMA requirements for updating the **MULTI-JURISDICTION HAZARD MITIGATION PLAN**. **READ MORE HERE**.

CITIZENS NEEDED FOR VITAL SERVICE
The Town of Payson needs volunteers to serve as a member of a Council appointed Board, Commission, or Committee.
HELP SHAPE THE FUTURE OF YOUR COMMUNITY BY VOLUNTEERING TODAY!

Tell the Town Council what you think about a specific agenda item using **OPEN TOWN HALL**. A **new way** for **citizens to participate** in a public Council meeting.

Our new roundabout at HWY 87 and Airport Road is complete. **LEARN HOW TO DRIVE IN A MODERN ROUNDABOUT HERE.**

UPCOMING EVENTS

NEW EQUINE CARE CLASSES FOR HORSE OWNERS STARTING IN JANUARY.

QUICK LINKS

- BASIC STEPS TO REDUCING WASTE
- BUSINESS LICENSE ENFORCEMENT INQUIRY
- PUBLIC MEETING CALENDAR
- COMMUNITY EVENTS CALENDAR
- SUBSCRIBE TO GET E-MAIL UPDATES

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- Contact List
- Forms

City of Globe Related Links

- Globe Public Library/ Tool Lending Library - http://catalog.gila.lib.az.us/polaris
- Right Away Disposal trash services www.rightawaydisposal.com

Arizona State Government

- Arizona Department of Commerce - www.azcommerce.com
- Arizona Department of Revenue - www.azdor.gov/
- Arizona Game and Fish Department - www.gf.state.az.us/
- Arizona Office of Tourism - www.arizonaguide.com/
- Arizona State Parks - www.pr.state.az.us/
- Arizona State Retirement System - www.azasrs.gov
- League of Arizona Cities and Towns - www.azleague.org/
- Arizona Department of Transportation - www.dot.state.az.us
- ADOT Road Conditions - www.az511.com

Gila County Related Links

- Gila County - www.gilacountyaz.gov/index.html
- Gila County Hazard Mitigation - www.gilacountyaz.gov/governmentrelations&emergencymanagement/mjhmpp.html
- Southern Gila County Economic Development - www.sgilacountyed.com/

Tourist Attractions

- Globe-Miami Chamber of Commerce - www.globemiamichamber.com/
- Cobre Valley Center for the Arts - www.cvarts.org
- Tonto National Monument - www.fs.fed.us/r3/tonto
- Boyce Thompson Arboretum - http://arboretum.ag.arizona.edu
- San Carlos Apache - www.sancarlosapache.org/
- Roosevelt Lake and Marina - www.rlmaz.com/rlmaz
- GMTe-connect - www.gmteconnect.com

Medical Care

- Cobre Valley Regional Medical Center - www.cvchospital.com

Media

- Globe-Miami Times - www.globemiamitimes.com/
- Gila 101.9 - www.gila1019.com
- Arizona Silver Belt - www.silverbelt.com/v2_main_page.php
- Copper County News - www.coppercountrynews.com/

Appendix D

Detailed Historic Hazard Records

2010 State Plan Hazard Categories	Arizona Declared Events That Included Gila County January 1966 to August 2010		
	No. of Events	Total Expenditures	
		State	Federal
Drought	5	$ 296,455	$ -
Dam Failure	0	$ -	$ -
Earthquake	0	$ -	$ -
Extreme Heat	0	$ -	$ -
Fissure	0	$ -	$ -
Flooding / Flash Flooding	15	$ 52,540,953	$ 392,129,377
Flood / Severe Wind	0	$ -	$ -
Landslide / Mudslide	0	$ -	$ -
Levee Failure	0	$ -	$ -
Severe Wind	0	$ -	$ -
Subsidence	0	$ -	$ -
Wildfire	21	$ 6,030,207	$ -
Winter Storm	3	$ 2,649,481	$ 5,109,724

NOTES:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
- Flood / Severe Wind - this category included for declarations that have both elements

Source: ADEM - Recovery Section, October 2010

State and Federally Declared Events That Included Gila County
January 1966 to August 2010

Hazard	No. of Declarations	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	7	0	0	$300,000,000
Dam Failure	0	0	0	$0
Earthquake	0	0	0	$0
Extreme Heat	0	0	0	$0
Fissure	0	0	0	$0
Flooding / Flash Flooding	15	42	1090	$1,332,950,000
Landslide / Mudslide	0	0	0	$0
Levee Failure	0	0	0	$0
Severe Wind	0	0	0	$0
Subsidence	0	0	0	$0
Wildfire	22	6	28	$46,150,000
Winter Storm	4	8	0	$750,000

Notes:
- Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values. Sources: ADEM, FEMA, USDA

State of Arizona Declaration				Federal Presidential Declaration				
Date	**Hazard**	**State PCA No.**	**Expenditures**	**Date**	**ID**	**Expenditures**	**Counties Affected**	**Description**
1/21/2010	Winter Storm	20102		3/18/2010	1888-DR		Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, Yavapai, Hopi Tibe, Navajo Nation	**January 2010 Winter Storm Emergency:** About 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Strong gusty winds also affected many valley locations during the evening hours of the 19th and the early morning hours of the 20th. Six inches of snow fell at 6700 feet 6 miles south of Prescott. A strong winter storm hit northern Arizona with widespread snow and rain. Heavy snow fell along the Eastern Mogollon Rim. Snowfall totals for this one storm include: Clints Well 16 inches, Heber 13 inches, Clay Springs 14 to 15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to between 5000 and 5500 feet elevation by the storm moved east. The Governor Jan Brewer signed a Declaration of Emergency and released $200,000 to pay for emergency responses and and recovery expenses from the weather events. Declared that a State of Emergency in Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai Counties due to the 2010 Winter Storm beginning January 21, 2010. President Obama approved the Governor's request for Emergency Declaration in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, has complicated delivery of assistance like fuel, food and medical provisions. An additional $1 million was approved by Governor Brewer to cover state-share costs. Response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, 5,475 blankets and over 800 wood bundles were delivered by air and ground transport.
12/19/1967	Winter Storm	24825	$466,470				Coconino, Gila, Yavapai, Navajo	The December 1967 Snow Storm. A huge snow storm paralyzed northern Arizona and brought snow to much of the state. It was actually two storms, with the second following closely on the heels of the first. However, at that time, most perceived it as one storm. During the nine day period, 86.0 inches of show fell at Flagstaff. At Winslow, where average annual snowfall is 11.2 inches, 39.6 inches of snow was reported. On December 14, a state record of 38.0 inches fell at the Heber Ranger Station. Snowfall totals of the Rim Country included 102.7 inches at Hawley Lake, 99 inches at Greer, 91.5 inches at the Heber Ranger Station, 87.3 inches at Crown King, 77.0 inches at Payson, 46.0 inches at Prescott, 32.5 inches at Sedona, and 31.0 inches at the South Rim of the Grand Canyon. The Navajo Nation was extremely hard hit as two to three feet of snow fell across the community. Window Rock measured 33.5 inches. People on the reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Eight people died of exposure. Southern Arizona did not escape, with measurable snow fall on the lowest deserts. Amounts included 84.0 inches on Mt. Lemmon, 27.5 inches at Miami, 17.7 inches at Wilcox, 11.0 inches at Safford, 5.0 inches at Wickenburg, 3.8 inches at Douglas, 3.0 inches at Ajo, 2.5 inches at Gila Bend, and 1.6 inches at Tucson. Flood related damages in Pima and Santa Cruz Counties totaled $750,000.
2/25/1987	Winter Storm	EUZJN 31810	$3,347				Apache, Navajo, Gila, Coconino, Yavapai	Severe snowstorm.
1/4/1990	Winter Storm	EUZJAN 32877	$1,563				Gila	

State of Arizona Declaration				Damage Estimates			
Date	**Hazard**	**Fatalities**	**Injuries**	**Property**	**Crop/Livestock**	**Total**	**Sources**
1/21/2010	Winter Storm					$0	ADEM, 2010
12/19/1967	Winter Storm	8		$750,000		$750,000	ADEM, 2009; Tucson NWS, 2008 at http://www.wrh.noaa.gov/twc/hydro/floodhis.php
2/25/1987	Winter Storm					$0	ADEM, 2008
1/4/1990	Winter Storm					$0	ADEM, 2008

Gila County Undeclared Events September 1960 to April 2010				
Hazard	No. of Records	Recorded Losses		
		Fatalities	Injuries	Damage Costs ($)
Drought	1	0	0	$0
Dam Failure	0	0	0	$0
Earthquake	2	0	0	$0
Extreme Heat	0	0	0	$0
Fissure	0	0	0	$0
Flooding / Flash Flooding	61	9	1	$2,150,000
Hazardous Materials Incident	103	3	10	$268,812
Landslide / Mudslide	0	0	0	$0
Levee Failure	0	0	0	$0
Severe Wind	104	7	18	$448,000
Subsidence	0	0	0	$0
Transportation Accident	18	4	16	$50,000
Wildfire	44	6	21	$0
Winter Storm	24	6	1	$9,000

Notes: Damage Costs include property and crop/livestock losses and are reported as is with no attempt to adjust costs to current dollar values. Furthermore, wildfire damage cost do not include the cost of suppression which can be quite substantial. Sources: ADEM, NCDC, NWCG, NWS, USFS, NRC

						Damage Estimates			
Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
4/17/1913	Building/Structure Collapse	Air blast due to cave-in	Miami	5				$0	URS, October 2003
07/28/2000	Drought	Cost for State response was $42,111.						$0	URS, October 2003
06/17/1922	Earthquake	Modified Mercalli Intensity Scale: VI	Miami					$0	URS, October 2003
09/11/1963	Earthquake	Modified Mercalli Intensity Scale: VI	Globe					$0	URS, October 2003
7/26/1904	Flooding / Flash Flooding	"The flood of July 26, 1904 was the worst flood in Globe since February 1891". One life was lost.	Globe	1				$0	FEMA, Dec. 2002
8/17/1904	Flooding / Flash Flooding	"A cloudburst causes the most destructive flood ever witnessed here, Pinal Creek a mighty torrent". Six lives lost.	Globe	6				$0	FEMA, Dec. 2002
8/16/1940	Flooding / Flash Flooding	Store buildings were washed from their foundations, windows broken, and downpour of rain estimated at over 1.5 inches in about 20 min. Water over 3 feet deep on lower Broad Street.	Globe					$0	FEMA, Dec. 2002
8/3/1968	Flooding / Flash Flooding	A peak dischare of 7400 cfs was measerd by the USGS on Pinal Creek just downstream for Collins Street at the north end of the city.	Globe	1				$0	FEMA, Dec. 2002
9/29/1983	Flooding / Flash Flooding	A series of late summer storms flooded areas throughout the State of Arizona. In Gila County the area affected were Winkelman, Hayden, Payson and Globe. This incident cost $1,658,727 for response by the County.						$0	Gila County, 2004
7/8/1990	Flooding / Flash Flooding	A series of monsoon storms damaged various County Public Works infrastructure and private homes. Flooding occurred in areas ravaged by the Dude Fire and in the southern region of Gila County. The County spent $48,000 for responding to this incident.	Bonita, Ellison, and Tonto (Creeks)					$0	Gila County, 2004
1/8/1993	Flooding / Flash Flooding	Widespread flooding after 2.57 inches rainfall overnight. Tonto Creek flooded large wilderness areas near Roosevelt. Storm began in Payson	Payson					$0	NCDC, August 2004
2/22/1993	Flooding / Flash Flooding	Gila River below Coolidge Dam overflowed after releases of up to 11,000 cfs rushed through the southern parts of the county.	Winkelman					$0	NCDC, August 2004
10/6/1993	Flooding / Flash Flooding	Heavy rains generated a massive rock slide on State Route 60 near the town of Miami. 2 mi. W of Miami						$0	NCDC, August 2004
7/21/1994	Flooding / Flash Flooding	Heavy rains from thunderstorms caused Pinal Creek to overflow onto United States Highway 60. At one point five feet of water flowed across the highway. A few vehicles were stranded by the flash flood, and several roads had to be barricaded.	Miami					$0	NCDC, August 2004
7/28/1994	Flooding / Flash Flooding	Devore Wash overflowed across State Route 77 during a heavy downpour.	Globe					$0	NCDC, August 2004
9/4/1994	Flooding / Flash Flooding	Miami Police Department reported several drainages flooded, along with several vehicle accidents due to wind and heavy rain.	Miami					$0	NCDC, August 2004
12/4/1994	Flooding / Flash Flooding	Between December 4 and 6, mostly steady rain fell over southern Arizona with many areas receiving in excess of one inch rain. Locally heavier amounts included Tucson, 2.50 inches; Nogales, 2.42 inches; and Globe, 2.35 inches.	Globe					$0	NCDC, August 2004
2/15/1995	Flooding / Flash Flooding	5 mi. N of Payson						$0	NCDC, August 2004
9/3/1996	Flooding / Flash Flooding	Thunderstorm rain caused street flooding in the town of Strawberry. Several roads were flooded with ponding water.	STRAWBERRY					$0	NCDC, August 2004
9/13/1996	Flooding / Flash Flooding	Very heavy thunderstorm rains caused flash flooding at a campground area along Roosevelt Lake. A three-foot wave of water rushed down the northern slope of Four Peaks, engulfing several cars, trailers, and a motor home, some of which washed into Roosevelt Lake near Bachelor Cove. 30 mi. NW of GLOBE						$0	NCDC, August 2004
9/13/1997	Flooding / Flash Flooding	The runoff from several thunderstorms with heavy rain caused flooding on several streets in Payson.	PAYSON					$0	NCDC, August 2004
10/7/1997	Flooding / Flash Flooding	Flooding occurred across Highway 188 south of Punkin Center. A foot of mud debris moved onto the highway. 5 mi. S of PUNKIN CENTER						$0	NCDC, August 2004
4/12/1998	Flooding / Flash Flooding	Rain and fast snowmelt caused small stream flooding on Bear Creek near Kohl's Range. Several low water crossing were flooded with no injuries or damage reported. 20 mi. NE of PAYSON						$0	NCDC, August 2004
7/7/1998	Flooding / Flash Flooding	One inch rainfall in 20 minutes. 1 mi. WNW of ROOSEVELT	ROOSEVELT					$0	NCDC, August 2004
7/31/1998	Flooding / Flash Flooding	Rock slides in Icehouse Canyon resulted from very heavy rains totaling as much as 3.7 inches. Streets in Globe flooded.	GLOBE					$0	NCDC, August 2004
8/24/1998	Flooding / Flash Flooding	Heavy rain resulted in street flooding, road blocked to Icehouse Canyon. Up to 1.5 inches reported in less than an hour.	GLOBE					$0	NCDC, August 2004
9/5/1998	Flooding / Flash Flooding	Heavy rains resulted in a mudslide with one vehicle trapped. 2 mi. S of ROOSEVELT						$0	NCDC, August 2004
7/11/1999	Flooding / Flash Flooding	Flash flooding along the East Verde River in the Washington Park area produced a 5 foot wall of water that swept one woman 100 yards downstream. She was rescued with minor injuries. 10 mi. N of PAYSON			1			$0	NCDC, August 2004
7/14/1999	Flooding / Flash Flooding	Much of southern Gila County hit by torrential rains. Numerous people stranded around the county.	ROOSEVELT					$0	NCDC, August 2004
7/18/1999	Flooding / Flash Flooding	Very heavy rain caused rock slides and mud slides in El Capitan Canyon along route 77. 15 mi. S of GLOBE						$0	NCDC, August 2004
7/21/1999	Flooding / Flash Flooding	Heavy rainfall including a burst of one inch in 20 minutes produced rapid rises on the East Verde River near Washington Park. Weather spotters reported large trees floating down the river and several low water crossings were flooded. 10 mi. N of PAYSON						$0	NCDC, August 2004

