GILA COUNTY

Multi-Jurisdictional Local
HAZARD MITIGATION PLAN

2019

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RECORD OF REVIEWS AND REVISIONS

Revision #	Date	Sections Reviewed or Revisions Made	Entered by

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SECTION 1: INTRODUCTION

Gila County (County) has prepared the 2019 Multi-Jurisdictional Local Hazard Mitigation Plan (MJLHMP) to assess the natural, technological, and human-caused risks to County communities, to reduce the potential impact of the hazards by creating mitigation strategies. The 2019 MJLHMP represents the County's commitment to create a safer, more resilient community by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the people and property of the County.

This plan complies with The Federal Disaster Mitigation Act (DMA 2000), Federal Register 44 CFR Parts 201 and 206, which modified the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) by adding a new section, 322 - Mitigation Planning. This law, as of November 1, 2004, requires local governments to develop and submit hazard mitigation plans as a condition of receiving Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) and other mitigation project grants. Staff from Gila County, the City of Globe, and the Towns of Hayden, Miami, and Payson, have coordinated preparation of the MJLHMP in cooperation with stakeholders, partner agencies, and members of the public.

This introduction to the MJLHMP provides a brief description of hazard mitigation planning, local mitigation plan requirements, and an outline of the 2019 MJLHMP. There is also an overview of FEMA programs and grants related to hazard mitigation.

1.1 BACKGROUND

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)

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

[1] FEMA, 2013, *Local Multi-Hazard Mitigation Planning Guidance*

1.2 DISASTER MITIGATION ACT OF 2000

The County's MJLHMP has been developed to provide a living document that meets the requirements of DMA 2000 that will reduce risks posed by hazards in order to protect the community. Regular updates to the MJLHMP are required to comply with the guidance of DMA 2000. Completion of this updated MJLHMP and approval by FEMA will support efforts to reduce hazards to County communities, and to apply for HMGP funding. Both pre- and post-disaster hazard mitigation grants are available. Post-disaster funding, which can be used to enhance the resiliency of facilities, is governed by Section 406 of the Stafford Act, 42 U.S.C. 5172. The Stafford Act provides FEMA with the authority to fund cost-effective mitigation measures under the Public Assistance program in conjunction with the repair of disaster-damaged public facilities.

As the costs of damage from natural disasters continue to increase, governmental and local agencies, as well as the general public, have come to realize the importance of identifying effective ways to reduce vulnerability and losses. The MJLHMP assists entities and jurisdictions in reducing impacts from hazards by recognizing vulnerability in relation to risk, identifying resources, creating an orderly data collection process and developing strategies for risk reduction, while helping to guide and coordinate mitigation activities. The resources and information within the MJLHMP:

- Establish a basis for coordination and collaboration among agencies and the public
- Assist in the integration of mitigation goals and objectives with other County and community plans
- Identify existing mitigation projects and prioritize future projects
- Assist in meeting the requirements of Federal mitigation programs
- Lay the foundation for future MJLHMP updates and MJLHMP maintenance

In addition, the MJLHMP is designed to ensure the long-term values of the community are not compromised in the course of preparing for, responding to, or recovering from natural and manmade hazards.

1.3 AUTHORITY AND ADOPTION

- 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. The 2011 MJLHMP for Gila County, and the incorporated communities of Globe, Hayden, Miami and Payson expired in 2016. As such, an update to the MJLHMP is required.

1.4 Official Record of Adoption

FEMA REGULATION CHECKLIST: PLAN ADOPTION

Adoption by the Local Governing Body

44 CFR § 201.6(c)(5): The local hazard mitigation plan shall include "[d]ocumentation 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)."

Element

E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval?

Source: FEMA, *Local Mitigation Plan Review Tool*, March 2013.

The requirements for adoption of this MJLHMP by all local governing bodies, as set forth in the Stafford Act and, as amended by DMA 2000 and its implementing regulations, are described below. The County Board of Supervisors approved this MJLHMP on xxx date. The following cities and towns approved their appropriate sections of the MJLHMP as noted below. The local and tribal mitigation planning requirements are identified in their appropriate sections throughout the 2019 MJLHMP and in *Appendix A: FEMA Local HMP Crosswalk Tool*. This is documented in the governing body meeting resolutions documented in the individual jurisdiction **Appendix G.**

City of Globe

Town of Hayden

Town of Miami

Town of Payson

Town of Winkelman

The Town of Star Valley did not participate in the 2012 MJLHMP and chose not to participate in the 2019 Plan.

1.5 Grant Programs with Mitigation Plan Requirements

Currently, five FEMA grant programs provide funding to local entities that have some FEMA-approved local mitigation plan meeting Federal hazard mitigation plan requirements. Two of the grant programs are authorized under the Stafford Act.

1.5.1 Stafford Act Grant Programs

Funding is provided to local, State, and tribal governments that have an approved hazard mitigation plan through the following programs.

Hazard Mitigation Grant Program

The HMGP provides grants to implement long-term hazard mitigation measures after declaration of a major disaster. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. To qualify for HMGP funding, projects must provide a long-term solution to a problem, and the project's potential savings must exceed the cost of implementing the project.

HMGP funds may be used to protect either public or private property, or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. Under the program, the Federal Government may provide a State or tribe with up to 20% of the total disaster grants awarded by FEMA under Stafford Act programs, and may provide up to 75% of the cost of any projects approved under the program.

Pre-Disaster Mitigation Program

The PDM provides funds to local, State, and tribal entities for hazard mitigation planning and mitigation projects before a disaster event. PDM grants are awarded on a nationally-competitive basis. The cost benefit of a PDM project must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to repetitive damage. For 2016 Congress appropriated $90 million for PDM. The Federal Government provides up to 75% of the cost of projects approved under the PDM program.

1.5.2 National Flood Insurance Act Grant Programs

The Flood Mitigation Assistance (FMA) Grant Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). Consistent with Biggert-Waters Flood Insurance Reform Act of 2012 (Public Law 112-141), the FMA Grant Program is focused on mitigating repetitive loss (RL) properties and severe repetitive loss (SRL) properties.

Flood Mitigation Assistance Grant Program

The primary source of funding for the FMA program is the National Flood Insurance Fund. For 2016, Congress appropriated $199 million for FMA programs. Grant funding is available for planning, project, and technical assistance. Project grants are awarded to local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. The cost-share for this grant is 75% federal and 25% nonfederal. However, a cost share of 90% federal and 10% nonfederal is available in certain situations to mitigate SRL properties.

Repetitive Flood Claims Program

The Repetitive Flood Claims (RFC) grant program provides funding to reduce or eliminate the long-term risk of flood damage to structures insured under the NFIP that have had one or more claim payment(s) for flood damages

1.6 FEMA APPROVAL LETTER

The Plan was submitted to the Arizona Department of Emergency and Military Affairs (DEMA), the authorized State agency, and FEMA for review and approval. FEMA Region IX's approval letter is on the next page.

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

February 15, 2019

Carl Melford
OES Specialist
Department of Health and Emergency Management
5515 South Apache Avenue
Globe, AZ 85501

Dear Mr. Melford:

We have completed our review of the *Gila County Multi-Jurisdictional Local Hazard Mitigation Plan* and have determined that this plan is eligible for final approval pending its adoption by Gila County and all participating jurisdictions. Please see the enclosed list of approvable pending adoption jurisdictions.

Formal adoption documentation must be submitted to the FEMA Region IX office by the lead jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. We will approve the plan upon receipt of the documentation of formal adoption.

If you have any questions regarding the planning or review processes, please contact the FEMA Region IX Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

Juliette Hayes
Director
Mitigation Division
FEMA, Region IX

Enclosure

cc: Lucrecia Hernandez, State Hazard Mitigation Officer, Arizona Department of Emergency and Military Affairs
Susan Austin, Planning Branch Manager, Arizona Department of Emergency and Military Affairs

www.fema.gov

Status of Participating Jurisdictions as of February 15, 2019

Jurisdictions – Adopted and Approved

#	Jurisdiction	Date of Adoption

Jurisdictions – Approvable Pending Adoption

#	Jurisdiction
1	Gila County
2	Globe, City of
3	Hayden, Town of
4	Miami, Town of
5	Payson, Town of
6	Winkelman, Town of

www.fema.gov

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SECTION 2: 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.

This MJLHMP is an update to the 2011 MJLHMP which expired in 2016. It includes Gila County and the incorporated communities of Globe, Hayden, Miami, Payson and Winkelman.

The planning process began with the County establishing the planning area and inviting jurisdictions within the planning area to participate in the process. In addition, the County identified the financial and technical resources required to update the MJLHMP. Once all the participating jurisdictions' financial and technical resources were identified, the County developed the planning team and a schedule for the process.

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.

In 2010, ADEM (now DEMA) 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, DEMA then selected the consulting firm, JE Fuller, to work with the participating jurisdictions and guide the planning process.

An initial project kick-off meeting between JE Fuller and DEMA was convened in September 2010 to begin the planning process, outline the plan objectives, develop meeting agendas for the planning efforts, and discuss the new plan format and other administrative tasks. Initial points of contact were also established between DEMA, 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.

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 2011 Plan 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.13

Funding for the development of the Plan was provided by a FEMA Section 404 Hazard Mitigation Grant acquired as a subgrantee through DEMA. Willdan Homeland Solutions (Willdan) was retained by the County to provide consulting services in guiding the planning process and Plan development.

2.3 References and Documents

In updating the MJLHMP, the planning team used a large number of resource documents and references. **Table 2-1** contains a comprehensive list of guidance and tools incorporated to create the current Plan.

Table 2-1: Resource Documents and References Reviewed and Incorporated in the Plan Update

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 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.
City of Globe General Plan (2015)	General Plan	Source for history, demographic and development trend data for the city.
City of Globe MHMP (2011)	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
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 (2011)	Hazard Mitigation Plan	FEMA approved hazard mitigation plan that together with the other Gila County jurisdiction's LHMPs, formed the starting point for the update process. See Section 2.4 for further discussion
Gila County Community Wildfire Protection Plans (2016)	Community Wildfire Protection Plan	Source of wildfire hazard profile data for hazard mapping and 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.

Table 2-1: Resource Documents and References Reviewed and Incorporated in the Plan Update

Referenced Document or Technical Source	Resource Type	Description of Reference and Its Use
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 (2017)	Technical Resource	Source for drought related projections and conditions. Used in the risk assessment.
National Inventory of Dams (2017)	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.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group (2017)	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.
Town of Hayden MHMP (2011)	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 (2013)	General Plan	Source for history, demographic and development trend data for the city.
Town of Payson MHMP (2011)	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
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.
World Wildlife Fund (2017)	GIS Data	Terrestrial ecoregions database used in the general county description.

2.4 PLANNING PROCESS DESCRIPTION

The 2011 County MJLHMP was the starting point for updating the MJLHMP. All County participating jurisdictions used their previous hazards, assets, capabilities and mitigation actions as the basis for this update. Activity to update the MJLHMP included:

- Review of material on various Federal and State websites such as the National Weather Service and Arizona Geological Survey
- Review of progress since the last Plan update
- Review of existing County and City plans such as the General Plan
- Identification of critical assets
- Hazards identification and risks assessment
- Mitigation strategies development
- Engagement with community in the planning process
- Solicitation and incorporation of feedback from external stakeholders and the public

The most significant changes resulting from this effort include several items. Primarily, new hazards were identified and old hazards revised. The update process progressed through selection of a consultant who had supported development of the previous plan. Additional planning process activity is detailed in Table 2.3.

2.5 PLANNING TEAM

The Planning teamed used a two-tiered approach to support the development of this Plan. The first tier was a County-wide Multi-Jurisdictional Planning Team (Planning Team) that was comprised of one or more representatives from each participating jurisdiction. The second tier of the planning team was the Local Planning Team within each jurisdiction.

The Planning Team was responsible to work with the planning consultant to perform the coordination, conduct the research, and identify the planning element activities required to update the 2011 Plan. Attendance by each participating jurisdiction was required for all Planning Team meetings as the meetings were structured to progress through the planning process. Steps and procedures for updating the 2011 Plan were presented and discussed at each Planning Team meeting, and work assignments made to provide information to inform creating the updated Plan. Each meeting built on information discussed and assignments given at the previous meeting. The Planning Team was also responsible to act as a liaison to the Local Planning Teams, 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 were 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

2.5.1 Planning Team Assembly

The Planning Team was assembled using participating organizations that supported the 2011 Plan development and other agencies that are relevant stakeholders. Invitees included County agencies, jurisdictions within the County, State agencies and non-governmental organizations such as utilities. Emails were sent to invitees from the County Department of Health and Emergency Services. Appendix B contains a sample of on invitation. A list of invitees is contained in Table 2-2.

Table 2-2: MJLHMP Planning Team Invitees

Name	Agency/Department	Jurisdiction	Position/Title
Brent Cline	County Manager	Globe	Roads/Shops County Manager
Gary Cruz	Public Works	Hayden	General Super
Darde Deroulhac	Flood Control District (Gila County)	County	Chief Engineer
Don Engler	Town Manager's Office	Payson	Deputy Town Manager
Laron Garrett	Town Manager's Office	Payson	Town Manager
Timothy Grier	Town Manager's Office	Star Valley	Town Manager
Joseph Heatherly	Town Manager's Office	Miami	Town Manager
Thomas Homan	Public Works	County	GIS Supervisor
Paul Jepson	City Manager's Office	Globe	City Manager
Sharon Listiak	Health and Emergency Services	County	Emergency Services Coordinator
Carl Medford	Health and Emergency Services	County	Emergency Services Manager
Mark Nipp	Police	Globe	Chief
Michael O'Driscoll	Health and Emergency Services	County	Director
Nick Renon	Tri-City Fire	Tri-City Fire	Chief
Robert Rippy	Operations	Star Valley	Director
Gary Robinson	Fire	Globe	Chief

Table 2-2: MJLHMP Planning Team Invitees			
Steve Sanders	Public Works	County	Director
Ron Sattelmaier	Fire	Water Wheel Fire	
Tim Scott	Sherriff's Office	County	Lieutenant
Adam Shepherd	Sherriff's Office	County	Sherriff
Bobby Smith	Mayor's Office	Hayden	Mayor
David Staub	Fire	Payson	Chief
Jurisdictions Outside the County			
Tom Engle	ADOT	State	
Terry Jones		San Carlos Tribe	General Manager
Kaiyle Moses		San Carlos Tribe	
Richard Rosales	Community Affairs	State	
Kirsten Sorensen	ADOT Emergency Management	State	
Carlos Valadez	Emergency Management	White Mountain Apache Tribe	Manager

2.5.2 Planning Activities

The planning process involved Planning Team meetings and other processes to provide input to the Plan. It also included public outreach efforts to solicit input to the Plan and provide opportunities to review the draft Plan. Table 2-3 contains a chronology of steps in the planning process. Appendices B and C provide details and documentation of individual planning activities

Table 2-3: Planning Activities		
Date	**Activity**	**Purpose**
August 29, 2017	Planning Team Meeting Nr. 1 Details of this meeting are including in Appendix B	Kicked off the MJLHMP update project and solicit participation by stakeholder agencies
September 25, 2017	Posted public outreach survey on County website and provided paper copies at the County Library. Details and results of the survey are contained in Appendix C.	Solicited input from the public in a structured approach that allowed quantitative analysis.
October 26, 2017	Planning Team Meeting Nr. 2 Details of this meeting are including in Appendix B	Provided vulnerability and risk assessment guidance as a read ahead. Reviewed hazard analysis, discussed risk and vulnerability and identified capabilities.

February 8, 2019	Planning Team Meeting Nr. 3 Details of this meeting are including in Appendix B	Met individually with jurisdictions. Collected data on past mitigation activities, hazards and capabilities. Developed draft mitigation activities. Discussed mitigation implementation priorities and actions.

2.6 Community Engagement

Once the planning process commenced, the County provided public notification through its website, and Facebook and Twitter accounts. Additionally, the County conducted an online survey to solicit input on the hazards that the communities face and the types of mitigation activities the County and cities should undertake. The draft MJLHMP was placed on the County and cities websites for public review and comment. Finally, notification of the draft MJLHMP review and adoption by the County Board of Supervisors and City Councils was advertised.

The public survey input from the 29 responders was used to select hazards and rank their affects. Wildfire and flooding were ranked as the two top hazards. This input was also used to inform the Calculated Priority Risk Index (CPRI) contained in Table 5.5. Finally, survey input was used to select mitigation actions. Input from posting the draft MJLHMP was used to refine the Plan and prepared it for submission for review. **Appendix C** provides documentation of community outreach efforts and public participation.

On May 21, 2019, the County posted a link to the draft MJLHMP on its website and invited public review and comment. Appendix C contains screen shots of the website.

SECTION 3: COMMUNITY DESCRIPTIONS

This section describes the County as a whole and provides community profiles for each jurisdiction that participated in the development and adoption of the 2017 MJLHMP. Participating jurisdictions include:

- City of Globe
- Town of Hayden
- Town of Miami
- Town of Payson
- Town of Winkelman

3.1 COUNTY OVERVIEW

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.

3.1.1 Geography

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 3.1**.

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 3.2**, 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 3.3** 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

[2]State of Arizona Enhanced Hazard Mitigation Plan, 2013.

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.

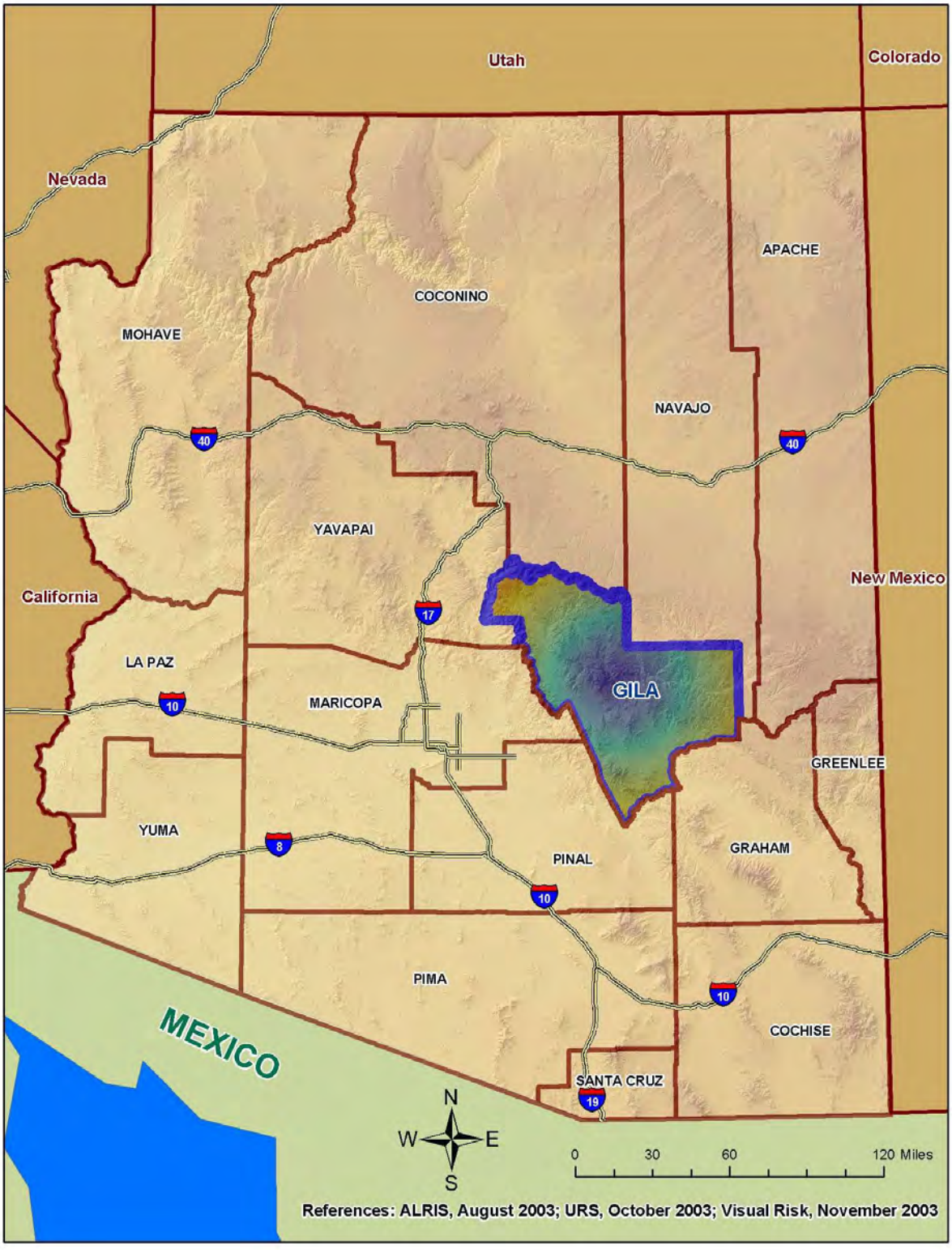

Figure 3.1: Gila County Vicinity Map

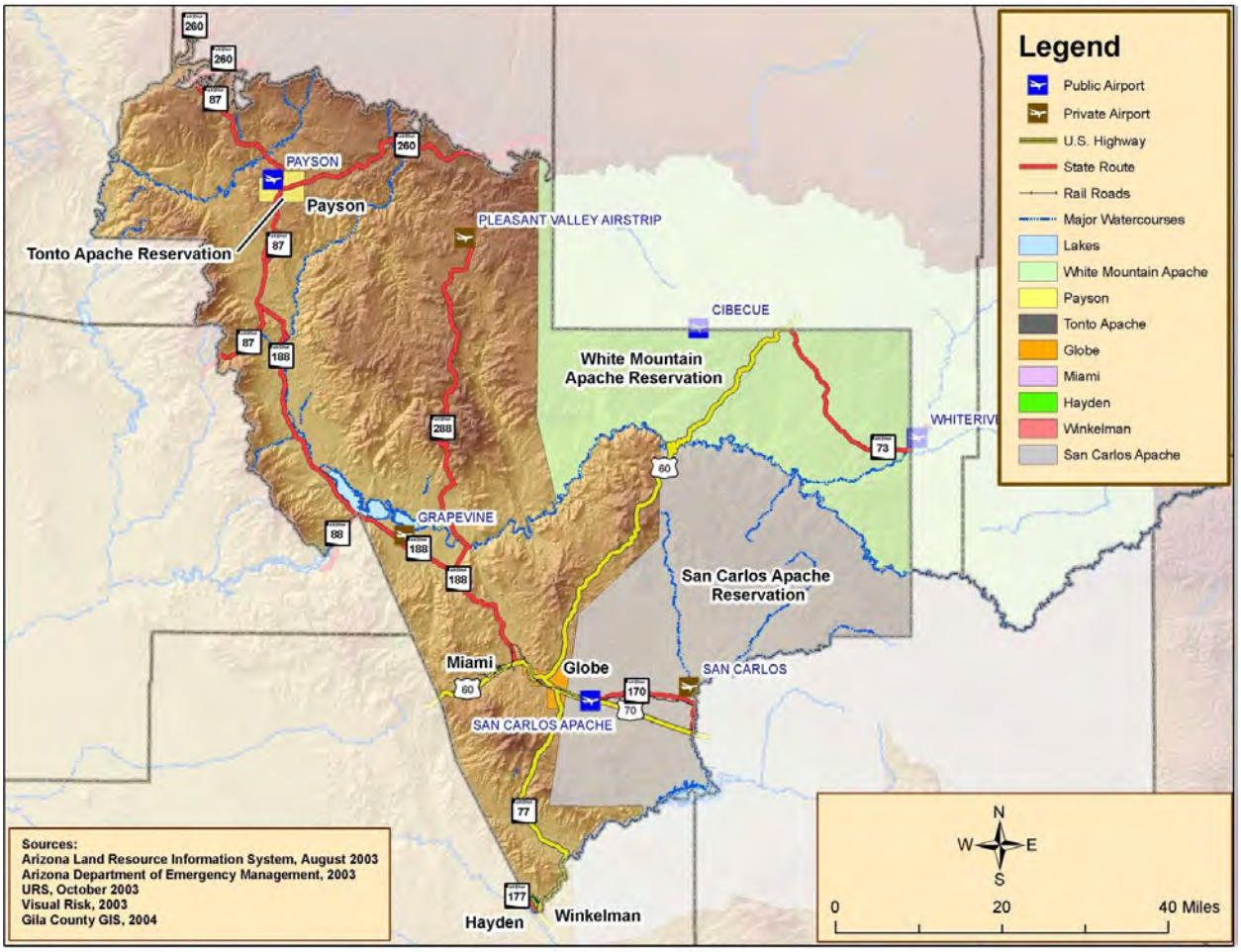

Figure 3.2: Gila County Transportation Routes

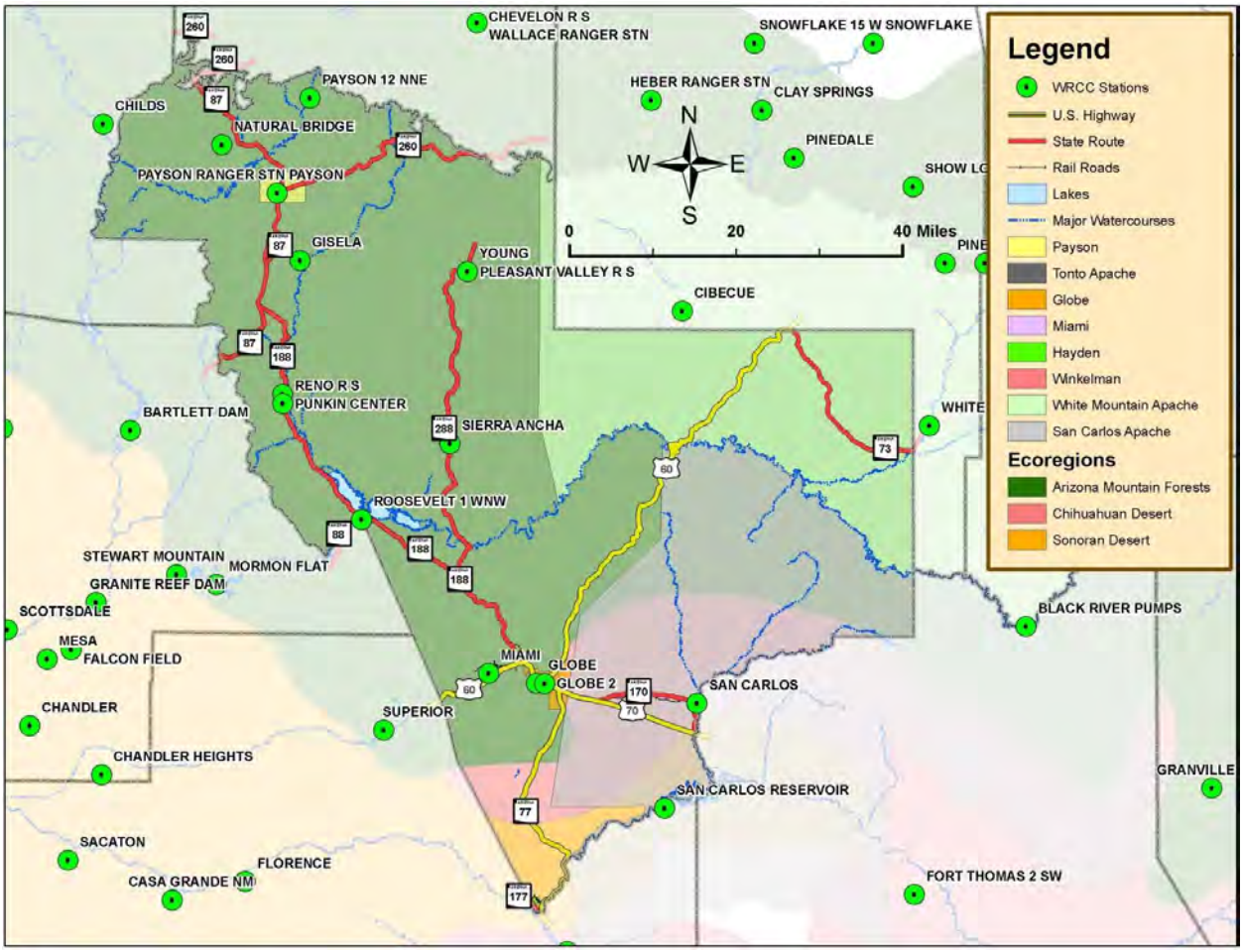

Figure 3.3: Gila County Terrestrial Ecoregions

3.1.2 Climate

The majority of Gila County can be classified as Arizona Mountain Forest; however, the southern part of the County, including the Towns of Hayden and 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 and span records dating back to the early 1900's.

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.

Precipitation throughout Gila County is governed to a great extent by elevation and season of the year. From November through March, frontal 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 the 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[3].

Climate Payson - Arizona

	Jan	Feb	Mar	Apr	May	Jun
Average high in °F:	54	56	62	70	79	88
Average low in °F:	25	28	31	36	43	51
Av. precipitation in inch:	2.28	2.32	2.32	1.02	0.55	0.31
Average snowfall in inch:	5	6	3	2	0	0

	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	91	89	84	74	62	53
Average low in °F:	59	59	52	41	31	25
Av. precipitation in inch:	2.44	2.99	1.89	1.46	1.65	2.05
Average snowfall in inch:	0	0	0	0	2	3

Climate Globe - Arizona

	Jan	Feb	Mar	Apr	May	Jun
Average high in °F:	56	61	66	74	83	94
Average low in °F:	31	34	38	43	50	59
Av. precipitation in inch:	1.77	1.73	1.77	0.51	0.35	0.28

	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	96	93	89	78	65	56
Average low in °F:	67	65	58	49	37	31
Av. precipitation in inch:	2.09	2.64	1.34	1.65	1.34	1.54

[3] Office of the State Climatologist for Arizona, 2004.

3.1.3 Population and Demographics

According to the 2016 estimate Census, Gila County is home to 53,556 residents, who primarily reside in six incorporated communities, with the majority of the population living in the Town of Payson and unincorporated areas of the County. The population density was 11 per square mile. The population of Gila County is estimated at -0.1 percent growth from 2010 to 2016.

With 53,556 people[4], the County is the 11th most populated county in Arizona. Urban areas include the City of Globe and Town of Payson. Whites are the largest ethnic group in the County, representing 76% of the population, with Hispanics accounting for 17% of the population. Native Americans make up 14% of the population. Just below 32% of the population is under 18 years of age. There are 20,909 households in the County with an average of 2.5 persons per household. Average household income was $39,751 per year. The poverty rate was 21.3%. The high school graduation rate was 84.0%. Slightly over 16.7% of the County had a college degree or higher level of education.

3.1.4 Economy

The economy for the County is focused primarily on services, recreation, and mining and forestry. There is little agriculture or manufacturing. Relatively few residents are employed in professional services, finance, construction or transportation. **Table 3-1** portrays employment trends for the County.

Table 3-1: County Employment by Sector[5]

Industry	Thousands	Percentage
Education, health care & social assistance	4.6	25.1
Arts, entertainment, food & recreation services	2.2	12.1
Retail trade	2.1	11.4
Agriculture, forestry, fishing, hunting, & mining	1.9	10.2
Public administration	1.5	8.3
Professional, scientific, & administrative services	1.3	7.2
Construction	1.2	6.8
Finance, insurance & real estate	0.9	5.1
Transportation, warehousing, & utilities	0.9	4.9
Other services, except public administration	.7	3.9
Manufacturing	.6	3.2

[4] U.S. Census Bureau, QuickFacts 2016

[5] Arizona Commerce Authority 2015

3.1.5 Land Use and Developing Trends

Of the nearly 4,800 square miles that comprise Gila County, only 3.5 percent is privately owned—or deeded—land. Of that, about 2 percent is owned by the mines, leaving about 1.5 percent for residential, commercial, and other industrial usage. Over 55 percent of the County lies within the Tonto National Forest, another 37 percent is Tribal land, and the remaining 5 percent is either Arizona State Trust land or owned by the US Bureau of Land Management.

The Tonto National Forest occupies nearly three million acres of land and is the fifth largest forest in the United States with approximately 5.8 million visitors annually. The San Carlos Apache Indian reservation encompasses 1,826,541 acres and is the fourth largest reservation in Arizona while the Fort Apache Reservation covers more than 1.6 million acres.

The Gila County General Plan outlines land usage for the deeded land portions of the County including the unincorporated rural communities of Pine and Strawberry, Young, Tonto Basin, Gisela, and Christopher Creek. Nearly all of the residential land is shown as being planned for 3.5 dwelling units or fewer per acre. Some higher density residential usage is planned for portions of the Claypool area abutting the City of Globe, planned communities near Roosevelt Lake, and within the communities of Pine and Gisela.

Multifunctional corridor or Public Facilities areas are shown abutting some of the more heavily traveled State Routes and County roads. Nearly all of the commercially planned or zoned land lies within local incorporated jurisdictions with the exception of a few parcels in Claypool, Gisela, Pine, Roosevelt, and Tonto Basin.

The result of the limited amounts of private land and the moderate population growth rates has been a continuation of the historical pattern of development in the unincorporated areas of the county. New development activities have consisted primarily of lot splitting and the limited subdividing of land among scattered private properties for residential uses, and the limited development of non-residential uses along the major transportation corridors. New development has largely occurred in the incorporated communities of Payson and Globe and the unincorporated areas of Pine, Strawberry and Tonto Basin. In the northern section of the county, where the majority of the overall county population growth has occurred, the development of “pockets” of residential uses on the remaining vacant parcels of private property has been steadily consuming the balance of the private property available in northern Gila County. **Figure 3.4** depicts land ownership in the County.

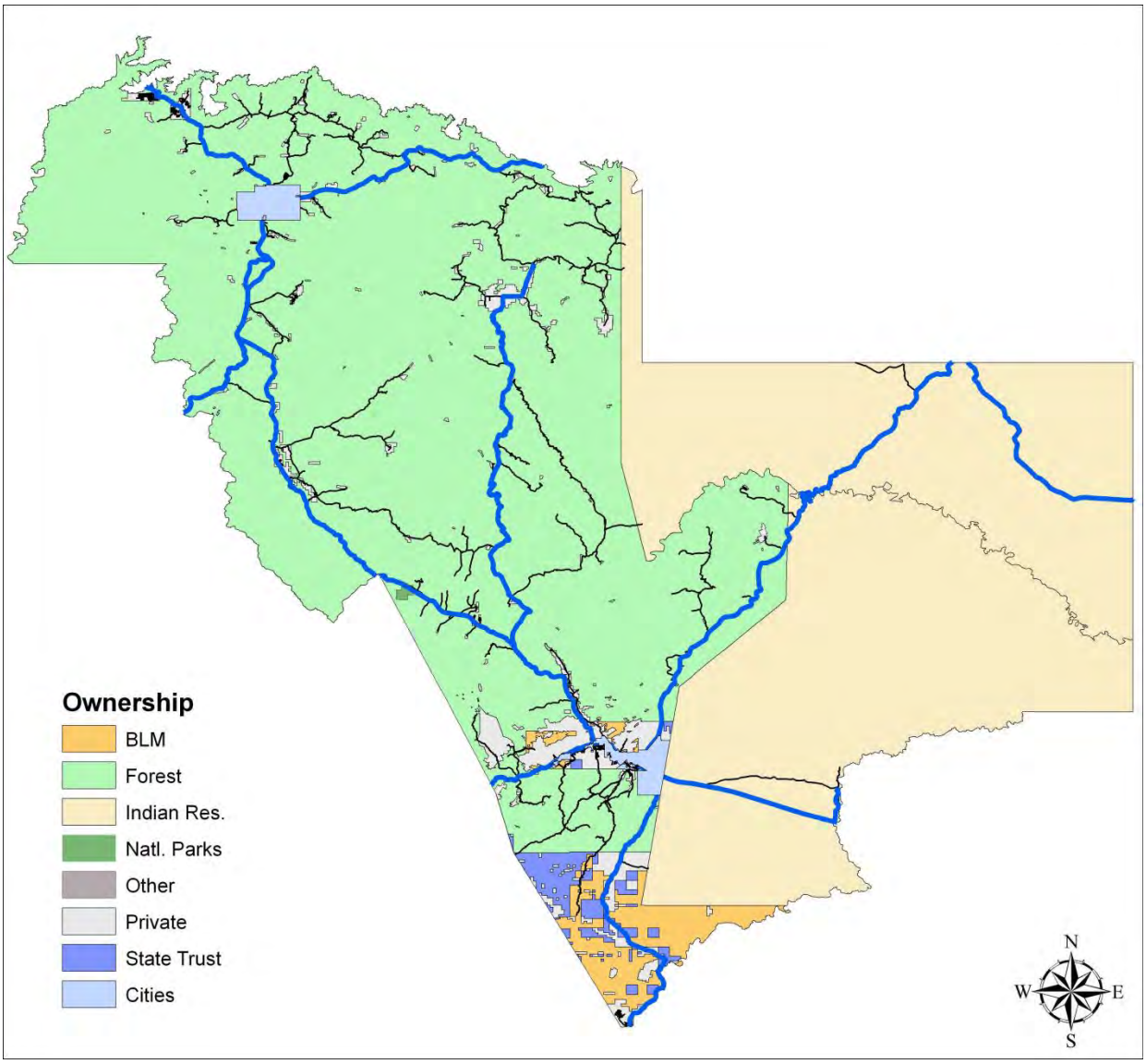

Figure 3.4: Gila County Land Ownership

Development in Hazard Prone Areas

Because population growth was negligible since approval of the 2011 MJLHMP, there has been no development in hazard prone areas that has affected overall vulnerability of the County.