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
7/27/1999	Flooding / Flash Flooding	Widespread damage due to 3 inches of rainfall in about one hour. Washes flooded in most areas, with one swift-water rescue of a motorist in the Central Heights area. State route 88 to Roosevelt Lake at Wheatfields was closed due to high water going over the road. The recovery cost was $100,000.	GLOBE					$0	NCDC, August 2004
8/28/1999	Flooding / Flash Flooding	Showers and thunderstorms moved through much of southern Gila County resulting to running washes and street flooding.	GLOBE					$0	NCDC, August 2004
8/30/1999	Flooding / Flash Flooding	Thunderstorm rainfall amounts of nearly three inches in two and half hours caused Pine Creek to leave its banks in the town of Pine. Numerous smaller drainages in the Pine area also flooded.	PINE					$0	NCDC, August 2004
8/30/1999	Flooding / Flash Flooding	Flash flooding occurred further downstream on Pine Creek at the Tonto Bridge State Park. Three hikers were trapped by flood waters that were estimated to by 25 feet above the normal stage. They were rescued without injury. A long time park official witnessed the event and called it " one of the fiercest flash floods I have ever seen." 12 mi. NW of PAYSON						$0	NCDC, August 2004
8/31/1999	Flooding / Flash Flooding	A torrential rainstorm in east Globe had Pinal Creek running from bank to bank and highway 60 flooded in spots.	GLOBE					$0	NCDC, August 2004
9/16/1999	Flooding / Flash Flooding	About 2 inches of rain fell in about 15 minutes and resulted in street flooding.	ROOSEVELT					$0	NCDC, August 2004
6/19/2000	Flooding / Flash Flooding	Large hail accompanied by heavy rain. Spotter reported .80 inch in just 15 minutes. 1 in. diameter hail.	ROOSEVELT					$0	NCDC, August 2004
8/9/2000	Flooding / Flash Flooding	Very heavy rain associated with slow moving storms resulted in heavy runoff and mudslides near Escalante. Police in Miami barricaded some streets due to flooding. 10 mi. N of GLOBE						$0	NCDC, August 2004
8/13/2000	Flooding / Flash Flooding	Rainfall estimated to be over 2.5 inches per hour resulted in flooded creeks and washes near the "Peak Fire". 6 mi. S of GLOBE						$0	NCDC, August 2004
8/18/2000	Flooding / Flash Flooding	Localized heavy rain caused some flooding and forced route 88 to be closed for a few hours. 10 mi. NW of GLOBE						$0	NCDC, August 2004
8/26/2000	Flooding / Flash Flooding	Up to 3 inches of rain in one hour resulted in rock and mud slides in parts of town.	MIAMI					$0	NCDC, August 2004
7/29/2001	Flooding / Flash Flooding	Thunderstorms with very heavy rains caused a rock slide south of San Carlos, as well as a flash flood in the community of San Carlos between 1907 MST and 1915 MST. Pinal Creek in Miami was reported to be in flash flood at 2025 MST.	MIAMI					$0	NCDC, August 2004
7/15/2002	Flooding / Flash Flooding	Street flooding was reported in Payson by Payson Police Department.	PAYSON					$0	NCDC, August 2004
9/10/2002	Flooding / Flash Flooding	Heavy rain fell in Verde Glen between 5:10 PM and 5:45 PM MST. This caused the East Verde River to rise rapidly. The low water crossing at Cowan Ranch was impassable.	PAYSON					$0	NCDC, August 2004
9/10/2002	Flooding / Flash Flooding	Several streets flooded in Payson. Highway 87 flooded at the East Verde River.	PAYSON					$0	NCDC, August 2004
2/27/2003	Flooding / Flash Flooding	Snowmelt and runoff from rain resulted in considerable flows in the Tonto Creek, between Payson and Roosevelt Lake. Four roads, which cross the Tonto Creek, were closed by Gila County Public Works. The Tonto Basin area was affected the most by the flood. About 300 people in several subdivisions along the east side of Tonto Creek were isolated. Secondary Forest Service roads were inaccessible due to mud. Gila County Emergency Services assisted the Sheriff's Department and the Public Works Department in ferrying medical supplies and basic food staples across Tonto Creek. Beginning location in Payson. Ending location in Punkin Center.						$0	NCDC, August 2004
8/26/2003	Flooding / Flash Flooding	Highway 88 was closed 10 miles northwest of Globe because of flooding. One vehicle was stuck in a wash and the passengers were rescued without injury.						$0	NCDC, August 2004
8/26/2003	Flooding / Flash Flooding	2.30 inches of rain fell in Payson in just an hour.	PAYSON					$0	NCDC, August 2004
9/9/2003	Flooding / Flash Flooding	Persistent heavy rains (up to 10 inches) during the late night and early morning flooded the Pinto Creek and a nearby creek. A wall of water, 4 to 8 feet deep, rushed through Roosevelt Estates. Telephones, electricity and water service was knocked out. The worst of the damage occurred in the southeast portion of the Estates at Pine and Ash Streets. About 200 homes were damaged, and 5 were destroyed. The Roosevelt Lake Resort had considerable water damage, and a rock house on route 288 and the Salt River was damaged by flooding.	ROOSEVELT					$0	NCDC, August 2004
12/28/2004	Flooding / Flash Flooding	Tonto Creek in Gila County reached its flood stage of sixteen feet near Roosevelt Lake, isolating residents in the Tonto Basin and flooding homes in the Punkin Center Area. The creek is fed by several streams including 120,000 acres burned by the Willow Forest Fire last summer exacerbating the stormwater runoff. Gila County had extensive flooding that overtopped the roads and left many residents stranded in their homes. Gila County provided emergency services and shelter for several weeks to flood victims. This was a cost of $159,322 based on a Declaration.						$0	Declaration Request Letter from Governor Janet Napolitano, January 27,

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
12/30/2004	Flooding / Flash Flooding	A strong Pacific storm system moved across Arizona December 28th and 29th with heavy rainfall. The governor of Arizona declared a state of emergency for Coconino and Yavapai Counties which provided $200,000 aid for relief efforts. The heavy rain and melting snow resulted in excessive runoff in many areas from Williams to Flagstaff to Winslow and south to Prescott and Black Canyon City. High water, mudslides, and rock slides resulted in numerous road closures and evacuations in the area. Many creeks experienced significant rises. Oak Creak near Sedona exceeded bank full for a few hours when it rose 14 feet on the 29th and the Little Colorado River reached bankfull near Winslow. Some storm total rainfall amounts were: Flagstaff 3.83 inches, Crown King 4.73 inches, Sedona 4.06 inches, Winslow 0.54 inches, Payson 2.88 inches. Flagstaff received it's second largest calendar day precipitation on record. Seventy people were evacuated in southwest Flagstaff when water over-topped an earthen flood control dam. A dozen neighborhoods (about 300 people) along Oak Creek were evacuated in the Sedona area and two neighborhoo down stream. A 14 mile section of Highway 89 between Flagstaff and Sedona was closed because of rock slides. High water on the Verde River forced evacuations in Cornville andBridgeport. Four RVs were lost in Oak Creek at the Page Springs RV park while 23 vehicles were removed before the water rose too high. About 100 people were evacuated in Black Canyon City in two different mobile-home parks. Portions of Navajo Route 71 and Old Navajo Route 2 were closed northeast of Winslow when the Little Colorado River overflowed the banks. Six families were evacuated near Bird Springs on the Navajo Reservation. All thirty-one low water crossings and seven other streets were closed in Prescott due to flooding. Two passengers were rescued from a stranded vehicle in Prescott. Preliminary counts indicate that as many as 150 homes may have sustained damages up to approximately one million dollars. Roads and bridges sustained an additional one million dollars damage.	AZZ007>008 - 012>013 - 015>016 - 018 - 037>038			$200,000		$200,000	NCDC, April 2010
2/10/2005	Flooding / Flash Flooding	Tonto Creek near Punkin Center was heavily impacted by heavy rainfall on snowpack that resulted in evacuations, rescues, isolated communities, and extraordinary damage. The creek is fed by several streams including 120,000 acres burned by the Willow Forest Fire last summer exacerbating the stormwater runoff. Gila County received extensive flooding and road damages. Gila County provided emergency services, protecting lives and property from the flooding. This Declaration Request Letter indicated a cost of $281,576.						$0	Declaration Request Letter from Governor Janet
2/12/2005	Flooding / Flash Flooding	A low pressure system west of the Baja, Mexico Peninsula spread abundant subtropical moisture across the desert southwest. The result was widespread precipitation and river flooding. The Gila River at the Town of Duncan had moderate flooding from the large amount of precipitation that not only fell in Arizona but also in New Mexico. In the Town of Duncan smaller dikes broke allowing water to backup into the town. Damage occurred to a residence near Duncan High School, and a trailer downstream of the high school. Also, U.S. Highway 70 near the high school was covered with four feet of water and the approach ramps to the highway were overtopped with flowing water. East Avenue and low lying areas in the west end of the Town of Duncan were evacuated on the evening of Saturday February 12, 2005. The railroad tracks also on the west end of Duncan were covered with water and power went out in the west side of the town. The Gila River at Duncan reached a maximum crest of 23.28 feet on February 13, 2005 at 0345 MST. The San Francisco River at the Town of Clifton had minor flooding reported. There was no damage reported in the Town of Clifton. However, there was water to the bottom of the Railroad Bridge which stopped railroad traffic from the Morenci Mine and minor overflow of the river in the northern end of Clifton. Also, the town gates, designed to divert water away from the Town of Clifton were closed isolating the town from road and railroad access from the north. The San Francisco River at Clifton reported a peak crest of 23.49 feet on February 12, 2005 at 1230 MST. The Town of Solomon at the Gila River reported minor flooding. The Solomon Road, Pima Road, and Thatcher Road bridge approaches were all flooded and closed. U.S. Highway 70 Bridge near Bylas was also flooded and closed. The Gila River near Solomon recorded a maximum crest of 19.63 feet on February 13, 2005 at 1430 MST.	AZZ030			$1,500,000		$1,500,000	NCDC, April 2010
7/15/2007	Flooding / Flash Flooding	Spotter reported 2.75 inches of rain in less than one hour. Sheriffs office reported a swift-water rescue after many streets became flooded during the height of the storm. EPISODE NARRATIVE: Scattered showers and thunderstorms and the fast runoff resulted in flash flooding in parts of the Globe-Miami area.	Globe/Miami			$20,000		$20,000	NCDC, April 2010
12/8/2007	Flooding / Flash Flooding	About 500 people were stranded in their Tonto Basin homes because of flooded roads and adjacent areas around Tonto Creek. The largest rainfall amounts from this series of storms exceeded 3 inches in some spots. The river gauge at the Tonto Creek site near Roosevelt peaked at over 12 feet on the 8th. Rainfall continued into the week of December 10th, prolonging the runoff and keeping FR470 through Tonto Basin closed for several days. Globe received 1.90, and Miami had 2.72 inches from the 8th through the 12th. EPISODE NARRATIVE: The second major storm system two weeks contributed to excessive runoff and high water over a period of several days in parts of southern Gila County.	Tonto Basin			$50,000		$50,000	NCDC, April 2010
1/28/2008	Flooding / Flash Flooding	A railroad bridge over the Gilson Wash collapsed which resulted in a train derailment. Considerable damage resulted, but no injuries were reported. EPISODE NARRATIVE: Moderate to heavy rainfall amounts were reported over two days after a plume of subtropical air moved into Arizona. The heaviest amounts occurred over the higher terrain generally east and north of Phoenix, resulting in flooded roads and other low-lying areas. About 3 inches fell at McDowell Mountain Park near Fountain Hills. The peak release from Granite Reef Dam into the Salt River was about 22,000 cfs.	Cutter			$50,000		$50,000	NCDC, April 2010
1/28/2008	Flooding / Flash Flooding	Law enforcement reported about 80 people had to be evacuated as flood waters from the Tonto Creek affected portions of Tonto Basin. A spotter in Tonto Basin reported part of a road being washed out. A power outage affected about 2,300 homes and was blamed on flooding when power poles near the creek were taken down. A small dike gave way which resulted in additional flooding of homes and roads. The Red Cross opened a shelter at the Tonto Basin Kiwanis Club and the Tonto Basin School. Gila County declared an emergency due to the flooding. EPISODE NARRATIVE: Moderate to heavy rainfall amounts were reported over two days after a plume of subtropical air moved into Arizona. The heaviest amounts occurred over the higher terrain generally east and north of Phoenix, resulting in flooded roads and other low-lying areas. About 3 inches fell at McDowell Mountain Park near Fountain Hills. The peak release from Granite Reef Dam into the Salt River was about 22,000 cfs.	Punkin Center			$100,000		$100,000	NCDC, April 2010
7/2/2009	Flooding / Flash Flooding	Several reports of heavy rain in the Globe and Miami area. One of the heaviest amounts was 1.30 inches in about 50 minutes which resulted in minior flooding. Pea size hail was also reported at the time of the heavy rainfall. One spotter in Miami reported a wall of water coming towards h shortly after 7 PM. EPISODE NARRATIVE: Thunderstorms moved slowly across the area, dumping about an inch of rain in less than an hour.	Globe			$10,000		$10,000	NCDC, April 2010
7/3/2009	Flooding / Flash Flooding	Very heavy rain caused streets to flood and at least one landslide on the hill near Miami. The official observer in Globe had .97 inches in less than an hour. Strong winds and small hail accompanied the storms. EPISODE NARRATIVE: Strong winds and heavy rain pounded parts of Gila County late in the afternoon.	Radium			$20,000		$20,000	NCDC, April 2010

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
1/22/2010	Flooding / Flash Flooding	Numerous reports of flooding in Southern Gila County. Residents were evacuated along the wash south of San Carlos. Residents near Tonto Bas were stranded for several days after flows of about 60,000 cfs were measured along the Tonto Creek. By Monday, January 25th, the flow was down to about 550 cfs. EPISODE NARRATIVE: Widespread rain, heavy at times, resulted in numerous flooded streets, and low spots. Strong winds associated with a line of thunderstorms caused considerable damage to property and some minor injuries. Phoenix established a new all-tir record low pressure of 29.20 inches on the 21st.	San Carlos			$200,000		$200,000	NCDC, April 2010
05/28/1980	Flooding / Flash Flooding	Cost the State $980.	White Mt. Reservation					$0	URS, October 2004
07/15/1954	Flooding / Flash Flooding	Flash flood at Miami piles up cars; damage estimated at $150,000. Nine days later (7/24/54) a major disaster occurred at Globe when a wall of water came down Pinal Creek severely damaging the business area. Sixty-five businesses and 126 families suffered loss. Damages estimated at $1,400,000 (approximate date- July 29, 1954- also found in Source FEMA, 2002)	Miami/Globe					$0	URS, October 2003
2/16/1891	Flooding / Flash Flooding	Buildings were washed away and the channel moved laterally in many places a distaces of at least 100 feet.	Globe					$0	FEMA, Dec. 2002
2/23/1891	Flooding / Flash Flooding	"Surpassed any previous flood. More buildings washed away and there was more channel migration." One life was lost	Globe	1				$0	FEMA, Dec. 2002
9/3/1983	Hazardous Materials Incident	FLASH FIRE RESULTING FROM WELDING OPERATION, NOT SURE IF THE FIRE AND PROPANE LEAK ARE RELATED. THERE IS AN INDICATION OF A PROPANE LEAK AT THE SITE. Hazardous Material Involved: PROPANE. Amount: UNKNOWN AMOUNT Remedial Action: TESTED TO DETERMINE THE SOURCE OF THE LEAK. The cost was $1,000.	PAYSON		1			$0	NRC, August 2004
6/14/1991	Hazardous Materials Incident	HIT A GAS POCKET WHILE DRILLING FOR WATER Hazardous Material Involved: HYDROGEN SULFIDE (OTH = CUBIC FEET). Amount: 1000 OTHER Remedial Action: CALLED IN WELL TEAM WHICH BLEW THE WELL CASING AND FILLED IT WITH CEMENT. It was necessary to evacuate 2,000 people during this incident.	GLOBE					$0	NRC, August 2004
1/24/1992	Hazardous Materials	HOUSEHOLD APPLIANCE/FIRE Hazardous Material Involved: NATURAL GAS. Amount: UNKNOWN AMOUNT Remedial Action: NONE FIRE IS UNDER INVESTIGATION	GLOBE		5			$0	NRC, August 2004
12/9/1994	Hazardous Materials	TANKER TRUCK//TRUCK OVERTURNED Hazardous Material Involved: SULFURIC ACID. Amount: 2500 GALLON(S) Remedia Action: SECURED RELEASE//NEUTRALIZED WITH LIME//MATERIAL STAYED ON SITE	CLAYPOOL		1			$0	NRC, August 2004
12/12/1999	Hazardous Materials Incident	TANKER TRUCK / TRUCK RAN OVER AN EMBANKMENT AND EXPLODED / CAUSE UNK TRUCK IS A HAZMAT CARRIER "CARGO IS DIESEL" Hazardous Material Involved: OIL: DIESEL. Amount: 7000 GALLON(S) Remedial Action: LEPC NOTIFIED WAS ON SCENE /FD STATE & LOCAL AUTH. ALL WERE ON SCENE ENVIRONMENTAL RESPONSE SERVICE DID CLEAN UP/DAMAGES OVER $50,000	5 mi S of PAYSON		1			$0	NRC, August 2004
4/20/2000	Hazardous Materials Incident	HOUSE EXPLOSION AT 732 DAN'S HIGHWAY FOR UNKNOWN REASONS. RESIDENCE WAS CUSTOMER OF CALLER, WHO'S COMPANY WILL BEGIN INVESTIGATING IN MORNING OF 21-APR-2000. Hazardous Material Involved: NATURAL GAS. Amount: UNKNOWN AMOUNT Remedial Action: FIRE EXTINGUISHED; INVESTIGATION UNDERWAY The total cost was $51,000.	STRAWBERRY					$0	NRC, August 2004
4/20/2000	Hazardous Materials Incident	HOUSE EXPLOSION FOR UNKNOWN REASONS. RESIDENCE WAS CUSTOMER OF CALLER, WHO'S COMPANY WILL BEGIN INVESTIGATING IN MORNING OF 21-APR-2000.	STRAWBERRY						NRC 2011, 526741
9/22/2000	Hazardous Materials Incident	THE CALLER IS REPORTING THAT THE MATERIAL WAS DUMPED ON THE GROUND THAT WAS STORED ON A FLATBED TRAILER.	PAYSON						NRC 2011, 543017
10/25/2000	Hazardous Materials Incident	THE MATERIAL RELEASED OUT THE HOLDING TANK DUE TO OVERFILLING.	CLAYPOOL						NRC 2011, 546278
11/27/2000	Hazardous Materials Incident	THE CALLER STATED THE RESPONSIBLE PARTY IS USING THE EMERGENCY BYPASS STACK DUE TO LOSS OF POWER.	CLAYPOOLE						NRC 2011, 549270
2/16/2001	Hazardous Materials Incident	100 GALLON OF ARSENIC ACID WAS RELEASED OUT OF A FOUR INCH PIPE LINE THAT RUNS FROM THE STRIPPER UNIT TO THE FILTER PLANT DUE TO AN UNKNOWN LEAK.	HAYDEN						NRC 2011, 557070
2/21/2001	Hazardous Materials Incident	WELD FAILURE ON INTERNAL TRANSFER LINE	HAYDEN						NRC 2011, 557505
3/10/2001	Hazardous Materials Incident	THE CALLER STATED THAT DUE TO A MECHANICAL FAILURE, A RAKE DRIVE AT THE FILTER THICKENER, SPILLED MATERIAL..	HAYDEN						NRC 2011, 559282
3/31/2001	Hazardous Materials Incident	THE MATERIAL RELEASED OUT OF THE THREE INCH PROCESS PIPE LINE DUE TO ELBOW FAILURE.	HAYDEN						NRC 2011, 561366
4/10/2001	Hazardous Materials Incident	THE MATERIAL WAS RELEASED FROM A FLANGE ON A ELBOW PIPELINE DUE TO A FAILED SEAL.	HAYDEN						NRC 2011, 562653
4/12/2001	Hazardous Materials Incident	THE CALLER REPORTS THAT A FURNACE BLDG WAS ENGULFED IN A HUGE PLUME OF GREY SMOKE.							NRC 2011, 562868
4/29/2001	Hazardous Materials Incident	GARAGE WITH AN APARTMENT UPSTAIRS EXPLODED / CALLER STATES: PROPANE COULD HAVE BEEN INVOLVED / EXACT CAUSE: UNKNOWN Hazardous Material Involved: PROPANE. Amount: UNKNOWN AMOUNT Remedial Action: TESTED AREA FOR GAS-NONE FOUND / SHUT OFF THE PROPANE TO THE AFFECTED AREA. The total cost of the incident was $50,000.	PAYSON			50000		$50,000	NRC, August 2004

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4/29/2001	Hazardous Materials Incident	GARAGE WITH AN APARTMENT UPSTAIRS EXPLODED / CALLER STATES:PROPANE COULD HAVE BEEN INVOLVED / EXACT CAUSE:UNKNOWN	PAYSON						NRC 2011, 564457
5/4/2001	Hazardous Materials Incident	THE MATERIAL WAS RELEASED FROM A TRENCH DUE TO BLOCKING IN THE TRENCH.	CLAYPOOL						NRC 2011, 564973
6/2/2001	Hazardous Materials Incident	WHILE TAKING A PORTABLE FUEL TANK DOWN THE RAMP TO PUT ON A BARGE TO FUEL A GENERATOR, IT FELL OFF THE FORK LIFT CAUSING THE TANK TO VENT SOME DIESEL FUEL	ROOSEVELT						NRC 2011, 568130
7/5/2001	Hazardous Materials Incident	THE MATERIAL WAS RELEASED FROM A GASOLINE PUMP DUE TO A DEFECTIVE NOZZLE.	GLOBE						NRC 2011, 571939
11/24/2001	Hazardous Materials Incident	DUE TO AN UNDETERMINED CAUSE A 93 % SULFURIC ACID SOLUTION RELEASED ONTO AN ASPHALT SURFACE FROM THE DOME LID GASKET ON A TRACTOR TRAILER TRUCK.	SUPERIOR						NRC 2011, 586857
2/28/2002	Hazardous Materials Incident	THE MATERIAL RELEASED OUT OF THE FOUR INCH BOND STRAND FIBER PIPE, CONNECTED TO THE STORAGE TANK RUNNING TO THE RAIL CAR LOAD OUT, DUE TO A FAILED ELBOW JOINT WHICH PARTED.	HAYDEN						NRC 2011, 595250
4/13/2002	Hazardous Materials Incident	BLOWDOWN FAILURE OF HAYDEN SMELTER.	HAYDEN						NRC 2011, 599528
6/25/2002	Hazardous Materials Incident	THE CALLER REPORTED A RELEASE OF MERCURY FROM WELL DURING PURGE THAT RELEASED MERCURY.	PAYSON						NRC 2011, 613274
7/28/2002	Hazardous Materials Incident	THE CALLER IS REPORTING MATERIAL RELEASED FROM A 6 INCH NATURAL GAS PIPELINE DUE TO IMPROPER MAINTENANCE.	HAYDEN						NRC 2011, 618110
10/15/2002	Hazardous Materials Incident	THE CALLER STATED THAT THE OWNER OF THE COMPANY HAS BEEN DUMPING USED OIL IN THE GARBAGE TRUCK AND TAKING IT TO THE COUNTY LANDFILL.	GLOBE						NRC 2011, 639823
12/30/2002	Hazardous Materials Incident	CALLER IS REPORTING MATERIAL RELEASED FROM AN INDUSTRIAL 12 INCH PIPELINE DUE TO A BREAK IN THE LINE.	MIAMI						NRC 2011, 632980
1/19/2003	Hazardous Materials Incident	A TANKER TRUCK OVERTURNED AND CAUSED A RELEASE OF MATERIAL.	PAYSON						NRC 2011, 634483
4/1/2003	Hazardous Materials Incident	CALLER STATED THAT A VEHICLE HAS HIT A NATURAL GAS METER, RELEASING NATURAL GAS UNDERGROUND AND INTO THE ATMOSPHERE.	SUPERIOR						NRC 2011, 641078
4/29/2003	Hazardous Materials Incident	A TRACTOR TRAILER TRUCK ROLLED OVER CAUSING THE SADDLE TANK TO RUPTURE AND SPILL DIESEL FUEL ONTO A SOIL AND PAVEMENT SURFACES.	PAYSON						NRC 2011, 643616
5/6/2003	Hazardous Materials Incident	THE CALLER IS REPORTING A TRANSPORT ACCIDENT. A TANKER TRUCK LOST CONTROL WHILE GOING DOWN A HILL AND OVERTURNED, CATCHING FIRE AND KILLING THE DRIVER. Hazardous Material Involved: GASOLINE: AUTOMOTIVE (UNLEADED). Amount: 8500 GALLON(S) Remedial Action: AZ DEQ HAS RESPONDED AND IS PROVIDING THE CLEANUP. MOST OF THE MATERIAL WAS CONSUMED IN THE FIRE.	PAYSON	1	2			$0	NRC, August 2004
5/6/2003	Hazardous Materials Incident	THE CALLER IS REPORTING A TRANSPORT ACCIDENT. A TANKER TRUCK LOST CONTROL WHILE GOING DOWN A HILL AND OVERTURNED, CATCHING FIRE AND KILLING THE DRIVER.	PAYSON	1					NRC 2011, 644231
7/1/2003	Hazardous Materials Incident	REPORTING MATERIAL BEING RELEASED FROM AN EMERGENCY FURNANCE STACK AT A COPPER MINE DUE TO UNKNOWN CAUSES.	MIAMI						NRC 2011, 649663
9/4/2003	Hazardous Materials Incident	THE CALLER STATES THAT A MINING FACILITY IS RELEASING HEAVY METAL MATERIAL INTO THE ATMOSPHERE IN HER NEIGHBORHOOD FROM THEIR FURNACE STACK.	MIAMI						NRC 2011, 655973
9/22/2003	Hazardous Materials Incident	THE MATERIAL IS RELEASING FROM THE MAT FUME STACK	CLAYPOOL						NRC 2011, 700447
9/24/2003	Hazardous Materials Incident	THE SUSPECTED RESPONSIBLE PARTY IS RELEASING HAZARDOUS WASTE AND HEAVY METALS FROM THE FUME STACK ON A COPPER MINE.	MIAMI						NRC 2011, 700690