Inclusion of dam inundation added a large area of the County to this new hazard. While little new development occurred in the expanded inundation zones, vulnerability to dam inundation increased substantially and now includes most the following the towns of Hayden and Winkelman.

The new MJLHMP addresses the new hazard of climate change. This hazard impacts the entire County. Development in the County, the State and globally with increased carbon emissions will result in increasing overall vulnerabilities to its impacts.

3.1.6 Past Disasters

The County has experienced a number of disasters that have resulted in either a State or Federal disaster declaration. **Table 3-2** lists recent federal declarations from 1990 through 2017. **Table 3-3** lists State and County declarations.

Table 3-2: Stafford Act Declarations. Emergency Declarations and FMAG6 for the County 1990 -2019

Declaration	Dates	Type	Assistance [7]
DR-884	July 08, 1990 - September 14, 1990	Flooding	
DR-977	January 05, 1993 - March 06, 1993	Arizona Severe Storms, Tornadoes, Flooding	
FM-2263 Rainbow Fire	June 11, 1999 - June 12, 1999	Fire	
DR-1422	June 18, 2002 - July 07, 2002	Fire	PA: $1,237,521
FM-2478 Kinsishba Fire	July 13, 2003 - July 22, 2003	Fire	PA: $286,116
FM-2523 Willow Fire	June 24, 2004 - July 13, 2004	Fire	PA: $251,890
FM-2570 Edge Fire	July 21, 2005 - July 24, 2005	Fire	PA: $8,644
EM-3241 Katrina Evacuation AZ	August 29, 2005 - October 01, 2005	Hurricane evacuation and survivor emergency housing support reimbursement	PA: $5,726,164
DR-1581	December 28, 2004 - January 12, 2005	Flood	PA: $6,186,719
DR-1586	February 10, 2005 - February 15, 2005	Flood	PA: $8,970,436
DR-1660	July 25, 2006 - August 04, 2006	Flood	PA: $10,852,070
FM – 2835 Water Wheel Fire	August 30, 2009 - September 05, 2009	Fire	PA: $192,972
DR - 1888	January 18, 2010 - January 22, 2010	Flood	PA: $7,147,189

[6] Fire Management Assistance Grant

[7] State Total

Table 3-3: State Emergency Declarations for the County 1990 -2019			
Declaration	**Date Declared**	**Type**	**Assistance**[8]
33019 Dude Fire	July 25, 1990	Fire	$29,727
92003 Prisoner Escape	June 2, 1992	Civil Unrest	$100,000
94002 Fire Suppression	September 9, 1994	Fire	$200,000
95006	January 10, 1995	Flood	$510,179
95007	February 15, 1995	Flood	$1,525,663
96004	May 16, 1996	Fire	$1,000,728
96005	June 7, 1996	Drought	$211,199
98002	September 28, 1998	Tropical Storm	$2,318,258
21101	July 28, 2000	Gila County - Potable water shortage	$42,111
23001	July 3, 2003	Potable water shortage	$42,844
24104	December 3, 2005	Flash flood	$62,497
25001	July 15, 2004	Fire	$291,298

3.2 JURISDICTIONAL OVERVIEWS

The following sections contain community descriptions of the incorporated jurisdictions that participated in the 2019 MJLHMP.

3.2.1 City of Globe

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 18.8 square miles.

Globe is located in the southern portion of the Gila County 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 traverse Globe and serve as major roadways servicing the community. Railways include the Arizona Eastern Railroad.

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

[8] Reflects statewide costs

Mexico, Safeway and Wal-Mart. **Figure 3.5** provides a visual depiction of the land ownership around the Globe area.

The 2016 population was 7,376[9] which was a 2.1% decrease from the 2010 Census. The 2010 Census indicated the following demographics:

- % population under age 18: 23.4%
- Labor force age 16 and over: 59.2%
- Education: High school 83.0%, College level or higher 15.8%
- Income: Median household $42,405, Poverty level 19.8%
- Housing units: 3,386
- Households: 2,840

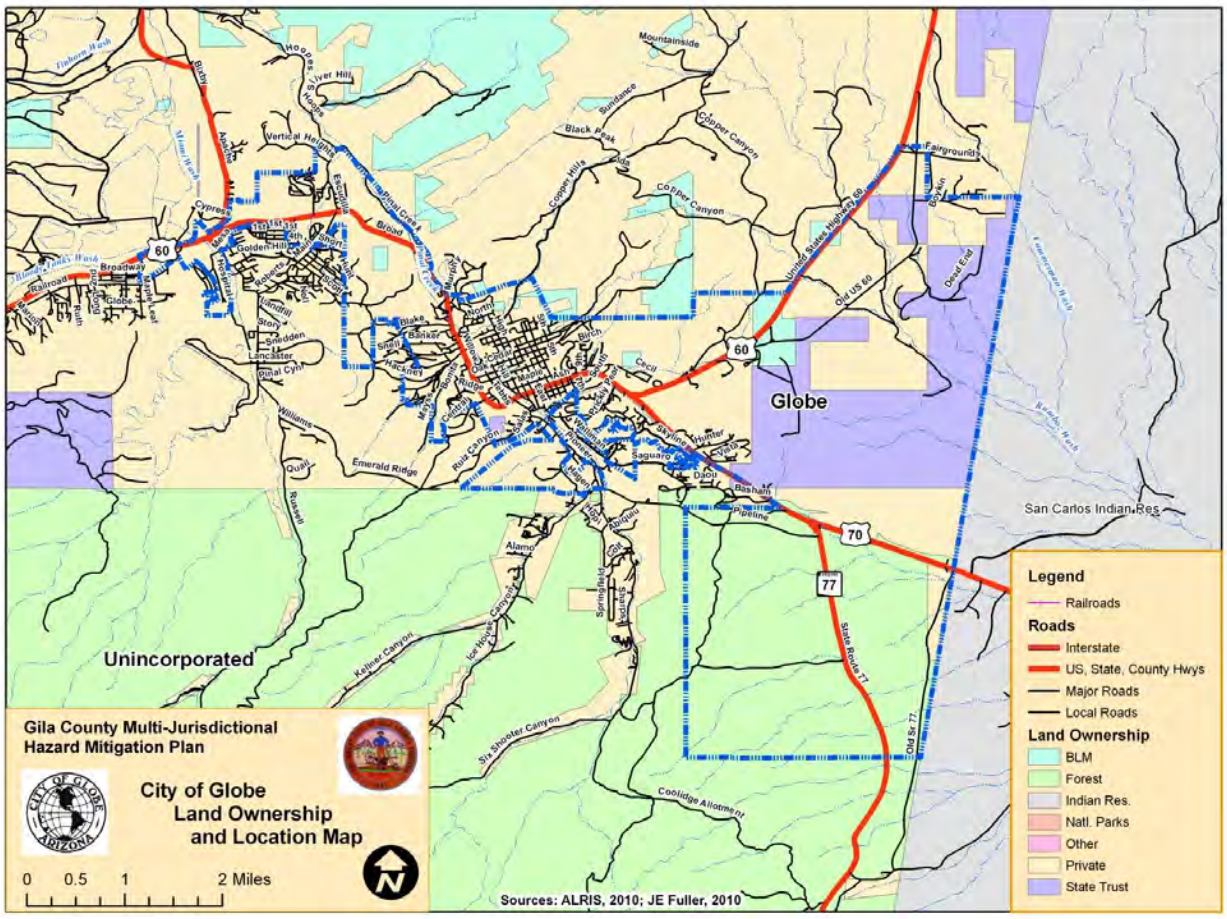

Figure 3.5: City of Globe Land Ownership

[9] U.S Census QuickFacts 2016

3.2.2 Town of Hayden

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 1.27 square miles.

Hayden is located in the very southern portion of the Gila County, as depicted in **Figure 3.2**, 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 traverses 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 3.6**.

Founded as a mining town, Hayden's economy continues to be dependent on mining and the production of copper. The biggest employer in the area is the mining and smelter operation owned by American Smelting and Refining Company (ASARCO), Inc. 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 3.6** provides a visual depiction of the land ownership around the Hayden area.

The 2016 population was [10] 635. The 2010 Census indicated the following demographics:

- Average population age 41.9
- Education: High school 87.0%
- Income: Median household $38.167, Poverty level 32.0%
- Housing units: 301

[10] U.S. Census FactFinder 2016

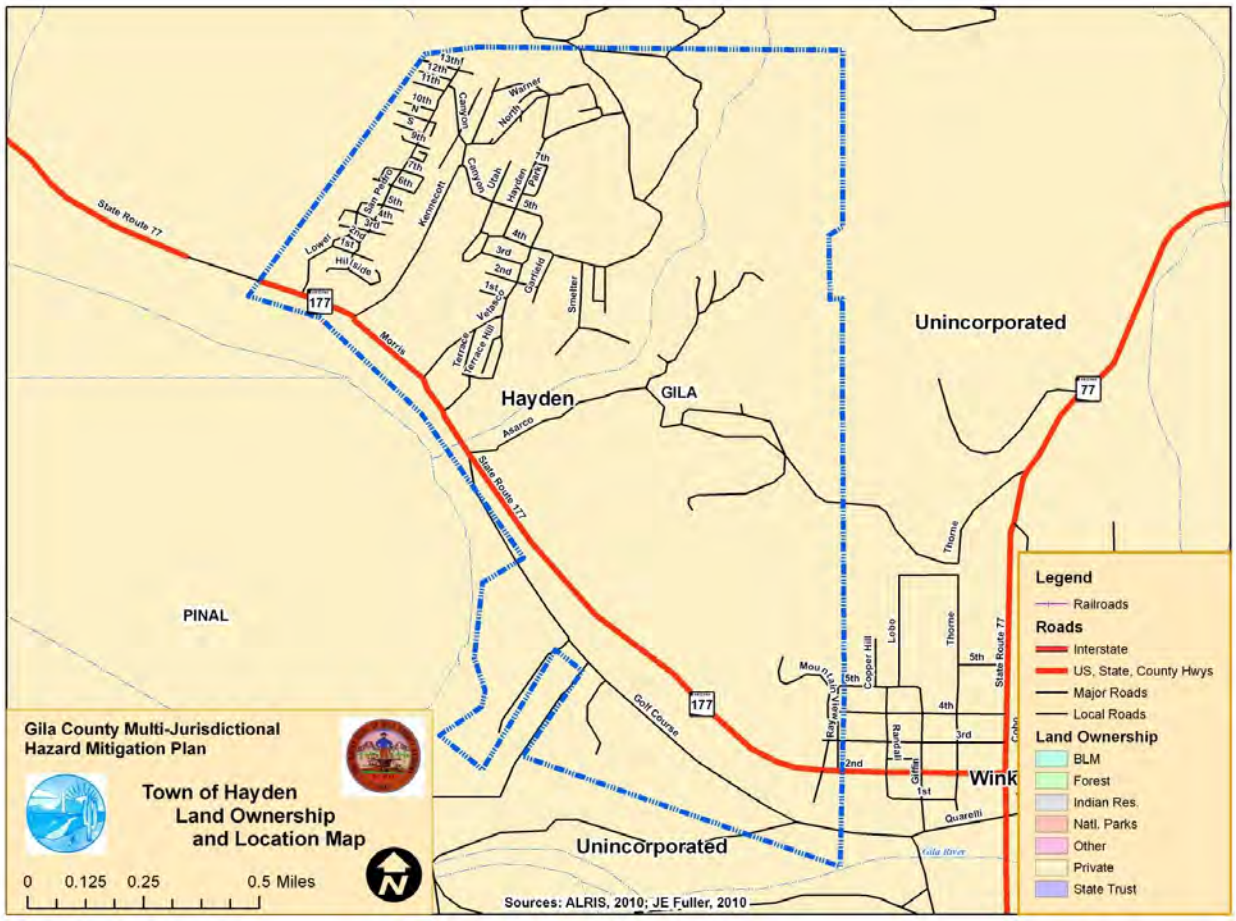

Figure 3.6 Town of Hayden Land Ownership

3.2.3 Town of Miami

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 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 3.7**.

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. **Figure 3.7** provides a visual depiction of the land ownership around the Miami area.

The 2016 population was [11] 1735. The 2010 Census indicated the following demographics:

- Average population age 39.2
- Education: High school 77.3%
- Income: Median household $ 40,602, Poverty level 21.1%
- Housing units: 988

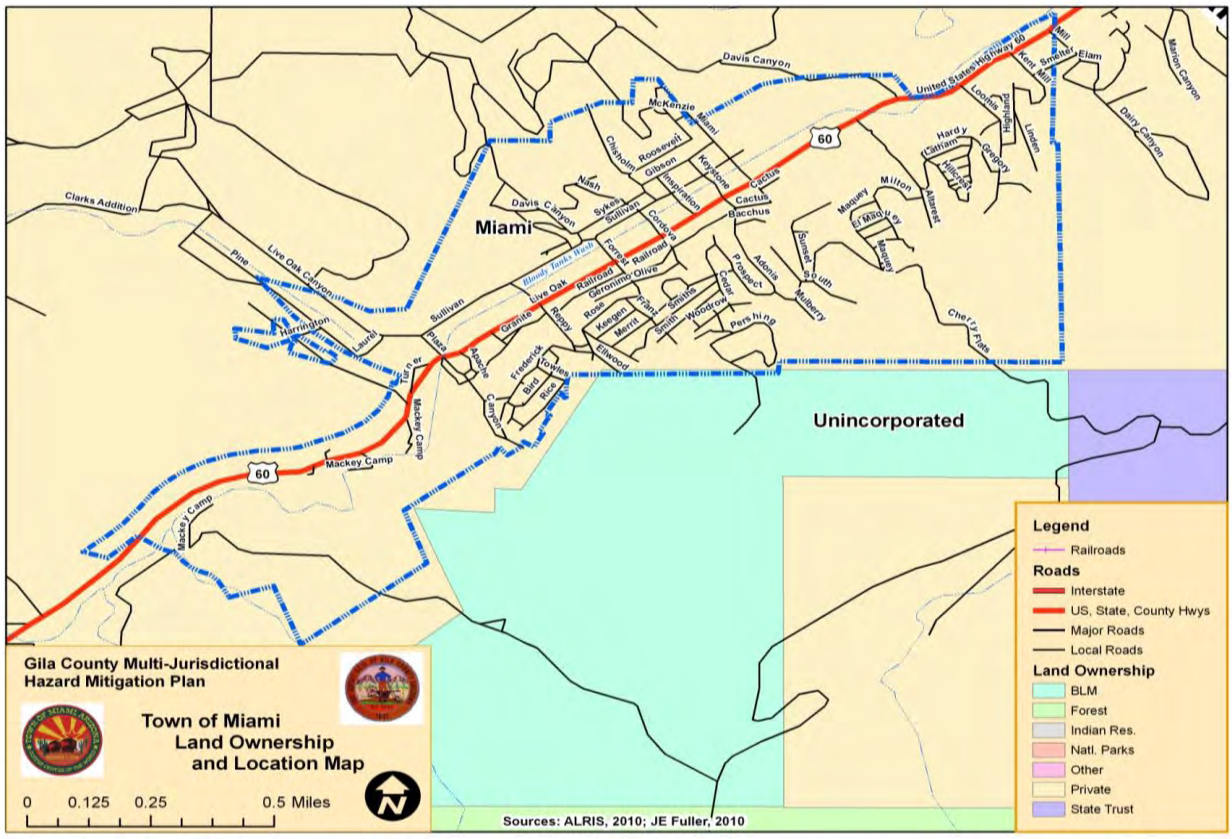

Figure 3.7: Town of Miami Land Ownership

3.2.4 Town of Payson

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 19.47 square miles.

Payson is located in the northern Gila County, as depicted in **Figure 3.2**, 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

[11] U.S. Census Fact Finder 2016

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 traverse Payson and serve as the main roadways servicing the community. The major transportation routes and land features around Payson are shown on **Figure 3.8**.

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.

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 2016 population for Payson was 15,476[12]. The 2010 Census indicated the following demographics:

- % population under age 18: 17.5%
- Labor force age 16 and over: 42.5%
- Education: High school 88.3%, College level or higher 22.6%
- Income: Median household $42,856, Poverty level 12.7%
- Housing units: 8,958
- Households: 6,625

[12] U.S. Census QuickFacts 2016

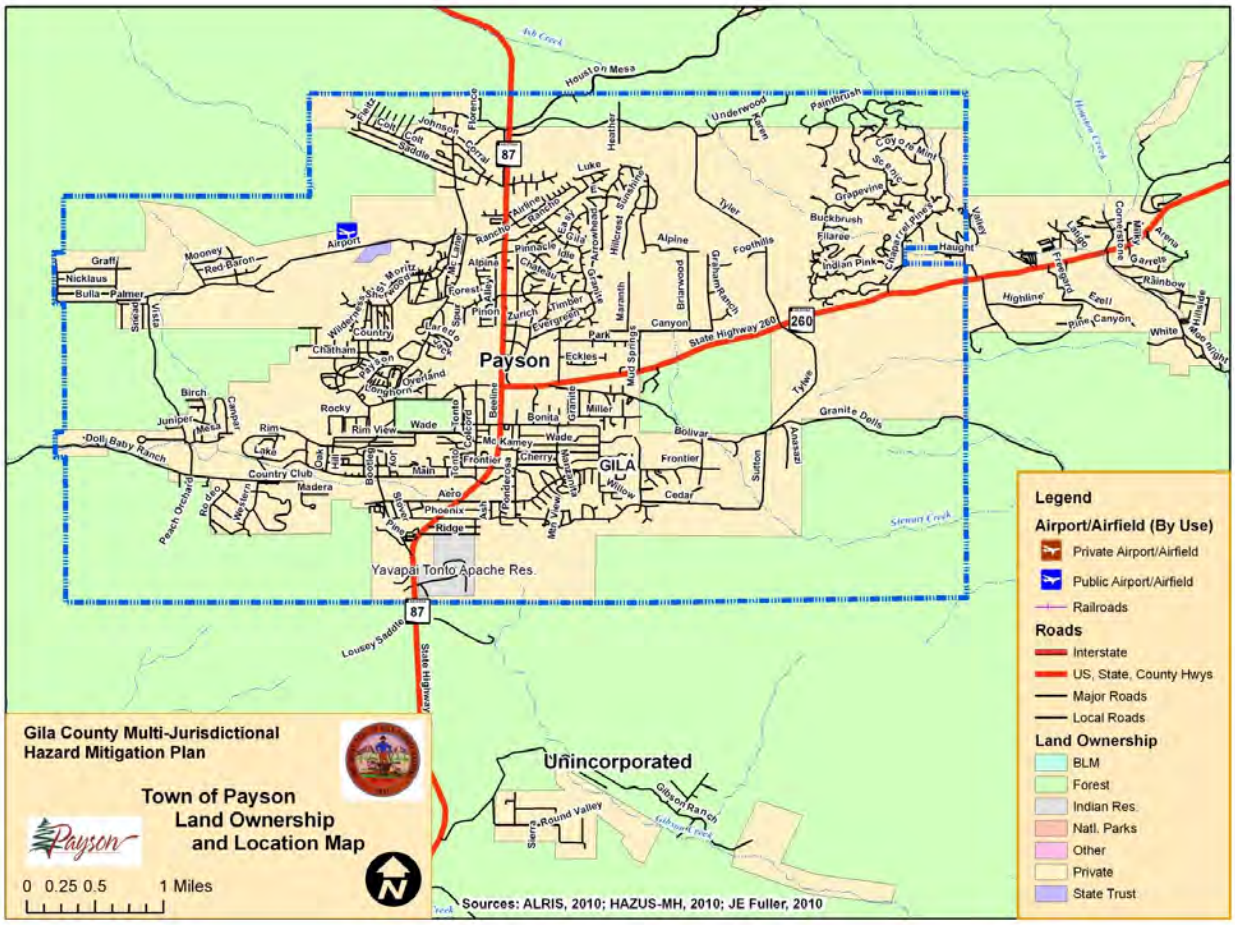

Figure 3.8: City of Payson Land Ownership

3.2.5 Town of Winkelman

Geography and Climate:

Winkelman is located at the southern tip of Gila County at 32°59'17"N 110°46'13"W (32.988142, -110.770240) situated at an elevation of 2,100 feet. Winkelman is adjacent to Hayden, Arizona. The unincorporated community of Dudleyville is south of Winkelman, in Pinal County. According to the United States Census, the town has a total area of 0.73 square miles all of it land. The Gila River passes along the eastern and southern sides of town.

The scenery around Winkelman is some of the most spectacular in the State and is part of the Old West Highway route. The mountain ranges provide the backdrop for the meandering Gila River and such landmarks as Saddleback and Mescal Mountain ranges.

Winkelman has a semi-arid climate, characterized by hot summers and moderate to warm winters. Globe's arid climate is somewhat tempered by its elevation, however, leading to slightly cooler temperatures and slightly more precipitation than Phoenix or Yuma.

Summers in Winkelman are hot, with daytime highs generally between 90 °F (32 °C) and 100 °F (38 °C). High temperatures topping 100 °F (38 °C) are not uncommon in July and August for Globe. Summertime lows are generally right around 65 °F (18 °C). Wintertime highs usually average between 55 °F (13 °C) and 65 °F (18 °C), and lows tend to be right at or above freezing (32 °F/0 °C).

Demographics and economy:

The 2010 population was 353, a 20 percent decline from 2000. The average age was 48. The median household income was $46,944. The median house value was $76,936. Most of Winkelman's economic activity is based on copper. The community serves primarily as a service center and residential area for families of employees associated with the mining and processing activities. The principal employer with the Town is the Hayden-Winkelman School District.

Government:

Winkel man has a Council/Town manager government.

Land use:

Figure 3.9 depicts land use in Winkelman.

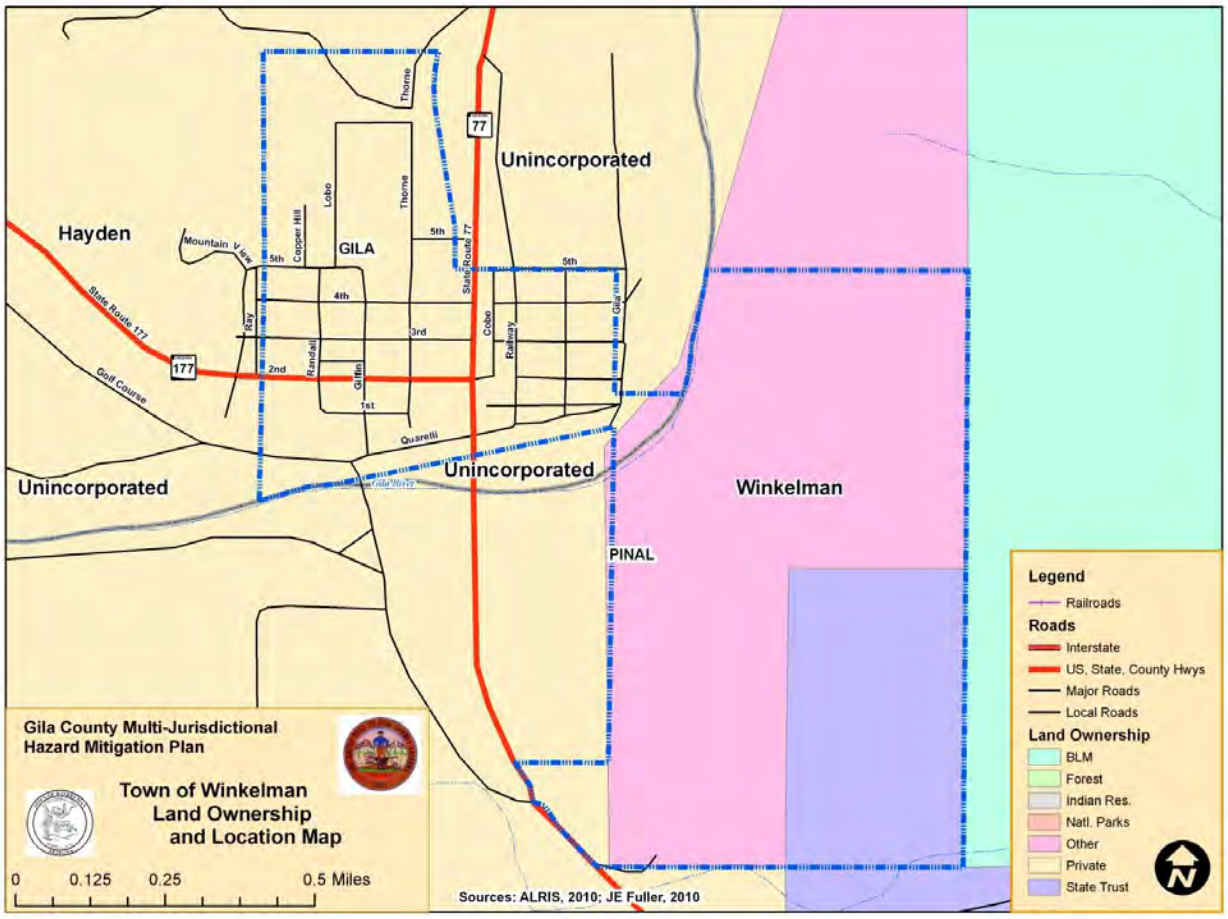

Figure 3.9: Winkelman Land Ownership

SECTION 4: CAPABILITIES ASSESSMENT

Assessing the capabilities of the County and the jurisdictions within the County is critical to understanding what resources are available to achieve mitigation goals and actions. The communities use the capabilities to achieve mitigation strategies as well as identify where capabilities can be improved or where they may expose risk. A MJLHMP such as this one is especially advantageous here because the communities can integrate, borrow and/or share resources to achieve broader mitigation strategies. Capabilities are generally categorized as planning and regulatory, administrative and technical, financial, and educational and outreach.

Individual jurisdictions will identify their capabilities in **Appendix E, Annexes A** through **E**. This section highlights overarching County capabilities and identify potential risk.

4.1 LEGAL AND REGULATION CAPABILITIES

It is important that the planning team have members from many communities. Each community should bring recent, current, and future projects to the planning table. This will provide both background for planning purposes as well as points of insertion for hazard mitigation strategies. Examples of plans include general plans, capital improvement plans, and emergency preparedness and response plans. Regulatory capabilities include building codes and zoning ordinances. It is important to note these plans and regulations specifically include information for hazard mitigation. Also, this is an opportunity to identify where plans and regulations do not identify mitigation for hazards and could pose a risk to the community. **Table 4-1** outlines the County legal and regulatory capabilities. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table 4-1 contain suggested methods for expanding upon current County plans and policies as a follow-on paragraph.

Table 4-1: County Legal and Regulatory Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Building Code Ordinance of the County of Gila amended June 28, 2011	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the County Building Code Ordinance in terms of hazard locations and extent.	All	Updated 2011 All	Regulatory
Minor Land Division Ordinance of the County of Gila	The purpose of this Ordinance shall be to ensure that minor land divisions shall • Comply with existing zoning regulations; provide adequate public utility easements • Provide for adequate unobstructed legal and physical access • Not constitute a subdivision • Not constitute an attempt to evade or circumvent the laws and regulations governing subdivisions • Ensure compliance with related ordinances, laws and regulations	All		Regulatory

Table 4-1: County Legal and Regulatory Capabilities				
	• Provide for conveyance by accurate legal description.			
Gila County Planning and Zoning Ordinance, May 3, 2011	Establishes regulations for land use and property development. Restricts development in high hazard areas. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the County Planning and Zoning Ordinance in terms of hazard locations and extent. Areas that are noted as high hazard zones should face restrictions on development.	Fire, Flood,	Updated 2011 All	Regulatory
Gila County Floodplain Management Ordinance 2015	The objective of this policy is to minimize the impacts floods through building restrictions in flood zones and specifically in special flood hazard areas. Expansion - The MJLHMP contains several specific flood mitigation measures in support of the Flood Prevention Ordnance. Inclusion of the new dam hazard developed as part of the MJLHMP planning process will be included in updates to the Ordinance.	Flood	Yes All	Regulatory
Gila County Grading and Drainage Ordinance No. 08-01, March 12, 2008	The objective of this policy is to minimize the impacts floods through building restrictions in flood zones and specifically in special flood hazard areas. Expansion - The MJLHMP contains several specific flood mitigation measures in support of the Flood Prevention Ordnance. Inclusion of	Flood		Regulatory

Table 4-1: County Legal and Regulatory Capabilities				
	the new dam inundation data developed as part of the MJLHMP planning process will be included in updates to the Ordinance.			
Gila County Ordinance No. 11-02 Open Outdoor Fire	Restricts open fires outdoors to promote fire safety. Expansion - As the ordinance is reviewed, staff can use the latest fire hazard maps in the MJLHMP to provide input.	Fire		Regulatory
General Plan (2003) – General Development Plan for Gila County	Its purpose is to conserve and promote the public health, safety and general welfare by guiding and accomplishing a coordinated, adjusted and harmonious County development and future growth. Describes hazard areas and regulates current and future development based on known hazard areas. The General Plan Safety Element may incorporate the MJLHMP by formal adoption by the County Board of supervisors. Expansion - The MJLHMP may be adopted as part of the Safety Element by the County Board of Supervisors. The General Plan and the MJLHMP will be correlated with respect to climate change and the impacts of planned growth. As the Safety Element is updated, revised hazard analysis from the MHLHMP will be incorporated. Safety Element actions will be aligned with MJLHMP mitigation measures	Dam Inundation, Hazardous Materials, Flooding, Fire, Winter Storm		Plan

Table 4-1: County Legal and Regulatory Capabilities				
Land Use and Resource Policy Plan, (LLURP) September 16, 2010	Sets forth Gila County Policy Statements regarding federally managed land and resource planning, management and decision-making processes that may affect the residents, lands and resources situated in Gila County, Arizona. The LURRP complies with the requirements of the 2010 State of Arizona SB/HB 1398 as it relates to Federal and State management of land and resources, and it is consistent with the County's culture, customs, traditions, and economic heritage. Expansion - The MHLHMP will be used to provide information to update the LLURP to include addressing hazards that are contiguous with County and Federal land.	Fire, Flood		Regulatory
Community Wildland Protection Plan (CWPP) (2016) General forest remediation and subdivision protection plan, northern Gila County region	The Plan is a local road map to create and maintain defensible landscapes in order to protect vital assets. It seeks to reduce firefighting cost and property loss, increase public and firefighter safety, minimize wildfire risk to communities and contribute to ecosystem health. The Plan identifies pre-suppression projects including opportunities for reducing structural ignitability, and the identification of potential fuel reduction projects and techniques for minimizing those	Fire	Yes All	Plan

Table 4-1: County Legal and Regulatory Capabilities				
	risks. The central goals that are critical to reducing and preventing the impacts of fire revolve around both suppression efforts and fire prevention efforts. Expansion - The MJLHMP fire hazard analysis and fire related mitigation measures will be included in updates to the CWPP.			
Gila County Emergency Operations Plan (on-going, updated as needed, live document)	Describes what the local jurisdiction's actions will be during a response to an emergency. Includes annexes that describe in more detail the actions required of the local jurisdiction's departments/agencies. Further, this plan describes the role of the Emergency Operation Center (EOC) and the coordination between the EOC and the local/tribal jurisdictions. Lastly, the EOP describes how the EOC serves as the point of coordination between local, tribal, State, and Federal agencies during a disaster. The MJLHMP provides the basis for the hazards included and described in the EOP. Expansion - The MJLHMP will be used as an essential tool to update the County EOP. The EOP describes applicable hazards as part of the Plan. The latest MJLHMP hazards	All	Yes	Plan

Table 4-1: County Legal and Regulatory Capabilities				
	descriptions will be included. Mitigation actions that are preparedness and response in nature will be analyzed for applicability to include in the description of EOP processes and procedures.			
Gila County Multi-Hazard Mitigation Plan (2011)	Describes hazard areas and recommends actions to mitigate hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the County Board of supervisors. Expansion - The MJLHMP and the Comprehensive Plan will be correlated with respect to climate change and the impacts of planned growth. As the Comprehensive Plan is updated, revised hazard analysis from the MHLHMP will be incorporated into the Land Use and Resource Policy section.	All	Yes – All sections	Plan
Flood Studies • Flood Insurance Study, December 4, 2007 • Flood Insurance Rate Maps • US Army RGP reports for Emergency Protective Measures at: - Pinto Creek at Lopez Cross - Tonto Creek at Gisela	Provides information on flood plain boundaries and areas prone to flooding. Displays flood insurance rate maps. List emergency protective measures for property in areas that are prone to flooding. Expansion - The MJLHMP contains the latest flood maps as well as several recommended	Flood		Report

Table 4-1: County Legal and Regulatory Capabilities				
- Tonto Creek at Tonto Basin - Sycamore Creek at Tonto Basin - Campaign Creek at Roosevelt	mitigation measures to address flooding hazards.			

4.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

Mitigation actions need to be implemented through administrative and technical capabilities; specifically, staff and their skills to achieve them. The County and all jurisdictions have identified not only government administrative capabilities but contractor and private partner capabilities. The County's administrative and technical capabilities are also resources for all jurisdictions within the planning area. **Table 4-2** represents administrative and technical capabilities either within or available to all jurisdictions within the County.