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
10/16/2003	Hazardous Materials Incident	CALLER STATED THAT THERE ARE SECONDARY MATERIALS IN A CONCRETE BUNKER WHICH LEAKED OUT, RELEASING ONTO THE GROUND AND INTO A PIT (CONTAINMENT AREA).	HAYDEN						NRC 2011, 702824
11/20/2003	Hazardous Materials Incident	EXCAVATION CONTRACTOR DAMAGED PADMOUNT ELECTRICAL TRANSFORMER AND BURIED CODUIT. TRANSFORMER RELEASED 100 GALLONS OF NON-PCB MINERAL OIL. TRANSFORMER D.O.M. 1998, CERTIFIED NON-PCB BY MANUFACTURER.	PAYSON						NRC 2011, 705876
11/20/2003	Hazardous Materials Incident	MATERIAL RELEASED FROM A STORAGE TANK (STONE CONE SETTLER OVERFLOW) DUE TO AN OPEN DOOR WHERE CLEANING MAINTENANCE WAS BEING DONE.	HAYDEN						NRC 2011, 705928
11/29/2004	Hazardous Materials Incident	A FIRE OCCURRED IN A METAL CHEMICAL FACILITY CAUSING A RELEASE OF HEAVY METALS TO THE ATMOSPHERE. THE CAUSE OF THE FIRE IS UNKNOWN AT THIS TIME.	GLOBE						NRC 2011, 742704
6/20/2005	Hazardous Materials Incident	CALLER STATED THERE WAS A RELEASE OF MATERIALS FROM A 30 INCH PIPELINE DUE TO A HOLE.	HAYDEN PARK						NRC 2011, 762863
6/20/2005	Hazardous Materials Incident	CALLER STATED THERE WAS A RELEASE OF MATERIALS FROM A 30 INCH PIPELINE DUE TO A HOLE.	HAYDEN PARK						NRC 2011, 762863
6/20/2005	Hazardous Materials Incident	REPORTING A MATERIAL RELEASE DISCOVERY FROM AN UNKNOWN SOURCE INVOLVING "CHEMICALS RUNNING DOWN THE STREET AND PEOPLE ARE BEING TOLD TO GET OUT OF THEIR HOUSES".	HAYDEN						NRC 2011, 762840
6/20/2005	Hazardous Materials Incident	REPORTING A MATERIAL RELEASE DISCOVERY FROM AN UNKNOWN SOURCE INVOLVING "CHEMICALS RUNNING DOWN THE STREET AND PEOPLE ARE BEING TOLD TO GET OUT OF THEIR HOUSES".	HAYDEN						NRC 2011, 762840
6/22/2005	Hazardous Materials Incident	THE CALLER STATED THAT A WELDING MACHINE WAS BEING FILLED. THE EMPLOYEE LEFT THE NOZZLE UNATTENDED AND THE MACHINE WAS OVERFILLED.	ROOSEVELT LAKE						NRC 2011, 763182
7/29/2005	Hazardous Materials Incident	TANKER TRUCK M306 WAS GOING NORTHBOUND ON STATE ROAD 77 AT MILE MARKER 147 WENT OFF THE ROAD DUE TO UNKNOWN CAUSES AND CAUGHT ON FIRE. DRIVER OF THE TRUCK WAS KILLED. MOST OF THE DIESEL RELEASED WAS BURNT IN THE FIRE.	GLOBE						NRC 2011, 767280
8/9/2005	Hazardous Materials Incident	NON PCB MINERAL OIL SPILLED ONTO THE SOIL AND POSSIBLY INTO AN UNNAMED WASH FROM A FAILED PAD MOUNTED TRANSFORMER.	STAR VALLEY						NRC 2011, 768511
8/9/2005	Hazardous Materials Incident	NON PCB MINERAL OIL SPILLED ONTO THE SOIL AND POSSIBLY INTO AN UNNAMED WASH FROM A FAILED PAD MOUNTED TRANSFORMER.	STAR VALLEY						NRC 2011, 768511
10/22/2005	Hazardous Materials Incident	TRACTOR TRAILER RAN OFF THE ROAD DUE TO UNKNOWN CAUSES RESULTING IN A RELEASE OF DIESEL FUEL INTO DRY WASH FROM THE SADDLE TANK.	PAYSON						NRC 2011, 777189
1/14/2006	Hazardous Materials Incident	AN OPERATOR LEFT A VALVE OPEN ON A CSO TANK CAUSING A RELEASE OF 4000 GALLONS OF PROCESS SOLUTION INTO A PRIMARY AND SECONDARY CONTAINMENT AND 4.09 POUNDS OF ARSENIC CONTAINED IN THE SOLUTION.	HAYDEN						NRC 2011, 785200
2/24/2006	Hazardous Materials Incident	SULFURIC ACID SPILLED ONTO THE SOIL FROM AN OVERFILLED STORAGE TANK.	HAYDEN						NRC 2011, 789113
3/3/2006	Hazardous Materials Incident	LEAD SPILLED ONTO THE SOIL FROM A LEAKING VACUUM TRUCK.	HAYDEN						NRC 2011, 789822
3/12/2006	Hazardous Materials Incident	DUE TO A HEAVY SNOW STORM, A UTILITY POLE WAS KNOCKED OVER. THE POLE HELD 3 TRANSFORMERS. ONE OF THE TRANSFORMERS BROKE CAUSING A RELEASE OF MATERIALS ONTO THE GROUND. RAIN MOVED THE MATERIAL TO A WATER-FILLED WASH.	GLOBE						NRC 2011, 790650
6/21/2006	Hazardous Materials Incident	Diesel tanker crashed near Kohl's Ranch at MP 267 on SR260	PAYSON						Town of Payson, 2011
6/21/2006	Hazardous Materials Incident	A TANKER TRUCK WAS INVOLVED IN A TRAFFIC ACCIDENT CAUSING THE TRUCK TO OVERTURN AND SPILL DIESEL FUEL ONTO THE PAVEMENT AND THE SOIL.	PAYSON						NRC 2011, 801524
8/5/2006	Hazardous Materials Incident	THE CALLER STATED THAT THERE IS SOME GASOLINE IN THE SEWER TREATMENT PLANT'S HOLDING TANK AFTER SOMEONE PUMPED OUT ITS VESSEL.	ROOSEVELT						NRC 2011, 807766
8/17/2006	Hazardous Materials Incident	REPORTING A RELEASE OF MATERIALS ONTO THE GROUND AND INTO SECONDARY CONTAINMENT FROM A STORAGE TANK DUE TO EQUIPMENT FAILURE.	HAYDEN						NRC 2011, 808197
10/15/2006	Hazardous Materials Incident	THE CALLER IS REPORTING THE DISCOVERY OF A LARGE CLOUD OF SULFURUR TRIOXIDE NEAR HER NEIGHBORHOOD COMING FROM A NEAR BY COPPER MINE.	MIAMI						NRC 2011, 814731
10/16/2006	Hazardous Materials Incident	CALLER STATED THAT THERE ARE EMISSIONS COMING FROM THE ACID PLANT TAIL STACK.	MIAMI						NRC 2011, 814877

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1/12/2007	Hazardous Materials Incident	THE CALLER IS REPORTING A RELEASE OF WHAT SEEMS TO BE HEAVY METALS TO THE ATMOSPHERE COMING FROM AN EMERGENCY BI-PASS STACK. THE CALLER DID NOT KNOW THE CAUSE OF THE RELEASE.	MIAMI						NRC 2011, 823447
1/20/2007	Hazardous Materials Incident	CALLER REPORTS THE ISA VESSEL TAIL STACK IS RELEASING RECYCLING MATERIALS AND HEAVY METALS. CAUSE FOR THE RELEASE IS DUE TO THE PLANT BYPASSING THE ACID PLANT. THE PLANT MIXES HAZARDOUS WASTE WITH FEED MATERIAL. CALLER STATES THERE IS A LARGE PLUME OVER THE CITY.	MIAMI						NRC 2011, 824172
2/22/2007	Hazardous Materials Incident	THE CALLER STATES THAT WHILE SALVAGING A RAIL CAR THAT IS USED STRICTLY IN THE COPPER SMELTER FACILITY, RESIDUE IN THE TANK LEAKED ONTO THE GROUND.	HAYDEN						NRC 2011, 827256
4/18/2007	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE OF LED SULFATE IN AN ACID PLANT SOLID FROM A WASH RACK SUMP AND OR A VACUUM TRUCK. THE CAUSE OF THE SPILL IS NOT CERTAIN AT THIS TIME. THE CALLER STATED THAT IT RELEASED TO THE SOIL, DOWN A DIRT ROAD, THEN INTO ANOTHER ENGINEERED LINED POND. CALLER STATED THAT THE RELEASE DID NOT LEAVE THE SITE.	CLAYPOOLE						NRC 2011, 832690
4/18/2007	Hazardous Materials Incident	ARSENIC HAS RELEASED ONTO THE SOIL FROM A FURNACE VENT DURING HIGH WINDS.	HAYDEN						NRC 2011, 832704
7/8/2007	Hazardous Materials Incident	CALLER IS REPORTING A DISCHARGE OF SULFURIC ACID ONTO THE GROUND. WHILE IN THE PROCESS OF LOADING A RAILCAR THE SPILL OCCURRED. THE CAUSE IS UNKNOWN WHY THE ACID SPILLED.	HAYDEN						NRC 2011, 841357
9/23/2007	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE OF SULFURIC ACID FROM A 8" SULFURIC ACID LINE DUE TO A BREAK IN THE LINE.	CLAYPOOLE						NRC 2011, 849665
9/23/2007	Hazardous Materials Incident	CALLER IS REPORTING THAT A TAILINGS LINE, CARRYING A MIXTURE OF SEEPAGE WATER FROM THE TAILINGS CATCHMENT POND AND RAIN WATER, BROKE AND RELEASED 45,000 GALLONS OF PRODUCT ONTO THE GROUND. THE WATER MAY CONTAIN TOTAL SUSPENDED SOLIDS AND PRIORITY POLLUTANT METALS (COPPER MOST LIKELY) BUT THEY HIGHLY DOUBT THAT IT WILL EXCEED AN RQ. AN UNKNOWN AMOUNT OF THE WATER REACHED A DRY CREEK BED.	MIAMI						NRC 2011, 849770
9/23/2007	Hazardous Materials Incident	THE CALLER REPORTED THAT A TRACTOR TRAILER TRANSPORTING 8500 GALLONS OF DIESEL FUEL OVERTURNED DUE TO THE VEHICLE HITTING THE CENTER DIVIDER ON THE ROAD. THE VEHICLE CAUGHT ON FIRE AND RELEASED MATERIAL INTO THE ENVIRONMENT. DRIVER OF THE VEHICLE WAS FATALLY WOUNDED.	PAYSON						NRC 2011, 849709
10/26/2007	Hazardous Materials Incident	THE CALLER IS REPORTING A RELEASE OF MATERIALS FROM A UNDERGROUND MINE DUE TO EQUIPMENT FAILURE.	MIAMI						NRC 2011, 852801
1/28/2008	Hazardous Materials Incident	PROPANE HAS RELEASED INTO THE SOIL FROM A CRACK IN A 1.25 INCH UNDERGROUND PIPELINE.	PAYSON						NRC 2011, 887874
1/28/2008	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE OF MAGNESIUM OXIDE POWDER AND DIESEL FUEL FROM A TRAIN DUE TO A TRAIN DERAILMENT. THE TRAIN DERAILMENT WAS CAUSED DUE TO A FLOOD IN THE AREA WHICH WASHED OUT THE EMBANKMENT AREA WHERE THE TRAIN TIES INTO THE BRIDGE. THE DISCHARGE OF DIESEL FROM A LOCOMOTIVE WHOSE TANKS HAD PUNCTURING INCLUDING ONE WHICH TOTALLY RIPPED OFF WENT INTO THE GILSON WASH. THE MAGNESIUM OXIDE POWDER RELEASED FROM A RAIL CAR. CALLER STATES THE MAGNESIUM OXIDE DID NOT GO INTO THE WATER BUT ONTO THE GROUND. WHEN THE TRAIN DERAILED THREE LOCOMOTIVES AND PARTS OF THE BRIDGE COMPLETELY BURNED DUE TO THE FIRE. THERE WERE NO INJURIES.	SAN CARLOS INDIAN RESERVATION						NRC 2011, 860962
1/28/2008	Hazardous Materials Incident	CALLER IS REPORTING THAT A FREIGHT TRAIN DERAILED SOMETIME DURING THE NIGHT OF 1/27/08, DUE TO A TRUSS THAT DESTABLIZED CAUSING A ENGINE AND UNKNOWN AMOUNT OF CARS TO GO INTO TO GILSON WASH. TRAIN WAS CARRYING MAGNESIUM BASED PAINT AND THERE WAS ALSO ABOUT 2000 GALLONS OF DIESEL FUEL ON BOARD THE TRAIN AT THE TIME OF THE INCIDENT. CALLER DID NOT KNOW IF ANY MATERIAL HAS RELEASED AT THIS TIME.	CUTTER						NRC 2011, 860848
2/9/2008	Hazardous Materials Incident	CALLER IS REPORTING A DISCHARGE OF DIESEL FROM THE TRUCK'S SADDLE TANK DUE TO A HEAD ON COLLISION FROM ANOTHER VEHICLE THAT RAN INTO THE TRUCK CAUSING A DISCHARGE OF DIESEL ONTO THE GROUND AND INTO A ROCK EMBANKMENT AND DRAINAGE DITCH. IT IS UNKNOWN IF THE DRAINAGE DITCH LEADS TO A BODY OF WATER BECAUSE THE CALLER STATES THAT IT WAS VERY DARK AT THE TIME OF THE ACCIDENT. THE DRIVER OF THE VEHICLE DIED IN THIS ACCIDENT.	SUPERIOR	1					NRC 2011, 862017
5/1/2008	Hazardous Materials Incident	THE CALLER IS REPORTING A RELEASE OF MATERIAL FROM A BROKEN LINE ONTO THE GROUND DUE TO THE LINE SPLITTING.	MIAMI						NRC 2011, 869619
5/7/2008	Hazardous Materials Incident	CALLER STATED DUE TO A LOOSE FLANGE THERE WAS A RELEASE OF MATERIALS AT THE FACILITY FROM A 12" PIPELINE. THIS RESULTED IN THE SPILL OF SULFURIC ACID INTO CONTAINMENT.	CLAYPOOLE						NRC 2011, 870163
6/29/2008	Hazardous Materials Incident	CALLER IS REPORTING THAT BETWEEN 80-100 GALLONS OF SULFURIC ACID RELEASED FROM A BULK TANK ON A TRACTOR TRAILER DUE TO A LOOSE FILL CAP. AS A RESULT THE MATERIAL RELEASED ONTO THE PAVEMENT AND SOIL.	GLOBE						NRC 2011, 875733
7/25/2008	Hazardous Materials Incident	DURING FLASH FLOODING RESIDUAL CRUDE OIL AND POSSIBLY LAMPBLACK (A TARR LIKE SUBSTANCE) HAS RELEASED TO THE PINAL CREEK FROM THE SOIL LOCATED AT A REMEDIATION SITE.	GLOBE						NRC 2011, 878507