Table 4-2: County Technical and Staff Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Planner(s) or engineer(s) with knowledge of land development and land management practices (Public Works – County Engineer)	Checks to make sure structures/Improvements are located in safe manor	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Engineer(s) or professional(s) in construction practices related to buildings and/or infrastructure (Public Works – Public Works Director)	Checks to make sure structures/Improvements are built in safe manor	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards (Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built and located in safe manor	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Floodplain Manager (Public Works – Public Works Director)	Checks to make sure structures/Improvements are located outside the floodplain or provided flood protection	Flood	New city engineer and staff	Technical Staff/Personnel

Table 4-2: County Technical and Staff Capabilities				
Surveyors (Public Works – County Engineer)	Checks to make sure structures/Improvements are located in safe manor		New city engineer and staff	Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Fire Department and the Planning and Zoning Department)	Checks to identify possible hazards associated with wildfire and make recommendations for mitigating the hazards	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Personnel skilled in GIS and/or HAZUS (Planning Department)	Able to assist routes for detours in case of road closures, also help locate water valves in case of emergency		New city engineer and staff	Technical Staff/Personnel
Emergency Manager (County OES)	Able to help identify new hazards and existing hazards	Winter Storm Flood Fire High wind	New city manager	Technical Staff/Personnel
Grant writer(s) (Administration – Department Heads)	Supports securing funding for mitigation actions implementation	Winter Storm Flood Fire High wind	New administrative assistant	Technical Staff/Personnel

4.3 FISCAL CAPABILITIES

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table 4-3: County Fiscal Capabilities			
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire High wind	Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire High wind	Fiscal
Authority to levee taxes for specific purposes		Winter Storm Flood Fire High wind	Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire High wind	Fiscal
Incur debt through general obligation bonds			Fiscal
Incur debt through special tax bonds			Fiscal

4.4 EDUCATION AND OUTREACH

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table 4-4: County Education and Outreach Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Emergency Management Website	Gives access to community for information in case of an emergency	All	Ongoing updates	http://www.gilacountyaz.gov/government/health_and_emergency_services/emergency_management/index.php
Ready Gila	Official preparedness website for the County	All	Ongoing updates	http://readygila.com/
Facebook	Gives access to community for information in case of an emergency	All	Ongoing updates	https://www.facebook.com/gilacountygovernment/
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	All	Ongoing updates	928-425-3559
Everbridge	Gives access to community for information in case of an emergency	All	Ongoing updates	Web page and phone app http://www.gilacountyaz.gov/alertcenter.php

4.5 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 4-5** summarizes the NFIP status and statistics for each of the jurisdictions participating in this Plan.

Table 4-5: NFIP status and statistics for Gila County and participating jurisdictions as of February 15, 2019

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	270	$48,127	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	45	$19,775	Provides floodplain management for the incorporated areas of the city.
Miami	040030	5/1/1980	12/4/2007	27	$2,580	Provides floodplain management for the incorporated areas of the town.

Table 4-5: NFIP status and statistics for Gila County and participating jurisdictions as of February 15, 2019						
Jurisdiction	**Community ID**	**NFIP Entry Date**	**Current Effective Map Date**	**Number of Policies**	**Amount of Coverage (x $1,000)**	**Floodplain Management Role**
Payson	040107	3/18/1980	12/04/2007	24	$5,965	Provides floodplain management for the incorporated areas of the town.
Star Valley	040022	4/11/2008	12/4/2007	27	$4,386	Defers floodplain management responsibilities to Gila County. Will take a first look to screen and then forward to the County for permits.
Winkelman		10/1/91	12/4/2007			Winkelman residences were relocated outside the floodplain. There are no policies in effect.
Source: https://bsa.nfipstat.fema.gov/comm_status/index.html FEMA Community Status Report in NFIP (2/15/2019)						

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;

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[13]. 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 2011 Plan was reviewed by

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

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 2011 Plan list to the comprehensive hazard list summarized in the 2013 State Plan[14] to ensure compatibility with the State Plan. **Table 5-1** summarizes the 2011 Plan and 2013 State Plan hazard lists.

Table 5-1: Summary of initial hazard identification lists

2011 Gila County Plan Hazard List	2013 State Plan Hazard List
• Drought • Flooding/Flash Flooding • HAZMAT • Severe Wind • Transportation Accident • Wildfire • Winter Storm	• Dam Failure • Disease • Landslide/Mudslide • Levee Failure • Drought • Earthquake • Extreme Heat • Fissure • Flooding/Flash Flooding • Wildfires • Winter Storm • Hazardous Materials Incidents • Severe Wind • Subsidence • Terrorism

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 mitigations 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 2011 Plan. With this update, the 2011 Plan database was reviewed and revised to separately summarize declared

[14] ADEMA, 2013, *State of Arizona Multi-Hazard Mitigation Plan*

disaster events versus non-declared events. Declared event sources included Gila County Department of Emergency Management (GCDEM), ADEM (now DEMA), 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 1972 to August 2017. Three tables are used in this update to summarize the historic hazard events. **Table 5-2** summarizes federal and state declarations with data provided by many sources that included fatalities, injuries, and property damages. **Table 5-3** 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 Events That Included Gila County January 1972 to August 2017

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: DEMA, FEMA, USDA

Table 5-3: Gila County Historic Hazard Events – February 1891 to August 2017				
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 does not include the cost of suppression which can be quite substantial. Sources: DEMA, NCDC, NWCG, NWS, USFS, NRC				

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 2011 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.

While the Planning Team considered adding Extreme Heat to the list of hazards for the 2019 Plan, the consensus was to not include it as a hazard. NWS records[15] from 1990 through 2019 indicate only two days of extreme heat occurred in the County. On June 19 and 20, Payson experienced temperatures of 104 and 106 respectively. There were no injuries or deaths, or financial losses associated with the incident.

The 2016 FEMA State Mitigation Plan Review Guide adds the requirement for state HMPs to address climate change as a prerequisite for mitigation program grant funding. The Gila County 2019 will address climate change as a specific hazard and review is impacts on other natural hazards.

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.

• **Climate Change** • **Dam Inundation** • **Drought** • **Flooding/Flash Flooding**	• **HAZMAT** • **Severe Wind** • **Transportation Accident**	• **Wildfire** • **Winter Storm**

5.2 VULNERABILITY ANALYSIS METHODOLOGY

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.

5.2.1 Calculated Priority Risk Index (CPRI) Evaluation

A risk assessment involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard. The intention of a risk assessment is to help the community understand the greatest risks facing the County. The risk assessment defines and quantifies vulnerable populations, buildings, critical facilities, and other assets at risk from hazards, and is based on the best available data and the significance of the hazard. The risk assessment further examines the impact of the identified hazards on the County, determines which areas of the County are most vulnerable to each hazard, and estimates potential losses to County facilities for each hazard.

For the 2019 MJLHMP, the risk for each hazard was rated using the Calculated Priority Risk Index (CPRI). The CPRI examines four criteria for each hazard (probability, magnitude/severity, warning time, and duration) as seen on **Table 5-4**. For each hazard, an index value is assigned for each CPRI category from 0

[15] NWS 2018 https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=707231

to 4 with 0 being the least hazardous and 4 being the most hazardous situation. This value is then assigned a weighting factor and the result is a hazard ranking score, **Table 5-5**.

CPRI Category	Table 5-4: Calculated Priority Risk Index (CPRI) Degree of Risk Chart			Assigned Weight
	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 of between 0.01 and 0.001.	**2**	
	Likely	Occasional occurrence with at least two or more documented historic events. Annual probability of between 0.1 and 0.01.	**3**	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of 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 and 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 infrastructures). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week	**3**	

CPRI Category	Table 5-4: Calculated Priority Risk Index (CPRI) Degree of Risk Chart			Assigned Weight
	Level ID	Description	Index Value	
		and less than 1 month.		
	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	< than 6 hours	Population receives less than 6 hours of warning.	**4**	**15%**
	6 to 12 hours	Population receives between 6-12 hours of warning.	**3**	
	12 to 24 hours	Population receives between 12-24 hours of warning.	**2**	
	> than 24 hours	Population receives greater than 24 hours of warning.	**1**	
Duration	< than 6 hours	Disaster event will last less than 6 hours.	**1**	**10%**
	6 to 24 hours	Disaster event will last between 6-24 hours.	**2**	
	24 hrs. to 1 week	Disaster event will last between 24 hours and 1 week.	**3**	
	> than 1 week	Disaster event will last more than 1 week.	**4**	

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

Table 5-5: CPRI Summary									
Hazard	Probability	Weighted 45%	Magnitude Severity	Weighted 30%	Warning Time	Weighted 15%	Duration	Weighted 10%	CPRI Ranking
Climate Change	4	.45	3	.30	1	.15	4	.10	**3.25**
Drought	3	.45	2	.30	1	.15	4	.10	**2.45**
Flood/Flash Flood	4	.45	3	.30	4	.15	2	.10	**3.50**
Hazardous Material Release	2	.45	2	.30	4	.15	2	.10	**2.30**
Severe Wind	2	.45	2	.30	3	.15	2	.10	**2.15**
Transportation Accidents	2	.45	2	.30	4	.15	1	.10	**2.20**
Wildfire	4	.45	3	.30	3	.15	3	.10	**3.45**
Winter Storm	3	.45	3	.30	1	.15	3	.10	**2.70**

5.2.2 Asset Inventory

The following facilities are County owned. Table 5-6 provides use, location, associated hazards and values based on insurance limits. Asset inventories for participating jurisdictions are contained in **Appendix E**.

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
2	County Courthouse ($7,462,300) Guerrero Admin ($504,400)	1400 East Ash Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$7,966,700
1	911 Sheriff Dispatch	1342 East Monroe Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$80,100
1	Juvenile Detention	1425 South Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$2,775,400
1	Michaelson Bldg-Child Support/City Atty	147-149 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$748,700

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	WIC Building & EOC Storage	5515 S. Apache Ave, Suite 500 Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	--
1	County Jail Facility	1100 South Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$4,186,300
1	Women's Jail Dorm	1101 South Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	--
6	• Recycle Landfill Office Building ($130,200) • Storage Warehouse / Sheriff Fitness & Recycle Bikes ($149,000) • Landfill Scale House – Russell Gulch • Copper Road Tool Shed • Copper Road Work Shop ($36,100) • Recycle Landfill Storage Shed	5891 Hope Lane Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$316,200
1	Weatherization Bldg	5815 Hope Lane Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
1	Admin Building	745 N. Rose Mofford Way Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$1,515,843
1	Facilities & Sign Shop	725 N. Rose Mofford Way Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$1,123,767
1	Roads & Auto Shop	1001 W. Besich Blvd Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
1	Tire Pole Barn	1000 W. Besich Blvd Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
34	• Fair Grounds • Exhibit Hall ($614,300) • Fairground Well/Pump House ($--) • Grandstand ($217,800) • Announcer Booth ($--) • Concession Stand #1 ($--) • Concession Stand #2 ($--)	900 East Fairgrounds Road Globe, AZ 85501	Fire, Flood, Winter Storm	B	$3,072,300

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
	• Concession Stand #3 ($--) • Concession Stand #4 ($--) • Concession Stand #5 ($--) • Mutual Building ($33,200) • Announcers Booth (Corral Area) ($--) • Maintenance Shop ($157,600) • Restroom/Shower ($181,600) • Test Barn ($30,200) • Bird Barn ($64,900) • Covered Area #1 ($77,600) • Covered Area #2 ($110,800) • Covered Area #3 ($41,000) • Stable A ($86,600) • Stable B ($83,900) • Stable C ($83,900) • Stable D ($118,600) • Stable E ($86,600) • Stable F ($86,600) • Stable G ($86,600) • Stable H ($86,600) • Stable I ($86,600) • Stable J ($86,600) • Storage Building • Water Tank (White) ($75,100) • Water Tank ($44,200) • Mobile Home/FBB Office ($76,300) • Fairgrounds RV Park ($455,100) • FBB Double Wide Classroom				
1	Monroe Building	1177 Monroe Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	$376,300

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Sheriff Substation ($886,600) Boat Storage and Dock ($54,300)	28449 North Hwy 188 Roosevelt, AZ 85545	Fire, Flood, Winter Storm	B and C	
1	Courthouse/Probation Offices	714 South Beeline Hwy Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	$1,156,500
1	Community Services Building	100 W Main Street Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	---
1	Elections Storage	Star Valley, AZ	Fire, Flood, Winter Storm	B and C	
1	Facilities Management Shop	109 W Frontier Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	
2	Health/Environmental/ Animal Depts ($268,600) C.A.P. Suite B & C ($88,000)	107 West Frontier Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	
1	Payson Admin Office	608 & 610 E Hwy 260 Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	
1	Sheriff Jail and JP Court	108 West Main Street Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	$1,075,500
1	Old Payson Sheriff's Office & Jail	702 S. McLane Road Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	
1	Assessor / Recorder	201 West Frontier Street Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	$169,400
1	Timber Roads Office	5318 East Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$190,100
1	Timber Gas Shop	5320 East Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$233,600
1	Timber Diesel Shop	5322 East Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$894,000
1	Well Pump House	Mile Post 257 Hwy 260 Star Valley, AZ	Fire, Flood, Winter Storm	B and C	

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Fuel Storage Tank	5324 East Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$57,400
1	Pine Roads Office	3180 Old County Road Pine, AZ	Fire, Flood, Winter Storm	B and C	
1	Elections Storage	5318 Est Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$34,500
1	Timber Engineering Office	5314 E Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	
1	Sheriff Storage	5310 East Hwy 260 Star Valley, AZ 85541	Fire, Flood, Winter Storm	B and C	$36,800
1	Recycle Landfill Attendant Bldg.	1321 E. Buckhead Landfill Lane _____, AZ	Fire, Flood, Winter Storm	B and C	
3	Young Sheriff Substation ($88,800) Young Fuel Storage Tank ($33,000) Young Roads Shop ($38,500)	46777 North Hwy 288 Young, AZ 85554	Fire, Flood, Winter Storm	B and C	$160,300
1	Young Well/Pump House	Hwy 288 Young, AZ 85554	Fire, Flood, Winter Storm	B and C	
1	Mtn Ord Radio Station & 80' Tower	Top of FS 626 W of Tonto Basin Tonto Basin, AZ	Fire, Flood, Winter Storm	B and C	
1	Pinal Mtn Radio Station & 60' Tower	FS 651 Radio Loop SE of Globe Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
1	Copper Building	1350 E. Monroe Street Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
1	NAPPA Building (Due for Remodel/ Construction)	110 W. Main Street Payson, AZ 85541	Fire, Flood, Winter Storm	B and C	
1	Central Heights School	5515 S. Apache Avenue Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	
1	Gila County Animal Rabies Control	700 Shelter Lane Globe, AZ 85501	Fire, Flood, Winter Storm	B and C	

Table 5-6: Gila County					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Claypool Ballpark	Hwy 60 and Oak Street Claypool, AZ 85532	Fire, Flood, Winter Storm	B	
1	Pleasant Valley Medical Center	126 N. Tewksbury Blvd Young, AZ 85554	Fire, Flood, Winter Storm	B and C	

5.3 HAZARD RISK PROFILES

The requirements for hazard profiles is stipulated in DMA 2000 and its implementing regulations. The hazards that the Planning Committee selected for the 2019 MJLHMP have been profiled using existing available information. The hazard profiles consist of describing the hazard characteristics:

- Nature/Description
- History
- Locations
- Extent
- Impact of climate change (if applicable)
- Probability and Magnitude

Sources for hazard profiles and profile maps (as applicable) are included

5.3.1 Climate Change

Description:

Arizona's climate is changing. The State has warmed about two degrees (F) in the last century. Throughout the southwestern United States, heat waves are becoming more common, and snow is melting earlier in spring. In the coming decades, changing climate is likely to decrease the flow of water in the Colorado River, threaten the health of livestock, increase the frequency and intensity of wildfires, and convert some rangelands to desert. Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by 40 percent since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree during the last 50 years. Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. Greenhouse gases are also changing the world's oceans and ice cover. Carbon dioxide reacts with water to form carbonic acid, so the oceans are becoming more acidic. The surface of the ocean has warmed about one degree during the last 80 years.

The U.S. Environmental Protection Agency (EPA) describes climate change as "any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes

major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer."

Many people confuse climate change with global warming, the recent and ongoing rise in global average temperatures near Earth's surface. However, global warming represents only one aspect of climate change. The Earth's average temperature has risen by 1.4°F over the past century and is projected to rise another 2 to 11.5°F over the next hundred years. Rising global temperatures have been accompanied by changes in weather and climate. Many places have seen changes in rainfall resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves. The planet's oceans and glaciers have also experienced changes - oceans are warming and becoming more acidic, ice caps are melting and sea levels are rising. The effects of these indicators include:

- **Greenhouse Gases:** Human activities have increased the emissions of greenhouse gases. As a result of the increase in emissions, average concentrations of heat-trapping gases in the atmosphere are also increasing
- **Weather and Climate:** Average U.S. and global temperatures are increasing, while attributes of weather and climate, such as precipitation, drought and tropical cyclone activity, are changing
- **Oceans:** Average oceanic temperatures are increasing. Sea levels are rising around the world due to thermal expansion and increases from ice melt, and waters are becoming more acidic
- **Snow and Ice:** Glaciers in the U.S. and around the world are generally shrinking, while snowfall and snow cover in the U.S. have decreased overall. The extent of the Arctic Sea ice is declining
- **Health and Society:** Warmer temperatures and later fall frosts allow ragweed plants to produce pollen later into the year, potentially prolonging allergy season. The length of ragweed pollen season has increased at 10 out of 11 locations studied in the central U.S. and Canada since 1995. The change becomes more pronounced from south to north
- **Ecosystems:** Many areas are experiencing earlier spring events, such as peak stream runoff and flower blooms. Bird migration patterns are changing, and wildfire zone size has increased

History: Climate change has occurred throughout the history of the planet. Due to variations in the earth's inclination to the sun, volcanic activity and other factors such as asteroid impacts, the amount of solar radiation reaching the earth's surface rises and falls. The temperature of the planet correlates to the amount of solar radiation arriving at the surface and with it the climate.

In relatively recent history, the last glacial period, popularly known as the Ice Age, occurred from c. 110,000 to 12,000 years ago. This most recent glacial period is part of a larger pattern of glacial and interglacial periods known as the Quaternary glaciation (c. 2,588,000 years ago to present). From this point of view, scientists consider this "ice age" to be merely the latest glaciation event in a much larger ice age, one that dates back over two million years and is still ongoing.

During this last glacial period, there were several changes between glacier advance and retreat. The Last Glacial Maximum, the maximum extent of glaciation within the last glacial period, was approximately 22,000 years ago. While the general pattern of global cooling and glacier advance was similar, local differences in the development of glacier advance and retreat make it difficult to compare the details from continent to continent. Generally, the pattern of temperature variation and glaciation has lagged

atmospheric carbon dioxide (CO2) content. **Figure 5-1** depicts global variations during the past 400,000 years as a correlation between temperature and atmospheric CO2 content in part per million.[16]

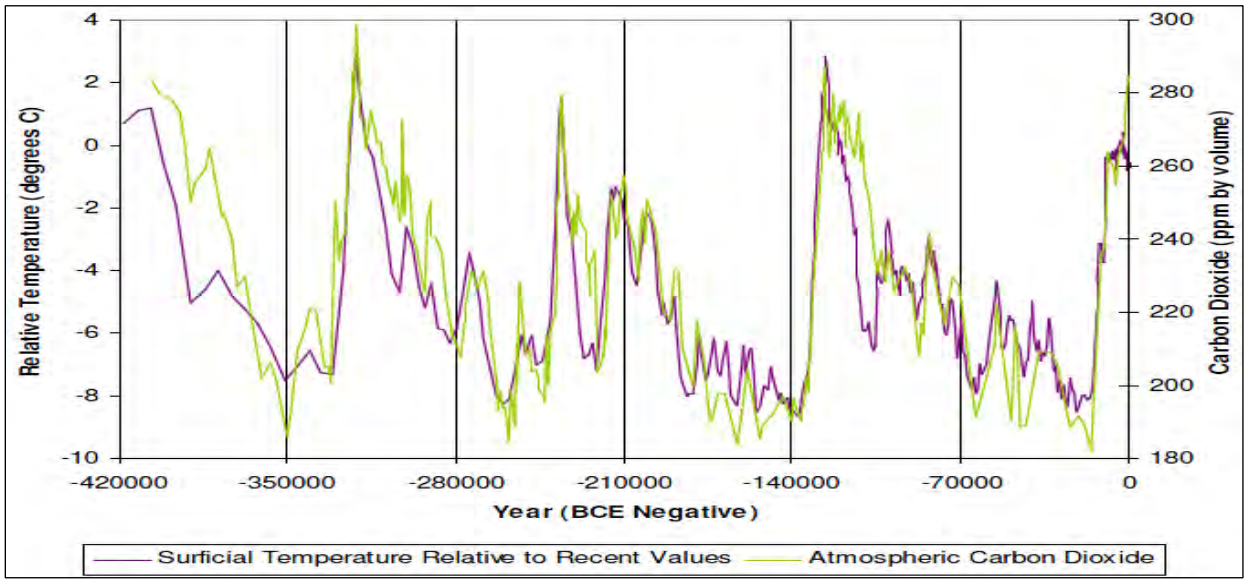

Figure 5.1: Temperature and Atmospheric CO2 Variation Past 400,000 Years

Since 22,000 years ago, the planet has slowly warmed and the glaciers retreated to high northern latitudes and mountains. In the last several decades of this period, human activity has likely led to a rapid increase in atmospheric CO2 and a matching rise in global temperature. The result has been that climate change may be accelerating. **Figure 5-2** provides a graphical depiction of the recent history of temperature rise.[17]

[16] Hogg, A.M., 2008, Glacial cycles and carbon dioxide: A conceptual model. Geophysical Research Letters, 35, L01701

[17]: NOAA

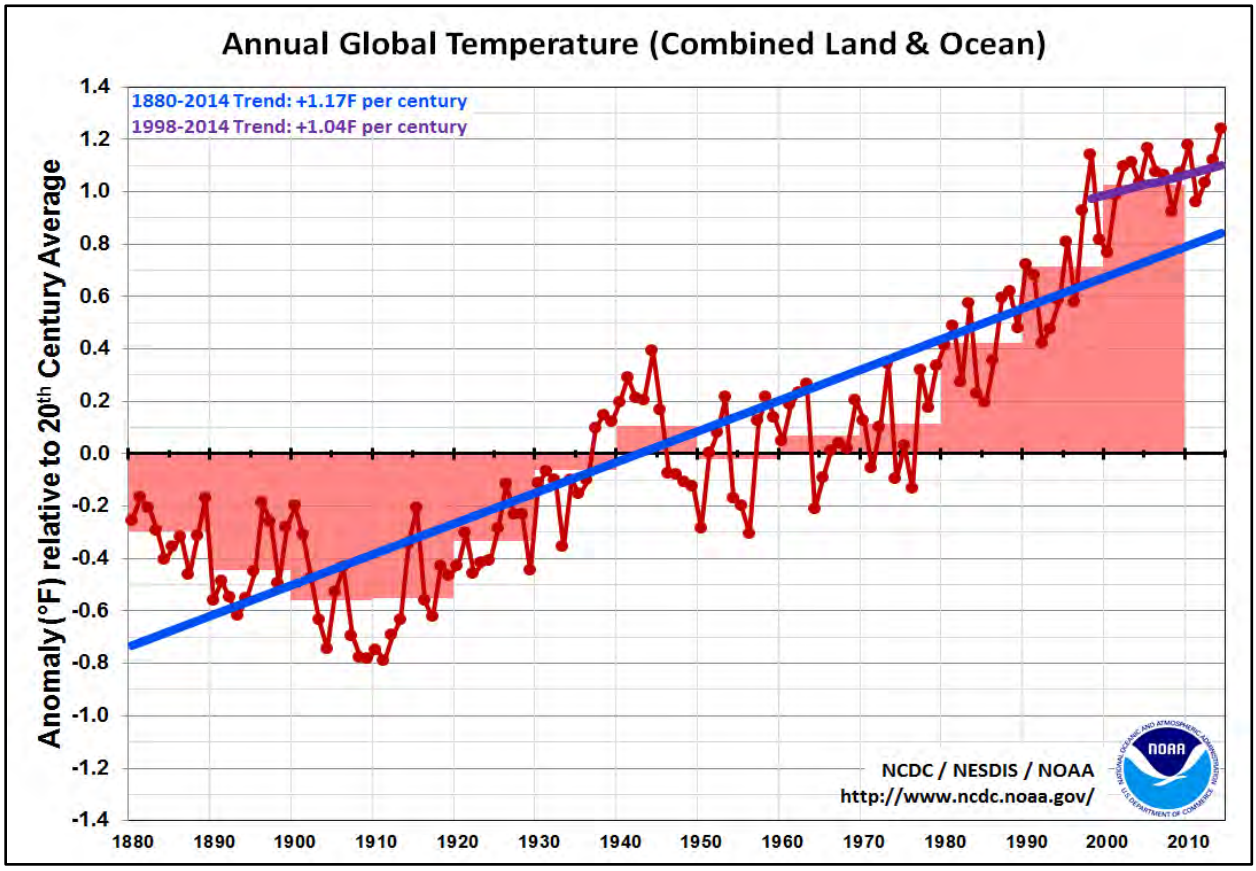

Figure 5.2: Temperature Rise Since 1880

Location: Warming and climate change are occurring globally with wide variations based on location and latitude. The polar regions have experienced particularly rapid changes in climate with increased ice melt and more sea-ice free days.

Extent: Climate change is likely to affect the entire earth's population. More widespread drought and associated crop failure, movement of invasive species, more frequent wildfires, increased energy emergencies, and more intense climate events such as storms and extreme heat will occur throughout the County.

Specific likely impacts on Arizona include:

- Agriculture Increasing droughts and higher temperatures are likely to affect Arizona's top agricultural products: cattle, dairy, and vegetables. Hot temperatures threaten cows' health and cause them to eat less, grow more slowly, and produce less milk. Livestock operations could also be impaired by fire, the lack of water, and changes in the landscape from grassland to woody shrubs more typical of a desert. Reduced availability of water would also create challenges for irrigated farms, which account for two-thirds of the water used in the state.
- Wildfires and Changing Landscapes Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires, which could harm property, livelihoods, and human

health. On average, more than 2 percent of the land in Arizona has burned per decade since 1984. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems. The combination of more fires and drier conditions may expand deserts and otherwise change parts of Arizona's landscape. Many plants and animals living in arid lands are already near the limits of what they can tolerate. A warmer and drier climate would generally extend the Sonoran and Chihuahuan deserts to higher elevations and expand their geographic ranges. In some cases, native vegetation may persist and delay or prevent expansion of the desert. In other cases, fires or livestock grazing may accelerate the conversion of grassland to desert in response to a changing climate. For similar reasons, some forests may change to desert or grassland.

- Pests: Warmer and drier conditions make forests more susceptible to pests. Drought reduces the ability of trees to mount a defense against attacks from pests such as bark beetles, which have infested 100,000 acres in Arizona. Temperature controls the life cycle and winter mortality rates of many pests. With higher winter temperatures, some pests can persist year-round, and new pests and diseases may become established.
- Human Health Hot days can be unhealthy—even dangerous. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. High air temperatures can cause heat stroke and dehydration, and affect people's cardiovascular, respiratory, and nervous systems. Higher temperatures are amplified in urban settings where paved and other surfaces tend to store heat. Construction crews may have to increasingly operate on altered time schedules to avoid the heat of the day. Rising temperatures can increase the formation of ground-level ozone, a key component of smog. Ozone has a variety of health effects, aggravates lung diseases such as asthma, and increases the risk of premature death from heart or lung disease. EPA and the Arizona Department of Environmental Quality have been working to reduce ozone concentrations. As the climate changes, continued progress toward clean air will be more difficult.
- Tribal Communities Changing the climate threatens natural resources and public health of tribal communities. Rising temperatures and increasing drought are likely to decrease the availability of certain fish, game, and wild plants on which the Navajo and other tribes have relied for generations. Water may be less available for domestic consumption, especially for those who are not served by either municipal systems or reliable wells, which includes about 30 percent of the people on the Navajo Nation, who must haul water to meet daily needs. Recurring drought and rising temperatures may degrade the land itself. In the Navajo Nation, for example, the Great Falls Dune Field has advanced almost a mile in the last 60 years, threatening roads, homes, and grazing areas. Extreme heat may also create health problems for those without electricity, including about 40 percent of the people on the Navajo reservation

Probability of Future Events: Climate change is an ongoing occurrence. Essentially, it has occurred, is occurring and will continue to occur for several decades, centuries or longer.

5.3.2 Dam Inundation

Nature: A dam failure is the structural collapse of a dam that releases the water stored in the impounded reservoir. Dam failures usually result due to the age of the structure, inadequate spillway capacity used in construction, or structural damage caused by an earthquake or flood. When a dam fails, large quantities of water may be suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning or evacuation time for the downstream communities. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs as a result of the momentum of the flood caused by the sediment-laden water flooding over the channel banks and impact debris carried by the flow.

History: There is no record of dam failure within the County.

Location: While there are four dams located in the County with Emergency Action Plans and inundation maps, only Coolidge dam poses a high failure threat. **Figure 5-3** depicts Coolidge Dam.

Coolidge Dam is located on the San Carlos Apache Reservation 31 miles southeast of Globe. The dam impounds the Gila River for 23 miles when full. The dam is operated by the Bureau of Indian Affairs and provides irrigation, hydroelectric power and recreation. Dedicated by President Coolidge on March 4, 1930, Coolidge Dam is a massive edifice, composed of three large domes, approximately 250 feet in height, anchored by two buttresses. Coolidge dam with its maximum of 1,073,000 storage of acre-feet at the spillway is rated as a high failure threat dam.

Figure 5.3:

Extent: Failure of Coolidge Dam could cause massive flooding in the Winkelman and Hayden areas. The Arizona State Hazard Mitigation Plan notes that there are 795 people living in the Coolidge Dam inundation zone or 1.48% of the County population. Estimated financial losses are $6,811,526.[18]

Probability of Future Events: Dam failure can result from numerous natural or human activities. Earthquakes, internal erosion, improper siting, structural and design flaws, or rising floodwaters can all result in the collapse or failure of a dam. A dam failure may also be a result of the age of the structure or inadequate spillway capacity. The probability of a future dam failure affecting the County is unknown. While possible, it is unlikely that a dam failure event will occur within the next ten years. Event history is less than or equal to 10% likelihood per year.

[18] State of Arizona Hazard Mitigation Plan 2013

5.3.3 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.

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 stream-flows 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 challenges 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. A federally declared drought emergency was declared in in 1977. 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

Arizona is currently in the 21st year of a long-term drought. Drought in the West is a long-term concept where a single dry year does not constitute a drought. Since Arizona has an arid and semi-arid climate, extreme variability in precipitation is normal, and drought is characterized by a string of drier than normal years, often interrupted by a few wetter than normal years. Currently most watersheds in the state have experienced only 7 or 8 normal or wetter than normal years during the past 21 years.

Location: When a drought is in effect, the entire County is affected. Current drought conditions have persisted throughout the County and Arizona from 2012 through 2017.

Extent:

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[19] 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 5.4**, 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 5.5**, is a three-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.

Long-term drought and water supply conditions in northern Arizona and the Salt River watersheds are much better than they were over the past six to ten years. However, this winter was still not as wet as in late 1980s and early 1990s, before this drought began, and abnormally dry conditions still persist in many parts of the State.

Impact of climate change:

11 https://www.drought.gov/drought/

Higher temperatures throughout the State will result in Increasing droughts and are likely to affect Arizona's top agricultural products: cattle, dairy, and vegetables. Hot temperatures threaten cows' health and cause them to eat less, grow more slowly, and produce less milk. Livestock operations could also be impaired by fire, the lack of water, and changes in the landscape from grassland to woody shrubs more typical of a desert. Reduced availability of water would also create challenges for irrigated farms, which account for two-thirds of the water used in the state.

Annual precipitation has decreased in Arizona during the last century, and it may continue to decrease. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates (or transpires) into the air from soils, plants, and surface waters. Irrigated farmland would thus need more water. But less water is likely to be available, because precipitation is unlikely to increase enough to make up for the additional water lost to evaporation.

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. Drought conditions can be monitored at the National Integrated Drought Information System https://www.drought.gov/drought/states/arizona.

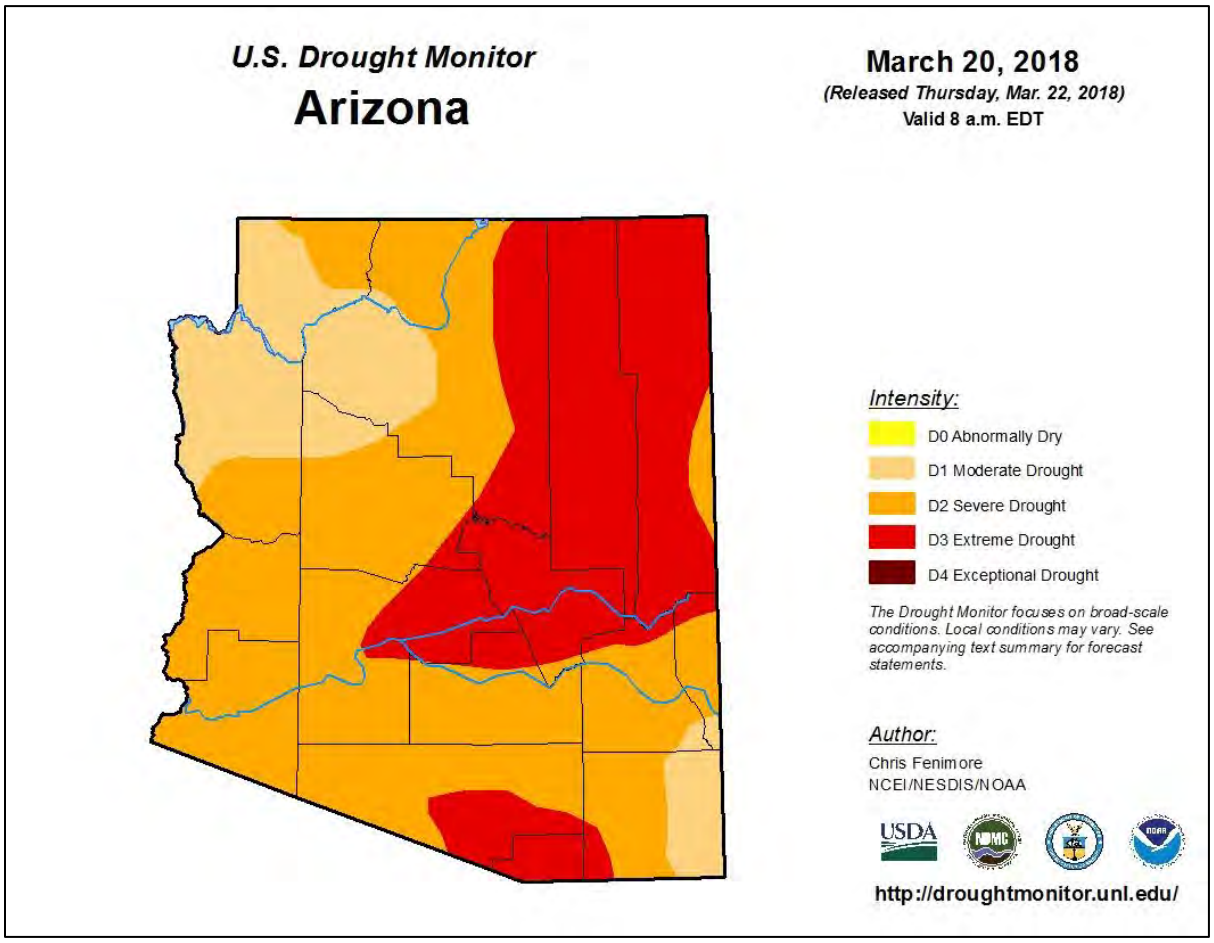

Figure 5.4: March 22, 2019 Drought Extent

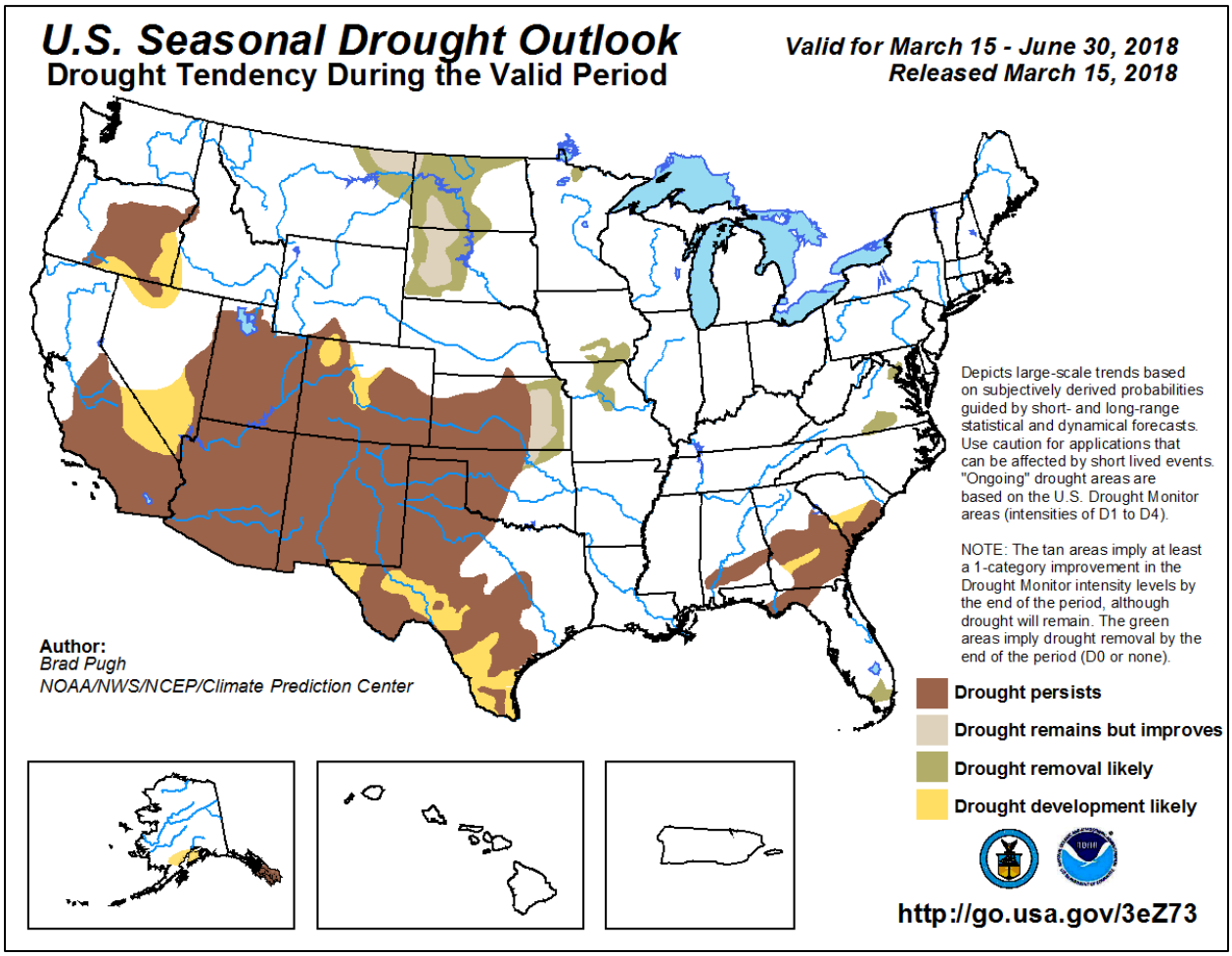

Figure 5.5: U.S. Seasonal Drought Outlook

5.3.4 Flood / Flash Flood

Description:

A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. A floodplain is the area adjacent to a watercourse or other body of water that is subject to recurring floods. Floodplains may change over time from natural processes, changes in the characteristics of a watershed, or human activity such as construction of bridges or channels.

River channels change as water moves downstream, acting on the channel banks and on the channel bottom. On the outside of a channel curve, the banks are subject to erosion as the water scours against them. On the inside of a channel curve, the banks receive deposits of sand and sediment transferred from the eroded sites. In areas where flow contains a high-sediment load, the course of a river or stream may shift dramatically during a single flood event. There are three major types of flooding within the County: riverine flooding (also known as overbank flooding), shallow flooding, and localized drainage flooding.

- Riverine flooding occurs when downstream channels receive more rain or snowmelt from their watershed than normal, or a channel is blocked by an ice jam or debris. Excess water overloads the channels and flows out onto the floodplain. When flooding occurs in steep, mountainous areas, it is usually confined, strikes with less warning time, and has a short duration. In comparison, larger rivers typically have longer, more-predictable flooding sequences and broad floodplains. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics.
- Shallow flooding occurs in the valley of the County. Shallow flooding may consist of sheet flow or ponding and generally occurs in flat areas where a lack of channels prevents water from draining away easily. Sheet flow occurs where there are inadequate or no defined channels. Floodwaters spread over a large area at a uniform depth after an intense or prolonged rainfall during which surface soils reach saturation. Ponding occurs in some flat areas when runoff collects in depressions and cannot drain out. The floodwaters remaining form a temporary pond until they infiltrate into the soil, evaporate, or are pumped out.
- Localized flooding in the County is generally associated with irrigation ditches and canals in the valley, which may contribute to flooding because of levee overtopping or failure. Major canal systems and numerous ditches follow the line of the foothills and cut across the natural drainage pattern. When flood flows overtop the banks of the channels in reaches of inadequate capacity, they may pond against the embankments of the canals (such as roads and railroads), or flow along the embankment until they reach a crossing. Floodwaters may also back up behind obstacles until they overtop a canal bank, then flow down the canal to increase flooding downstream.

History:

The three seasonal atmospheric events that tend to trigger floods in Gila County are:

- 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.
- 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.

Recent flood events that have resulted in damage, death or evacuation include:

- 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. (NCEI, 2017)
- 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. (NCEI, 2017)
- On July 11, 2012 thunderstorms with very heavy rain developed across portions of southern Gila county. At approximately 1630MST, radar indicated rainfall rates approaching 3 inches per hour in the area between Globe and San Carlos. The heavy rain led to flash flooding and

mudslides on area roads, such as highway 70, in the area around Globe and Cutter. No injuries were reported as a result of the flash flooding. At 1653MST, the Arizona Department of Highways reported mud and debris across the roadway at the intersection of US Highway 70 and Highway 170, approximately 1 mile west of Cutter. At 1712MST, there was a public report of a mudslide near Bucket Mountain south of US 60 which created mud debris across the road. A Flash Flood Warning had been issued for southern Gila county, starting at 1640MST and continuing until 1845MST. (NCEI 2017)

- On September 4, 2012 thunderstorms with locally heavy rain developed across portions of southern Gila county, including the community of San Carlos. Peak rainfall rates with the stronger thunderstorms were at least 2 inches per hour. The heavy rain led to flash flooding along State Route 170, just east of San Carlos. The heavy rain led to the issuance of a Flash Flood Warning for the area around San Carlos. According to local law enforcement, at 515 pm MST, flash flooding was occurring along State Route 170 in San Carlos. Multiple people were being rescued due to high and swiftly moving water crossing the highway. (NCEI 2017)
- On February 28, 2017, the second of two low pressure systems hit northern Arizona with a generous moisture tap. This produced abundant snow above around 6,000 feet and heavy rain below that elevation. Several locations along and north of the Mogollon Rim experienced strong to high winds. The Gila County Sheriff's Office reported flooding along the lower water crossings of East Verde River at East Verde Estates. (NCEI 2017)

Location:

Watercourses in the County originate in the mountain ranges and foothills to the north and east, and flow in a westerly or southwesterly direction across lower elevations. The County has three primary stream systems which drain the mountainous portions:

East Verde River - The East Verde River is a tributary of the Verde River in the U.S. state of Arizona. Beginning on the Mogollon Rim near Washington Park, it flows generally southwest through Gila County and the Tonto National Forest northeast of Phoenix. Near the middle of its course, it passes to within about 5 miles (8 km) of Payson, which is southeast of the river. The East Verde River flows through parts of the Mazatzal Wilderness west of Payson.

Gila River – The Gila River has its source in western New Mexico, in Sierra County on the western slopes of Continental Divide in the Black Range. It flows southwest through the Gila National Forest and the Gila Cliff Dwellings National Monument, then westward into Arizona, past the town of Safford. After flowing along the southern slope of the Gila Mountains in Graham County through a series of canyons, the Gila is impounded by Coolidge Dam in San Carlos Lake south of Peridot.

The Gila is joined by many tributaries, beginning with the East and West Forks of the river, which combine to form the main stem near Gila Hot Springs in New Mexico. Above Safford, it is joined by the San Francisco River and the intermittent San Simon River. Further downstream it is joined by the San Carlos River from the north in San Carlos Lake. At Winkelman, Arizona it picks up the San Pedro River and then is joined by the Santa Cruz River south of Casa Grande. The Salt River, its main tributary, joins

in the Phoenix metro area, and further west the Gila receives its last two major tributaries, the Agua Fria and Hassayampa Rivers, from the north.

Salt River - The Salt River is formed by the confluence of the White River and the Black River in the White Mountains of eastern Gila County. The White and Black rivers, and other tributaries of the upper Salt River, drain the region between the Mogollon Rim in the north and the Natanes Mountains and Natanes Plateau to the east and south.

Below the Pinal Creek confluence, the Salt River enters Theodore Roosevelt Lake, the first of four reservoirs on the river. Tonto Creek joins the Salt River in Theodore Roosevelt Lake and become the Salt River Project watercourse. The Granite Reef Diversion Dam diverts all remaining water in the Salt River into the Arizona Canal and Southern Canal, which deliver drinking and irrigation water to much of the Phoenix metropolitan area

In addition to localized along stream beds and canyons, flooding also occurs as sheet flow and ponding in flat areas where there are inadequate or undefined channels.

Detailed flood maps for the County and participating jurisdictions are contained in **Appendix F.**

Extent:

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 DEMA) 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 5-7** summarizes the RL property characteristics by jurisdiction.

Table 5-7: 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)			

Impact of Climate Change:

Climate change can also lead to more frequent and extreme weather. This includes heavy rainfall events, which can trigger landslides and debris flows that are especially problematic in areas where wildfires have occurred. Heavy rain events can also overwhelm sewage and water treatment facilities with negative impacts to water quality. Combined with higher temperatures, more annual precipitation will occur as rainfall, leading to increased runoff and reduced snowpack. Per the assessment, with

current reservoir capacities, excess runoff would need to be released from reservoirs early for flood control, which would lead to overall reductions in the amount of stored water available for use over the dry months.

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). The previous Plan included provisional floodplain delineations used for in-house purposes by participating jurisdictions or Planning Team delineated areas. The current Plan does not. EMA 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.

5.3.5 Hazardous Materials Incidents

Description:

Hazardous materials are substances that may have negative effects on health or the environment. The MJLHMP does not focus on the hazards contained in everyday products but rather on the hazards associated with potential releases of hazardous substances from transportation corridors and fixed facilities within the County. Exposure to hazardous materials causes injury, illness, or death. Effects may be felt over seconds, minutes, or hours (short-term effects) or not emerge until days, weeks, or even years after exposure (long-term effects). Some substances are harmful after a single exposure of short duration, but others require long episodes of exposure or repeated exposure over time to cause harm. Hazardous materials in the County primarily consist of paints, solvents, adhesives, gasoline, household cleaners, batteries, pesticides and herbicides, dairy products and ammonia. The toxicity of a specific substance is one important factor in determining the risk it poses, but other factors can be just as important, if not more so. Factors affecting the severity of a hazardous material release include:

- Toxicity
- Quantity
- Dispersal characteristics
- Location of release in relation to population and sensitive environmental areas
- Efficacy of response and recovery actions

Mobile incidents include those that occur on a roadway or a railroad. These incident-related releases are dangerous because they can occur anywhere, including near human populations, critical facilities or environmentally sensitive areas. Mobile incident-related releases can also be more difficult to mitigate because of the great area over which any given incident might occur and the potential distance of the incident site from response resources.

The release of hazardous substances from stationary sources can be caused by human error, equipment failure, intentional dumping, acts of terrorism, or natural phenomena. Earthquakes pose a particular risk, because they can damage or destroy facilities containing hazardous substances. The threat posed by a hazardous-material event can be amplified by restricted access, reduced fire suppression and spill containment capability, and even complete cutoff of response personnel and equipment. In addition, pipeline transportation of substances such as petroleum products, natural gas, and other chemicals exist throughout the County.

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.

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 Local Emergency Planning Committee, 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 fluoride.

History:

According to the National Response Commission database, there are at least 190 reported incidents of HAZMAT releases that have occurred since 1985 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, there was a report 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)
- In February 2007 at Asarco's Hayden Operations. a leak from a coupling in a tailings pipeline occurred spilled tailings onto the banks of the Gila River, resulting in a small amount of tailings entering the river. (Asarco, 2010)
- 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)
- In January 2016, 1000 pounds of sulfuric acid were spilled near Claypoole at the Freeport McMoran Miami copper mine. (NRC, 2017)

Location:

While any area accessible by road or railway may be subject to a hazardous material release, most incidents occur near area with a Tier II EHS facility and, in the circumstances of the County, near mines or smelters.

Extent:

The extent of a hazardous material release is dependent upon a number of variables. These include:

- Quantity
- Toxicity
- Dispersal characteristic
- Persistence

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.

5.3.6 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 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.

History:

Gila County has been subject to over 60 severe wind events meeting the criteria listed above, with a combined economic loss of over $364,000 to structures and agriculture in the last 50 years. In that same period, there were at least 1 death and 3 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 13 severe wind events were noted in the NCDC database for period

of July 2013 through July 2019, 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:

- Thunderstorms developed across portions of southern Gila county during the afternoon hours on August 17th,2013 and they affected the community of Roosevelt. The storms generated gusty and damaging winds. A trained weather spotter in Roosevelt estimated a wind gust to 60 mph. He also reported additional storm damage to the Roosevelt Lakeview Park Mobile Home RV Park. The strong winds, estimated to be at least 60 mph, tore up awnings and broke windows at some of the properties at the RV park. Damage was $20,000. (NCEI 2019)
- Thunderstorms developed across portions of southern Gila county during the afternoon hours on August 17th, 2014 and some of them affected the community of Globe. The stronger storms produced strong, gusty and damaging microburst winds estimated to be as high as 70 mph. According to local law enforcement, strong winds caused a portion of the roof of a home to be blown off; the roof landed on a nearby car. The home was located 1 mile northwest of the town of Globe. No injuries were reported. Damage was $25,000. (NCEI 2019)
- Thunderstorms developed across portions of southern Gila county during the afternoon hours on August 17th, and some of them affected the community of Globe. The stronger storms produced strong, gusty and damaging microburst winds estimated to be as high as 70 mph. According to local law enforcement, strong winds caused a portion of the roof of a home to be blown off; the roof landed on a nearby car. The home was located 1-mile northwest of the town of Globe. No injuries were reported. Damage was $25,000. (NCEI 2017)
- Strengthening southeasterly monsoonal flow imported increasing moisture into southern Gila County June 27, 2015 and as a result isolated to scatted thunderstorms developed during the late afternoon hours. Some of the storms generated strong and gusty outflow winds which affected Roosevelt Lake. Wind gusts estimated to be nearly 70 mph created 3 to 4-foot swells along the southern periphery of Roosevelt Lake, about 2 miles east of the town of Roosevelt. According to the Tonto Basin Fire Department and Rescue, the large swells knocked a number of boats into the shore and numerous people were knocked into the water as a result. The Tonto Basin Fire Department then performed multiple rescues of the affected people. No injuries were reported. Damage was $50,000. (NCEI 2019).

Location:

The entire county is subject to thunderstorms with the mountainous areas receiving more frequent severe thunderstorms. 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 are 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[20], as illustrated in **Figure 5.6** 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.

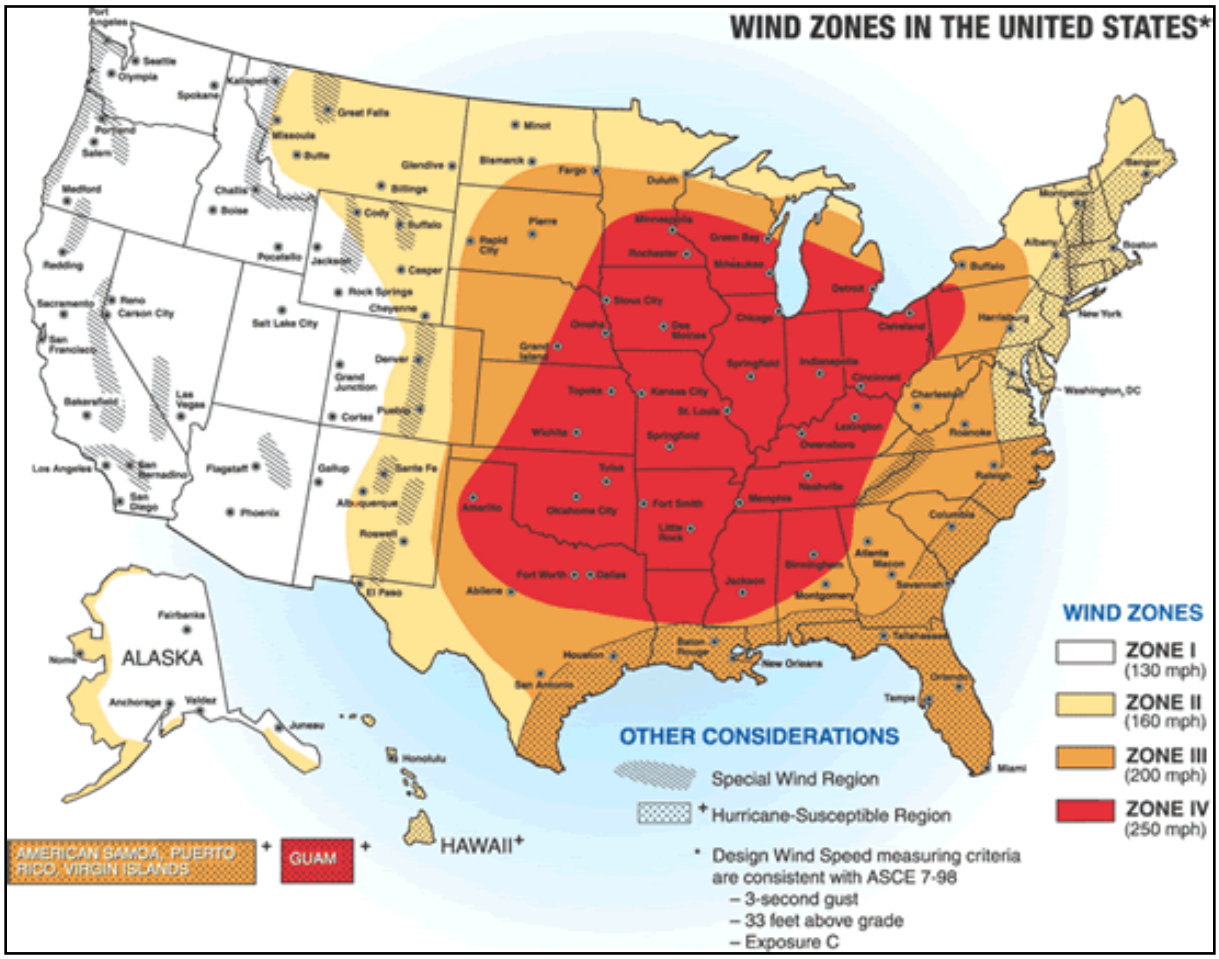

Figure 5.6: Wind Zones in the United States

Extent:

Wind speed and potential damage is measured on the Beaufort Scale. **Figure 5.7** depicts the Beaufort scale with respect to potential damage.

[20] Source: FEMA Website at the following URL: https://www.fema.gov/graphics/library/wmap.gif

Description	Mean Wind Speed	Appearance of Wind Effects		
		On a Tree	*On Land*	
Calm	< 1 knot < 1 km/h	Still	Smoke rises vertically	
Light Air	1 – 3 knots 1 – 5 km/h		Smoke drifts, wind vanes are still	
Light	4 – 6 knots 6 – 11 km/h	Leaves rustle	Wind felt on face, vanes begin to move	
Gentle	7 – 10 knots 12 – 19 km/h	Leaves and small twigs move	Flags flap	
Moderate	11 – 16 knots 20 – 28 km/h	Small branches move	Dust and loose paper lifted	
Fresh	17 – 21 knots 29 – 38 km/h	Small trees in leaf begin to sway	Flags fully extended	
Strong	22 – 27 knots 38 – 49 km/h	Larger branches shake	Whistling in wires, umbrellas become difficult to use	

Near Gale	28 – 33 knots 50 – 61 km/h	Whole trees move	Wind impedes walking	
Gale	34 – 40 knots 62 – 74 km/h	Whole trees shake, twigs break	Windblown dust and dirt	
Strong Gale	41 – 47 knots 75 – 88 km/h	Branches start to break	**Light Damage:** Some damage to chimneys; twisting damage to signs; light weight awnings and canopies damaged; weak roofing lifts; windows may blow out; aircraft grounded.	
Storm	48 – 55 knots 89 – 102 km/h	Pushes over shallow-rooted trees		
Violent Storm	56 – 63 knots 103 – 117 km/h	Broken branches big enough to cause structural damage		
Hurricane Force	≥ 64 knots ≥ 118 km/h	Mature trees uprooted	**Moderate to Devastating Damage:** Roofs and some walls torn off; snaps powers lines; moving cars pushed off road or lifted; loose objects turned into missiles.	

Figure 5.7: Beaufort Scale

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 (DEMA, 2004).

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.

Probability:

According to NCDC database records for the past five years, Gila County averages about 2.5 severe wind events a year. For that same five-year time period for the events that reported, almost $174,000 in damages was estimated.

3.3.7 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 5-8**. 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.

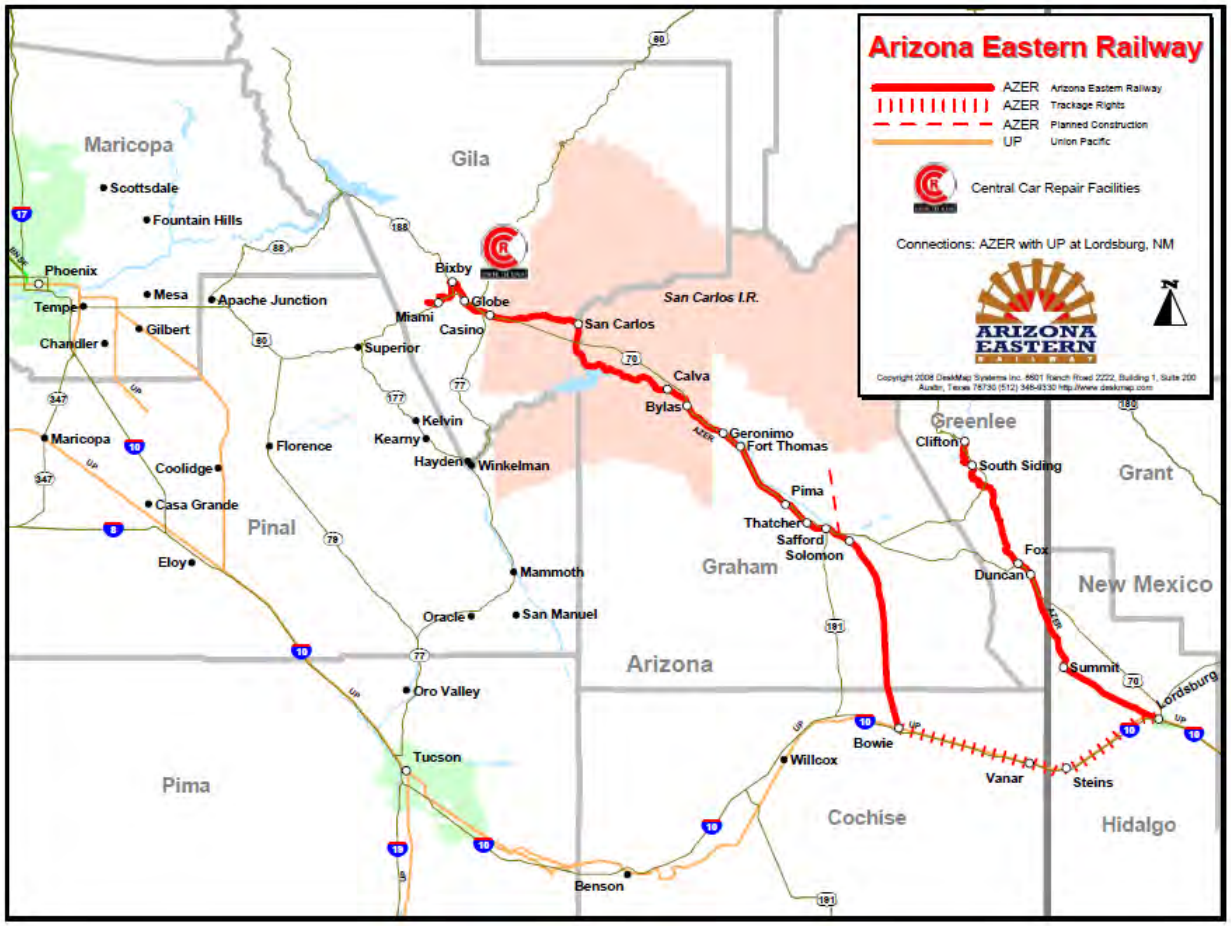

Figure 5.8: Arizona Eastern Railway Transportation Route

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.

Table 5.8[21] lists major transportation accidents in Gila County with a combined loss of 111 deaths, and 1801 injuries between January 2012 through December 2016. The historic record only includes those accidents that were reported. Based on the description of several of these events, the property damage

[21] Source: https://www.azdot.gov/mvd/Statistics/arizona-motor-vehicle-crash-facts

would be considerably more, although it was not reported. The Planning Team recognizes that traffic accidents occur almost every day and that **Table 5-8** under-represents the true historic account of transportation accidents in the County.

Table 5-8: Transportation Incidents in Gila County 2012 - 2016

Year	Total	Fatal	Injury	PDO	Nr. Killed	Nr. Injured
2016	796	16	252	528	21	375
2015	844	25	258	561	31	385
2014	817	20	252	545	20	356
2013	806	22	223	561	22	313
2012	788	15	244	529	18	372
Total		98	1229		111	1801

- 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, 2017)
- 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, 2017)
- 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, 2017)
- 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, 2017)
- 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 gallons went into a storm drain. (NRC, 2017)

Location:

Transportation incidents can occur anywhere in the County where railways and roadways are located. Most occur near populated areas where there is greatest traffic volume although isolated incident take place in rural areas. Nearly 40% of fatal accidents State-wide occur in rural areas.

Extent:

Individual transportation incidents are normally small incidents with limited loss of life or property. They can occur any time of the year and are most likely during inclement weather. Within Gila County the 2016 cost of vehicle transportation accidents was $121,800,000 for injuries, $40,880,000 for deaths, $2,112,000 for property damage only and $164,792,000 overall.

State-wide, alcohol related crashes accounted for 3.88% of all crashes and 31.21% of all fatal crashes. Single vehicle crashes accounted for 15.80% of all crashes and 34.91% of all fatal crashes.

Probability:

The State-wide rate of fatal accidents was 1.47 per million vehicle miles traveled (VMT). The injury rate was 86.33 per VMT.

5.3.8 Wildfire

Description:

A wildfire is an uncontrolled fire spreading through vegetative fuels. Wildfires can be caused by human activities (such as arson or campfires) or by natural events (such as lightning). Wildfires often occur in forests or other areas with ample vegetation. Wildfires differ from other fires due to their large size, the speed at which the fires can spread, and the ability of the fire to change direction unexpectedly and to jump gaps, such as roads, rivers, and fire breaks. In areas where structures and other human development meet or intermingle with wildland or vegetative fuels (referred to as the wildland urban interface), wildfires can cause significant property damage and present extreme threats to public health and safety. The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas.

Topography**:** As slope increases, the rate of wildfire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridgetops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill.

Fuel: The type and condition of vegetation plays a significant role in the occurrence and spread of wildfires. Certain types of plants are more susceptible to burning or will burn with greater intensity, and nonnative plants may be more susceptible to burning than native species. Dense or overgrown vegetation increases the amount of fuel load. The ratio of living to dead plant matter is also important. The risk of fire increases significantly during periods of prolonged drought, as the moisture content of both living and dead plant matter decreases; or when a disease or infestation has caused widespread damage. The fuel's continuity, both horizontally and vertically, is also an important factor.

Weather: The most variable factor affecting the behavior of wildfires is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. Years of precipitation followed by warmer years tend to encourage more widespread fires and longer burn periods. Also, since the mid-

1980s, earlier snowmelt and associated warming due to global climate change has been associated with longer and more severe wildfire seasons in the western U.S.

Wildfires can have serious effects on the local environment, beyond the removal of vegetation. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above. Wildfires can also greatly affect the air quality of the surrounding area.

History: For the period reported between 11/01/1990 and 11/30/2017, 134 wildfire events 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 million board feet of timber (enough lumber to build 3,300 average American homes). The fire also forced the temporary evacuation of 1,153 people.

Four additional fires larger than 10,000 acres are described below in chronological order:

- In June of 2003, the Picture Fire was started by human causes and burned 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 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 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 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.
- In June 2012, the Poco Fire was reported six miles northeast of Young. At the peak of the human-caused incident, 768 personnel were stationed in Young who traveled from 12 states to protect central Arizona communities. Six community meetings were held within eight days in the towns of Young, Forest Lakes, Colcord, Heber, and Payson. Five firefighters were injured; no structures were burned; estimated suppression costs were $9 million.

Location:

All of the County is subject to fires although they are more common and larger at higher elevations in forested areas. Several communities face very high fire hazards. Much of past fire activity has occurred on National Forest Service and Bureau of Land Management land. **Appendix F** provides a depiction of fire zone hazard locations for the County and participating jurisdictions.

Extent:

The majority of the ignitions have occurred along roadways and Wildland Urban Interface (WUI) areas, and were human caused. The second leading source of ignitions has been lightning. Major fires have occurred throughout Arizona with increased frequency following a continual drought and wildland fuel buildup.

The Arizona State Forestry Department, under the direction of the Governor of Arizona, issued an Arizona-Identified Communities at Risk rating for nearly 200 communities located throughout the State. These communities were given WUI ratings, with 39 communities located in Gila County. The ratings were based on the following criteria:

1. Fire Behavior Potential
2. Social, Cultural and Community Factors
3. Fire Protection Capability

Table 5-9: provides a list of WUI Risk for communities participating in the Southern Gila County Community Wildfire Protection Plan

Table 5-9: WUI Risk for Communities Participating in the Southern Gila County Community Wildfire Protection Plan

Community	WUI Risk	Fire District/Department
Claypool	Moderate	Tri-City Fire Department
Cutter	Moderate	San Carlos Reservation Fire Department
Dripping Springs	Low	None
El Capitan	High	None
Globe	Moderate	Globe Fire department
Haigler Canyon	Moderate	None
Hayden	Low	Hayden Fire Department
Miami	Moderate	Miami Fire Department
Nail Ranch	Moderate	None
Rose Creek-YMCA	High	None
San Carlos	High	San Carlos Reservation Fire Department
Tonto Basin-Roosevelt	Moderate	Tonto Basin Fire Department
Top of the World	High	None
Winkelman	Moderate	Winkelman Fire Department

Table 5-10: provides a list of WUI Risk for communities participating in the Northern Gila County Community Wildfire Protection Plan

Table 5-10: WUI Risk for Communities Participating in the Northern Gila County Community Wildfire Protection Plan

Community	WUI Risk	Fire District/Department
Beaver Valley	Low	Beaver Valley Fire District
Christopher Creek	High	Christopher Kohls Fire District
Colcord Estates	High	Christopher Kohls Fire District
Diamond Point	Moderate	Hellsgate Fire District
East Verde Park	Moderate	Payson Fire Department
Gordon Canyon	Moderate	Christopher Kohls Fire District
Houston Mesa	High	Houston Mesa Fire District
Kohls Ranch	Moderate	Christopher Kohls Fire District
Ox Bow/Round Valley	Moderate	Payson Fire Department
Payson	High	Payson Fire Department
Pine	High	Pine Strawberry Fire District
Ponderosa Springs	Moderate	Christopher Kohls Fire District
Star Valley	Moderate	Hellsgate Fire District
Thompson Draw	Moderate	Hellsgate Fire District
Tonto Village	High	Hellsgate Fire District
Whispering Pines	Moderate	Whispering Pines Fire District
Wonder Valley	Low	Houston Mesa Fire District
Young/Pleasant Valley	Moderate	Pleasant Valley Fire District
Strawberry	High	Pine Strawberry Fire District

Impact of Climate Change:

The determination of climate change on wildfire is difficult to quantify. Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires, which could harm property, livelihoods, and human health. Arizona's fire season typically runs from late April at least until July monsoon storms, depending on snow and rain patterns. Internationally accepted climate models indicate that Arizona's forest-soil moisture will dry enough to tack 34 days onto the risk by midcentury, according to Climate Central's analysis.

On average, more than 2 percent of the land in Arizona has burned per decade since 1984. A warming climate is triggering larger wildfires throughout Arizona and the West, and will extend the Southwest's fire season by more than a month by 2050, according to a climate education group's research. Already the typical burning season has grown by 100 days across the West since the 1970s, according to Climate Central's study. The number of forest fires exceeding 1,000 acres has roughly tripled.

Probability:

Wildfires are likely to occur in any year with an average of five per year occurring during the period 1/11/1990 through 1/11/2017.

5.3.9 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. The National Weather Service in Flagstaff[22], 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.

[22] NWS: 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

History:

Winter snows are the lifeblood of water supplies for most of Gila County. 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 of snow 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 entire 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. (DEMA, 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 worked directly with DHS/FEMA and provide their own non-federal cost share. Maricopa County was not included in the Federal declaration. (DEMA, 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 to between 5000 and 5500 feet elevation as the storm moved east. The Governor Jan Brewer signed a Declaration of Emergency and released $200,000 to pay for emergency responses and recovery expenses from the weather events. FEMA declared 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. (DEMA, 2010, FEMA, 2010)

- In December 2014, a deep and cold upper level Pacific low pressure system moved into Arizona and brought winter storm conditions to southern Gila County starting on December 31st. The winter storm conditions were primarily in the form of heavy snow which started during the late morning hours and persisted throughout the day and into the morning hours on January 1st 2015. At 2345MST, a public report was received indicating that 5 inches of snow was measured about 3 miles north of Globe. The heavy snow significantly affected communities such as Globe and Miami and produced very hazardous driving conditions along roads such as highway 77 north of Globe to the Salt River Canyon. Fortunately, no accidents or injuries were reported due to the dangerous driving conditions. (NCEI 2017)

Location:

All of the County is subject to winter storms. Impacts are greater in the northern portion of the County and at higher elevations. The Towns of Payson, Star Valley and Pine are more likely to experience winter storms than other communities along the Gila and Salt Rivers.

Extent:

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. Appendix B provides a graphical depiction of zones of historically maximum snow depths for the 1- and 3-day durations for the county.