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
7/27/2008	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE OF LEAD COMPOUND FROM ITS CONTAINMENT ON THE FACILITY DUE TO EQUIPMENT FAILURE OF THE CONTAINMENT. CALLER STATES THAT GREATER THAN TEN POUNDS HAS RELEASED. THE MATERIAL IS FULLY CONTAINED ON THE FACILITY.	HAYDEN						NRC 2011, 878596
8/14/2008	Hazardous Materials Incident	CALLER IS REPORTING THAT DIESEL DISCHARGED FROM A 5 GALLON CONTAINER DUE TO UNKNOWN CAUSES. AS A RESULT THE MATERIAL RELEASED INTO A NEAR BY STORM DRAIN.	GLOBE						NRC 2011, 880611
8/18/2008	Hazardous Materials Incident	A PROCESS LINE RUPTURED, RESULTING IN A DISCHARGE OF A PRODUCT NAMED "STRIPPER BLOWDOWN".	HAYDEN						NRC 2011, 880961
11/15/2008	Hazardous Materials Incident	A DITCH USED TO CONTAIN SEDIMENT DEBRIS AT A CONSTRUCTION SITE FAILED CAUSING THIS DEBRIS TO RUN INTO THE FOSSIL CREEK. THERE WERE NO HAZARDOUS MATERIALS INVOLVED, BUT THIS SEDIMENT DEBRIS HAS THE POTENTIAL TO CAUSE A SIGNIFICANT FISH KILL.	CHILDS						NRC 2011, 890129
12/16/2008	Hazardous Materials Incident	CALLER IS REPORTING A POTENTIAL RELEASE OF PROPANE DUE TO A HOUSE EXPLOSION. CALLER STATES THAT IT DOES NOT APPEAR THAT THEIR WAS A FIRE. THE HOUSE WAS STRUCTURALLY DAMAGED. THERE WERE NO REPORTED INJURIES IN THIS INCIDENT. THE HOUSE WAS CONNECTED TO AN UNDERGROUND PROPANE LINE.	PAYSON						NRC 2011, 892677
1/22/2009	Hazardous Materials Incident	CALLER IS REPORTING A POSSIBLE EXCEEDANCE OF THE REPORTABLE QUANTITY AMOUNT OF NITROGEN DIOXIDE. WHILE REMOVING A SECTION OF DUCTING DURING ROUTINE MAINTENANCE ON A GAS HANDLING SYSTEM OF THE ACID PLANT. THE RESIDUE ON THE INSIDE OF THE DUCTING CAME IN CONTACT WITH RAINWATER WHICH CREATED A REACTION OF A CHEMICAL WHICH CONTAINED NITROGEN DIOXIDE.	CLAYPOOLE						NRC 2011, 895570
2/27/2009	Hazardous Materials Incident	A PICK UP TRUCK RAN INTO A GAS RISER CAUSING A FIRE AND A RELEASE OF PROPANE. THE DRIVER OF THE PICK UP TRUCK WAS SENT TO THE HOSPITAL DUE TO THE ACCIDENT NOT THE MATERIAL RELEASED.	STAR VALLEY						NRC 2011, 898643
3/7/2009	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE OF MATERIAL FROM AN EMERGENCY BYPASS STACK AT A MINING FACILITY.	CLAYPOOL						NRC 2011, 899302
4/28/2009	Hazardous Materials Incident	THE CALLER IS REPORTING THE DISCOVERY OF A SMELTING PLUME FROM THE FURNACE OF THE REPORTING PARTY'S MINE. THERE IS NO WIND AND THE PLUME IS VERY LARGE INDICATING THAT IT HAS BEEN ONGOING FOR SOME TIME.	CLAYPOOL						NRC 2011, 903965
5/22/2009	Hazardous Materials Incident	THE CALLER IS REPORTING THE RELEASE OF MATERIALS INTO THE ATMOSPHERE FROM THE FACILITY DUE TO UNKNOWN CAUSES.	MIAMI						NRC 2011, 906308
7/9/2009	Hazardous Materials Incident	CALLER IS REPORTING A RELEASE THAT IS OF AN UKNOWN MATERIAL FROM A COPPER MINE.	MIAMI						NRC 2011, 911131
7/14/2009	Hazardous Materials Incident	CALLER IS REPORTING A DISCHARGE OF GASOLINE FROM A FUELING STATION IN AN ABOVEGROUND STORAGE TANK DUE TO A CONTAINMENT SYSTEM FAILURE AT THE PUMP SITE. CALLER WAS NOTIFIED OF THE INCIDENT ON 14-JUL-2009 AT 1300 PDT. CALLER ALSO STATES THE DISCHARGE MAY HAVE BEEN GOING ON FOR SEVERAL DAYS.	PAYSON						NRC 2011, 911792
7/14/2009	Hazardous Materials Incident	CALLER STATED THAT THIS IS AN UPDATE TO REPORT #911792 MARKED AS A SPILL OF GASOLINE. THE MATERIAL THAT SPILLED WAS ACTUALLY DIESEL FUEL. THE DIESEL WAS DISCOVERED TO BE LEAKING FROM THE TANK DUE TO AN EQUIPMENT FAILURE.	PAYSON						NRC 2011, 911889
9/17/2009	Hazardous Materials Incident	CALLER STATED THAT MINERAL ORE TAILINGS CONTAINING LEAD SULFIDE WERE DISCOVERED DURING A NORMAL ROUND.	HAYDEN						NRC 2011, 918089
1/22/2010	Hazardous Materials Incident	CALLER STATED THAT THERE WAS A RELEASE OF AN UNKNOWN AMOUNT OF MINING TAILINGS ONTO LAND, WITH A POTENTIAL RELEASE TO WATER. THE CAUSE WAS DUE TO HEAVY RAINS. THE MATERIAL IS CONTAINED IN A TAILINGS DAM.	MIAMI						NRC 2011, 929371
1/27/2010	Hazardous Materials Incident	///UPDATE TO REPORT # 929371/// CALLER IS REPORTING THAT THERE WAS A RELEASE OF 5362 TONS OF MINE TAILINGS TO SOIL AND INTO PINTO CREEK. CALLER STATED THE CAUSE OF THE RELEASE WAS AN EXCESSIVE STORM. THE MATERIAL CONTAINED WITHIN THE MINE TAILINGS ARE: ARSENIC 214 POUNDS AND LEAD 11 POUNDS.	MIAMI						NRC 2011, 929841
3/31/2010	Hazardous Materials Incident	CALLER STATES THE SUSPECTED RESPONSIBLE PARTY INTENTIONALLY DUMPS MATERIAL ONTO THE GROUND FROM EITHER BARRELS OR BUCKETS AND THEY COVER IT UP WITH A SLAB OF CEMENT IN THE BACK OF THEIR PROPERTY. CALLER ALSO STATES THIS HAS BEEN ONGOING FOR ABOUT TWO YEARS AND THEY ARE STILL DOING IT.	GLOBE						NRC 2011, 935693
4/14/2010	Hazardous Materials Incident	CALLER IS REPORTING THAT SO2 IS RELEASING FROM THE PLANTS TAIL STACK DUE TO UNKNOWN CAUSES.	MIAMI						NRC 2011, 937089
4/15/2010	Hazardous Materials Incident	THE CALLER IS REPORTING THAT A COMMERCIAL MOTOR VEHICLE THAT WAS TRANSPORTING HOT OIL HAD A MECHANICAL FAILURE, THIS RESULTED IN A FIRE. THERE WERE 10 GALLONS OF TRANSMISSION FLUID AND MOTOR OIL DISCHARGED OF WHICH 6 GALLONS WENT INTO A STORM DRAIN.	PAYSON						NRC 2011, 937136
5/29/2010	Hazardous Materials Incident	CALLER IS REPORTING A BROKEN LINE ON PUMP THAT LEADS TO A STORAGE TANK ON THE FACILITY CAUSING A RELEASE OF MATERIAL TO THE SOIL.	HAYDEN						NRC 2011, 942155

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
11/26/2010	Hazardous Materials Incident	THE CALLER IS REPORTING THAT THEY HAD A VALVE FAIL AND 3000 GALLONS OF SULFURIC ACID WAS RELEASED OUTSIDE OF CONTAINMENT. ALL OF THE MATERIAL SPILLED TO SOIL. THERE WERE NO WATERWAYS AFFECTED. THEY TRENCHED THE SOIL AND REROUTED THE MATERIAL BACK INTO CONTAINMENT. THEY HAVE FLUSHED THE AREA WITH WATER. THEY PLAN ON EVACUATING ALL OF THE CONTAMINATED SOIL ON MONDAY.	MIAMI						NRC 2011, 960829
01/16/1980	Hazardous Materials Incident	An incident cost for State to respond was $193,169.						$0	URS, October 2003
05/11/1983	Hazardous Materials Incident	Presence of asbestos tailing state of emergency oat Mountain View Monile Home Estates. The State costs to respond to this incident was $298,000.	Globe					$0	URS, October 2004
11/00/2008	Hazardous Materials Incident	House destroyed by propane explosion. Leak from propane main line in adjacent street.				$150,000		$150,000	Town of Payson, 2011
2000-2004	Hazardous Materials Incident	Various hazardous material incidents around Payson in the past five years. 77 incidents cost the City $68,812 to respond.	PAYSON					$68,812	Payson, 2004
05/24/1977	Infestation	Grasshoppers						$0	URS, October 2003
06/06/1989	Infestation	Grasshopper Infestation EUZ9JL. The County and State costs to respond was $18,053.						$0	URS, October 2004 and Gila County, 2004
7/25/2008	Lightning	House fire started by lightning strike at 714 N. Foothils East, Payson, Arizona	PAYSON			$500,000		$500,000	Town of Payson, 2011
7/22/2010	Lightning	House fire started by lightning strike at 2700 E. Grapevine, Payson, Arizona	PAYSON			$750,000		$750,000	Town of Payson, 2011
6/13/1955	Severe Wind	3 in. diameter hail.						$0	NCDC, August 2004
8/4/1961	Severe Wind	Wind Measured at 54 knots						$0	NCDC, August 2004
8/4/1961	Severe Wind	Wind Measured at 62 knots						$0	NCDC, August 2004
8/18/1961	Severe Wind	Wind Measured at 51 knots						$0	NCDC, August 2004
8/23/1961	Severe Wind	1.5 in. diameter hail.						$0	NCDC, August 2004
8/9/1966	Severe Wind	On August 9, 1966 at 2:30 pm a small tornado passed through trailer courts in Ice House Canyon, south of Globe, Gila County, causing 9 injuries. Fujita Tornado Scale F1 (73-112mph/ 63-97 kts.) The total cost was $25,000.			9			$0	NCDC, August 2004
8/3/1968	Severe Wind							$0	NCDC, August 2004
8/15/1970	Severe Wind	1 in. diameter hail.						$0	NCDC, August 2004
8/15/1970	Severe Wind							$0	NCDC, August 2004
7/25/1971	Severe Wind							$0	NCDC, August 2004
9/17/1971	Severe Wind	2.5 in. diameter hail.						$0	NCDC, August 2004
10/6/1972	Severe Wind	Wind Measured at 50 knots						$0	NCDC, August 2004
7/22/1976	Severe Wind							$0	NCDC, August 2004
7/28/1976	Severe Wind	1.75 in. diameter hail.						$0	NCDC, August 2004
8/24/1980	Severe Wind	Wind Measured at 52 knots						$0	NCDC, August 2004
5/1/1981	Severe Wind	Wind Measured at 87 knots						$0	NCDC, August 2004

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
10/2/1984	Severe Wind	2.5 in. diameter hail.						$0	NCDC, August 2004
6/23/1986	Severe Wind							$0	NCDC, August 2004
10/10/1986	Severe Wind	1.5 in. diameter hail.						$0	NCDC, August 2004
8/18/1988	Severe Wind							$0	NCDC, August 2004
7/9/1989	Severe Wind							$0	NCDC, August 2004
1/2/1990	Severe Wind							$0	NCDC, August 2004
6/26/1990	Severe Wind	6 fatalities.		6				$0	NCDC, August 2004
5/11/1994	Severe Wind	Half-inch diameter hail accumulated to a depth of four to six inches on State Route 88 during a thunderstorm. 7 mi. NW of Globe						$0	NCDC, August 2004
7/28/1994	Severe Wind	20 mi. E of Payson. 0.75 in. diameter hail.						$0	NCDC, August 2004
2/23/1995	Severe Wind	10 mi. SW of Payson						$0	NCDC, August 2004
8/30/1995	Severe Wind	A tree and some power lines were blown down. The storm also produced pea-sized hail. Wind Measured at 60 knots	Globe					$0	NCDC, August 2004
6/30/1996	Severe Wind	Large dust devil destroyed an aluminum shed.						$0	NCDC, August 2004
7/14/1996	Severe Wind	Straight-line winds damaged a floating wet dock and sank several boats in the Roosevelt Lake area. Wind gust estimated from damage. Wind Measured at 52 knots	ROOSEVELT					$0	NCDC, August 2004
7/14/1996	Severe Wind	A Gila County Deputy Sheriff witnessed a small tornado which remained on the ground for about 5 to 10 seconds before lifting back off the ground. The tornado moved across the ground about 100 feet. It went through the Alhambra Mobile Home Park and struck a mobile home, lifted it a couple feet off the ground, and then dropped it. The thunderstorm which produced the tornado caused straight-line wind damage, including damage to trees, power lines, and shingled roofs. Damage was confirmed by a NWS survey team. 4.5 mi. SE of GLOBE. Fujita Tornado Scale F1 (73-112mph/ 63-97 kts.)						$0	NCDC, August 2004
9/3/1996	Severe Wind	Beginning Lat, Long (34.38, 111.45) Ending Lat, Long (34.4, 111.52) 1.5 in. diameter hail.	PINE					$0	NCDC, August 2004
9/13/1996	Severe Wind	Beginning Lat, Long (34.38, 111.45) Ending Lat, Long (34.4, 111.52) 1.75 in. diameter hail.	PINE					$0	NCDC, August 2004
8/4/1997	Severe Wind	Strong thunderstorm winds downed several telephone poles in Strawberry. Wind Measured at 50 knots. The costs were $1,000.	STRAWBERRY					$0	NCDC, August 2004
8/4/1997	Severe Wind	Strong thunderstorm winds knocked out phone service. Wind Measured at 50 knots	PAYSON					$0	NCDC, August 2004
8/14/1997	Severe Wind	Nickel size hail (0.88 in.) reported by a spotter near the community of Christopher Creek. 27 mi. ENE of PAYSON 0.88 in. diameter hail.						$0	NCDC, August 2004
9/8/1997	Severe Wind	Beginning Lat, Long (34.38, 111.27) Ending Lat, Long (34.48, 111.33) 10 mi. E of PINE. 0.75 in. diameter hail.						$0	NCDC, August 2004
9/12/1997	Severe Wind	Spotter reported high winds in Claypool. 3 mi. W of GLOBE Wind Measured at 58 knots						$0	NCDC, August 2004
9/12/1997	Severe Wind	Two spotters reported large hail. 1 in. diameter hail.	GLOBE					$0	NCDC, August 2004
9/13/1997	Severe Wind	One adult male was seriously injured when struck by lightning. 15 mi. E of PAYSON	15 miles SE of Payson		1			$0	NCDC, August 2004
7/17/1998	Severe Wind	Wind Measured at 61 knots	ROOSEVELT					$0	NCDC, August 2004
8/6/1998	Severe Wind	A weather spotter reported one inch diameter hail at Tonto Village.	TONTO BASIN					$0	NCDC, August 2004
8/6/1998	Severe Wind	Large hail reported at Top of The World, along US 60. Up to 1.10 inches of rain in just 20 minutes. Several tree limbs broken off. 15 mi. W of GLOBE. 0.75 in. diameter hail.						$0	NCDC, August 2004
8/7/1998	Severe Wind	Strong winds blew down at least one antenna. 2 mi. W of GLOBE. Wind Measured at 50 knots. The recovery costs were $2,000.				2000		$2,000	NCDC, August 2004
8/15/1998	Severe Wind	1 mi. WNW of ROOSEVELT. 0.75 in. diameter hail.	ROOSEVELT					$0	NCDC, August 2004
8/17/1998	Severe Wind	0.75 in. diameter hail.	ROOSEVELT					$0	NCDC, August 2004
6/17/1999	Severe Wind	Large hail reported along route 70 east of Globe. 5 mi. E of GLOBE. 0.75 in. diameter hail.						$0	NCDC, August 2004