Impact of Climate Change:

The determination of climate change on severe winter storms is difficult to quantify. Warming central Pacific Ocean water has the potential to produce more frequent and longer winter storms originating in the intertropical convergence zone (ITCZ). Days on which atmospheric rivers (formed in the ITCZ and a major cause of severe winter storms) reach the West Coast each year could increase by a third this century, if greenhouse gas pollution continues to rise sharply Pacific Northwest National Laboratory researchers concluded after running model simulations.[23] Currently, the West Coast is likely to receive

[23] Samson M. Hagos, L. Ruby Leung, Jin-Ho Yoon, Jian Lu, Yang Gao; *A projection of changes in landfalling atmospheric river frequency and extreme precipitation over western North America from the Large Ensemble CESM simulations;* Geophysical Research Letters, February 2016

rain or snow from atmospheric rivers between 25 and 40 days each year, the analysis concluded. By century's end, that's expected to rise to between 35 and 55 days annually. Meanwhile, the number of days each year on which the atmospheric rivers bring "extreme" amounts of rain and snow to the west could increase by more than a quarter.

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 (DEMA, 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.

5.4 Risk Assessment Summary

A risk assessment determines the vulnerability of assets within the County by evaluating the inventory of existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that are natural.

Populations and Businesses at Risk

As of the 2010 United States Census, there were 53,597 people, 22,000 households, and 14,294 families residing in the County. The population density was 11.3 inhabitants per square mile. There were 32,698 housing units at an average density of 6.9 per square mile. Services, and natural resource based industries such as mining and ranching along with recreation and tourism provide jobs for many residents.

Economic Risks

The economy for the County is focused primarily on services, recreation, and mining and forestry. There is little agriculture or manufacturing. Relatively few residents are employed in professional services, finance, construction or transportation. **Table 5-11** portrays employment trends for the County.

Table 5-11: County Employment by Sector24

Industry	Thousands	Percentage
Education, health care & social assistance	4.6	25.1
Arts, entertainment, food & recreation services	2.2	12.1
Retail trade	2.1	11.4
Agriculture, forestry, fishing, hunting, & mining	1.9	10.2
Public administration	1.5	8.3
Professional, scientific, & administrative services	1.3	7.2
Construction	1.2	6.8
Finance, insurance & real estate	0.9	5.1
Transportation, warehousing, & utilities	0.9	4.9
Other services, except public administration	.7	3.9
Manufacturing	.6	3.2

[24] Arizona Commerce Authority 2015

Vulnerability and Potential Losses

The vulnerability of infrastructure to specific hazards for the County and the participating jurisdictions is contained in **Table 5-6 and in the Appendix E, Tables A-2, B-2, C-2, D-2 and E-2**. Values of the infrastructure, where available, are included. Detailed, street level hazard maps for wildfire and flooding for the County and the jurisdictions are located in **Appendix F.**

The analysis of potential losses calculated in **Table 5-12** used the best data currently available to produce an understanding of potential losses. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

Table 5-12: Summary of Vulnerabilities and Potential Loss

Hazard Type	Impacts/Costs
Climate Change	Vulnerability and Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness. Drier weather will place increasing demands on imported and well water and may lead to long lasting droughts that result in water rationing. The impacts of climate change on the communities within the County will include a longer fire season, with potentially more and larger fires in the wildland urban interface. This will result in loss of housing stock, commercial buildings and critical infrastructure. Climate change will also result in drier weather and potentially cause groundwater levels to drop resulting in loss of wells or imported water. Impacts are likely to be water rationing and lower water quality. Additionally, longer, drier summers and milder winter will cause an increase in tree mortality resulting in larger and more costly wildfires. Potential Loss and Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families within the communities. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.

Table 5-12: Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
Dam Inundation	Vulnerability and Impacts: Dam inundation is a particularly extensive hazard to the City of Winkelman. Coolidge Dam is a reinforced concrete multiple dome and buttress dam 31 miles southeast of Globe on the Gila River. Built between 1924 and 1928, Coolidge Dam is part of the San Carlos Irrigation Project. Coolidge Dam impounds San Carlos Lake on the San Carlos Apache Indian Reservation. The project irrigates 100,000 acres Potential Loss and Costs: A rapid failure of Coolidge Dam would inundate the Town of Winkelman. Residents would have little notice to evacuate. Loss of life and damage could be catastrophic.
Drought	Vulnerability and Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. The County is dependent on imported water for most of its needs. During prolonged droughts, water rationing is possible resulting in potentially higher water costs and loss of private and public landscaping. Potential Loss and Costs: Potential costs from drought to the County and its communities are difficult to quantify and are dependent upon drought duration and severity. In addition to increased costs for imported water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.
Flood/Flash Flood	Vulnerability and Impacts: Flooding occurs in the County during periods of heavy rain due to inadequate drainage. The flat geography through the town centers of Miami and Globe also contributes to ponding. Detailed flood inundation areas for the County and each participating jurisdiction are contained in **Appendix F.** These maps provide a street level view of potential flood impacts. Potential Loss and Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood cost could be in excess of $200,000,000 for a catastrophic event. As cited in the annexes to **Appendix E,** many of the County's and the towns' and cities' critical infrastructure and government buildings are in the 100-year flood map.
Severe Winds	Vulnerability and Impacts: Wind events are usually localized and result from macro-bursts. Impacts are typically damage roofs and downed vegetation. Loss of power due to powerline damage also occurs. The entire county is subject to thunderstorms with the mountainous areas receiving more frequent severe thunderstorms. 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

Table 5-12: Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
	Arizona and all of Gila County are designated with a design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds (ASCE, 1999). Potential Loss and Costs: Costs to the County will include emergency response, debris clearance and damage to private property. Total costs are likely to be less than $1,000,000 per incident.
Wildfire	Vulnerability and Impacts: Structures near the urban/wildland interface are susceptible to wildland fire. Impacts on low density communities are limited. Detailed fire hazard zone maps, developed specifically of this Plan are contained in **Appendix F**. These maps provide a street level view of potential impacts for the overall County and participating jurisdictions. Potential Loss and Costs: Costs to the County will include emergency response and damage to public and private property. Total costs are likely to be less than $50,000,000 in any year.
Winter Storm	Vulnerability and Impacts: The primary effects of winter storms are road, and government offices and business closures. Areas impacted are often isolated since the County does not maintain snow removal equipment. Populations with disabilities, and other access and functional needs may require special assistance. Potential Loss and Costs: Costs to the County will include emergency response and loss from curtailed economic activity. Total cost for any single incident is likely to be less than $1,000,000.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the County are:

- Dam Inundation
- Drought
- Flood
- Wildfire
- Winter Storm

SECTION 6: MITIGATION STRATEGY

The Federal regulations require local mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)).

FEMA REGULATION CHECKLIST: CAPABILITY ASSESSMENT

44 CFR § 201.6(c)(3): – The plan must include mitigation strategies based on the jurisdiction's "existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."

Elements

C1. Does the plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).

C2. Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

C3. Does the Plan include goals to reduce or avoid long-term vulnerabilities to identified hazards? 44 CFR § 201.6(c)(3)(i).

C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? See 44 CFR § 201.6(c)(3)(ii).

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii).

C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

Source: FEMA, *Local Mitigation Planning Handbook Review Tool,* March 2013.

A hazard mitigation plan's primary focus is the mitigation strategy. It represents the efforts selected by the County to reduce or prevent losses resulting from the hazards identified in the risk assessment. The strategy includes mitigation actions and projects to address the risk and vulnerabilities discovered in the risk assessment. The mitigation strategy consists of the following steps:

- Identify and profile hazards and risk within the County.
- Identify projects and activities that can prevent or mitigate damage and injury to the population and buildings.
- Develop a mitigation strategy to implement the mitigation actions.
- Develop an action plan to prioritize, implement, and administer the mitigation actions.
- Implement the MJLHMP mitigation action plan.

A capability assessment was conducted of County and participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. The planning team also developed a plan to prioritize, implement, and administer the mitigation actions to

reduce risk to existing buildings and new development. This section also includes information regarding County's implementation of and continued participation in the National Flood Insurance Program (NFIP).

6.1 Hazard Mitigation Mission Statement

The 2019 MJLHMP represents the County's commitment to create a safer, more resilient community by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the people and property of the County.

6.2 Mitigation Goals and Actions

Mitigation goals are guidelines that represent what the community wants to accomplish through the mitigation plan. Goals are broad statements that represent a long-term, community-wide vision. The planning team reviewed example goals and objectives from the previous MJLHMP, and determined which goals best met the County's objectives for mitigation. There were no changes to the hazard mitigation goals. In addition to the overarching hazard mitigation goals, the County worked with County Planning to develop the strategies in alignment with the County General Plan Health and Safety Element. The goals align with the hazards in the 2016 General Plan and reflect input provided by stakeholders and the public. **Table 6-1** lists the goals for the 2019 MJLHMP.

Table 6-1: Hazard Mitigation Goals
Goal 1: Protect life, property, and reduce potential injuries from natural, technological, and human-caused hazards.
Goal 2: Improve public understanding, support and need for hazard mitigation measures.
Goal 3: Promote disaster resistance for the County's natural, existing, and future built environment.
Goal 4: Strengthen partnerships and collaboration to implement hazard mitigation activities.
Goal 5: Enhance the County's ability to effectively and immediately respond to disasters.

Many of the County's mitigation strategies from the 2011 HMP are still relevant to this update. **Table 6-3** contains an updated set of potential future County-specific mitigation actions

6.3 MITIGATION ACTIONS/PROJECTS AND IMPLEMENTATION STRATEGY

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives, and often include a mechanism, such as an assigned timeframe, to measure the success and ensure the actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the 2011 HMP. With information from the risk analysis, capability assessment, and status of the actions implemented since the 2011 HMP, the planning team integrated outstanding action items with other County planning efforts to develop new mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure. Current mitigation projects identified by the County are included in **Table 6-3**. A complete list of mitigation actions for all jurisdictions is included in individual jurisdiction annexes.

The requirements for prioritization of mitigation actions, as provided in the federal regulations implementing the Stafford Act as amended by DMA 2000, are described below.

FEMA REGULATION CHECKLIST: MITIGATION STRATEGY; PLAN REVIEW AND REVISION

Implementation of Mitigation Actions

44 CFR § 201.6(c)(3)(iii): The mitigation strategy section shall include "an action plan describing how the actions identified in section (c)(3)(ii) 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."

Element

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii)

Plan Review and Revision

44 CFR § 201.6(d)(3): "A local jurisdiction must review and revise its plan to reflect…changes in priorities…"

Based on these criteria, the County prioritized potential mitigation projects and included them in the action plan discussed below in **Table 6-3**. The mitigation action plan developed by the planning team includes the action items that the County intends to implement during the next five years, assuming funding availability. The action plan includes the implementing department, an estimate of the timeline for implementation, and potential funding sources.

6.3.1 Previous Mitigation Actions/Projects Assessment

The 2011 MJLHMP listed a number of mitigation measures for the County. These measures were reviewed by the planning team and as determination was made as to their status. In a number of cases, the mitigation measures in the 2011 Plan were considered impractical. This was due to regulatory requirements associated with the clean water act and other environmental laws that would prohibit accomplishment. **Table 6-2** provides the current status of the previous Plan mitigation measures and whether they were carried over into the 2019 MJLHMP.

Table 6-2: Status of 2011 Mitigation Actions

Status	Project Name	Description	Hazards Addressed	Costs of Construction (if known)	Any Additional Comments/ Description
Ongoing. Consider for 2019 Plan	2017 Pinal Fire Community Meetings	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	N/A	
Ongoing. Completed Annually. Consider for 2019 Plan	Pine Strawberry Firewise Day	Conduct a FIREWISE Communities Program through the promotion of public education, planning support and guidance to communities on wildfire mitigation and preparedness.	Wildfire	N/A	
Not accomplished	Tonto Creek 2.5 Miles of Bank Protection	Gisela Bank Protection. Construct/reconstruct 2.5 miles of riprap-lined bank protection along Tonto Creek.	Flood	$6,500,000	Not realistic due to cost benefit
Not accomplished. Consider for 2019 Plan.	Roosevelt Lake Estates Home Buyouts	Buyout remaining homes between Ash St and Campaign Creek at Roosevelt Lake Estates.	Flood	$1,500,000	

Table 6-2: Status of 2011 Mitigation Actions					
Not accomplished	Pinto Creek Bank Protection	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	$5,500,000	Not realistic due to cost benefit
Not accomplished	Tonto Creek 9 Miles of Bank Protection	Construct 9 miles of riprap-lined bank protection, approx. 23 feet high along Tonto Creek in the Tonto Basin.	Flood	$66,000,000	Not realistic due to cost benefit
Not accomplished. Consider for 2019 Plan	Tonto Creek Bridge	Construct bridge across Tonto Creek at Tonto Basin to provide all weather access to residents and emergency personnel in the community.	Flood, Winter Storm	$9,000,000	
Not accomplished	International Building Code	Update of International Building Code	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	N/A	Beyond scope of MJLJMP
Not accomplished. Consider for 2019 Plan	County Comprehensive Development Plan	Update of the Gila County Comprehensive Development Plan	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	$150,000	
Not accomplished. Consider for 2019 Plan	County Zoning Ordnance	Update of the Gila County Zoning Ordinance-combining codes into one document.	Flood, Wildfire, HAZMAT, Severe Winds, Winter Storm	$150,000	
Not accomplished. Consider for 2019 Plan	East Verde Estates Bridge	East Verde River - East Verde Estates Crossing. Construct bridge to replace failing vented ford crossing on access road to East Verde Estates to	Flood, Transportation Accident	$9,000,000	

Table 6-2: Status of 2011 Mitigation Actions					
		provide all weather access to residents and emergency personnel in the community.			
Ongoing. Consider for 2019 Plan	HAZMAT Training	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)*		Have conducted HAZMAT training
Completed USFS	Houston Mesa Road Bridge	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, Transportation Accident		
Ongoing. Consider for 2019 Plan	FS 512 Improvements	Improve all weather access on FS 512 from Hwy 260 to Hwy 288 by paving existing dirt road.	Flood, Wildfire, HAZMAT, Winter Storm, Transportation Accident		
Not accomplished	Control Road Improvements	Control Road all weather access from SR 87 to SR 260	Flood, Wildfire, HAZMAT, Winter Storm, Transportation Accident		State owned road
Ongoing. Consider for 2019 Plan	Stream Flow Gages in Tonto Basin	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		

Table 6-2: Status of 2011 Mitigation Actions					
Completed 2016	Rim Country CWPP	Continue maintenance of the Rim Country CWPP and pursue final adoption of southern Gila County CWPP.	Wildfire		
Ongoing. Consider for 2019 Plan	Transportation Corridor HAZMAT	Study traffic patterns of Hazardous Materials transporters within the County to identify transportation corridors being used in the County.	HAZMAT, Transportation Accident		
Ongoing Consider for 2019 Plan. Consider for 2019 Plan	Wildfire 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.	Wildfire		
Complete	Thompson Draw Control Road Bridge	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, Transportation Accident		
Not Accomplished	Christopher Creek Box Culvert	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, Transportation Accident		
Not Accomplished	Pinel Creek Channel Widening	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	Unknown	Not realistic due to cost benefit
Not Accomplished	Russell Gulch Channel Widening	Russell Gulch Channel Widening and Bank Protection. Widen 2.75 miles of Russell Gulch and construct bank protection near Cobre Valley Hospital	Flood	Unknown	Not realistic due to cost benefit

Table 6-2: Status of 2011 Mitigation Actions					
Not Accomplished	Thompson Draw Channel Widening	Widen and riprap line the Thompson Draw Channel for 2 miles through Tonto Village and replace 3 undersized culvert/bridge crossings with bridges	Flood	Unknown	Not realistic due to cost benefit
Not Accomplished. Duplicate	Houston Mesa Road Bridge	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		
Ongoing. Consider for 2019 Plan	Water Tankers	Maintain drought contingencies of water tanker deployment and conservation plans.	Drought		
Completed 2016	Mobile Radios	Research and acquire remote low power mobile radio station to notify public of potential hazards.	All Hazards (Response)		

6.3.2 New Mitigation Actions / Projects and Implementation Strategy

Mitigation actions are specific activities or projects that serve to meet the goals that the community has identified. Mitigation actions and projects are more specific than goals or objectives, and often include a mechanism, such as an assigned timeframe, to measure the success and ensure the actions are accomplished. The planning team conducted a review of the mitigation actions and strategies from the 2011 HMP. With information from the risk analysis, capability assessment, and status of the actions implemented since the 2011 HMP, the planning team integrated outstanding action items with other County planning efforts to develop new mitigation actions and projects to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure. Current mitigation projects identified by the County are included in **Table 6-3**. A complete list of mitigation actions for all jurisdictions is included in individual jurisdiction annexes.

The requirements for prioritization of mitigation actions, as provided in the federal regulations implementing the Stafford Act as amended by DMA 2000, are described below.

FEMA REGULATION CHECKLIST: MITIGATION STRATEGY; PLAN REVIEW AND REVISION

Implementation of Mitigation Actions

44 CFR § 201.6(c)(3)(iii): The mitigation strategy section shall include "an action plan describing how the actions identified in section (c)(3)(ii) 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."

Element

C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost-benefit review), implemented, and administered by the jurisdiction? 44 CFR § 201.6(c)(3)(iii)

Plan Review and Revision

44 CFR § 201.6(d)(3): "A local jurisdiction must review and revise its plan to reflect…changes in priorities…"

Based on these criteria, the County prioritized potential mitigation projects and included them in the action plan discussed below in **Table 6-3**. The mitigation action plan developed by the planning team includes the action items that the County intends to implement during the next five years, assuming funding availability. The action plan includes the implementing department, an estimate of the timeline for implementation, and potential funding sources.

The planning team does not presume the expertise to prescribe which projects will be implemented. The prioritization of projects in the MJLHMP is a means to provide a basis for implementing the mitigation strategies, but all new mitigation actions and projects will be formally prioritized and selected by the implementing department. This will accommodate the project funding, schedule of the department, staff

requirements, and ability to integrate the new project into existing and ongoing projects. Departments will take into account the funding source, the cost effectiveness of the project, alternative projects, the compatibility of the new project with ongoing projects, the extent to which the project addresses the risks assessed in Section 3, and the potential of economic and social damage.

Mitigation activities identified by the County are potentially applicable for all the jurisdictions within the County. Individual, detailed jurisdiction hazard mitigation action tables are included in **Annexes A** through **D**.

Mitigation actions were derived from numerous sources including the General Plan, the Climate Action Plan and input from the public and stakeholders. The County shall strive to implement these mitigation actions as determined to be economically and technically feasible under current regulations and fiscal constraints. Applicable hazards codes are:

Hazard Type	Mitigation Type	Responsibility	Funding Source
CC – Climate Change	Mit. – Mitigation	EM – Emergency Manager	GF – General Fund
DI – Dam Inundation	Prep. – Preparedness	PW – Public Works	PA – Project Applicant
DR – Drought	Resp. – Response	BD – Building Department	BLF – Business License Fee
FL -Flood / Flashflood		PD – Planning Department	BG – Bonds or Grants
HZ – Hazardous Materials		EA - Environmental Analyst	GPMF – General Plan Maintenance Fee
SW – Storms and High Winds			
TR – Transportation Incident			
WF – Wildfire			
WS – Winter Storm			

Table 6-3: County Specific Actions and Hazards Mitigated							
Strategy Number	**Mitigation Action**	**Hazards**	**Cost**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
1	Implement a 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.	FL	N/A	EM	N/A	1 Year	High
2	Conduct a FIREWISE Communities Program through the promotion of public education, planning support and guidance to communities on wildfire mitigation and preparedness.	WF	N/A	EM	N/A	1 Year	High
3	Gisela Bank Protection. Construct/reconstruct 2.5 miles of riprap-lined bank protection along Tonto Creek.	FL	TBD - bid	PW	BG	2-5 Years	Medium
4	Buyout remaining homes between Ash St and Campaign Creek at Roosevelt Lake Estates.	FL	TBD - bid	BD	BG	2-5 Years	Medium
5	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.	FL	TBD - bid	PW	GF, BG	2-5 Years	Medium
6	Construct bridge across Tonto Creek at Tonto Basin to provide all weather access to residents and emergency personnel in the community.	FL, WS, TR	TBD - bid	PW	GF, BG	2-5 Years	High
7	Update of the Gila County Comprehensive Development Plan.	All	N/A	PD	N/A	1-2 Years	Medium
8	Update of the Gila County Zoning Ordinance-combining codes into one document.	All	N/A	PD	N/A	1-2 Years	Medium
9	East Verde River - East Verde Estates Crossing. Construct bridge to replace failing vented ford crossing on access road to	FL, WS, TR	TBD - bid	PW	GF, BG	2-5 Years	High

Table 6-3: County Specific Actions and Hazards Mitigated							
Strategy Number	**Mitigation Action**	**Hazards**	**Cost**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
	East Verde Estates to provide all weather access to residents and emergency personnel in the community.						
10	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.	HZ	TBD	EM	GF	1 Year	High
11	Improve all weather access on FS 512 from Hwy 260 to Hwy 288 by paving existing dirt road.	FL	TBD - bid	PW	GF, BG	2-5 Years	Medium
12	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.	FL	TBD - bid	EM	GF	1 Year	High
13	Study traffic patterns of Hazardous Materials transporters within the County to identify transportation corridors being used in the County.	HZ, TR	TBD	PW, EM	GF, BLF	1 Year	High
14	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.	WF	N/A	PW, WM	N/A	1 Year	High
15	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.	FL, WS, TR	TBD - bid	PW	GF, BG	2-5 Years	Medium

Table 6-3: County Specific Actions and Hazards Mitigated							
Strategy Number	**Mitigation Action**	**Hazards**	**Cost**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
16	Maintain drought contingencies of water tanker deployment and conservation plans.	DR	TBD - bid	EM	GF, BG	2-5 Years	Medium
17	Work with the Bureau of Indian Affairs and San Carlos Apache Tribe to plan and execute a Coolidge Dam emergency evacuation functional exercise.	DI	$50,000	EM	GF	1 Year	High

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 MJLHMP 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 Plan is intended to be a "living" document with regularly scheduled monitoring, evaluation, and updating. The County Department of Health and Emergency Management has overall responsibility for Plan maintenance. Carl Medford is the currently designated staff member with overview of the Plan update process.

Section 7 of the 2011 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 2011 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 2011 Plan in the day-to-day operations is not realized and without continual reference, the 2011 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

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 Director of the Gila County Office of Emergency Management (GCOEM) will take the lead to reconvene the Planning Team. The Director of the GCOEM will schedule the review within 90 days of the Plan anniversary by contacting the Planning Team members or their replacements. If no replacement can be identified, then the Director of the GCOEM will contact the City/Town Clerk.
- **Review Content** – The 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 annual review and document responses to the above questions in the form of an informal memorandum. During the annual, each jurisdiction will have the opportunity to summarize their review findings to the group and discuss concerns or successes. Documentation of the review will include a compilation of the memorandums generated by each jurisdiction plus any notes on the discussions and conclusions. Copies of the annual review report will be included in Appendix E.

7.2 PLAN UPDATE

The County and each jurisdiction are responsible for keeping the MJLHMP relevant over its five-year life. As such, the planning team must engage in continual monitoring of the effectiveness of the mitigation actions accomplished and evaluate changes in the hazards profiles and the need for new mitigation activities. The objective is to both update the status of the plan and modify the mitigation actions as required. The County Director of Emergency Services is responsible for leading the annual review.

Maintenance Schedule

Annually during April, the Director of the GCHEM will lead the planning team to review applicable portions of the MJLHMP and the implementation of mitigation actions to develop an annual progress report. This may assist in the annual budget review process by providing information on mitigation projects and activities that have been completed or implemented. The annual progress report process will serve to incorporate new information into the MJLHMP. As updates to the MJLHMP are completed, the participating jurisdictions will keep the public informed of the changes and newly recommended

mitigation activities. The MJLHMP progress report will also be posted on the County and City websites on a dedicated page, provided to the local media through a press release, and presented in the form of a report to local agencies. The planning team will strive to complete the review and deliver the progress report process by June of each year.

Section 201(.6.d)(.3) of 44_CFR requires that local MJLHMPs be reviewed, revised as appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under the DMA. The County intends to update its MJLHMP on a 5-year cycle. The County Director of Emergency Services is responsible for leading the 5-year update.

FEMA REGULATION CHECKLIST: PLAN MAINTENANCE PROCESS
Monitoring, Evaluating, and Updating the Plan
44 CFR § 201.6(c)(4)(i): The plan shall include a plan maintenance process that includes a "section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle."
Element
***A6.** Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle)?*
Incorporation into Other Planning Mechanisms
44 CFR § 201.6(c)(4)(ii): The plan shall include a plan maintenance process that includes 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."
Element
***C6.** Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?*
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Maintenance Evaluation Process

The planning team, under the lead of the Director of the GCHEM will monitor the hazard mitigation strategies during the year. At least once each year, team members will meet to provide information for and evaluate the progress of the 2019 LHMP. This evaluation will include:

- A summary of any hazard events that occurred during the prior year and their impact on the planning area
- A review of successful mitigation initiatives identified in the LHMP
- A brief discussion about the targeted strategies that were not completed
- A re-evaluation of the action plan to determine if the timeline for identified projects needs to be amended, and the reason for the amendment, e.g., funding issues
- Any recommendations for new projects
- Any changes in or potential for new funding options (grant opportunities)
- Any impacts of other planning programs or initiatives that involve hazard mitigation

The planning team will write a progress report that will be provided to the City's agencies for review and incorporation in the budget process as mitigation projects are completed or implemented.

Update Process

Based on needs identified by the planning team, the update will, at a minimum, include the following elements:

- The hazard risk assessment will be reviewed and updated using the most recent information and technologies
- The action plan will be reviewed and revised to account for any initiatives completed, dropped, or changed and to account for changes in the risk assessment
- Any new policies identified under other planning mechanisms, as appropriate
- The draft LHMP update will be sent to appropriate agencies and organizations for comment
- The public will have an opportunity to provide input on the updated version prior to adoption
- The City will adopt the updated LHMP

At a minimum of six months prior to the expiration date of the 2019 MJLHMP, the Director of the GCOEM will implement a revision schedule to formally update the MJLHMP. The MJLHMP will be revised using the latest FEMA hazard mitigation guidance documents, such as the Mitigation Planning Tool and to comply with current hazard mitigation planning regulations. The revised plan will be submitted to DEMA 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 2011 Plan elements over the past planning cycle into other planning programs, has varied. Ways in which the 2011 Plan has been successfully incorporated or referenced into other planning mechanisms for each jurisdiction are summarized below:

Gila County:

- Referenced during the development of the 2016 Southern Gila County Community Wildfire Protection Plan and 2016 Northern Gila County Community Wildfire Protection Plan.
- Referenced in the Homeland Security Target Capability Assessment as it relates to HAZMAT and Transportation Accident.
- The 2011 Plan was used in the development of flood mitigation project lists for the Gila County Flood Control District.
- County General Plan Health and Safety Element
- 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 2011 Plan was found to be beneficial, and especially with regard to the critical facility inventories, vulnerability analysis results, and the mitigation measures. Obstacles to further incorporation of the 2011 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 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.

Recommended 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 **Table 6.3 and Appendix E, Tables A-9, B-9, C-9 and D-9** will review and

reference the Plan and revise and/or update the legal and regulatory planning documents, manuals, codes, and ordinances 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.

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 measures being implemented using local media. • Present all proposed mitigation 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 fire-wise brochures. • The Fire Department will man a booth at the September County Fair • 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 • Maintain a permanent website posting of the Plan with contact information provided for any comments or suggestions.
Miami	• Discussed flood mitigation opportunities during recent public meetings that followed some of the recent flooding events.	• Discuss flood mitigation opportunities during recent public meetings that followed some of the recent flooding events. • Maintain a permanent website posting of the Plan with contact information provided for any comments or suggestions.

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**
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. •
Winkelman	• Did not participate in the 2011 LHMP	• 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.

SECTION 8: ADOPTION RESOLUTIONS

Adoption resolutions for the County and participating jurisdictions are contained in **Appendix G**.

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APPENDICES:

Appendix A – Local Mitigation Plan Review Tool

Appendix B – Planning Team Meeting Documentation

Appendix C – Public Engagement Documentation

Appendix D – Acronyms

Appendix E – City and Town Annexes

Appendix F – Maps

Appendix G – Adoption Resolutions

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APPENDIX A: LOCAL MITIGATION PLAN REVIEW TOOL

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APPENDIX B: PLANNING TEAM MEETING DOCUMENTATION

Appendix B contains documentation of the planning process including meetings of the planning team. The planning process material is presented in chronological order along with a brief explanation of its contents. Key planning process events are summarized in **Table B-1**. Meeting notes are provided as documentation including representatives from participating jurisdications.

Table B-1: Planning Process

Date	Activity	Purpose
August 29, 2017	Planning Team Meeting Nr. 1	Kicked off the MJLHMP update project and solicit participation by stakeholder agencies. Reviewed hazard profiles and discussed public outreach approach.
October 26, 2017	Planning Team Meeting Nr. 2	Provided vulnerability and risk assessment guidance as a read ahead. Reviewed hazard analysis, discussed risk and vulnerability and identified capabilities. Collected capabilities and completed mitigation action data.
February 8, 2019	Planning Team Meeting Nr. 3	Provided draft mitigation activities. Discussed mitigation implementation priorities and actions.
September through November 2017	Survey	Outreach to County residents. Results are in Appendix C.

Sample 1: Planning Team Meeting Nr. 1 Notes:

Gila County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update
Planning Meeting 1
August 29, 9-11am
Meeting Minutes

I. Overview

On August 29, 2017, Gila County hosted a meeting to establish the project planning team and review the process of updating its multi-jurisdictional local hazard mitigation plan (MJLHMP) for the County. The meeting was conducted in person at the Gila County EOC, 5515 S. Apache Ave., Globe, AZ, with videoconference to the Gila County Star Valley Conference Room, 5320 E Highway 260, Star Valley, AZ 85541. Attendees are listed in Table 1. Please refer to Appendix A for Meeting Agenda.

Table 1: Planning Team Meeting #1 Attendees

Name	Project Role	Organization	Email
Blevins, Debra	Financial Analyst	Department of Health and Emergency Mgmt.	dblevins@gilacountyaz.gov
Coll, Eliza Gregory	Director, Public Health Services	Willdan Homeland Solutions	ecoll@willdan.com
Darde de Roulhac	Chief Engineer	Gila County Flood Control	dderoulahc@gilacountyaz.us
Engel, Tom Engel	Development Engineer	Arizona Department of Transportation	tengel@azdot.gov
Engler, Don	Chief	City of Payson Police Dept.	dengler@paysonaz.gov
Foster, Amy	Planner	Willdan Homeland Solutions Preparedness Assoc.	afoster@navigatingpreparedness.com
Homan, Tom	GIS Supervisor	Gila County Public Works	thomen@gilacountyaz.gov
Listiak, Sharon	Assistant Emergency Mngr.	Department of Health and Emergency Mgmt.	slistiak@gilacountyaz.gov
Medford, Carl	Emergency Manager	Department of Health and Emergency Mgmt.	cmelford@gilacountyaz.gov

Name	Project Role	Organization	Email
Nipp, Mark	Chief	City of Globe Police Dept.	mnipp@globe.gov
Paul, Zach	GIS Analyst	Gila County Public Worms	zpaul@gilacountyaz.gov
Rippy, Robert	Operations Superintendent	Town of Star Valley	rrippy@starvalleyaz.com
Robinson, Gary	Chief	City of Globe Fire Dept.	grobinson@globe.gov
Rosales, Richard	Community Affairs	Arizona Public Service (APS)	richard.rosales@aps.com
Rosenberg, Lee	Managing Director	Willdan Homeland Solutions	lee.rosenberg@navigatingparedness.com
Scott, Timothy	Lieutenant	Gila County Sherriff Department	tscott@gilacountyaz.gov
Staub, David	Chief	City of Payson Fire Dept.	dstaub@paysonaz.gov

II. Summary of Discussion

1. The group introduced themselves and the organization they represent.
2. Willdan Homeland Solutions (WHS) provide a presentation of the MJLHMP update process, the role of the Planning Team, expected information and date needed from the County and participating jurisdictions.
3. The group discussed the requirements for documenting the planning process and for conducing and documenting public outreach/engagement efforts. Focus topics included:
   - Conducting a survey of the communities to determine their input on relevant hazards and their priorities, and to solicit suggested mitigation measures
   - Posting information on the County, cities and towns web pages and social media accounts of the MJLHMP update process and how hazard mitigation benefits them
4. The group discussed previous emergencies and incidents while reviewing potential hazards. Candidate hazards include climate change, drought, energy emergency, fire, flood, hazardous material releases, high winds, transportation incidents, and winter storms. All are included in the County 2011 MJLHMP or the State HMP with the exception of climate change and energy emergency. Sharon Listiak mentioned the hazard posed by Coolidge Dam and Reservoir to Winkelman and Hayden. The team will review the inundation zone of Coolidge Dam and add dam inundation to the hazards.
5. The group discussed National Flood Insurance Program (NFIP) participation. The County and all jurisdictions participate. All will provide dates when they enrolled the NFIP.

6. The group discussed the following incidents and the hazards they pose:
   - Winter storms resulting in energy outages near Payson that affect medically fragile community members
   - Transportation incidents involving propane trucks in Payson
   - Heavy snowpack and flash flooding
   - Monsoon rains on burned areas resulting in flash flooding
   - Loss of telecommunications in Globe. Most everything comes in on Century Link from Camp Verde. Squirrels disrupt service. Payson, Hayden has been experiencing this as well. The hospital is increasingly relying on telemedicine, and the outages are becoming an issue.
   - Shortage of funding for departments of public safety. Resources are stretched thin and not sourced to respond to a large-scale emergency
7. The group discussed the following areas of concern and potential mitigation measures:
   - Coolidge Dam and its state of disrepair and needed maintenance
   - Queen Creek and Pinal Creek bridges which are 80 years old and need retrofitting refurbishment
   - Rock falls on Highway 60 which close traffic during rain events and pose a hazard to motorists
   - Globe is working a project for city bridges in need of retrofitting or replacement and has identified 12-13 bridges
   - County Flood Control is reviewing flood plain management options such as elevating houses, advanced flood warning system/notification measures (working out glitches). Interactive GIS maps on web and use of Alert Gila County is now implemented
   - APS has identified Globe as being a higher risk area based on vegetation, debris, and junk around poles. They have a self-directed program using a fire mitigation specialist to identify concerns. APS has a program to replace wood power poles with steel poles if truck accessible
   - The risk of hazardous materials (hazmat) spills by truck or rail is low. The Arizona Department of Environment Quality (ADEQ) monitors these incidents. The County will reach out to ADEQ for information for the MJLHMP.
8. WHS stressed the need to complete the data collection templates which were emailed to the planning team earlier. They include forms for listing facilities and infrastructure, capabilities, status of previous mitigation measures in the 2011 MJHMP and incidents that have occurred since the previous MJHMP was completed.

III. Action Items

Action Item	Responsible Party	Due Date	Status
1. Review Arizona requirements for MJHMP development and review	Willdan	Sep 15	Open
2. Provide an update of incidents/declarations in the County since the last update	County	Sep 15	Open
3. Develop/provide materials (agenda, read ahead packet, presentation) for Planning Meeting # 2	Willdan	Sep 15	Open
4. Create appropriate material to support public outreach/engagement and provide to the County for posting on websites and social media including a survey	Willdan	Sep 20	Open
5. Research files for MJLHMP related GIS shape files, flood maps layers and other available data	County	Sep 20	Open
6. Send out second planning team meeting calendar invitations	Willdan	Sep 20	Open
7. Develop MJLHMP update	Willdan	Ongoing	Open
8. Develop and provide the public survey to the County. The County is planning on distributing the survey at the County Fair (9/22-24) and may also use Survey Monkey	Willdan	Sep 20	Open
9. Consider inviting appropriate private sector representatives (CenturyLink, etc.) into the planning process	County	Sep 20	Open
10. Contact Department of Water Resources (Brian?) regarding the date the County and the cities joined the NFIP	County	Sep 30	Open
11. Reach out to ADEQ for information on hazmat spills (dates, locations, damages, etc.)	County	Sep 30	Open

IV. Points of Contact

For concerns or questions regarding these notes or the plan revision project, please contact: Lee Rosenberg: (925) 381-0583 lee.rosenberg@navigatingpreparedness.com or

Eliza Gregory Coll: (602) 315-4263 ecoll@willdan.com

Sample 2: Planning Team Meeting Nr. 2 Notes

October 26, 2017

To: Eliza Gregory Coll
From: Lee Rosenberg

On October 26, 2017, Gila County hosted a meeting to conduct the project planning team meeting number two and support the process of updating its multi-jurisdictional local hazard mitigation plan (HMP). Attendees are listed in Table 1.

Table 1: Planning Team Meeting #1 Attendees

Name	Title	Organization	Email
Carl Medford	Emergency Manager	Department of Health and Emergency Mgmt.	cmelford@gilacountyaz.gov
Rosenberg, Lee	Managing Director	Navigating Preparedness Assoc.	lee.rosenberg@navigatingparedness.com
Foster, Amy	Planner	Navigating Preparedness Assoc.	efoster@navigatingpreparedness.com
Tom Engel	Development Engineer	Arizona Department of Transportation	tengel@azdot.gov
Gary Robinson	Chief	City of Globe Fire Dept.	grobinson@globe.gov
Tom Homan	GIS Supervisor	Gila County Public Works	thomen@gilacountyaz.gov
Darde de Roulhac	Chief Engineer	Gila County Flood Control	dderoulahc@gilacountyaz.us'
Sharon Listiak	Assistant Emergency Mngr.	Department of Health and Emergency Mgmt.	slistiak@gilacountyaz.gov
Don Engler	Chief	City of Payson Police Dept.	dengler@paysonaz.gov
Robert Rippy	Operations Superintendent	Town of Star Valley	rrippy@starvalleyaz.com
Robert J. Lockhart	Fire Chief	Christopher Kohls Fire Dept.	chief@ckfire.net
John Wisner	Fire Chief	Hellsgate Fire District	jwisner@hellsgatefire.org

Summary of Discussion

1. The meeting was held at the Gila County Maintenance Yard, Gila County Star Valley Conference Room in Star Valley with additional attendees attending via Videocon from the Globe EOC.
2. Willdan Homeland Security Solutions (WHS), facilitated the meeting.
3. The points of contact for each jurisdiction (Gila County, Miami, Hayden, Payson and Globe) received a packet of templates to assist in providing information needed to update and complete the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). Meeting attendees introduced themselves.

4. WHS provided an update on the current MJLHMP status and reviewed the project timeline. This is the second planning meeting designed to review hazards analysis and provide guidance to begin collecting information for inclusion in the plan update.
5. Gila County Emergency Management (EM) provided an update on the recent poll that was distributed and posted online as part of the public outreach component of planning. The poll is online via local social media as well as the County website. Hard copies were also available for pick up at both health department locations. Gila County EM has ten paper returns. WHS, has the information regarding the electronic returns. WHS set the end of November as a deadline to close the survey and compile results. Gila County EM also stated that they made a video on social media as part of County preparedness program and discussed the survey and HMP. Carl will get a screenshot announcing the video or some other form of documentation to include in the HMP.
6. The group reviewed and discussed the hazards listed in the current plan and had the following comments:
    a. FEMA required subsidence was addressed, but it is not a risk to the County
    b. Terrorism is a low probability in the County
    c. The group agreed to combine transportation accidents and hazardous materials (HAZMAT) into a single hazard. Most HAZMAT incidents are truck accidents; there is no HAZMAT transported via rail through the County
        i. County EM wants to include public safety training for HAZMAT incidents as a mitigation measure. The State is responsible for accidents on the State roads, but the local responders will be first on the scene. While the probability of HAZMAT incidents is low, the County wants to ensure responders are appropriately trained to respond.
        ii. WHS suggested wording for mitigation including “collaborate with Arizona DOT for training and “establish public/private partnerships for response.”
7. The group reviewed the proposed hazards and made the following comments:
    a. FEMA requires climate change to be included in plan updates. WHS will include and link climate change to other hazards (drought, flood, wildfire)
    b. Extreme heat is not considered an issue as it is part of the region, and weather is not extreme enough to open cooling centers due to cooling at night. The fragile power grid makes extreme heat a risk as it results in loss of life sustaining support such as internet service, phones and home health equipment.
    c. The group wants to add energy emergency as a hazard, A consideration is the utilities are privately held. Public safety communications are “self-contained”, but the citizens have lost cell coverage and then have no access to call 9-1-1. An “energy emergency” caused by winter weather and high wind, results in power lines, dropping fairly regularly. In addition to citizens being unable to call 9-1-1, public safety cannot put out information regarding how to report emergencies, other imminent hazards or timelines for system restoration.

d. The group discussed dams in the county. And adding dam inundation as a hazard. The Roosevelt Dam, owned by the Salt River Project (SRP) and managed by the Department of Water Resources, would flow into the Phoenix Valley; and therefore, is not an issue for Gila County. Inundation from the Coolidge Dam, maintained by the San Carlos Apache Tribe will flow down the Gila River and inundate Winkelman and Hayden.
    i. Gila County EM provided additional information regarding the Coolidge Dam. The Tribe has a dam emergency action plan set up with notification flowcharts, who to contact, how to contact, etc. The County is working with the Tribe on their notification program with Everbridge to communications warning system. Residents (potentially affected by a dam release who are in the white/yellow pages' database) are on the County's system. The National Weather Service (NWS) is on the Tribe's notification list that will provide weather predictions and broadcast flood warnings. The NWS is tied into the River Center Forecast Center for the Colorado River Basin. The group did not know if the Tribe is part of the River Center Forecast Center as part of their action plan. The group was also not aware if the Tribe has conducted an engineering study with trigger points to lower water levels, etc.

8. The group discussed completing the Priority Risk Index Summary, viewed in a chart on slide 12. Some of the responses are in the chart below. The group noted that some of the responses were dependent upon time of year and location of incident. WHS will review and research responses and "weigh" the information on a scale of 0-4 to create a priority risk index to include in the report.

Hazard	Probability	Magnitude severity	Warning time	Duration
1. Climate Change	4	4	1	4
2. Dam Failure	1	4	4	4
3. Drought	3	3	1	4
4. Flood/Flash flood	4	4	4	2
5. HAZMAT (combine with transportation)	2	2	4	1
6. Severe/ High Winds	4	2	2	2

7. Wildfire	4	3	4	3
8. Winter storm	4	2	1	4
9. Energy Emergency	3	3	3	3

9. The group reviewed handouts regarding Critical Facilities. WHS explained the facilities considered Critical include all public safety stations, power substations, water/wastewater plants, public works, parks and recreation, long-term care facilities, hospitals, dialysis centers, County maintenance yard, communications centers and repeater sites. The County and city insurance carriers/risk management departments have this information including dollar value.
10. The group discussed Capabilities and Completed Mitigation Actions. Payson and Gila County have provided this information; still awaiting Globe, Miami and Hayden.
11. The group discussed Mitigation Measures and needs to review the mitigation measures in the 201 HMP, and identify if the measures should be listed as completed, remain and/or be revised or deleted. The group should identify additional mitigation measures for inclusion in the plan update. The cities and County participate in the National Flood Insurance Program (NFIP).
12. WHS asked the group to review the Hazard Mitigation Goals and provide any edits and comments to Gila County EM.
13. The group discussed what is expected of them regarding the Mitigation Actions and reviewed the examples provided. WHS stated that listing mitigation measures will help if the County receives mitigation grant funding (either pre-disaster funding or post-disaster mitigation funds after a Presidential Declaration). The plan provides 15% of public assistance that FEMA provides as mitigation grants to make other mitigation measures. It benefits the jurisdiction to show mitigation actions already in the plan to back up funding requests.
14. The group discussed realistic vs. unrealistic mitigation measures as there were some identified in the 2011 HMP that are not realistic or feasible.

Action Items

Action Item	Responsible Party	Due Date	Status
1. Review Arizona requirements for LHMP development and review	Willdan	November 15	Open
2. Provide an update of incidents/declarations in the County since the last HMP	County	November 15	Open
3. Identify recent statistics, mitigation measures/activities regarding Coolidge Dam	County	November 15	Open
4. Collect critical facilities information and dollar value from Risk Management / insurance carrier	County/Cities	November 15	Open

5. Provide examples of issues/consequences resulting from loss of electricity/internet phone services (under Energy Emergency) and dead zones	County	November 15	Open
6. Complete data collection templates	County Globe, Hayden, Miami and Payson	November 15	Open
7. Develop/provide materials (agenda, read ahead packet, presentation) for Planning Meeting # 3	Willdan	TBD	Open
8. Research files for LHMP related GIS shape files. flood maps layers and other available data	County	November 15	Open
9. Send out third planning team meeting calendar invitations	Willdan		Open
10. Develop LHMP update	Willdan	Ongoing	Open

Points of Contact

For concerns or questions regarding these notes, please contact:
Lee Rosenberg, (925) 381-0583 or lee.rosenberg@navigatingpreparedness.com or Eliza Gregory Coll, (657) 223-8584 ecoll@willdan.com

Sample 3: Planning Team Meeting Nr. 3 Notes:

February 8, 2019

To: Eliza Gregory Coll
From: Lee Rosenberg

On February 8, 2019, Gila County hosted a meeting to conduct the project planning team meeting number three and support the process of updating its multi-jurisdictional local hazard mitigation plan (HMP). Attendees are listed in Table 1.

Table 1: Planning Team Meeting #1 Attendees

Name	Title	Organization	Email
Louis Bracamoote	Mayor	Town of Winkelman	chacobracamonte@gmail.com
Eliza Coll	Project Manager	WHS	ecoll@willdan.com
Dan Engler			
Joshua Derhammer	Code/Enforcement	Town of Miami	miamicodenforcement@cableone.net
Sharon Listiak	Emergency Mgmt. Asst.	Department of Health and Emergency Mgmt.	slistiak@gilacountyaz.gov
Dale Metz	Civil Engineer	Town of Miami	dmetzmiami@gmail.com
Carl Medford	Emergency Manager	Department of Health and Emergency Mgmt.	cmelford@gilacountyaz.gov
Spence Preston	Chief	Town of Miami Police	miamipolice@yahoo.com
Gary Robinson	Fire Chief	Globe Fire	grobinson@globeaz.gov
Lee Rosenberg	Planner	WHS	lee.rosenberg@navigatingpreparedness.com

Summary of Discussion

1 The meeting was held at the Gila County Gila County EOC, 5515 S. Apache Ave., Globe, AZ with additional attendees attending via Videocon from the Payson.

2 Willdan Homeland Security Solutions (WHS), facilitated the meeting.

3 The points of contact for each jurisdiction (Gila County, Miami, Hayden, Payson and Globe) received a packet of templates to assist in providing information needed to update and complete the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).

4 One on one meetings were conducted throughout the day to collect information on the following data needed to update the MJLHMP:

- Jurisdictions facilities
- Jurisdiction capabilities

- Status of 2011 Plan mitigation actions
- Updated mitigation measures to include in the 2019 MJLHMP

5 Discussion Town of Miami

a. Many of the previous Plan mitigation activities are ongoing
b. New floodplain maps and a survey/assessment to replace and expand the current sewer/stormwater lines to the wastewater/ stormwater plan are incomplete
c. Matthews Camp bridge needs replacement (coordinate with County to build/rebuild. 2010 flood that washed out bridge). Needs a grant. Section of bridge is on private property. There is an old easement that needed to be expanded; land owner disputed with town
d. Town needs to provide list of municipal facilities

6 Discussion Gila County

a. Need inventory list (location, value) of County owned facilities
b. Reach out to DEMA; would like to set up time for courtesy review. Review any additional state requirements or any areas they look at closely

7 Discussion Town of Payson

a. Need listing of town facilities and assets (buildings, structures, relatively high value, parks & rec)
b. Most plans listed in capabilities have been or are being updated
c. The town receives CDBG grants
d. Need to get hazards addressed
e. Capital Improvement funding has been allocated for new water lines and fire hydrants
f. The town uses bonds, mainly for water projects
g. Education and outreach capabilities include:
h. Paysonaz.gov; town and PD Facebook sites
i. TDD for hearing impaired outreach at PD
j. County Everbridge system
k. CERT: Town of Payson, under County jurisdiction, under Sheriff's Office "Northern Gila County CERT"
l. 52 Volunteer police personnel "Volunteers in Action" program

8 Discussion Town of Globe

a. Key hazards are drought, impact on water supply, flooding which occurs annually along low-lying areas along Pinal Creek, wild fire which is not as frequent, winter storms which isolate the Town (shut down utilities for 3 days during winter 2006-2007 for entire town), traffic with potential for hazardous spill on highways 60 and 70
b. Items to consider for new mitigation activities are:

c. Connie's Bridge is priority… Jesse Hayes /South Broad
d. ongoing project to update wildland fire equipment (trucks, PPE) to stay current with standards
e. Better surveillance for the Town wells. It's a wildland interface zone, surrounding Cutter Wellfield
f. Replace or update critical city facility/infrastructure in flood plan such as the Fire Station, Police Station and City Hall; move/relocate out of flood plain
g. Acquire a generator for City Hall. The building also leaks
h. Emergency communications are currently operated off frequency managed by PD. Would like trunked system. Need to update FCC license and acquire new radio equipment

9 The Town of Hayden didn't participate.

10 Discussion Town of Winkelman:
a. Dangers of lead poisoning from groundwater; EPA has been testing; over past two years. This is beyond scope of the EPA
b. Need list of Town infrastructure and values
c. Need dates on preparedness and other Town plans
d. Need to develop a list of mitigation actions
e. Coolidge Dam is a concern. Dam inundation wasn't listed as a hazard in the old plan. Still needs to be considered due to age and condition of the dam as it's not in great shape and is a high-hazard dam
f. Will include Winkelman in MJLHMP
g. The Town needs to consider what mitigation projects do
h. The Town has no real infrastructure to speak of with only 2 businesses generating revenue (convenience store and park). This year, putting $280K into park. The park sits in the flood zone
i. The Town has a siren that was tied into the county. There is a need to rehabilitate the siren notification system

Action Items

Action Item	Responsible Party	Due Date	Status
11. Review Arizona requirements for LHMP development and review	Willdan	March 15	Open
12. Provide an update of incidents/declarations in the County since the last HMP	County	March 15	Open
13. Identify recent statistics, mitigation measures/activities regarding Coolidge Dam	County	March 15	Open

14. Complete data collection templates	Miami and Payson	March 15	Open
15. Research files for LHMP related GIS shape files. Flood maps layers and other available data	County	March 15	Open
16. All towns provide information listed above	All Towns	March 15	Open
17. Develop LHMP update	Willdan	Ongoing	Open

Points of Contact

For concerns or questions regarding these notes, please contact:
Lee Rosenberg, (925) 381-0583 or lee.rosenberg@navigatingpreparedness.com or Eliza Gregory Coll, (657) 223-8584 ecoll@willdan.com

Sample 4: Meeting Nr. 1 Invitation Email

From: Eliza Gregory Coll
To: Melford, Carl; Lee; slistiak@gilacountyaz.gov; Lee Rosenberg; jbarnes@globeaz.gov; Cline, Brent; gcruz@townofhayden.net; dderoulhac@gilacountyaz.us; tengel@azdot.gov; "dengler@paysonaz.gov"; lgarrett@paysonaz.gov; townmanager@ci.star-valley.az.us; miamimanager@cableone.net; thoman@gilacountyaz.gov; ptjepson@globeaz.gov; tjswanie68@hotmail.com; kaiyle.moses@scat-nsn.gov; mnipp@globeaz.gov; tcfd214@globeaz.gov; rrippy@ci.star-valley.az.us; grobinson@globeaz.gov; richard.rosales@aps.com; ssanders@gilacountyaz.gov; ronsatt@wwfmd.us; tscott@gilacountyaz.gov; ashepherd@gilacountyaz.gov; bsmith@townofhayden.net; ksorensen@azdot.gov; David Staub; kthompson@gilacountyaz.gov; cvaladez@wmat.us
Subject: Gila County Multi-Jurisdictional Hazard Mitigation Plan Update
Date: Monday, August 07, 2017 4:11:40 PM
Attachments: Gila County Multi-Juris Haz Mit Plan_Final Draft_2011-11-01-Secured.pdf Gila County MJHMP_IPM Read Ahead.pdf

Good afternoon,

Gila County Office of Emergency Management is updating the Gila County Multi-Jurisdictional Hazard Mitigation Plan (last updated 2011).
You have been identified as a key stakeholder and we hope you will assist us with this important planning initiative.

Our first planning meeting is scheduled for August 29, 2017 from 0900-1200 in the Gila County EOC, 5515 S. Apache Ave., Globe, AZ.
We will plan to videoconference with the Gila County Star Valley Conference Room, 5320 E Highway 260, Star Valley, AZ 85541.

I am attaching a read-ahead document as well as the 2011 MJHMP. I will send out additional materials for review in advance of the meeting. I will also send out an Outlook calendar appointment.
Please let me know if we might have missed anyone that should attend the meeting. Thanks!

Eliza

Eliza Gregory Coll, MHA, CEM
Director, Public Health Services

Willdan Homeland Solutions

ecoll@willdan.com

Office: 657-223-8584

Cell: 602-315-4263
Fax: 714-940-4930

APPENDIX C: PUBLIC ENGAGEMENT DOCUMENTATION

This appendix includes documentation of the 2019 MJLHMP public engagement process. Public outreach consisted of the following:

- Providing a continuing page on the County OES website providing announcements and updates on the planning process. A copy of the draft MJLHMP was also posted on the website for County residents to review. County Facebook and twitter accounts were used to advertise the webpage. See Sample 1
- A survey was developed and place on the County OES website soliciting feedback on hazards, potential mitigation measures and priorities, general community preparedness. Nine surveys were returned. The results of the survey were used to inform hazard CPRI and select and prioritize mitigation measures. See Samples 2 and 3
- All planning team participants were notified of the draft MJLHMP being place on the County OES website. Participating jurisdictions were provided a copy of the plan to place on their own media
- The draft MJLHMP was placed on the County OES Website May 21 through June 10, 2019 and a survey form provided for public comment. See Sample 4. No comments were received
- An email requesting review or the draft MJLHMP was sent to neighboring counties on May 30, 2108. No responses were received. See Sample 5

The public survey input from the 12 responders was used to select hazards and rank their affects. Earthquake and energy emergency were ranked as the two top hazards. This input was also used to inform the CPRI Summary contained in **Table 5-5.** Finally, survey input was used to select mitigation actions. Input from posting the draft MJLHMP was used to refine the Plan and prepared it for submission for review.

Sample 1: Web Page Screenshot Announcing LHMP Update and Survey September 25, 2017

Sample 2: Gila County Hazard Mitigation Plan Survey

1. The residents and businesses in the County face a number of hazards that could potentially occur. How concerned are you about the following hazards? (Check one response for each hazard)

	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned
Earthquake/Seismic	O	O	O	O	O
Flood	O	O	O	O	O
Fire	O	O	O	O	O
Levee Failure	O	O	O	O	O
Landslides/Mudslides/Debris Flow	O	O	O	O	O
Drought	O	O	O	O	O
Energy Emergency	O	O	O	O	O
Dam Failure	O	O	O	O	O
Epidemic/Pandemic/Vector Borne Disease	O	O	O	O	O
Hazardous Material and Oil Spills	O	O	O	O	O
Agricultural Hazard	O	O	O	O	O
Terrorism/Cyber Terrorism	O	O	O	O	O
Civil Disturbance	O	O	O	O	O
Fog	O	O	O	O	O
Extreme Heat	O	O	O	O	O
Severe Winter Storms/High Winds	O	O	O	O	O
Other (Please specify)					

2. How prepared is your household to cope with a hazard event?

	Not Prepared at All	Somewhat Prepared	Adequately Prepared	Very Well Prepared	Not Sure
Check one	O	O	O	O	O

3. Which of the following activities has your household taken to prepare for a hazard event? (Check all that apply)

- ☐ Prepared a disaster kit (Tools, gloves, dust masks, flashlights, eye protection, etc.)
- ☐ Stored water (one gallon a day/person for 5 days)
- ☐ Stored non-perishable food for 5 days
- ☐ Received first aid/CPR training
- ☐ Joined a Community Emergency Response Team (CERT)/taken CERT classes
- ☐ Stored medical needs/supplies (first aid kit, prescription medicines, extra glasses) at home, work or auto)
- ☐ Created a family reunification communications plan
- ☐ Identified utility shutoffs
- ☐ Installed smoke and carbon monoxide detectors on each floor of the house
- ☐ Have working portable fire extinguishers in appropriate areas such as the kitchen
- ☐ Purchased flood insurance
- ☐ Purchased earthquake insurance
- ☐ None

4. Which of the following sources of information do you use to help prepare for a hazard event? (Check all that apply)

- ☐ Government source such as federal, state of local website or Facebook account
- ☐ Community meetings that address disaster preparedness information
- ☐ CERT training
- ☐ Exhibit at a local fair or community event
- ☐ Civic organization involved in disaster preparedness such as American Red Cross or your church
- ☐ Personal experience with previous hazard or disaster
- ☐ School or academic institution
- ☐ Local news or regional media source (Other than social media)
- ☐ Phone book or distribution of printed material
- ☐ Other (Please specify) _____

5. Which of the following source of methods for receiving hazard and disaster preparedness information do you think are most effective? (Check all that apply)

- ☐ Social media
- ☐ Website other than social media such as Ready.gov
- ☐ Newspaper articles
- ☐ Telephone book
- ☐ Radio announcement
- ☐ Schools and academic institutions
- ☐ City newsletters
- ☐ Workshops
- ☐ Chamber of commerce or other civic group
- ☐ Fire department
- ☐ Law enforcement agency
- ☐ Church
- ☐ Public library
- ☐ Red Cross
- ☐ Public meetings
- ☐ Reverse 911
- ☐ Public awareness campaigns
- ☐ Other (Please specify) _____

6. What types of projects should the County/your city be accomplishing in order to reduce the damage and disruption from hazards? Please rank each option as low, medium or high priority.

	Low Priority	Medium Priority	High Priority
Strengthen codes and regulations to include higher regulatory standards in hazard areas.	O	O	O
Retrofit critical infrastructure such as roads and bridges, flood control systems, water and wastewater treatment plants, and power distribution systems.	O	O	O
Acquire vulnerable properties and maintain as open space.	O	O	O
Provide better public information about risk and the exposure to hazards with in the County.	O	O	O
Implement projects that restore the capacity of the natural environment to absorb the impacts from hazards.	O	O	O

Implement projects that mitigate the potential impacts of climate change.	O	O	O
Educate vulnerable property owners about the programs that support mitigation funding.	O	O	O
Other (Please specify)			

7. How important do you find the following County-wide actions or activities that may reduce the risks of hazards?

	Not Important	Somewhat Important	Very Important	Extremely Important
Prevention activities such as administrative actions that influence the way that land is develop and buildings constructed, such as planning, zoning and building codes.	O	O	O	O
Property protection actions that involve the modification of existing building to protect them from a hazard or removal from the hazard area such as acquisition, relocation, elevation and structural retrofits.	O	O	O	O
Structural projects intended to reduce the impact of a hazard by modifying the natural progression of the hazard such as detention/retention basins retaining walls and storm sewers.	O	O	O	O
Emergency services actions that protect people and property during an immediately after a hazard event, such as warning systems, evacuation planning emergency response training and protection of critical emergency facilities and systems.	O	O	O	O
Public education and awareness activities designed to inform community member about hazards	O	O	O	O

and the techniques the can use to protect themselves and their property such as outreach projects, CERT, school based programs, and public events or campaigns.				
Other (Please specify)				

8. Please indicate how your feel about the following statement: It is the responsibility of government (local, state and federal) to provide education and programs that promote citizen action that reduce exposure to the risks associated with hazards.

	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
Check one	O	O	O	O	O

9. Please indicate how your feel about the following statement: It is my personal responsibility to be educated and take action that reduce my exposure to the risks associated with hazards.

	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
Check one	O	O	O	O	O

10. Do you or anyone in your household have disabilities and / or access and functional needs that require early warning notification or specialized response to evacuate during disasters?

O Yes

O No

Other (Please specify) _____

11. If you answered yes to question 10, would you participate in a Disaster Assistance Registry for people with disabilities and / or access and functional needs?

O Yes

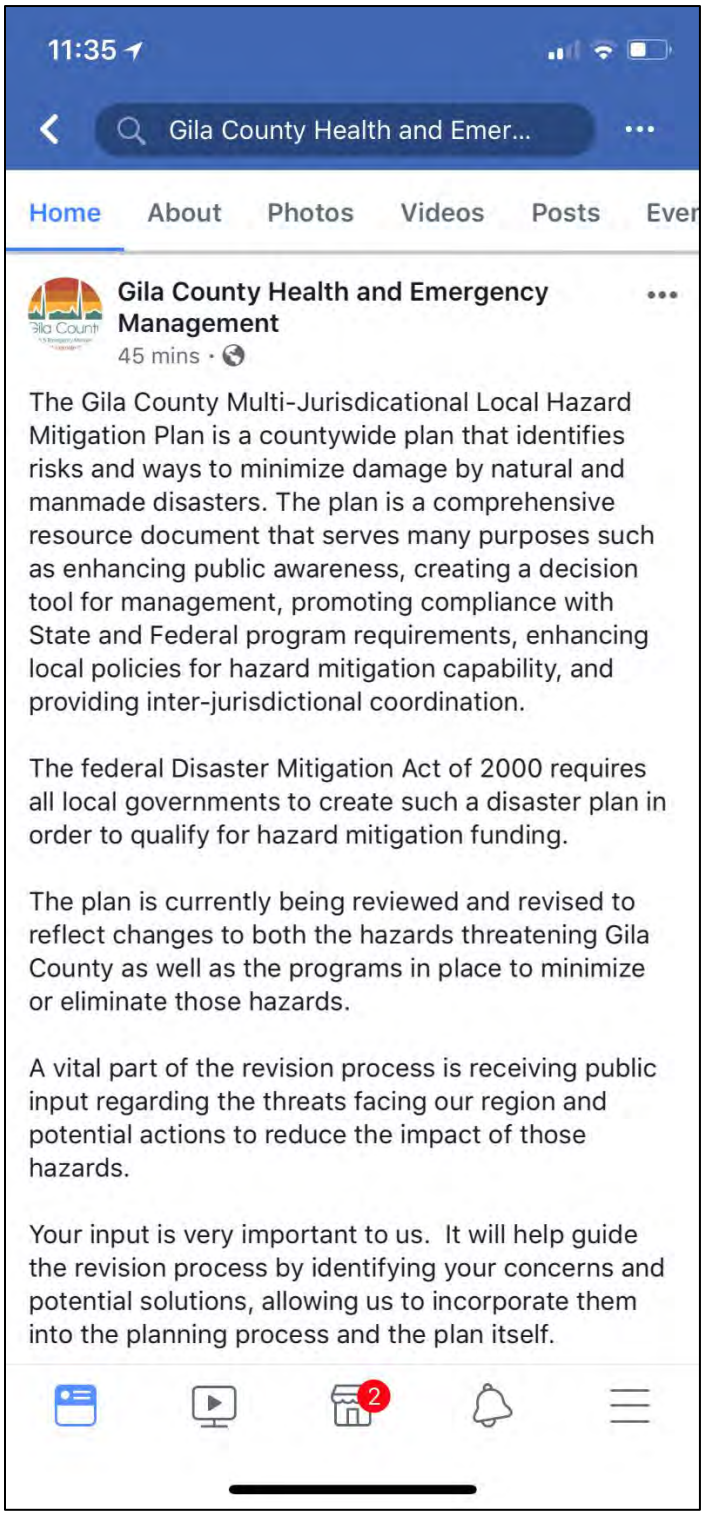
O No

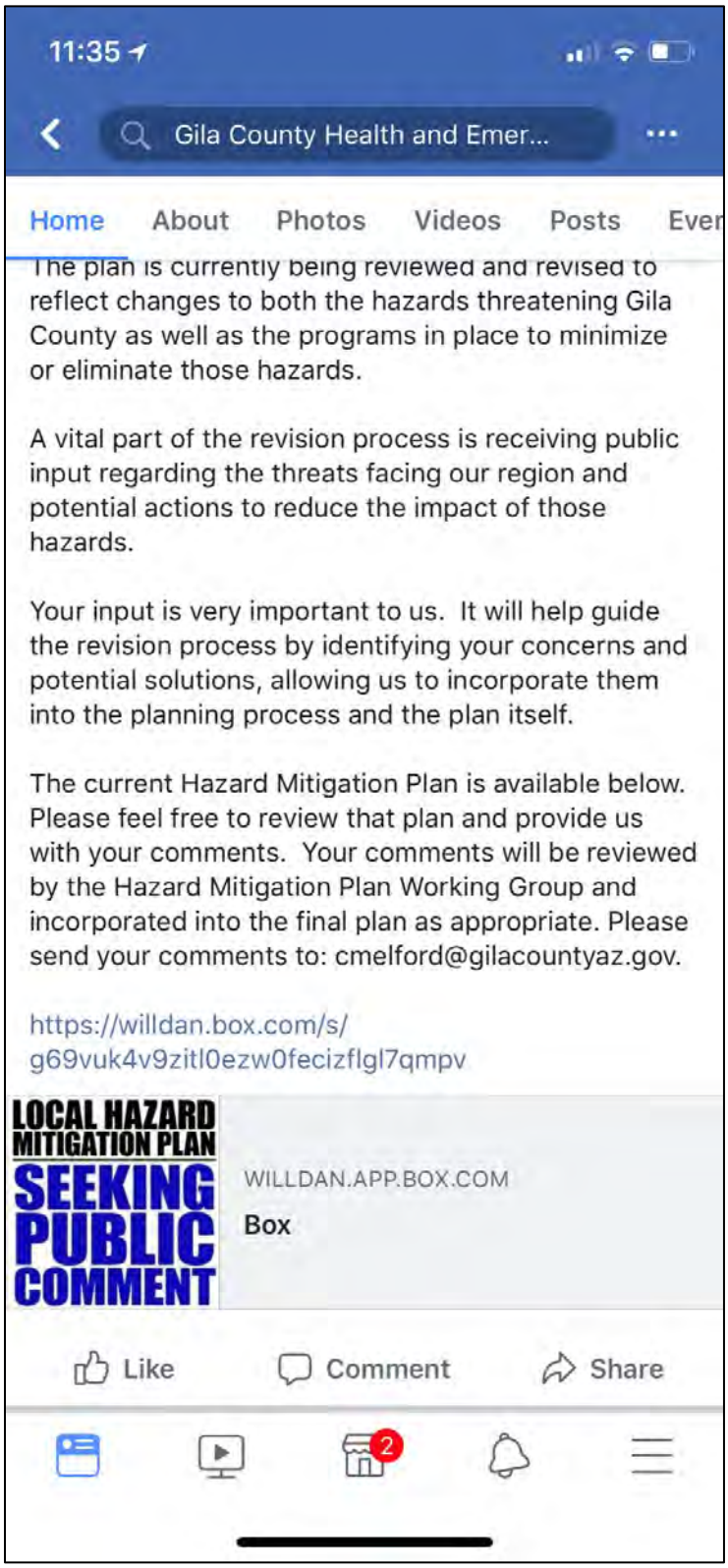
Other (Please specify) _____

Sample 3: Public Survey Results

29 Surveys were completed and returned. The results for each question were analyzed. The information provided was used to characterize the County hazards and identify those of greatest concern. This allowed the Planning Team to review and develop potential mitigation strategies and individual mitigation measures which are included in Sections 6.2 and 6.3 of the Plan. The gravest hazards identified by the responses were drought, flood, wildfire, extreme heat and energy emergency with fire being the hazard of most concern.

Sample 4: Draft MJLHMP Posting on County Website for Review and Comment, May 21, 2019




11:35
Gila County Health and Emer...
Home
About
Photos
Videos
Posts
Ever
The plan is currently being reviewed and revised to reflect changes to both the hazards threatening Gila County as well as the programs in place to minimize or eliminate those hazards.
A vital part of the revision process is receiving public input regarding the threats facing our region and potential actions to reduce the impact of those hazards.
Your input is very important to us. It will help guide the revision process by identifying your concerns and potential solutions, allowing us to incorporate them into the planning process and the plan itself.
The current Hazard Mitigation Plan is available below. Please feel free to review that plan and provide us with your comments. Your comments will be reviewed by the Hazard Mitigation Plan Working Group and incorporated into the final plan as appropriate. Please send your comments to: cmelford@gilacountyaz.gov.
https://willdan.box.com/s/g69vuk4v9zitl0ezw0fecizflgl7qmpv
LOCAL HAZARD MITIGATION PLAN
SEEKING PUBLIC COMMENT
WILLDAN.APP.BOX.COM
Box
Like
Comment
Share
2

Sample 5: Outreach to Neighboring Counties

From: "Melford, Carl" <cmelford@gilacountyaz.gov>
Date: Thursday, May 17, 2019 at 7:58 AM
To: "Whitney, Todd" <twhitney@coconino.az.gov>, "bdouglas@graham.az.gov" <bdouglas@graham.az.gov>, Charles Kmet <Charles.Kmet@pinalcountyaz.gov>, "srutherford@co.greenlee.az.us" <srutherford@co.greenlee.az.us>, "catrina.jenkins@navajocountyaz.gov" <catrina.jenkins@navajocountyaz.gov>
Subject: Gila County MJHMP

The Gila County Multi-Jurisdicational Local Hazard Mitigation Plan is a countywide plan that identifies risks and ways to minimize damage by natural and manmade disasters. The plan is a comprehensive resource document that serves many purposes such as enhancing public awareness, creating a decision tool for management, promoting compliance with State and Federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination.

The federal Disaster Mitigation Act of 2000 requires all local governments to create such a disaster plan in order to qualify for hazard mitigation funding.

The plan is currently being reviewed and revised to reflect changes to both the hazards threatening Gila County as well as the programs in place to minimize or eliminate those hazards.

A vital part of the revision process is receiving public and partner input regarding the threats facing our region and potential actions to reduce the impact of those hazards.

Your input is very important to us. It will help guide the revision process by identifying your concerns and potential solutions, allowing us to incorporate them into the planning process and the plan itself.