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
7/5/1999	Severe Wind	Lightning started a house fire on East Flowing Springs Road. The home burned to the ground. 10 mi. N of PAYSON . The total cost was $120,000.				120000		$120,000	NCDC, August 2004
7/22/1999	Severe Wind	Power lines and power poles down in Miami. Wind Measured at 60 knots	MIAMI					$0	NCDC, August 2004
7/27/1999	Severe Wind	Man suffered minor injuries from a lightning bolt.	ROOSEVELT		1			$0	NCDC, August 2004
7/27/1999	Severe Wind	Dime sized hail, very high winds and torrential downpours hit this area. Numerous reports of damage and power outages. Most damage was in t Claypool-Lower Miami area., and to the north of Globe. The total recovery cost was $100,000.	GLOBE			100000		$100,000	NCDC, August 2004
9/11/1999	Severe Wind	Numerous reports of a long lived funnel cloud south of Payson. A picture of the classic shaped funnel cloud made the front page of the local Payson paper. 5 mi. S of PAYSON						$0	NCDC, August 2004
8/6/2000	Severe Wind	Large hail was reported from a lookout tower. Strong winds from nearby thunderstorms moved through San Carlos at about the same time. 15 mi. NE of SAN CARLOS. 1.75 in. diameter hail.						$0	NCDC, August 2004
8/7/2000	Severe Wind	Public sighting of funnel cloud in Globe.	GLOBE					$0	NCDC, August 2004
8/12/2000	Severe Wind	Three hikers were hit by lightning 10 miles north of Payson. One died and the other two were injured.M66OU	10 mi. N of Payson	1	2			$0	NCDC, August 2004
8/13/2000	Severe Wind	Reported by firefighters at the "Peak Fire" near Signal Peak. 8 mi. S of GLOBE 0.75 in. diameter hail.						$0	NCDC, August 2004
7/3/2001	Severe Wind	A thunderstorm moved through Young with wind between 50 and 60 MPH. The wind blew lawn chairs around, knocked down a 40 meter antenna, blew off the roof of a house trailer, and two other buildings sustained roof damage. Wind Measured at 50 knots	YOUNG					$0	NCDC, August 2004
7/5/2001	Severe Wind	The Payson Ranger Station reported 0.75 to 1.00 inch hail at 410 PM. There were also reports of downed trees along Highway 87 near Payson. in. diameter hail.	PAYSON					$0	NCDC, August 2004
8/10/2001	Severe Wind	Three quarter inch diameter hail was reported in Jakes Corner. Thunderstorm wind knocked over a wooden fence. 0.75 in. diameter hail.	JAKES CORNER					$0	NCDC, August 2004
9/14/2001	Severe Wind	Nickel size hail (0.88 inch diameter) fell in Christopher Creek. 0.88 in. diameter hail.	CENTRAL PORTION					$0	NCDC, August 2004
10/3/2001	Severe Wind	Three quarter inch hail was reported in Payson.. 0.75 in. diameter hail.	PAYSON					$0	NCDC, August 2004
10/6/2001	Severe Wind	0.75 in. diameter hail.	GLOBE					$0	NCDC, August 2004
8/16/2002	Severe Wind	Lightning caused a house fire in Globe.	GLOBE					$0	NCDC, August 2004
8/28/2002	Severe Wind	A spotter in Roosevelt reported 3/4 inch hail. 0.75 in. diameter hail.	ROOSEVELT					$0	NCDC, August 2004
8/28/2002	Severe Wind	One inch hail covered the ground in the town of Strawberry. 1 in. diameter hail.	STRAWBERRY					$0	NCDC, August 2004
8/29/2002	Severe Wind	Lightning struck several homes in Globe. One of the homes caught fire.	GLOBE					$0	NCDC, August 2004
9/10/2002	Severe Wind	A spotter in Pine reported 3/4 inch hail for 5 minutes. 0.75 in. diameter hail.	PINE					$0	NCDC, August 2004
9/10/2002	Severe Wind	A second storm in Pine produced pea sized to 3/4 inch hail. 0.75 in. diameter hail.	PINE					$0	NCDC, August 2004
7/12/2003	Severe Wind	Trees and power lines down. Winds measured at 60 knots.	Peridot					$0	NCDC, August 2004
7/13/2003	Severe Wind	Trees downed by high winds. Winds measured at 60 knots. The total cost was $5,000.	Globe			5000		$5,000	NCDC, August 2004
7/14/2003	Severe Wind	Large metal carport lifted and moved 50 feet into a neighbor's house. Winds measured at 60 knots.	Globe					$0	NCDC, August 2004
7/20/2003	Severe Wind	A thirty-seven year old man was struck by lightning near his boat at Lake Roosevelt.	ROOSEVELT		1			$0	NCDC, August 2004
7/21/2003	Severe Wind	A National Forest Service employee reported golf ball sized (1.25 in. diameter) hail near Cedar Creek along Highway 73. A clogged culvert caused the hail to accumulate to a depth of over six feet in a stream bed under Highway 73.	Cedar Creek					$0	NCDC, August 2004
7/22/2003	Severe Wind	Three-quarter inch diameter hail was reported 13 miles southeast of Globe.						$0	NCDC, August 2004
7/26/2003	Severe Wind	Winds damaged part of a boat storage facility, uprooted a large tree, and resulted in a power outage for up to 5 hours. Winds measured at 52 knot The total cost was $5,000.	Punkin Center			5000		$5,000	NCDC, August 2004
7/26/2003	Severe Wind	The San Carlos RAWS measured 58 MPH / 50 knot wind gusts.	San Carlos					$0	NCDC, August 2004
7/30/2003	Severe Wind	Large hail and microburst winds damaged an airplane and a storage building at the Cutter Airport. San Carlos forestry personnel reported the aircraft was blown onto a nearby road before coming to rest. The total cost was $20,000.	Globe			20000		$20,000	NCDC, August 2004
7/30/2003	Severe Wind	One inch diameter hail was reported in the town of Young.	YOUNG					$0	NCDC, August 2004
8/14/2003	Severe Wind	Quarter sized (one inch diameter) was reported in Pleasant Valley near Young.	YOUNG					$0	NCDC, August 2004
8/30/2003	Severe Wind	Nickel sized (0.88 in. diameter) hail was reported in Globe.	Globe					$0	NCDC, August 2004

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
4/10/2004	Severe Wind	A strong spring storm moved through central Gila County during the late afternoon with heavy rain, hail, and damaging winds affecting the Globe and Miami areas. The storm ripped the roof off of a business and sent it through power lines and into a roof across the street. This caused damage to two additional businesses. Several homes had shingles blown off their roofs. Trees and power poles were also knocked down. Power was restored to all areas by 7:45 PM. Winds measured at 50 knots.	MIAMI					$0	NCDC, August 2004
7/14/2004	Severe Wind	Law enforcement reported a thunderstorm with damaging wind seven miles south of Payson.							NCDC, August 2011
7/23/2004	Severe Wind	Ten inch diameter tree blown over onto a resident. Minor damage to a trailer door by downed electric power lines.							NCDC, August 2011
9/4/2004	Severe Wind	A tornado touched down about 12 miles northeast of Young along the Young-Heber Highway near Forest Service Road 188. Trees were sheared off and the road was blocked.			Young				NCDC, August 2011
7/28/2006	Severe Wind	Golf ball sized hail was reported south of Pine.			Pine				NCDC, August 2011
10/9/2006	Severe Wind	Hail up to 1.75 inches in diameter was reported across Southern Gila County. EPISODE NARRATIVE: Thunderstorms developed across South-central Arizona and intensified while moving rapidly toward the northeast.			East of Roosevelt				NCDC, August 2011
5/16/2007	Severe Wind	Thunderstorms developed over Southern Gila County late in the afternoon, and several storms became severe near the town of Miami.							NCDC, August 2011
7/4/2007	Severe Wind	A dust devil caused structure damage to a carport in Tonto Village.			NE of Payson				NCDC, August 2011
7/21/2007	Severe Wind	Roofing materials blown off several homes; mobile home damaged in White Rock, near San Carlos. EPISODE NARRATIVE: Portions of three counties experience flash flooding.	San Carlos			$50,000		$50,000	NCDC, April 2010
7/4/2008	Severe Wind	Winds knocked a 40 foot motor home on its side and took down power poles and trees in Punkin Center. Winds damaged a 20 foot section of a roof and blew down a TV antenna at Roosevelt Lakes Estates. EPISODE NARRATIVE: Strong and locally severe thunderstorms slammed into the Punkin Center and Roosevelt areas on Friday evening.	Punkin Center			$25,000		$25,000	NCDC, April 2010
8/13/2008	Severe Wind	Power outage due to strong winds. Possible funnel cloud near mile marker 256 on highway 70. EPISODE NARRATIVE: Storms moved toward the south and briefly became severe near San Carlos.	San Carlos			$2,000		$2,000	NCDC, April 2010
4/3/2009	Severe Wind	Winds reached up to 46 mph at Deer Valley airport. At least one large tree was toppled by the strong winds. EPISODE NARRATIVE: Winds increased to 30 to 45 mph by late Friday afternoon. Isolated wind gusts over 50 mph were reported in the Globe area.	AZZ023 - 024			$30,000		$30,000	NCDC, April 2010
7/1/2009	Severe Wind	Power outage on Wednesday evening at the Frazier substation was due to very strong winds. Spotter reports included debrs blowing around due to the strong wind. Heavy rain was also reported, with .98 inch in 45 minutes at Roosevelt Dam. EPISODE NARRATIVE: Severe thunderstorm winds resulted in a power outage in the Roosevelt Lakes estates area.	Roosevelt Grpvn Arpt			$10,000		$10,000	NCDC, April 2010
7/17/2009	Severe Wind	Lightning stuck one house and also knocked out power to street lights. EPISODE NARRATIVE: Lightning stuck one house and also knocked out power to street lights.	(0e4)payson Arpt			$5,000		$5,000	NCDC, April 2010
8/4/2009	Severe Wind	A wind gust of 56 mph from the north was reported by a spotter. A 300 gallon water tank was blown over. EPISODE NARRATIVE: Brief heavy rain and some gusty winds moved slowly to the south late in the afternoon.	Globe			$5,000		$5,000	NCDC, April 2010
9/19/2009	Severe Wind	Lake patrol at Roosevelt Lake reported a lightning strike that caused a brief power outage at the marina. A small shed was also damaged. EPISODE NARRATIVE: Showers and thunderstorms propagated off the mountains and into the Roosevelt area late in the afternoon Saturday.	Roosevelt			$2,000		$2,000	NCDC, April 2010
12/7/2009	Severe Wind	Strong winds caused extensive damage to the roof and porch of the Humane Society of Central Arizona in Payson early morning on December 8th as a strong cold front passed. The winds peeled the tin roof back, tore off shingles, and blew off two swamp coolers. EPISODE NARRATIVE: A powerful winter storm hit northern Arizona December 7th and 8th. This storm produced heavy snow, strong winds, and limited visibility in the high country. In the lower terrain, this storm produced heavy rain, damaging winds, and severe thunderstorms. Freeways were closed due to snow and blowing snow, hunters were trapped by heavy snow and falling trees, and over 400 hundred cars slid off the roads. The storm resulted in the largest search and rescue operations in Coconino County with nearly 50 people located from the Grand Canyon to Happy Jack. The Department of Public Safety dispatch center in Flagstaff received 3,000 calls for service within the first 24 hours of this storm. There were close to 550 slide offs and motorist assists, 83 non-injury collisions, and 26 injury collisions across northern Arizona. More than 14,000 customers were without power after the storm passed. Heavy rains loosened soil around boulders allowing them to fall on roadways. This storm caused school closures across the area.	AZZ018			$20,000		$20,000	NCDC, April 2010
12/8/2009	Severe Wind	High winds caused extensive damage to a manufactured home in Lower Covered Wells. The roof was completely torn off the home, with damage to the walls as well. Insulation was left in nearby tree branches. Another roof was blown off a single wide manufactured home 2 miles northwest of Topawa. No injuries were reported from either home. EPISODE NARRATIVE: An intense winter storm passed through Arizona during the evening hours of December 7th and during the early morning hours of December 8th. Heavy snowfall and very strong winds combined to produce winter storm conditions in the mountains of southeast Arizona, with blizzard conditions occurring at times. A particularly strong pressure gradient south of this storm produced a significant nighttime high wind event across much of southeast Arizona, with many reports of damage.	AZZ030 - 032			$30,000		$30,000	NCDC, April 2010
12/29/2010	Severe Wind	High wind on the eastern side of the Kachina Peaks blew down a fence. An anemometer measured frequent wind gusts over 50 MPH with a peak gust of 60 MPH. EPISODE NARRATIVE: A strong and extremely cold Pacific storm system moved across Arizona December 29th and 30th. Heavy snow and strong winds produced hazardous weather conditions across much of northern Arizona.	Northern AZ			$1,000		$1,000	NCDC, August 2011
1/14/2011	Severe Wind	A trained weather spotter near Globe reported strong and gusty non-thunderstorm winds late Friday evening. Sustained winds approaching 40 mph were reported along with a measured gust to 60 mph. The winds caused two half-inch thick plywood sheds to be blown down. In addition, the Gila County sheriff's dispatch indicated that a motorist on highway 77 15 miles south of Globe called in a report of very strong winds. The gusty winds caused rocks to be blown onto the highway. EPISODE NARRATIVE: A dry low pressure system generated strong gusty winds across portions of south central arizona during the evening hours on January 14 2011. Peak gusts in southern Gila county were in excess of 50 mph, sufficient to blow rocks onto area highways.				$2,000		$2,000	NCDC, August 2011
5/2/2011	Severe Wind	Strong winds were reported at the time that a boat went down on Roosevelt Lake. One person slightly injured. EPISODE NARRATIVE: A deep low pressure system brought widespread winds of 30 to 40 mph. Some damage was reported as gusts exceeded 50 mph.	Roosevelt Lake			$5,000		$5,000	NCDC, August 2011