The current Hazard Mitigation Plan is available below. Please feel free to review that plan and provide us with your comments. Your comments will be reviewed by the Hazard Mitigation Plan Working Group and incorporated into the final plan as appropriate. Please send your comments to: cmelford@gilacountyaz.gov.

https://willdan.box.com/s/g69vuk4v9zitl0ezw0fecizflgl7qmpv

Carl Melford

Emergency Manager

Gila County Office of Emergency Management

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Globe, AZ 85501

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Cell: (928)701-1811

Email: cmelford@gilacountyaz.gov

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APPENDIX D: ACRONYMS

Acronym	Definition
ADEM	Now is called DEMA
ADEQ	Arizona Department of Environment Quality
ADOT	Arizona Department of Transportation
ALOHA	Aerial Locations of Hazardous Atmospheres
APS	Arizona Public Service
ARS	Arizona Revised Statutes
ASARCO	American Smelting and Refining Company
ASCE	American Society of Civil Engineers
ASLD	Arizona State Land Department
AZSERC	Arizona Emergency Response Commission
AZTEC	Arizona Technical Eligibility Computer System
BD	Building Department
BHP	BHP Copper
BIA	Bureau of Indian Affairs
BG	Bonds or Grants
BLF	Business License Fee
CAMEO	Computer Aided Management of Emergency Operations
CC	Climate Change
CDBG	Community Development Block Grant
CEM	Certified Emergency Manager
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CIP	Critical Infrastructure Protection
CPR	Cardio Pulmonary Resuscitation
CPRI	Calculated Priority Risk Index
CRS	Community Rating System
CWPP	Community Wildfire Protection Plan
DEMA	Department of Emergency and Military Affairs
DFIRM	Digital Flood Insurance Rate
DHS	Department of Homeland Security
DI	Dam Inundation
DMA	Disaster Mitigation Act
DOJ	Department of Justice
DOT	Department of Transportation
DR	Drought, Disaster Recovery
DRS	Designation Renewal System
EA	Environmental Analyst
EHS	Extremely Hazardous Substance
EM	Emergency Manager, Emergency Management
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EOP	Emergency Operations Plan

Acronym	Definition
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FL	Flood / Flashflood
FM	Financial Management
FMA	Flood Mitigation Assistance
FMAG	Fire Management Assistance Grant Program
GCDEM	Gila County Department of Emergency Management
GCHEM	Gila County Health and Emergency Services
GCOEM	Gila County Office of Emergency Management
GF	General Fund
GIS	Geographic Information System
GPMF	General Plan Maintenance Fee
HAZMAT	Hazardous Materials
HAZUS	Hazards United States
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HZ	Hazardous Materials
ISO	International Organization for Standardization
ITCZ	Inter Tropical Convergence Zone
LHMP	Local Hazard Mitigation Plan
LLURP	Land Use and Resource Policy
MIT	Mitigation
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MJLHMP	Multi-Jurisdictional Local Hazard Mitigation Plan
MST	Mountain Standard Time
NCDC	National Climate Data Center
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NFIRA	National Flood Insurance Reform Act
NIDIS	National Integrated Drought Information System
NOAA	National Oceanic and Atmospheric Administration
NPA	Navigating Preparedness Associates
NRC	National Response Center
NWCG	National Wildfire Coordinating Group
NWS	National Weather Service
OES	Office of Emergency Services
PA	Public Assistance
PCB	Polychlorinated Biphenyls
PD	Planning Department
PDM	Pre-Disaster Mitigation
PDO	Property Damage Only

Acronym	Definition
PPE	Personal Protection Equipment
PREP	Preparedness
PSDI	Palmer Drought Severity Index
PW	Public Works
RESP	Response
RFC	Repetitive Flood Claims
RGP	Regional General Permits
RPAP	Regional Payson Area Project
SCIP	San Carlos Irrigation Project
SRL	Severe Repetitive Loss
SRP	Severe Repetitive Loss
SW	Storms and High Winds
TBD	To Be Determined
TDD	Telecommunications Device for the Deaf
TPQ	Threshold Planning Quantity
TR	Transportation Incident
USDA	United States Department of Agriculture
USDM	U.S. Drought Monitor
USFS	United States Forest Service
USGS	United States Geological Survey
USSDO	U.S. Seasonal Drought Outlook
VMT	Vehicle Miles Traveled
WF	Wildfire
WHS	Willdan Homeland Solutions
WS	Winter Storm
WUI	Wildland Urban Interface
WWTP	Waste Water Treatment Plan

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APPENDIX E: CITY AND TOWN ANNEXES

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Annex A City of Globe

Globe is located in the southern portion of the Gila County 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 traverse Globe and serve as major roadways servicing the community. As of the 2010 census, the population of the city was 7,532. The city is the county seat of Gila County.

A.1 Community Profile

Geography and Climate:
Globe is in southern Gila County at 33°23′59″N 110°46′54″W (33.399858, −110.781570, in the valley of Pinal Creek, a north-flowing tributary of the Salt River. U.S. Route 60 passes through the city. According to the United States Census Bureau, the city of Globe has a total area of 18.2 square miles (47.1 km2), of which 0.01 square miles (0.03 km2), or 0.07%, is water. The town of Miami, Arizona, is 6 miles west of Globe's downtown. Globe, Miami, and the unincorporated areas nearby (including Inspiration, Claypool and Central Heights-Midland City) are commonly called "Globe-Miami".

Globe has a semi-arid climate, characterized by hot summers and moderate to warm winters. Globe's arid climate is somewhat tempered by its elevation, however, leading to slightly cooler temperatures and slightly more precipitation than Phoenix or Yuma.

Summers in Globe are hot, with daytime highs generally between 90 °F (32 °C) and 100 °F (38 °C). High temperatures topping 100 °F (38 °C) are not uncommon in July and August for Globe. Summertime lows are generally right around 65 °F (18 °C). Wintertime highs usually average between 55 °F (13 °C) and 65 °F (18 °C), and lows tend to be right at or above freezing (32 °F/0 °C). The all-time highest recorded temperature in Globe is 111 °F (44 °C), and it occurred on both June 27, 1990, and July 29, 1995. The lowest recorded temperature in the city is 12 °F (−11 °C), which occurred the same year the first time the record high was reached—December 23, 1990.

Government:
Globe is governed by a mayor and city council consisting of six council members.

Population and demographics:

The 2016 population was estimated at 7,376. The median age was 43.1. Median household income was $42,405 with a poverty rate of 19.8 percent. 3,224 people were employed. The population was 77.6 percent white with 32.7 percent Hispanic of any race.

Housing:
Globe had 3,386 housing units, as of April 1, 2010 with 57% owner occupied. The medium housing value was $117,900.

Economy:
In 1875, prospectors found silver in the San Carlos Apache Reservation, including an unusual globe-shaped silver nugget. In just four years, the silver began to give out, but by then copper deposits were discovered. In the 1900s, the Old Dominion Copper Company in Globe ranked as one of the world's richest. The Old

Dominion closed in 1931, and mining operations moved to nearby Miami. Globe's economy remains heavily dependent on the mining industry, and as of 2008 the city was home to one of the few operating copper smelters in the United States.

Land use:

Figure A.1 depicts land use in Globe.

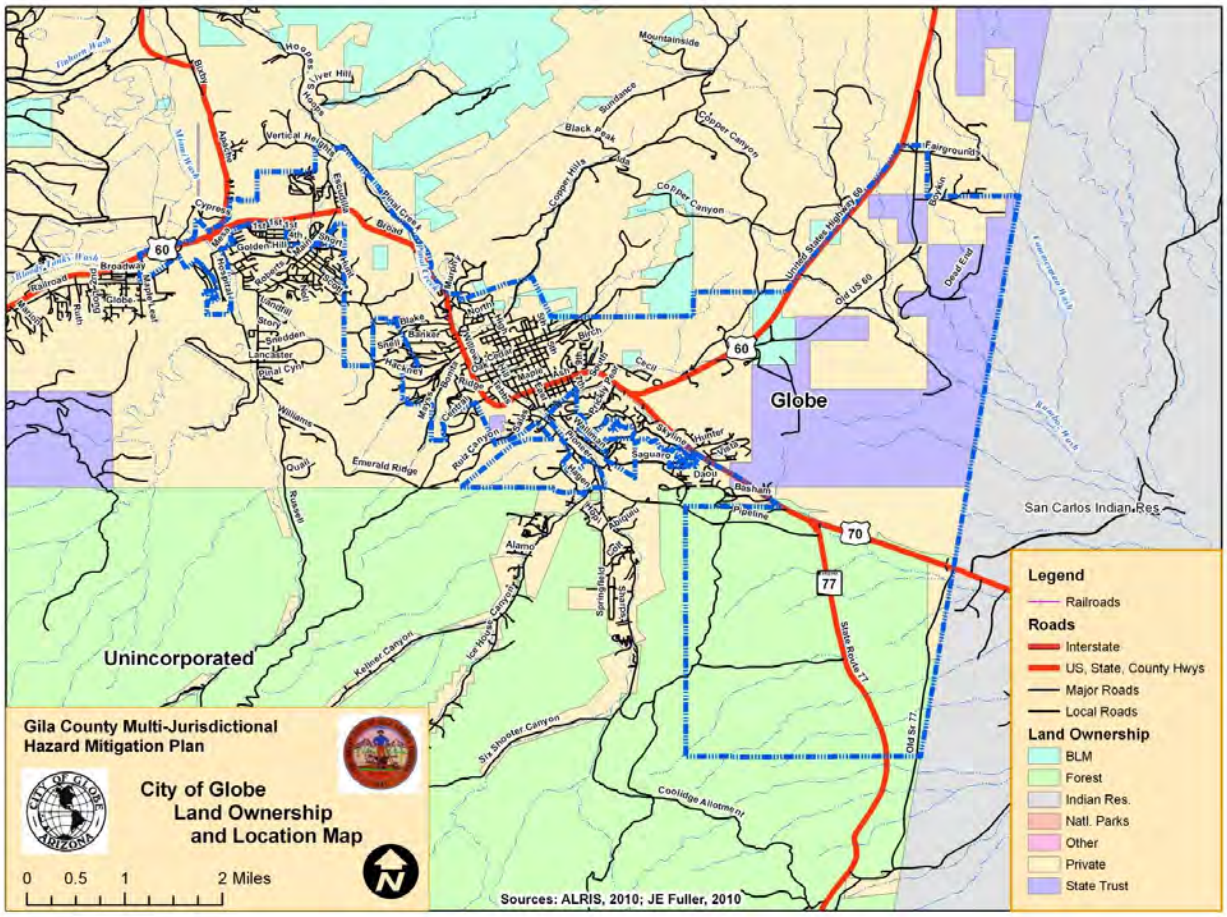

Figure A.1: City of Globe Land Ownership

Development trends:

Because population growth was negligible since approval of the 2011 MJLHMP, there has been no development in hazard prone areas that has affected overall vulnerability of the City.

Inclusion of dam inundation added a large area of the County to this new hazard. Globe is not in the inundation zone.

The new MJLHMP addresses the new hazard of climate change. This hazard impacts the entire City. Development in the City, County, the State and globally with increased carbon emissions will result in increasing overall vulnerabilities to its impacts.

A.2 Hazards Identification and Analysis

Hazards:

Globe faces many of the hazards that are present in the County. **Table A-1** below provides a summary of hazards. There are no hazards that are unique to Globe.

Table A–1: Globe Summary of Hazards

Hazard	Frequency	Extent	Magnitude	Significance	Location
Climate Change	Highly	Extensive	Catastrophic	High	Entire City
Drought	Likely	Extensive	Critical	High	Entire City
Flood / Flash Flood	Highly Likely	Limited	Limited	Low	Low lying areas along Pinel Creek
Hazardous Materials	Highly Likely	Significant	Limited	Low	Entire City
Severe Wind	Highly Likely	Significant	Limited	Medium	Entire City
Transportation Accidents	Highly Likely	Limited	Limited	Significant	Along Routes 60 and 70
Wildfire	Occasional	Limited	Limited	Low	Foothills and perimeter of City
Winter Storm	Occasional	Extensive	Catastrophic	High	Entire City

Guidelines for Hazard Rankings

Frequency of Occurrence:

Highly Likely	Near 100% probability in next year
Likely	Between 10 and 100% probability in next year or at least one chance in ten years
Occasional	Between 1 and 10% probability in next year or at least one chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Spatial Extent:

Limited	Less than 10% of planning area
Significant	10-50% of planning area
Extensive	50-100% of planning area

Potential Magnitude:

Catastrophic	More than 50% of area affected
Critical	25 to 50% of area affected
Limited	10 to 25% of area affected
Negligible	Less than 10%

Significance (subjective):
low, medium, high

A.3 Risk Assessment

The intent of this section is to assess Globe's vulnerability separate from that of the County as a whole, which has already been assessed in **Section 5.4** in the base plan. This risk assessment analyzes the population, property, and other assets vulnerable to the hazards ranked of medium or high significance that may vary from other parts of the planning area. For more information about how hazards affect the County as a whole, see **Section 5.3** of the base plan.

Infrastructure and Values at Risk:

A risk assessment determines the vulnerability of assets within the City by evaluating the inventory of City owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan.

Populations and Businesses at Risk

The 2016 population was estimated to be 7,376. Approximately 18.3 percent of the population were over 65 years old and 13 percent of the population under 65 were considered disabled. The City had 671 businesses.

Economic Risks

The 2010 Census Data lists the building inventory in Globe as 3,386 residential units. There are 519 commercial structures. The average house value in 2016 was $119,700. Globe's economy remains heavily dependent on the mining industry. **Table A-2** list facilities in Globe with estimated value and associated hazards.

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table A-3** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-City owned facilities, even though they are deemed critical. The City does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table A-2: Globe Facilities

Premises	Occupancy	Location	Associated Hazards	Type of Property	Value
1	City Hall	North Pine Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$654,000

Table A-2: Globe Facilities					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	City Hall	North Pine Street Globe, AZ 85501	Fire, Flood, Winter Storm	C	$200,000
1	Pumping Plant	North Pine Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$22,748
1	Police & Fire	150-160 West Cedar Street, 175 North Pin Globe, AZ 85501	Fire, Flood, Winter Storm	B	$877,000
1	Police & Fire	150-160 West Cedar Street, 175 North Pin Globe, AZ 85501	Fire, Flood, Winter Storm	C	$150,000
1	Main Booster	Highway 70 Globe, AZ 85501	Fire, Flood, Winter Storm	B	$33,000
1	Main Booster	Highway 70 Globe, AZ 85501	Fire, Flood, Winter Storm	C	$154,500
1	Office	Highway 70 Globe, AZ 85501	Fire, Flood, Winter Storm	B	$32,000
1	Pumping Plant #1	***Unknown*** Globe, AZ 85501	Fire, Flood, Winter Storm	B	$27,000
1	Pumping Plant #2	***Unknown*** Globe, AZ 85501	Fire, Flood, Winter Storm	B	$31,783
1	Pumping Plant #3	***Unknown*** Globe, AZ 85501	Fire, Flood, Winter Storm	B	$40,000
1	Crestline Booster	Crestline & Linda Vista Globe, AZ 85501	Fire, Flood, Winter Storm	B	$66,966
1	Back of Community Center	1435 S. Hagen Road Globe, AZ 85501	Fire, Flood, Winter Storm	B	$147,000
1	Cyn & Ice House Syn	Jess Hayes Road & Six Shooter Globe, AZ 85501	Fire, Flood, Winter Storm	B	$245,000
2	Swimming and Wading Pool	Jess Hayes Road & Six Shooter Globe, AZ 85501	Fire, Flood, Winter Storm	B	$406,000
1	Community Center	Jess Hayes Road & Six Shooter Globe, AZ 85501	Fire, Flood, Winter Storm	B	$438,000

Table A-2: Globe Facilities					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Pool Snack Bar	Jess Hayes Road & Six Shooter Globe, AZ 85501	Fire, Flood, Winter Storm	B	$93,000
1	Visitor Center	Besh Ba Gowah Center Globe, AZ 85501	Fire, Flood, Winter Storm	B	$214,000
1	Lab Building	Besh Ba Gowah Center Globe, AZ 85501	Fire, Flood, Winter Storm	B	$30,000
1	Digestor Tank Building	Holgate Pioneer Hills Subdivision (North)	Fire, Flood, Winter Storm	C	$110,000
1	Pinal Creek WWTP	1 ½ Mile North of Globe Globe, AZ 85501	Fire, Flood, Winter Storm	B	$179,000
1	Pinal Creek WWTP	1 ½ Mile North of Globe Globe, AZ 85501	Fire, Flood, Winter Storm	C	$160,000
1	Radio Tower "G" Hill	***Unknown*** Globe, AZ 85501	Fire, Flood, Winter Storm	B	$25,000
1	Office	***Unknown*** Globe, AZ 85501	Fire, Flood, Winter Storm	B	$79,928
1	Storage	Jess Hayes Road (Hagen Property) Globe, AZ 85501	Fire, Flood, Winter Storm	B	$206,000
1	City Barn (Iron on Iron)	Jess Hayes Road (Hagen Property) Globe, AZ 85501	Fire, Flood, Winter Storm	B	$422,000
1	Equipment Storage Bldg.	Jess Hayes Road (Hagen Property) Globe, AZ 85501	Fire, Flood, Winter Storm	B	$4,700
1	Chemical Storage Bldg.	Jess Hayes Road (Hagen Property) Globe, AZ 85501	Fire, Flood, Winter Storm	B	$138,000
1	Library	339 South Broad Globe, AZ 85501	Fire, Flood, Winter Storm	B	$518,000
1	Library	339 South Broad Globe, AZ 85501	Fire, Flood, Winter Storm	C	$200,000

Table A-2: Globe Facilities					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Concession Bldg.	Hagen Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$100,000
1	Park Rest Room	Hagen Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$47,000
1	Park Shop Building	Hagen Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$59,000
1	Light Equipment Ball Field Park	Hagen Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$76,315
1	Senior Center	Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$822,000
1	Senior Center	Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	C	$20,000
1	***Unknown***	Holly Road Globe, AZ 85501	Fire, Flood, Winter Storm	C	$55,000
1	Visitor Center	Round Mountain Park Globe, AZ 85501	Fire, Flood, Winter Storm	B	$20,000
1	Visitor Center	Round Mountain Park Globe, AZ 85501	Fire, Flood, Winter Storm	C	$1,000
1	Old Revco Bldg.	Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$1,707,000
1	Misc. Off Premises Bldg. & Equip	Various Locations Globe, AZ 85501	Fire, Flood, Winter Storm	B	$200,000
1	Little League Concession / Rest room	Notsger Hill Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$42,000
1	Concession / Rest room	Notsger Hill Field Globe, AZ 85501	Fire, Flood, Winter Storm	B	$42,000
1	Public Works Office	Pinal Creek Road Globe, AZ 85501	Fire, Flood, Winter Storm	B	$171,000
1	Public Works Office	Pinal Creek Road Globe, AZ 85501	Fire, Flood, Winter Storm	C	$50,000
1	Storage	Pinal Creek Road Globe, AZ 85501	Fire, Flood, Winter Storm	B	$223,000
1	Storage	Pinal Creek Road Globe, AZ 85501	Fire, Flood, Winter Storm	C	$50,000
1	Future Library Expansion	329 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$121,932

Table A-2: Globe Facilities					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value**
1	Future Library Expansion	329 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$126,853
1	Future Library Expansion	329 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	C	$40,000
1	Old Courthouse	329 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$3,860,000
1	Old Jail	329 South Broad Street Globe, AZ 85501	Fire, Flood, Winter Storm	B	$885,500

B= Building

C= Contents

Potential Losses:

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table 5-2** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-City owned facilities, even though they are deemed critical. The City does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles. **Table A-3** contains the summary of vulnerabilities and potential losses.

Table A-3: Globe Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
Climate Change	Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness.

Table A-3: Globe Summary of Vulnerabilities and Potential Loss	
	Drier weather will place increasing demands on imported and well water and may lead to long lasting droughts that result in water rationing. Climate change will also increase the average temperature and number of heat warning days in Globe with the potential to cause heat related injuries. Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.
Drought	Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. Costs: Potential costs from drought to the City is difficult to quantify and is dependent upon drought duration and severity. In addition to increased costs for water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.
Flood/Flash Flood	Impacts: Flooding occurs in the City during periods of heavy rain due to inadequate drainage. Most of the City structures are built in valleys or along creek and river beds. Many municipal structures are in the floodplain. See the Globe flood inundation map in Appendix F which provides street level detail of likely flood areas Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood costs could be in excess of $20,000,000 during a year.
Severe Winds	Impacts: Severe winds in Globe are not extreme. They typically cause damage to roofs on older structures. Costs: Costs from severe winds are likely to be less than $500,000 during any single event.
Wildfire	Impacts: Structures near the urban/wildland interface (WUI) are susceptible to wildland fire. Impacts on low density communities are limited. While the center of the City is not in the WUI, areas on Globe's outskirts are, particularly in the canyons south of the City. The Globe wildfire hazard map in Appendix F contains street level detail of fire danger. Costs: Costs to the City will include emergency response and damage to private property. Total costs are likely to be less than $10,000,000.

Table A-3: Globe Summary of Vulnerabilities and Potential Loss	
Winter Storm	Impacts: Several inches of snow will essentially isolate the City due to it lying lower than the surrounding approaches along Route 60. Additionally, individual communities in the valleys above the City center become isolated from town. Costs: Most of the cost from winter storms results from the impact on transportation. Because the City has no snow removal equipment, even modest amounts of snow result in dangerous and difficult road conditions. The costs are due to secondary effects such as loss of commerce and inability of workers to report to their jobs.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the City are:

- Climate Change
- Drought
- Flood
- Winter Storm

A.4 Capabilities Assessment

The reason for conducting a capability assessment is to identify the City's capacity to successfully implement mitigation activities. Understanding internal and external processes, resources, and skills helps to form the foundation of a successful LHMP. Understanding strengths and weaknesses also helps ensure that goals and objectives are realistic and attainable.

The planning team conducted an assessment of the City's capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources. Staff resources include technical personnel such as planners with knowledge of development and land management practices, engineers with an understanding of natural or human-caused hazards, and staff with expertise of the hazards. The planning team also considered ways to expand on and improve existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the City.
In carrying out the capability assessment, several areas were examined:

- Planning and Program Capabilities
- Administrative and Political Capabilities
- Technical Capabilities
- Fiscal Capabilities
- Education and Outreach Capabilities
- NFIP Participation and Floodplain Management Activities

Tables A-4 through A-7 describe Globe's capabilities.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table A-4 contain suggested methods for expanding upon current City plans and policies as a follow-on paragraph.

Table A-4: Globe Planning and Regulatory Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
2019 International Building Code	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance. Expansion - The updated MJLHMP will be used as a tool for reviewing the International Building Code and using applicable sections in establishing the City's Building Code.	Fire, Flood, Severe Winds, Winter Storm	Yes - All	Codes
2019 City Code of the City of Globe	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance.	Fire, Flood, Severe Winds, Winter Storm	Yes - All	Codes

Table A-4: Globe Planning and Regulatory Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
	Expansion - The updated MJLHMP will be used as a tool for reviewing and revising Globe City Code Chapter 12 in terms of hazard locations and extent.			
2004 City of Globe Planning and Zoning Ordinance	Establishes regulations for land use and property development. Restricts development in high hazard areas. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the Globe City Code Chapter 12 in terms of hazard locations and extent. Areas that are noted as high hazard zones should face restrictions on development	Fire, Flood, Winter Storm	No	Ordinances
2004 City of Globe Flood Damage Prevention Ordinance (amended July 2007)	The objective of this policy is to minimize the impacts floods through building restrictions in flood zones and specifically in special flood hazard areas. Expansion - The MJLHMP contains several specific flood mitigation measures in support of the Flood Prevention Ordnance	Flood	No	Ordinances
2008 City of Globe Subdivision Regulations	The purpose of this Ordinance shall be to ensure that minor land divisions shall • Comply with existing zoning regulations; provide adequate public utility easements	Fire, Flood	No	Regulations

Table A-4: Globe Planning and Regulatory Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
	• Provide for adequate unobstructed legal and physical access • Not constitute a subdivision • Not constitute an attempt to evade or circumvent the laws and regulations governing subdivisions • Ensure compliance with related ordinances, laws and regulations • Provide for conveyance by accurate legal description.			
2005 City of Globe General Plan Update	Its purpose is to conserve and promote the public health, safety and general welfare by guiding and accomplishing a coordinated, adjusted and harmonious City development and future growth. Expansion - The General Plan Land Use Element describes hazard areas and regulates current and future development based on known hazard areas. The Land Use Element actions will be aligned with MJLHMP mitigation measures	Fire, Flood, Winter Storm	2005 City of Globe general plan has been updated	Plans, Manuals and/or Guidelines
1998 City of Globe Winter Storm Policy Manual				

Table A-4: Globe Planning and Regulatory Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
2011 City of Globe Multi-Hazard Mitigation Plan	Describes hazard areas and recommends actions to mitigate hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the Town Council.	All	Yes, In progress - All	Plan
2016 Wildfire Protection Plan	The Plan is a local road map to create and maintain defensible landscapes in order to protect vital assets. It seeks to reduce firefighting cost and property loss, increase public and firefighter safety, minimize wildfire risk to communities and contribute to ecosystem health. The Plan identifies pre-suppression projects including opportunities for reducing structural ignitability, and the identification of potential fuel reduction projects and techniques for minimizing those risks. The central goals that are critical to reducing and preventing the impacts of fire revolve around both suppression efforts and fire prevention efforts. Expansion - The MJLHMP fire hazard analysis and fire related mitigation measures will be used to update the CWPP.	Fire	Yes - All	Plan

Technical and Staff

These capabilities include staff and their skills and tools used for mitigation planning and implementation such as engineers, planners, emergency managers, GIS analysts and building inspectors.

Table A-5: Globe Technical and Staff Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Planner(s) or engineer(s) with knowledge of land development and land management practices (Public Works – City Engineer)	Checks to make sure structures/Improvements are located in safe manor	Winter Storm, Flood, Fire, High wind	New city engineer and staff	Technical Staff/Personnel
Engineer(s) or professional(s) in construction practices related to buildings and/or infrastructure (Public Works – Public Works Director, City Engineer; Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built in safe manor	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards (Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built and located in safe manor	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Floodplain Manager (Public Works – City Engineer)	Checks to make sure structures/Improvements are located outside the floodplain or provided flood protection	Flood	New city engineer and staff	Technical Staff/Personnel

Table A-5: Globe Technical and Staff Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Surveyors (Public Works – City Engineer)	Checks to make sure structures/Improvements are located in safe manor		New city engineer and staff	Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Fire Department and the Planning and Zoning Department)	Checks to identify possible hazards associated with wildfire and make recommendations for mitigating the hazards	Winter Storm Flood Fire High wind	New city engineer and staff	Technical Staff/Personnel
Personnel skilled in GIS and/or HAZUS (Public Works – City Engineer)	Able to assist routes for detours in case of road closures, also help locate water valves in case of emergency	All	New city engineer and staff	Technical Staff/Personnel
Emergency Manager (Administration – City Manager)	Able to help identify new hazards and existing hazards	Winter Storm Flood Fire High wind	New city manager	Technical Staff/Personnel

Fiscal

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table A-6: Globe Fiscal Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire High wind	New fire truck purchased to fight fires	Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire High wind	New waterlines and fire hydrants to fight fires	Fiscal
Authority to levee taxes for specific purposes		Winter Storm Flood Fire High wind	Yes	Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire High wind	Raised to increase maintenance funds to repair waterlines to provide efficient fire flows	Fiscal
Incur debt through general obligation bonds			No	Fiscal
Incur debt through special tax bonds			No	Fiscal

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table A-7: Globe Education and Outreach Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Website	Gives access to community for information in case of an emergency	Winter Storm Flood Fire High wind	Ongoing updates	Globeaz.gov
Facebook	Gives access to community for information in case of an emergency	Winter Storm Flood Fire High wind	Ongoing updates	Facebook /cityofglobe.com
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	Winter Storm Flood Fire High wind	Ongoing updates	928-425-3559
Everbridge	Gives access to community for information in case of an emergency	Winter Storm Flood Fire High wind	Ongoing updates	Web page and phone app

NFIP Participation and Floodplain Management Activities is contained in **Table 4-5**.

A.5 Mitigation Strategy

Mitigation Actions are specific actions, projects, activities or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. General types include plans and regulations, structure and infrastructure projects, natural systems protection and education and awareness programs. Examples include:

- Plans and regulations – building codes, land use ordinances, NFIP community rating system, capital improvement projects, stormwater management plans, subdivision regulations.
- Structure and infrastructure projects – acquisition and elevation of structures in flood prone areas, structural retrofit, utility underground, retaining walls, detention and retention structures, culverts, safe rooms
- Natural system protection – erosion control, stream restoration, forest management, conservation easement, wetland restoration
- Education and awareness – radio and television, websites, real estate disclosure, presentations to schools or neighborhood organizations, mailings to residents in hazard-prone areas, Firewise and Stormready communities

Previous Plan Mitigation Action Status

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Table A-8 provides the status of the mitigation actions from the 2011 Plan.

Table A-8: Globe Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Complete 9/30/2017	Pinal creek clean up	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.	Flood	$200,000.00	Removed about 2,000 tons of debris
Ongoing	Building Codes	Continue to enforce building codes to mitigate against severe wind, wildfire, and flooding damage to existing and future buildings and infrastructure.	Flood, Severe Winds, Wildfire		
Ongoing	Drain clean up	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		Constantly clean debris from storm drains
Ongoing	PPE	Identify and purchase first responder advanced technology personal protection and detection equipment for chemical and biological incidents. Train public safety personnel.	HAZMAT		Budget restrictions
Ongoing	Brochures and inspections	Develop Fire Wise programs for all neighborhoods within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance	Wildfire		

Table A-8: Globe Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
		agencies. Program to include controlled burns and weed abatement and necessary equipment.			
Ongoing	Message Signs	Acquire two variable message signs for traffic control to mitigate transportation accident potential and re-route traffic around accident site.	Transportation Accidents	$18,000 per board	Budget restrictions
Ongoing	Fuel Reduction	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.	Wildfire		

2019 Plan Globe Mitigation Actions

The City's previous LHMP efforts were included in the 2019 LHMP. Many of the mitigation strategies are still relevant although some that were general in nature were removed. **Table A-9** provides a revised set of future, city-specific mitigation actions.

Table A-9: Globe 2019 Mitigation Plan Actions

Strategy Number	Mitigation Action	Hazard	Cost	Responsibility	Funding Source	Time Frame	Priority
1	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.	Flood	Need estimate	Public Works	General Fund, Grant	Annually	High
2	Continue to enforce building codes to mitigate against severe wind, wildfire, and flooding damage to existing and future buildings and infrastructure cost.	Flood, Severe Winds, Wildfire, Winter Storms	N/A	Planning	N/A	Continuing	High
3	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	Need estimate	Public Works	General Fund	1-2 years	High
4	Identify and purchase first responder advanced technology personal protection and detection equipment for chemical and biological incidents. Train public safety personnel.	Wildfire, HAZMAT	$75,000	Fire Department	General Fund	1-2 years	High

Table A-9: Globe 2019 Mitigation Plan Actions							
Strategy Number	Mitigation Action	Hazard	Cost	Responsibility	Funding Source	Time Frame	Priority
5	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.	Wildfire	N/A	Fire Department	N/A	Annually	Med
6	Acquire two variable message signs for traffic control to mitigate transportation accident potential and re-route traffic around accident site.	Transportation Accident	$30,000	Public Works	General Fund	1-2 years	Med
7	Implement wastewater rehabilitation project for oxidation ditch and equipment.	Drought, Flood	N/A	N/A	Funded by Mine Company	Ongoing	High
8	Use bridge condition report to prioritize bridge repair and replacement projects.	Flood	N/A	Public Works	General Fund	1-2 years	High
9	Update wildland fire equipment and conduct staff training.	Wildfire	$150,000	Fire Department	General Fund	1-2 years	High
10	Maintain water well field interface clearance zone. Install thermal imaging device with connectivity to fire dispatch.	Wildfire	$150,000	Fire Department	General Fund	Annually, 1-2 years	High
11	Replace the bridge at Jesse Hayes and S. Broad intersection.	Flood	Need estimate	Public Works	General Fund, Grant	2-5 years	High
12	Relocate Fire and Police Stations from flood zones.	Flood	$15,000,000	Public Works	General Fund, Grant	2-5 years	High

Table A-9: Globe 2019 Mitigation Plan Actions							
Strategy Number	Mitigation Action	Hazard	Cost	Responsibility	Funding Source	Time Frame	Priority
13	Replace City vehicles with fuel efficient models.	Climate Change	Need estimate	All	General Fund	Annually, 1-2 years	High
14	Install Zero emission power production systems on City facilities	Climate Change	Need estimate	All	General Fund	2-5 years	High
15	Develop a plan to mitigate the length of transportation delays, emergency response, and the secondary effects of transportation accidents.	Transportation Incidents, HazMat	$25,000	Planning	?	1-2 years	Medium

Annex B Town of Hayden

B.1 Community Profile

Geography and Climate:

Hayden is located in the very southern portion of the Gila County 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 traverses Hayden and serves in conjunction with State Route 177 through nearby Winkelman, as the main roadways servicing the community.

Government:

The town government is composed of a mayor and town council of five members. The mayor serves as the town manager.

Population and demographics:

The 2016 population was 635. The 2010 Census indicated the following demographics:

- Average population age 41.9
- Education: High school 87.0%
- Income: Median household $38,167, Poverty level 32.0%

Housing:

The Town had 361 housing units with a mean value of $32,900

Economy:

The economy of Hayden employs 178 people specialized in mining, arts, recreation and, accommodation and food services.

Land use:

Founded as a mining town, Hayden's economy continues to be dependent on mining and the production of copper. The biggest employer in the area is the mining and smelter operation owned by American Smelting and Refining Company (ASARCO), Inc. 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 B-1** provides a visual depiction of the land ownership around the Hayden area.

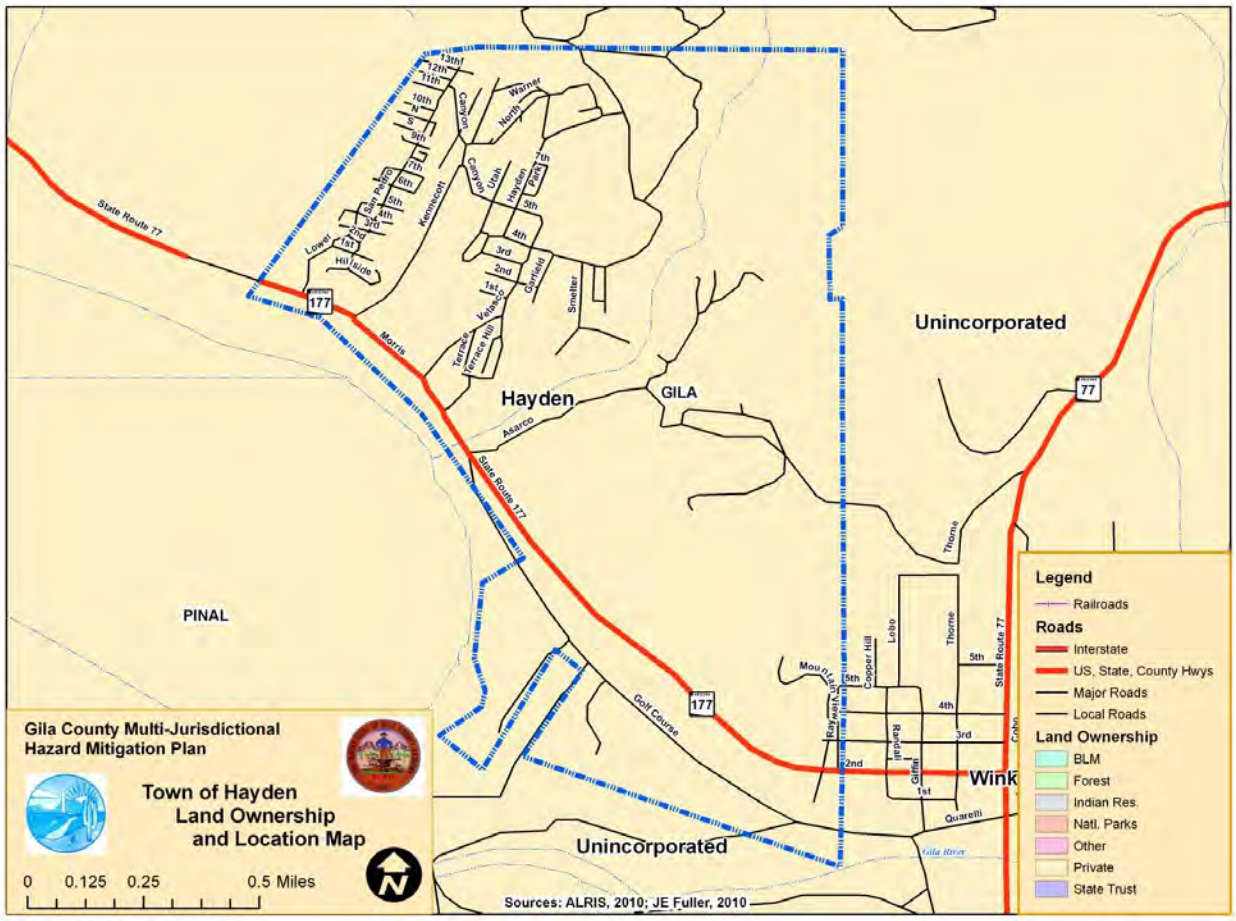

Figure B.1: Land ownership in Hayden

Development trends:

Because population growth was negligible since approval of the 2011 MJLHMP, there has been no development in hazard prone areas that has affected overall vulnerability of the Town.