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
08/06/2000	Severe Wind	1 injury, $5,000 property damage. High winds blew a trampoline onto a brick wall of a house and injured a young girl. National Climate Data Center, January 2003, Storm Event Database.	Globe		1	5000		$5,000	URS, October 2003
08/08/1997	Severe Wind	3 injuries, $4,000 property damage. A large tree was blown down by strong thunderstorm winds and fell down on a car in the community of Christopher Creek. Inside the car one person was seriously injured and 2 small children received minor injuries. National Climate Data Center, January 2003, Storm Event Database.	25 miles NE of Payson		3	$4,000		$4,000	URS, October 2003
2000-2004	Severe Wind	Various lightning strike related incidents around Payson in the past five years. 36 incidents cost the city $3,482.	PAYSON					$0	Payson, 2004
2000-2004	Severe Wind	Various wind related incidents around Payson in the past five years. 5 incidents cost $500 to respond.	PAYSON					$0	Payson, 2004
9/6/1993	Transportation Accident	2 LOCOMOTIVES COLLIDED WITH A HOPPER CAR DUE TO AIRBRAKE FAILURE SUSTAINED BY THE LOCOMOTIVE. CREW MEMBERS ABANDONED TRAIN.	Miami		3			$0	NRC, August 2004
6/26/1994	Transportation Accident	A HELICOPTER FROM THE AFB CRASHED INTO THE FOREST 65 MILES NE OF PHOENIX			8			$0	NRC, August 2004
12/9/1994	Transportation Accident	TANKER TRUCK//TRUCK OVERTURNED Hazardous Material Involved: SULFURIC ACID. Amount: 2500 GALLON(S) Remedial Action: SECURED RELEASE//NEUTRALIZED WITH LIME//MATERIAL STAYED ON SITE	CLAYPOOL		1			$0	NRC, August 2004
12/12/1999	Transportation Accident	TANKER TRUCK / TRUCK RAN OVER AN EMBANKMENT AND EXPLODED / CAUSE UNK TRUCK IS A HAZMAT CARRIER "CARGO IS DIESEL" Hazardous Material Involved: OIL: DIESEL. Amount: 7000 GALLON(S) Remedial Action: LEPC NOTIFIED & WAS ON SCENE /FD STATE & LOCAL AUTH. ALL WERE ON SCENE ENVIRONMENTAL RESPONSE SERVICE DID CLEAN UP/DAMAGES OVER $50,000	5 mi S of PAYSON		1	50000		$50,000	NRC, August 2004
1/19/2003	Transportation Accident	A TANKER TRUCK OVERTURNED AND CAUSED A RELEASE OF MATERIAL.	PAYSON						NRC 2011, 634483
4/29/2003	Transportation Accident	A TRACTOR TRAILER TRUCK ROLLED OVER CAUSING THE SADDLE TANK TO RUPTURE AND SPILL DIESEL FUEL ONTO A SOIL AND PAVEMENT SURFACES.	PAYSON						NRC 2011, 643616
5/6/2003	Transportation Accident	THE CALLER IS REPORTING A TRANSPORT ACCIDENT. A TANKER TRUCK LOST CONTROL WHILE GOING DOWN A HILL AND OVERTURNED, CATCHING FIRE AND KILLING THE DRIVER. Hazardous Material Involved: GASOLINE: AUTOMOTIVE (UNLEADED). Amount: 8500 GALLON(S) Remedial Action: AZ DEQ HAS RESPONDED AND IS PROVIDING THE CLEANUP. MOST OF THE MATERIAL WAS CONSUMED IN THE FIRE.	PAYSON	1	2			$0	NRC, August 2004
7/29/2005	Transportation Accident	TANKER TRUCK M306 WAS GOING NORTHBOUND ON STATE ROAD 77 AT MILE MARKER 147 WENT OFF THE ROAD DUE TO UNKNOWN CAUSES AND CAUGHT ON FIRE. DRIVER OF THE TRUCK WAS KILLED. MOST OF THE DIESEL RELEASED WAS BURNT IN THE FIRE.	GLOBE	1					NRC 2011, 767280
10/22/2005	Transportation Accident	TRACTOR TRAILER RAN OFF THE ROAD DUE TO UNKNOWN CAUSES RESULTING IN A RELEASE OF DIESEL FUEL INTO DRY WASH FROM THE SADDLE TANK.	PAYSON						NRC 2011, 777189
6/21/2006	Transportation Accident	Diesel tanker crashed near Kohl's Ranch at MP 267 on SR260	PAYSON						Town of Payson, 2011
6/21/2006	Transportation Accident	A TANKER TRUCK WAS INVOLVED IN A TRAFFIC ACCIDENT CAUSING THE TRUCK TO OVERTURN AND SPILL DIESEL FUEL ONTO THE PAVEMENT AND THE SOIL.	PAYSON						NRC 2011, 801524
7/8/2007	Transportation Accident	CALLER IS REPORTING A DISCHARGE OF SULFURIC ACID ONTO THE GROUND. WHILE IN THE PROCESS OF LOADING A RAILCAR THE SPILL OCCURRED. THE CAUSE IS UNKNOWN WHY THE ACID SPILLED.	HAYDEN						NRC 2011, 841357
9/23/2007	Transportation Accident	THE CALLER REPORTED THAT A TRACTOR TRAILER TRANSPORTING 8500 GALLONS OF DIESEL FUEL OVERTURNED DUE TO THE VEHICLE HITTING THE CENTER DIVIDER ON THE ROAD. THE VEHICLE CAUGHT ON FIRE AND RELEASED MATERIAL INTO THE ENVIRONMENT. DRIVER OF THE VEHICLE WAS FATALLY WOUNDED.	PAYSON	1					NRC 2011, 849709
1/28/2008	Transportation Accident	CALLER IS REPORTING A RELEASE OF MAGNESIUM OXIDE POWDER AND DIESEL FUEL FROM A TRAIN DUE TO A TRAIN DERAILMENT. THE TRAIN DERAILMENT WAS CAUSED DUE TO A FLOOD IN THE AREA WHICH WASHED OUT THE EMBANKMENT AREA WHERE THE TRAIN TIES INTO THE BRIDGE. THE DISCHARGE OF DIESEL FROM A LOCOMOTIVE WHOSE TANKS HAD PUNCTURING INCLUDING ONE WHICH TOTALLY RIPPED OFF WENT INTO THE GILSON WASH. THE MAGNESIUM OXIDE POWDER RELEASED FROM A RAIL CAR. CALLER STATES THE MAGNESIUM OXIDE DID NOT GO INTO THE WATER BUT ONTO THE GROUND. WHEN THE TRAIN DERAILED THREE LOCOMOTIVES AND PARTS OF THE BRIDGE COMPLETELY BURNED DUE TO THE FIRE. THERE WERE NO INJURIES.	SAN CARLOS INDIAN RESERVATION						NRC 2011, 860962
2/9/2008	Transportation Accident	CALLER IS REPORTING A DISCHARGE OF DIESEL FROM THE TRUCK'S SADDLE TANK DUE TO A HEAD ON COLLISION FROM ANOTHER VEHICLE THAT RAN INTO THE TRUCK CAUSING A DISCHARGE OF DIESEL ONTO THE GROUND AND INTO A ROCK EMBANKMENT AND DRAINAGE DITCH. IT IS UNKNOWN IF THE DRAINAGE DITCH LEADS TO A BODY OF WATER BECAUSE THE CALLER STATES THAT IT WAS VERY DARK AT THE TIME OF THE ACCIDENT. THE DRIVER OF THE VEHICLE DIED IN THIS ACCIDENT.	SUPERIOR	1					NRC 2011, 862017
6/29/2008	Transportation Accident	CALLER IS REPORTING THAT BETWEEN 80-100 GALLONS OF SULFURIC ACID RELEASED FROM A BULK TANK ON A TRACTOR TRAILER DUE TO A LOOSE FILL CAP. AS A RESULT THE MATERIAL RELEASED ONTO THE PAVEMENT AND SOIL.	GLOBE						NRC 2011, 875733
2/27/2009	Transportation Accident	A PICK UP TRUCK RAN INTO A GAS RISER CAUSING A FIRE AND A RELEASE OF PROPANE. THE DRIVER OF THE PICK UP TRUCK WAS SENT TO THE HOSPITAL DUE TO THE ACCIDENT NOT THE MATERIAL RELEASED.	STAR VALLEY		1				NRC 2011, 898643
4/15/2010	Transportation Accident	THE CALLER IS REPORTING THAT A COMMERCIAL MOTOR VEHICLE THAT WAS TRANSPORTING HOT OIL HAD A MECHANICAL FAILURE, THIS RESULTED IN A FIRE. THERE WERE 10 GALLONS OF TRANSMISSION FLUID AND MOTOR OIL DISCHARGED OF WHICH 6 GALLONS WENT INTO A STORM DRAIN.	PAYSON						NRC 2011, 937136
5/1/2000	Wildfire	The Coon Creek Fire started on April 26th in the Sierra Ancha Wilderness about 20 miles north of Globe. The fire, believed to be human caused, burned a total of 9359 acres (3989 acres in May) and cost a total of 4.9 million dollars($ 3.9 million in May) to contain. The fire was fully contained on May 18th. Some of the threats were to a lookout tower, wilderness areas, and old growth timber. Steep topography, remote location, and extreme fire behavior complicated fire control efforts.	CENTRAL PORTION					$0	NCDC, August 2004
7/10/2000	Wildfire	The Tanner Fire was caused by lightning on July 10 about 20 miles south of Young. The fire was contained on July 13 after 316 acres had burne	YOUNG					$0	NCDC, August 2004
7/22/2000	Wildfire	The Mogollon Fire was caused by lightning about 10 miles northeast of Payson on July 22. The fire burned about 190 acres before it was contained on July 29. About 50 people helped put out the fire at a cost of $65,000.	PAYSON					$0	NCDC, August 2004

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
7/30/2000	Wildfire	The lightning-started "Peak Fire" burned a total of 2,310 acres of the Tonto National Forest. Numerous communications towers were threatened but none was damaged. The fire was contained on August 28. 8 mi. S of GLOBE.						$0	NCDC, August 2004
8/15/2002	Wildfire	The Pack Rat Fire was lightning caused on August 15 about 15 miles north of Payson on the south side of the Mogollon Rim. The fire also spread north and over the rim about 8 miles east of Pine. Numerous other small lightning fires (<100 acres) started on August 15. The fire was contained on September 2 with total acreage burned at 3470 acres. Over 200 people, 4 engines, 3 helicopters, 6 water tenders, and 3 dozers were involved firefighting efforts. [The fire suppression costs were over $6,000,000.]	PAYSON					$0	NCDC, August 2004; GACC, 2010
10/7/2002	Wildfire	Towers Fire - a lightning caused fire that burned an area seven miles SSW of Globe, Arizona. The fire started on October 7, 2002 and was controlled on October 19, 2002, and burned a total of 365 acres with over $800,000 in fire suppression costs.							GACC, 2010
6/17/2003	Wildfire	Picture Fire - a human caused fire that burned an area ten miles northeast of Tonto Basin, Arizona. The fire started on July 3, 2003 and was controlled July 2, 2003, and burned a total of 12,529 acres with over $425,000 in fire suppression costs.			6				GACC, 2010
7/13/2003	Wildfire	Kinishba Fire - a lightning caused fire that burned an area two mile west of White River, Arizona. The fire started on July 13, 2003 and burned a total of 24,734 acres with over $5,800,000 in fire suppression costs.							GACC, 2010
3/29/2004	Wildfire	Webber Fire - the cause of the fire is under investigation which burned an area 7 miles northeast of Pine, Arizona. The fire started March 29, 20 and was controlled April 24, 2004, and burned a total of 4,311 acres with over $1,100,000 in fire suppression costs.							GACC, 2010
6/24/2004	Wildfire	Willow Fire: Transmission lines were taken out of service. Facility integrity had to be monitored. The Forest Service was required to encapsulate old mine shafts to reduce the potential of hazardous metals from escaping into the environment. Total cost was $18,000.	SRP					$0	SRP, 2004
7/7/2004	Wildfire	Ponderosa Fire - a human caused fire that burned an area 15 miles east of Payson on Highway 260. The fire started on July 7, 2004 and was controlled July 12, 2004, and burned a total of 140 acres with over $200,000 in fire suppression costs.			3				GACC, 2010
7/17/2004	Wildfire	Fox Fire - a lightning caused fire that burned an area 34 miles south of Payson, Arizona. The fire started on July 17, 2004 and was controlled July 24, 2004, and burned a total of 1,020 acres with over $600,000 in fire suppression costs.			1				GACC, 2010
5/22/2005	Wildfire	Skunk Fire - a human caused fire that burned an area 20 miles southwest of Globe, Arizona. The fire started on May 22, 2005 and was controlled May 29, 2005, and burned a total of 1,985 acres with over $700,000 in fire suppression costs.							GACC, 2010
6/21/2005	Wildfire	Three Fire Complex - a lightning caused fire that burned an area 8 miles nortwest of Tonto Basin, Arizona. The fire started June 21, 2005 and w controlled July 4, 2005, and burned a total of 19,370 acres with over $1,900,000 in fire suppression costs.			3				GACC, 2010
6/24/2005	Wildfire	Zane Fire - a lightning caused fire that burned an area 12 miles northeast of Payson, Arizona. The fire started June 24, 2005 and was controlled June 25, 2005, and burned a total area of 136 acres with over $451,000 in fire suppression costs.			2				GACC, 2010
2/6/2006	Wildfire	February Fire - Human caused fire along the Mogollon Rim near Bray Creek, 13 miles north of Payson. Fire Started on February 6 burnee a total of 4200 acres.	PAYSON						USFS, 2011
6/7/2006	Wildfire	Chalk Fire - a lightning caused fire that burned an area 18 miles northeast of Globe, Arizona. The fire started June 7, 2006 and was controlled June 10, 2006, and burned a total area of 514 acres with over $75,000 in fire suppression costs.			1				GACC, 2010
6/29/2006	Wildfire	Hackberry Fire - a lighting caused fire that burned an area 6 miles northeast of Punkin Center, Arizona. The fire started June 29, 2006 and was controlled July 10, 2006, and burned a total area of 2,000 acres with over $80,000 in fire suppression costs.							GACC, 2010
5/13/2007	Wildfire	Promontory Fire - Caused by a an abandoned campfire northeast of Christopher Creek. Burned approximately 4000 acres. Cost $4,200,000 to suppress.	PAYSON						USFS, 2011
6/28/2008	Wildfire	Black Mesa Fire - a lightning caused fire that burned an area 15 miles northeast of San Carlos, Arizona. The fire started June 26, 2008 and was controlled July 2, 2008, and burned a total area of 1,744 acres with over $75,000 in fire suppression costs.							GACC, 2010
4/27/2009	Wildfire	Dripping Springs Fire - a human caused fire that burned an area 2 miles east of Pine, Arizona. The fire started April 27, 2009 and was controlled April 29, 2009, and burned a total area of 43 acres with $771,131 in fire suppression costs.			1				GACC, 2010
5/30/2009	Wildfire	Pioneer Fire - a lightning caused fire that burned an area 8 miles south of Globe, Arizona. The fire started May 30, 2009 and was controlled June 30, 2009, and burned a total area of 1,400 acres with over $2,600,000 in fire suppression costs.			3				GACC, 2010
5/31/2009	Wildfire	The lightning cause Pioneer fire burned over 1,300 acres on the eastern side of the Pinal Mountains about 8 miles south of Globe. Total suppression cost was three million dollars. The lightning caused Pioneer Fire started on May 30 near Globe Arizona and burned through pondero pine, manzanita, and oak brush vegetation in steep, rough terrain. The fire threatened multi-million dollar communication towers in the Pinal Mountains. Fire fighting efforts prevented the fire from crossing Pioneer Canyon below the communication towers. The fire was at least 45 % contained by June 13th at around 1,300 acres with little additional spread.	AZZ018					$0	NCDC, April 2010
7/3/2009	Wildfire	Board Fire - a lightning caused fire that burned an area 8 miles south of Young, Arizona. The fire started July 3, 2009 and was controlled August 4, 2009, and burned a total area of 1,082 acres with over $270,000 in fire suppression costs.							GACC, 2010
7/14/2009	Wildfire	Bear Canyon Fire - a lightning caused fire that burned an area 23 miles north of San Carlos, Arizona. The fire started July 14, 2009 and was controlled August 31, 2009, and burned a total area of 20,029 acres with over $3,900,000 in fire suppression costs.							GACC, 2010
7/20/2009	Wildfire	Rim Fire - a lightning caused fire that burned an area 12 miles northeast of Payson, Arizona. The fire started July 20, 2009 and was controlled August 13, 2009, and burned a total area of 2,500 acres with $1,200,000 in fire suppression costs.							GACC, 2010
8/30/2009	Wildfire	Water Wheel Fire - the cause of the fire is under investigation which burned an area 7 miles northeast of Payson, Arizona. The fire started August 30, 2009 and was controlled September 8, 2009, and burned a total area of 773 acres with over $1,700,000 in fire suppression costs.			1				GACC, 2010
04/12/1994	Wildfire	268 acres burned.						$0	URS, October 2003
04/13/1989	Wildfire	200 acres burned.						$0	URS, October 2003
04/27/1996	Wildfire	Lone Fire The Lone Fire, near Roosevelt Lake, burned 61,370 acres of canyons and scrub-covered mountains in the Tonto National Forest.						$0	URS, October 2003
05/29/1993	Wildfire	400 acres burned.						$0	URS, October 2003
06/05/1994	Wildfire	400 acres burned.						$0	URS, October 2003
06/14/1992	Wildfire	231 acres burned.	HAYDEN					$0	URS, October 2003
06/20/1996	Wildfire	Wildfire outbreak described in Coconino County entry.						$0	URS, October 2003

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
06/25/1990	Wildfire	Dude Fire, EUZOJU. During the "Dude" Wildland Fire 6 fire fighters died. June 1990, Arizona, 24,174 acres burned, 63 homes destroyed, 6 killed. The State response cost was $20,717.		6				$0	URS, October 2003
06/25/1990	Wildfire	24174 acres burned.						$0	URS, October 2003
06/25/2002	Wildfire	Rodeo Chediski Fire: Transmission lines were taken out of service. Facility integrity had to be monitored. SRP The total cost was $137,000.						$0	SRP, 2004
07/12/1987	Wildfire	120 acres burned.						$0	URS, October 2003
07/17/1987	Wildfire	100 acres burned.						$0	URS, October 2003
08/07/1994	Wildfire	1100 acres burned.						$0	URS, October 2003
08/08/1995	Wildfire	520 acres burned.						$0	URS, October 2003
08/15/1977	Wildfire	Federal Funds	Tonto Nation					$0	URS, October 2003
2000-2004	Wildfire	Various wildland fire incidents around Payson in the past five years. 108 incidents cost the City of Payson $114,225 to respond.	PAYSON					$0	Payson, 2004
7/3/1980	Wildfire	Federal Funds	Tonto National Forest					$0	URS, October 2004
2/2/1987	Winter Storm	Emergency Assistance to stranded citizens in Young due to snow that cost the County $1,138 for response efforts.	YOUNG					$0	Gila County, 2004
2/24/1987	Winter Storm	District I road clearing cost the County $3,441.	District 1					$0	Gila County, 2004
2/24/1987	Winter Storm	Emergency Assistance to stranded citizens in Roosevelt area. The County response cost was $148.	ROOSEVELT					$0	Gila County, 2004
2/24/1987	Winter Storm	Remove snow from roads in Payson, Pine, Strawberry, Young . The County cost was $5,878.	PAYSON					$0	Gila County, 2004
2/24/1987	Winter Storm	Heavy equipment transport to Young for snow removal on public roads which cost the County $1,076 for response.	YOUNG					$0	Gila County, 2004
2/25/1987	Winter Storm	Gila County Emergency Operations Center for snow emergency. Heavy snowfall caused power outages county-wide; road closures; school & business closures; Pine-Strawberry, Payson, Globe; Tonto Basin. The County cost for response was $1,202.						$0	Gila County, 2004
2/25/1987	Winter Storm	Remove snow from county roads in Payson, Pine, Strawberry, Young. The County cost was $5,411.	PAYSON					$0	Gila County, 2004
2/26/1987	Winter Storm	Remove snow from roads in Payson, Pine, Strawberry, Young . The County cost was $3,706.	PAYSON					$0	Gila County, 2004
2/26/1987	Winter Storm	Emergency assistance to stranded citizens in Pine, Strawberry, Hardscrabble Mesa cost the County $165.	PINE					$0	Gila County, 2004
2/27/1987	Winter Storm	Remove snow from roads in Payson, Pine, Strawberry, Young. The County cost was $3,931.	PAYSON					$0	Gila County, 2004
2/27/1987	Winter Storm	Remove snow from county roads in Payson, Pine, Strawberry, Young. The County cost was $289.	PAYSON					$0	Gila County, 2004
2/27/1987	Winter Storm	Emergency assistance to stranded citizens in Payson area. The County cost was $5,029.	PAYSON					$0	Gila County, 2004
2/28/1987	Winter Storm	Remove snow from roads in Payson, Pine, Strawberry, Young. The County cost was $1,679.	PAYSON					$0	Gila County, 2004
3/2/1987	Winter Storm	Remove snow from roads in Payson, Pine, Strawberry, Young. The County cost was $1,679.	PAYSON					$0	Gila County, 2004
1/2/1990	Winter Storm	Downed power lines between San Carlos and Winkelman caused power loss to water supply systems, refrigeration systems and medical support systems. San Carlos; Dripping Springs. The County response costs were $2,698.	San Carlos to Winkelman					$0	Gila County, 2004
7/22/2000	Winter Storm	5 mi. NE of GLOBE. 1 in. diameter hail.						$0	NCDC, August 2004
1/6/2005	Winter Storm	A powerful winter storm began to move across northern Arizona on January 3rd and lingered into early January 5th. Widespread snowfall was reported above 5000 feet with generally 4 to 12 inches of total snowfall from 5000 to 6000 feet...12 to 20 inches from 5000 to 7000 feet...and 20 45 inches above 7000 feet. Heavy rainfall also occurred with the storm with elevations below 6000 feet along and south of the Mogollon Rim receiving generally one to two inches of rainfall. Some elevations between 5000 to 6000 feet saw heavy rainfall turn to snowfall during the event as snow levels lowered. Two teenagers week killed on January 3rd when their car slid on ice and hit a truck south of Hon Dah. Some storm snowfall totals (in inches) inclued: Alpine 7.5, Bellemont 25.4, Munds Park 18.5, Crown King 8.0, Payson 8.0, Flagstaff 35.0, Pine 10.0, Forest Lakes 37. Prescott 4-8, Grand Canyon North Rim 14.0, Grand Canyon South Rim 9.0, Greer 18.0 Hart Prairie 34.0, Heber 8.0, Williams 23.5, Jaacob Lake 12.0, Yarnell 7.0, Pinetop 13, Fort Defiance (8000') 12, Arizona Snowbowl ski resort (10800') 47, Sunrise Ski resort 33, Mormon Lake 25, Black Mesa 8-12, and Witeriver 8-10. For the city of Flagstaff...the storm total snowfall reached 35.0 inches during this storm...which made this event the 9th snowiest storm since weather records began in 1898. The 2-day total of 32.4 inches of snowfall was the 6th highest 2-day total since 1898. Record snowfall of 13.6 inches was recorded on January 3rd along with record snowfall of 18.8 inches on January 4th. The 18.8 inches of snow on January 4th was the 14th snowiest calendar day on record. 800 homes were without power in Walker (southeast of Prescott) when wet heavy snow broke the power line feeding into town. M18VE, M19VE	8 AZZ004 - 006 - 008 - 015>018 - 039	2				$0	NCDC, April 2010

Date	Hazard	Description	Location	Fatalities	Injuries	Property	Crop/Livestock	Total	Data Source
3/10/2006	Winter Storm	A major winter storm affected all of Northern Arizona from Friday (03/10) though most of the day on Sunday (3/12). Heavy snowfall and rare low elevation snowfall occurred over almost all of Northern Arizona. Snow levels dropped to as low as 2000 feet south of the Mogollon Rim. Strong winds accompanied this storm...leading to significant blowing and drifting snow. This made for difficult driving conditions on snow packed and icy roads with some areas having very poor visibility. Some storm totals from across northern Arizona (in inches) include: Alpine 24, Ash Fork 7, Bagdad 5, Black Canyon City and Camp Verde T, Chinle 3, Clarkdale 0.5, Concho 23, Cordes Junction 6, Christopher Creek 37, Crown King 16, Flagstaff 30, Forest Lakes 40-48, Fredonia 6, Ganado 6-8, Grand Canyon - N. Rim 29-40, Grand Canyon - S. Rim 17, Greer 44, Hart Prairie 51, Heber 30, Holbrook 8-10, Jacob Lake 27, Jerome 6, Kayenta 14, Mayer 8, Mormon Lake 20, Munds Park 13, Navajo National Monument 9, Page 2, Payson 31, Peeples Valley 8, Petrified Forest National Park 13, Phantom Ranch T, Pine 20, Pinetop/Lakeside 48, Prescott 7-12, Rye 8, Saint Johns 15-18, Sanders 5, Sedona 2, Seligman 8, Show Low 30, Snowbowl - 9500 Feet 36, Snowbowl - 10800 Feet 57, Star Valley 30, Strawberry 18-20, Sunset Crater 17, Tuba City 2-4, White River and Window Rock 18, Williams 30, Winona 15, Winslow 2, and Yarnell 6 inches. Two Embry Riddle University students and their friend died when their car hit a truck on a snow covered road in Prescott Valley. M20VE, F19VE, M19VE	AZZ004>018 - 037>040	3				$0	NCDC, April 2010
3/11/2006	Winter Storm	Power to a number of communities was knocked out as heavy snow broke tree limbs and took out power lines. At one point, 20,000 APS customers were without power, mainly affecting Globe, Miami, and Superior. Numerous trees and branches were down at the Boyce Thompson Arboretum near Superior. Unusually heavy snow was reported from observers in areas to the north and east of the Phoenix metro area, with 10 inches on the ground at Punkin Center. Heavy rainfall also occurred at Queen Creek, where one gauge recorded 3.39 inches up to 9 pm Saturday. This event also ended the 143-day record long streak of days without any measurable rain in Phoenix.	AZZ024			$5,000		$5,000	NCDC, April 2010
2/15/2008	Winter Storm	Heavy snow fell over the Western Mogollon Rim. Some of the snowfall totals were: Bellemont 5.8 inches, Flagstaff Airport 6 inches, Hart Prairie 9.0 inches, and Parks 6.0 inches. Area law enforcement responded to 22 non-injury or very minor injury vehicle accidents during and shortly after this storm. EPISODE NARRATIVE: A strong and cold Pacific storm brought significant snow to portions of northern Arizona on February 14th and 15th.	AZZ015>018		1			$0	NCDC, April 2010
12/7/2009	Winter Storm	Northern Gila County received up to 18 inches of snow with this storm. A man froze to death about a mile and a half from his truck north of Young. EPISODE NARRATIVE: A powerful winter storm hit northern Arizona December 7th and 8th. This storm produced heavy snow, strong winds, and limited visibility in the high country. In the lower terrain, this storm produced heavy rain, damaging winds, and severe thunderstorms. Freeways were closed due to snow and blowing snow, hunters were trapped by heavy snow and falling trees, and over 400 hundred cars slid off the roads. The storm resulted in the largest search and rescue operations in Coconino County with nearly 50 people located from the Grand Canyon to Happy Jack. The Department of Public Safety dispatch center in Flagstaff received 3,000 calls for service within the first 24 hours of this storm. There were close to 550 slide offs and motorist assists, 83 non-injury collisions, and 26 injury collisions across northern Arizona. More than 14,0 customers were without power after the storm passed. Heavy rains loosened soil around boulders allowing them to fall on roadways. This storm caused school closures across the area.	AZZ017 - 018	1				$0	NCDC, April 2010
12/8/2009	Winter Storm	Strong winds uprooted a large dead tree near the intersection of First Avenue and Highway 191 in Safford during the early morning hours. The tr toppled onto an unoccupied residence, causing some roof damage to the home. EPISODE NARRATIVE: An intense winter storm passed through Arizona during the evening hours of December 7th and during the early morning hours of December 8th. Heavy snowfall and very strong winds combined to produce winter storm conditions in the mountains of southeast Arizona, with blizzard conditions occurring at times. A particularly strong pressure gradient south of this storm produced a significant nighttime high wind event across much of southeast Arizona, with many reports of damage.	AZZ030 - 032			$4,000		$4,000	NCDC, April 2010
01/04/1990	Winter Storm	EUZJAN. The cost for the State to respond was $1,563.						$0	URS, October 2003
2000-2004	Winter Storm	Various winter storm incidents around Payson in the past five years. 2 incidents costing $1,000 the City to respond.	PAYSON					$0	Payson, 2004

Appendix E

Plan Maintenance Review Memorandums