Inclusion of dam inundation added a large area of the County to this new hazard. Hayden is not in the inundation zone.

The new MJLHMP addresses the new hazard of climate change. This hazard impacts the entire Town. Development in the Town, County, the State and globally with increased carbon emissions will result in increasing overall vulnerabilities to its impacts.

B.2 Hazards Identification and Analysis

Hazards:

Hayden faces many of the hazards that are present in the County. **Table B-1** below provides a summary of hazards. Hayden faces the unique hazard of dam inundation which only affects the southern portion of the County.

Table B–1: Hayden Summary of Hazards

Hazard	Frequency	Extent	Magnitude	Significance	Location
Climate Change	Highly likely	Extensive	Catastrophic	High	Entire Town
Flood / Flash Flood	Highly likely	Significant	Critical	Low	Low lying areas of Town
Hazardous Materials	Likely	Limited	Limited	Low	Entire Town
Severe Wind	Highly Likely	Significant	Limited	Medium	Entire Town
Transportation Accidents	Likely	Limited	Limited	Low	Entire Town
Wildfire	Likely	Significant	Critical	Medium	Entire Town
Winter Storm	Likely	Significant	Critical	Medium	Entire Town

Guidelines for Hazard Rankings

Frequency of Occurrence:

Highly Likely	Near 100% probability in next year
Likely	Between 10 and 100% probability in next year or at least one chance in ten years
Occasional	Between 1 and 10% probability in next year or at least one chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Spatial Extent:

Limited	Less than 10% of planning area
Significant	10-50% of planning area
Extensive	50-100% of planning area

Potential Magnitude:

Catastrophic	More than 50% of area affected
Critical	25 to 50% of area affected
Limited	10 to 25% of area affected
Negligible	Less than 10%

Significance (subjective):
low, medium, high

B.3 Risk Assessment

Infrastructure and Values at Risk:

A risk assessment determines the vulnerability of assets within the Town by evaluating the inventory of Town owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan.

Populations and Businesses at Risk

The population is estimated to be 635. Median household income is $38,167 with a poverty level of 32.0 percent. The median property value was $32,900.

Economic Risks

Table B-2 provides list facilities in Hayden with estimated value and associated hazards

Table B-2: Hayden Facilities

Premises	Occupancy	Location	Hazards	Value
1	Town Hall	520 Velasco Ave, Hayden, AZ 85135	Flood, High Winds, Wild Fire	
1	Police Department	601 Hayden Ave, Hayden, AZ 85135	Flood, High Winds, Wild Fire	

B= Building

C= Contents

Potential Losses:

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table B-3** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-Town owned facilities, even though they are deemed critical. The Town does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table B-3: Hayden Summary of Vulnerabilities and Potential Loss

Hazard Type	Impacts/Costs
Climate Change	Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness. Drier weather will place increasing demands on imported and well water and may lead to long lasting droughts that result in water rationing. Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.
Drought	Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. Costs: Potential costs from drought to the County and its communities are difficult to quantify and are dependent upon drought duration and severity. In addition to increased costs for water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.
Flood/Flash Flood	Impacts: Flooding occurs in the Town during periods of heavy rain due to inadequate drainage. The Hilly geography tends to prevent ponding. See the Hayden flood inundation map in Appendix F which provides street level detail of likely flood areas Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood cost could be in excess of $1,000,000.
Severe Winds	Impacts: Severe winds in Hayden are not extreme. They typically cause damage to roofs on older structures. Costs: Costs from severe winds are likely to be less than $100,000 during any single event.

Table B-3: Hayden Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
Wildfire	Impacts: Structures near the urban/wildland interface are susceptible to wildland fire. Impacts on low density communities are limited. The wildfire vulnerability map contained in Appendix F provides street level detail on areas likely to be impacted by fire. Costs: Costs to the Town will include emergency response and damage to private property. Total costs are likely to be less than $500,000.
Winter Storm	Impacts: The primary effects of winter storms are road, and government offices and business closures. Areas impacted are often isolated since the County does not maintain snow removal equipment. Populations with disabilities, and other access and functional needs may require special assistance. Costs: Costs to the County will include emergency response and loss from curtailed economic activity. Total cost for any single incident is likely to be less than $100,000.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the Town are:

- Drought
- Flood
- Wildfire
- Winter Storm

B.4 Capabilities Assessment

The reason for conducting a capability assessment is to identify the Town's capacity to successfully implement mitigation activities. Understanding internal and external processes, resources, and skills helps to form the foundation of a successful LHMP. Understanding strengths and weaknesses also helps ensure that goals and objectives are realistic and attainable.

The planning team conducted an assessment of the Town's capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources. Staff resources include technical personnel such as planners with knowledge of development and land management practices, engineers with an understanding of natural or human-caused hazards, and staff with expertise of the hazards. The planning team also considered ways to expand on and improve existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the Town.

In carrying out the capability assessment, several areas were examined:

- Planning and Program Capabilities
- Administrative and Political Capabilities
- Technical Capabilities
- Fiscal Capabilities
- Education and Outreach Capabilities
- NFIP Participation and Floodplain Management Activities

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table B-4 contain suggested methods for expanding upon current Town plans and policies as a follow-on paragraph.

Table B-4: Hayden Planning and Regulatory Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Hayden Town Codes	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance. Expansion - The MJLHMP hazard analysis will be used as a tool to support revisions to the Town Code.	Fire, Flood, High Wind, Winter Storm	Yes - All	Codes
Town of Hayden Multi-Hazard Mitigation Plan (2011) Gila County Multi-Hazard Mitigation Plan (2011)	Describes hazard areas and recommends actions to mitigate	All	New MJLJMP 2019, All	Plans, Manuals and/or Guidelines

	hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the Town Council.			

Technical and Staff

These capabilities include staff and their skills and tools used for mitigation planning and implementation such as engineers, planners, emergency managers, GIS analysts and building inspectors.

Table B-5: Hayden Technical and Staff Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure (Public Works – Operations Supervisor Administration – General Superintendent)	Checks to make sure structures/Improvements are located in safe manor	All		Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Police Department – Police Chief)	Checks to make sure structures/Improvements are built in safe manor	All		Technical Staff/Personnel

Fiscal

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table B-6: Hayden Fiscal Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind		Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind		Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire Wind		Fiscal

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table B-7: Hayden Education and Outreach Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Website	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	http://townofhaydenaz.gov/
Facebook	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	https://www.facebook.com/Hayden-Police-Department-1884888051833153/
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	Winter Storm Flood Fire Wind	Ongoing updates	928-425-3559
Everbridge	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	Web page and phone app

NFIP Participation and Floodplain Management Activities is contained in **Table 4-5**

B.5 Mitigation Strategy

Mitigation Actions are specific actions, projects, activities or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. General types include plans and regulations, structure and infrastructure projects, natural systems protection and education and awareness programs. Examples include:

- Plans and regulations – building codes, land use ordinances, NFIP community rating system, capital improvement projects, stormwater management plans, subdivision regulations.
- Structure and infrastructure projects – acquisition and elevation of structures in flood prone areas, structural retrofit, utility underground, retaining walls, detention and retention structures, culverts, safe rooms
- Natural system protection – erosion control, stream restoration, forest management, conservation easement, wetland restoration
- Education and awareness – radio and television, websites, real estate disclosure, presentations to schools or neighborhood organizations, mailings to residents in hazard-prone areas, Firewise and Stormready communities

Previous Plan Mitigation Action Status

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Table B-8 provides the status of the mitigation actions from the 2011 Plan.

Table B-8: Hayden Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Current	Rehabilitate dike	Rehabilitate the existing flood protection dike along the Gila River that protects the golf course and ASARCO Raw Water Plant.	Flooding		
Ongoing	NFIP	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		
Ongoing	Generators	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		
Ongoing	Building Codes	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		

2019 Plan Hayden Mitigation Actions

The Town's previous LHMP efforts were included in the 2019 LHMP. **Table B-9** provides a revised set of future, Town-specific mitigation actions.

Table B-9: Hayden 2019 Mitigation Plan Actions							
Strategy Number	**Mitigation Action**	**Hazard**	**Cost**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
1	Rehabilitate the existing flood protection dike along the Gila River that protects the golf course and ASARCO Raw Water Plant.	Flood	TBD	Public Works	ASARCO, General Fund, Grant	2- 5 Years	High
2	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.	Flood	-	Planning	General Fund	Ongoing	Medium
3	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.	Fire, Flood, Severe Winds, Winter Storm,	$500,000	Town Council	General Fund, Grant	1 – 2 Years	High
4	Continue to cooperate with Gila County to enforce building codes to mitigate severe wind damage to protect existing and future buildings and infrastructure.	Severe Winds	-	Planning		Ongoing	Medium
5	Develop a plan to mitigate the length of transportation delays, emergency response, and the secondary effects of transportation accidents.	Transportation Incidents, HazMat	$25,000	Planning	?	1-2 years	Medium
6	Install zero emission power production systems on City facilities.	Climate Change	Need estimate	All	General Fund	2-5 years	Medium

Annex C Town of Miami

C.1 Community Profile

Geography and Climate:

Miami is located in the southern portion of the Gila County 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. The town has a total area of .9 square miles. U.S. Highway 60 passes through Miami and serves as the main roadway servicing the community. Railways include the Arizona Eastern Railroad.

Government:

The town government is composed of a mayor and town council of five additional members. The town employs a town manager.

Population and demographics:

The 2016 population was 1,837. The 2010 Census indicated the following demographics:

- Average population age 39.2
- Education: High school 77.3%
- Income: Median household $40,602, Poverty level 21.1%

Housing:

The Town had 988 housing units with a mean value of $77,984

Economy:

Median household income was $40,602 with a poverty level 21.1%. The economy of Miami employs 178 people specialized in mining, arts, recreation and, accommodation and food services. Copper mining accounts for the largest number of jobs in Miami. The Freeport-McMorRan Miami Mine employees over 650 people at its Miami operations, at the smelter and mine.

Land use:

Figure C.1 provides a visual depiction of the land ownership around the Miami area.

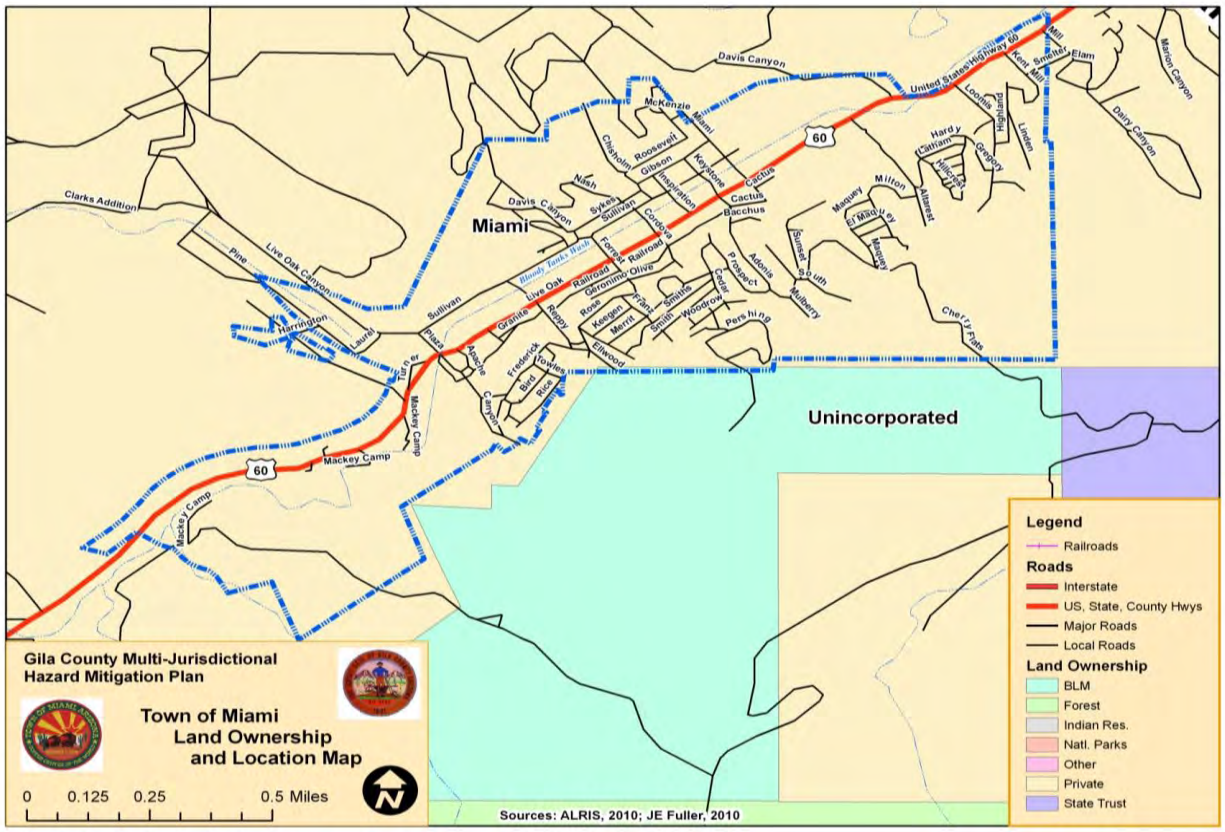

Figure C.1: Land ownership in Miami

Development trends:

Because population growth was negligible since approval of the 2011 MJLHMP, there has been no development in hazard prone areas that has affected overall vulnerability of the Town.

Inclusion of dam inundation added a large area of the County to this new hazard. Miami is not in the inundation zone.

The new MJLHMP addresses the new hazard of climate change. This hazard impacts the entire Town. Development in the Town, County, the State and globally with increased carbon emissions will result in increasing overall vulnerabilities to its impacts.

C.2 Hazards Identification and Analysis

Hazards:

Miami aces many of the hazards that are present in the County. **Table C-1** below provides a summary of hazards. Hayden faces the unique hazard of dam inundation which only affects the southern portion of the County.

Table C–1: Miami Summary of Hazards					
Hazard	**Frequency**	**Extent**	**Magnitude**	**Significance**	**Location**
Climate Change	Highly	Extensive	Catastrophic	High	Entire Town
Drought	Likely	Extensive	Critical	High	Entire Town
Flood / Flash Flood	Highly	Limited	Limited	Low	Low lying areas
Hazardous Materials	Highly	Significant	Limited	Low	Entire Town
Severe Wind	Highly Likely	Significant	Limited	Medium	Entire Town
Transportation Accidents	Highly Likely	Limited	Limited	Significant	Along Route 60
Wildfire	Occasional	Limited	Limited	Low	Foothills and perimeter of Town
Winter Storm	Occasional	Extreme	Catastrophic	High	Entire Town

Guidelines for Hazard Rankings
Frequency of Occurrence:

Highly Likely	Near 100% probability in next year
Likely	Between 10 and 100% probability in next year or at least one chance in ten years
Occasional	Between 1 and 10% probability in next year or at least one chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Spatial Extent:

Limited	Less than 10% of planning area
Significant	10-50% of planning area
Extensive	50-100% of planning area

Potential Magnitude:

Catastrophic	More than 50% of area affected
Critical	25 to 50% of area affected
Limited	10 to 25% of area affected
Negligible	Less than 10%

Significance (subjective):
low, medium, high

C.3 Risk Assessment

A risk assessment determines the vulnerability of assets within the Town by evaluating the inventory of Town owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan.

Populations and Businesses at Risk

The population is estimated to be 1,837. Median household income was $40,602 with a poverty level 21.1 percent. The median property value was $77,984.

Economic Risks

Table C-2 provides list facilities in Miami with estimated value and associated hazards

Table C-2: Miami Facilities

Premises	Occupancy	Location	Associated Hazards	Value $
1	Town Hall	500 Sullivan St.	Flood, Fire, Winter Storm	671,000
1	Library	1052 Adonis St.	Flood, Fire, Winter Storm	1,598,000
2	Fire/Police Station	804 & 812 Sullivan St.	Flood, Fire, Winter Storm	697,000
2	Pool/Bath House	708 Sullivan St.	Flood, Winter Storm	363,000
1	Maintenance Bldg.	2914 Latham Blvd.	Flood, Fire, Winter Storm	412,000
1	Waste Water Treatment Plant	Hwy. 6070	Flood, Fire, Winter Storm	786,000
1	Senior Center	Live Oak & Keystone	Flood, Fire, Winter Storm	491,000
1	Gym	Live Oak & Park	Flood, Fire, Winter Storm	1,840,000
1	Music Room	Live Oak & Park	Flood, Fire, Winter Storm	495,000
1	Museum	Live Oak & Park	Flood, Fire, Winter Storm	2,881,000
6	Park	Sullivan St. Memorial Park	Flood, Fire, Winter Storm	192,000
Multiple small buildings	Various	Various	Flood, Fire, Winter Storm	150,000
1	Transit building	506 Sullivan St.	Flood, Fire, Winter Storm	250,000

Potential Losses:

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table C-3** used the best data currently available to produce the estimations of loss.

These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-Town owned facilities, even though they are deemed critical. The Town does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table C-3: Miami Summary of Vulnerabilities and Potential Loss

Hazard Type	Impacts/Costs
Climate Change	Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness. Drier weather will place increasing demands on imported and well water and may lead to long lasting droughts that result in water rationing. Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.
Drought	Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. The Town is dependent on imported water for most of its needs. During prolonged droughts, water rationing is possible resulting in potentially higher water costs and loss of private and public landscaping. Costs: Potential costs from drought to the County and its communities are difficult to quantify and are dependent upon drought duration and severity. In addition to increased costs for water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.

Table C-3: Miami Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
Flood/Flash Flood	Impacts: Flooding occurs in the County during periods of heavy rain due to inadequate drainage. The flat geography also contributes to ponding. Appendix F contains a street level map the displays potential flooding areas in Miami. Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood cost could be in excess of $2,000,000.
Wildfire	Impacts: Structures near the urban/wildland interface are susceptible to wildland fire. Impacts on low density communities are limited. Appendix F contains a street level map that displays fire zone areas for Miami. Costs: Costs to the County will include emergency response and damage to private property. Total costs are likely to be less than $500,000.
Winter Storm	Costs: Most of the cost from winter storms results from the impact on transportation. Because the Town has no snow removal equipment, even modest amounts of snow result in dangerous and difficult road conditions. The costs are due to secondary effects such as loss of commerce and inability of workers to report to their jobs. Impacts: Several inches of snow will essentially isolate the Town due to it lying lower than the surrounding approaches along Route 60. Additionally, individual communities in the valleys above the Town center become isolated from town.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the Town are:

- Drought
- Flood
- Wildfire
- Winter Storm

C.4 Capabilities Assessment

The reason for conducting a capability assessment is to identify the Town's capacity to successfully implement mitigation activities. Understanding internal and external processes, resources, and skills helps to form the foundation of a successful LHMP. Understanding strengths and weaknesses also helps ensure that goals and objectives are realistic and attainable.

The planning team conducted an assessment of the Town's capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources. Staff resources include technical personnel such as planners with knowledge of development and land management practices, engineers with an understanding of natural or human-caused hazards, and staff with expertise of the hazards. The planning team also considered ways to expand on and improve existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the Town.

In carrying out the capability assessment, several areas were examined:

- Planning and Program Capabilities
- Administrative and Political Capabilities
- Technical Capabilities
- Fiscal Capabilities
- Education and Outreach Capabilities
- NFIP Participation and Floodplain Management Activities

Tables B-4 through B-7 describe Miami's capabilities.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table C-4 contain suggested methods for expanding upon current Town plans and policies as a follow-on paragraph.

Table C-4: Miami Planning and Regulatory Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Inter-Governmental Agreement Plans (12/2008) - Design review for new structures of building within the copper corridor-from west Miami to San Carlos Reservation.	Establishes regulations for land use and property development. Restricts development in high hazard areas. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the County Planning and Zoning Ordinance in terms of hazard locations and extent. Areas that are noted as high hazard zones should face restrictions on development	Fire, Flood, Winter Storm		Plans, Manuals and/or Guidelines
Town of Miami Multi-Hazard Mitigation Plan (2011)	Describes hazard areas and recommends actions to mitigate hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the County Board of supervisors. Expansion - The MJLHMP and the General Safety Element will be correlated with respect to climate change and the impacts of planned growth. As the Safety Element is updated, revised hazard analysis	All	New MJLJMP 2019, All	Plans, Manuals and/or Guidelines

	from the MHLHMP will be incorporated. Safety Element actions will be aligned with MJLHMP mitigation measures.			
Floodplain Study (Plan: 1947), (Maps: 2006) - Floodway and floodplain study through the Town of Miami.	The objective of this study is to minimize the impacts floods through building restrictions in flood zones and specifically in special flood hazard areas. Expansion - The MJLHMP contains several specific flood mitigation measures that could be included in in developing a Flood Prevention Ordnance	Flood		Studies

Technical and Staff

These capabilities include staff and their skills and tools used for mitigation planning and implementation such as engineers, planners, emergency managers, GIS analysts and building inspectors.

Table C-5: Miami Technical and Staff Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Planner(s) or engineer(s) with knowledge of land development and land management practices (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located in safe manor	Winter Storm Flood Fire High wind		Technical Staff/Personnel
Engineer(s) or professional(s) in construction practices related to buildings and/or infrastructure (Public Works – Public Works Director, Town Engineer; Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built in safe manor	Winter Storm Flood Fire High wind		Technical Staff/Personnel
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards (Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built and located in safe manor	Winter Storm Flood Fire High wind		Technical Staff/Personnel
Floodplain Manager (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located outside the floodplain or provided flood protection	Flood		Technical Staff/Personnel

Table C-5: Miami Technical and Staff Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Surveyors (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located in safe manor			Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Fire Department and the Planning and Zoning Department)	Checks to identify possible hazards associated with wildfire and make recommendations for mitigating the hazards	Winter Storm Flood Fire High wind		Technical Staff/Personnel
Personnel skilled in GIS and/or HAZUS (Public Works – Town Engineer)	Able to assist routes for detours in case of road closures, also help locate water valves in case of emergency			Technical Staff/Personnel
Emergency Manager (Administration – Town Manager)	Able to help identify new hazards and existing hazards	Winter Storm Flood Fire High wind		Technical Staff/Personnel

Fiscal

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table C-6: Miami Fiscal Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind	New fire truck purchased to fight fires	Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind	New waterlines and fire hydrants to fight fires	Fiscal
Authority to levee taxes for specific purposes			Yes	Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire Wind	Raised to increase maintenance funds to repair waterlines to provide efficient fire flows	Fiscal
Impact fees for homebuyers or new developments/homes			No	Fiscal
Incur debt through general obligation bonds			No	Fiscal
Incur debt through special tax bonds			No	Fiscal

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table C-7: Miami Education and Outreach Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Website	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	
Facebook	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	Winter Storm Flood Fire Wind	Ongoing updates	
Everbridge	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	

NFIP Participation and Floodplain Management Activities is contained in **Table 4-5**

C.5 Mitigation Strategy

Mitigation Actions are specific actions, projects, activities or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. General types include plans and regulations, structure and infrastructure projects, natural systems protection and education and awareness programs. Examples include:

- Plans and regulations – building codes, land use ordinances, NFIP community rating system, capital improvement projects, stormwater management plans, subdivision regulations.
- Structure and infrastructure projects – acquisition and elevation of structures in flood prone areas, structural retrofit, utility underground, retaining walls, detention and retention structures, culverts, safe rooms
- Natural system protection – erosion control, stream restoration, forest management, conservation easement, wetland restoration
- Education and awareness – radio and television, websites, real estate disclosure, presentations to schools or neighborhood organizations, mailings to residents in hazard-prone areas, Firewise and Stormready communities

Previous Plan Mitigation Action Status

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Table C-8 provides the status of the mitigation actions from the 2011 Plan.

Table C-8: Miami Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Incomplete		Conduct engineering studies and video assessment to replace and expand the current sewer/stormwater lines to the wastewater/ stormwater treatment plant.	Flood		
Ongoing		Continue to enforce building codes to mitigate against severe wind damage to existing and future buildings and infrastructure.	Severe Wind		
Ongoing		Continue to enforce zoning and blight codes with inspections, warnings and follow-up with letters and citations.	Severe Wind		
Ongoing		Identify and prioritize NFIP compliance strategy and coordinate with the State NFIP Coordinator during the Community Assisted Visits to remain compliant in NFIP.	Flood		
Incomplete		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		

2019 Plan Miami Mitigation Actions

The Town's previous LHMP efforts were included in the 2019 LHMP. **Table C-9** provides a revised set of future, town-specific mitigation actions.

Table C-9: Miami 2019 Mitigation Plan Actions						
Strategy Number	**Mitigation Action**	**Hazard**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
1	Conduct engineering studies and video assessment to replace and expand the current sewer/stormwater lines to the wastewater/ stormwater treatment plant.	Flood	Public Works	General Fund, Mining company	1-2 years	High
2	Continue to enforce building codes to mitigate against severe wind damage to existing and future buildings and infrastructure.	Wind	Building	General Fund	Ongoing	Medium
3	Identify and prioritize NFIP compliance strategy and coordinate with the State NFIP Coordinator during the Community Assisted Visits to remain compliant in NFIP.	Flood	Planning	General Fund	Ongoing	High
4	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	Planning	General Fund, Grant	1-2 years	High
5	Matthews Camp bridge needs replacement.	Flood	Building	General Fund, Grant	2-5 years	High
6	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.	Fire, Flood, Severe Winds, Winter Storm	Town Council	General Fund, Grant	1 – 2 Years	High
7	Install zero emission power production systems on City facilities.	Climate Change	All	General Fund	2-5 years	Medium
8	Develop water recycling capabilities.	Drought	Planning	General Fund	1-2 years	Medium
9	Develop a plan to mitigate the length of transportation delays, emergency response, and the secondary effects of transportation accidents.	Transpor-tation Incidents, HazMat	Planning	?	1-2 years	Medium

Annex D Town of Payson

D.1 Community Profile

Geography and Climate:

Payson is located in the northern Gila County 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 traverse Payson and serve as the main roadways servicing the community.

Owing to its elevation of almost 5,000 feet (1,500 m), Payson has what is classified as a Mediterranean climate, though atypical for this climate with its early-summer drought and late-summer rainfall. Average temperatures reach the high 80s to mid-90s in summer. The town's altitude usually keeps it protected from the 100 °F+ temperatures usually found at Arizona's lower elevations. Monsoon storms often develop in the later afternoon, bring heavy rainfall to the area Summer nights cool down into the 50s. Winter is also mild, with cold nights. January's average nighttime low is 25.3 °F with some nights in the teens, but by mid-afternoon, the temperature has usually risen into the 50s. There are only a few days of real winter, with 23.3 inches (0.59 m) of annual snowfall, but very little snow cover.

Government:

The town government consists of a seven person town council led by the mayor who is a council member.

Population and demographics:

The 2016 population for Payson was 15,476 with a median age of 56.9. Approximately 30.6 percent of the population were over 65 years old [25]. The 2010 Census indicated the following demographics:

- % population under age 18: 17.5%
- Labor force age 16 and over: 42.5%
- Education: High school 88.3%, College level or higher 22.6%
- Income: Median household $42,856, Poverty level 12.7%

Housing:

The 2016 Census lists 8,958 housing units with 6,625 households. The average house value in 2016 was $207,700.

Economy:

The Town had 671 businesses. There are 519 commercial structures. Only 42.7 percent of the population is in the workforce due to the high number of retirees. The most common employment sectors are

[25] U.S. Census QuickFacts

healthcare and social assistance, educational services, and construction. Payson's economy is heavily dependent on tourism and outdoor activity.

Land use:

Figure D.1 depicts land use in Payson.

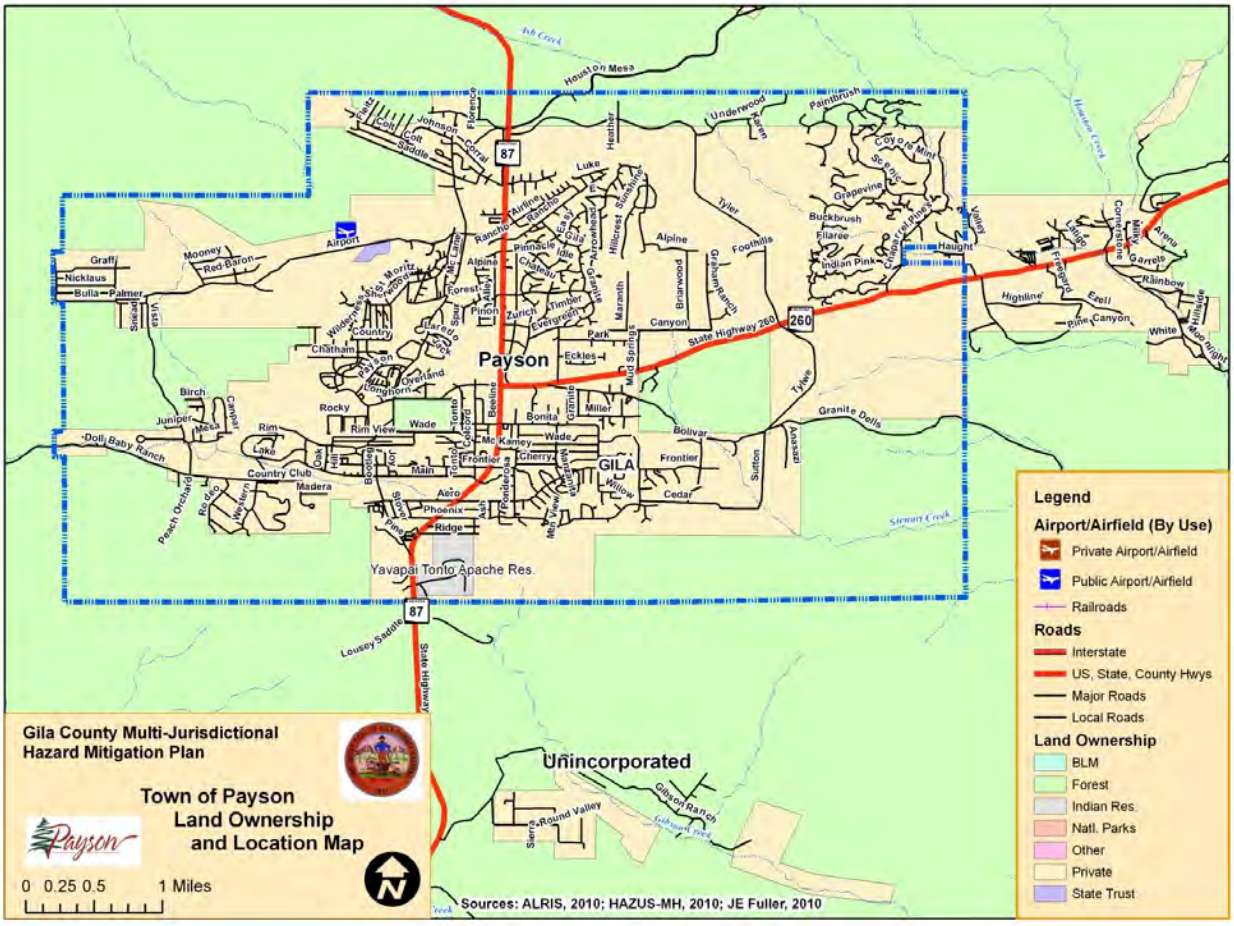

Figure D.1: Payson Land Ownership

Development trends:

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.

While the population of Payson tripled between 1980 and 2010, the Town has experienced very modest population growth since the last Plan was completed. In 2014, the True Life Companies closed escrow on Timber Ridge, 26.8 acres of land planned for residential development in Payson. New housing development is likely to occur on the outskirts of the Town while the downtown area has seen a slight increase in opening of restaurants and stores.

D.2 Hazards Identification and Analysis

Hazards:

Payson faces many of the hazards that are present in the County. Table D-1 below provides a summary of hazards. There are no hazards that are unique to Payson.

Table D–1: Payson Summary of Hazards

Hazard	Frequency	Extent	Magnitude	Significance	Location
Climate Change	Highly Likely	Extensive	Catastrophic	Medium	Entire Town
Drought	Likely	Extensive	Catastrophic	Medium	Entire Town
Flood / Flash Flood	Highly Likely	Limited	Limited	Medium	
Hazardous Materials	Likely	Limited	Limited	Low	Entire Town
Severe Wind	Highly Likely	Significant	Limited	Medium	Entire Town
Transportation Accidents	Highly Likely	Significant	Limited	Medium	Entire Town
Wildfire	Highly Likely	Significant	Significant	High	Wildland urban interface, perimeter of Town
Winter Storm	Highly Likely	Significant	Limited	High	Entire Town

Guidelines for Hazard Rankings
Frequency of Occurrence:

Highly Likely	Near 100% probability in next year
Likely	Between 10 and 100% probability in next year or at least one chance in ten years
Occasional	Between 1 and 10% probability in next year or at least one chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Spatial Extent:

Limited	Less than 10% of planning area
Significant	10-50% of planning area
Extensive	50-100% of planning area

Potential Magnitude:

Catastrophic	More than 50% of area affected
Critical	25 to 50% of area affected
Limited	10 to 25% of area affected
Negligible	Less than 10%

Significance (subjective):
low, medium, high

D.3 Risk Assessment

Infrastructure and Values at Risk:

A risk assessment determines the vulnerability of assets within the Town by evaluating the inventory of Town owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan.

Populations and Businesses at Risk:

The 2016 population was estimated to be 15,476 with a median age of 56.9. Approximately 30.6 percent of the population were over 65 years old.

Economic Risks:

The 2010 Census Data lists the building inventory in Payson as 3,386 residential units. There are 519 commercial structures. The average house value in 2016 was $ 207,700. The poverty rate was 11.9 percent. Only 42.7 percent of the population is in the workforce due to the high number of retirees. The most common employment sectors are healthcare and Social assistance, educational services, and construction. Payson's economy is heavily dependent on tourism and outdoor activity. The Town had 671 businesses.

Table D-2: Payson Facilities					
Premises	**Occupancy**	**Location**	**Associated Hazards**	**Type of Property**	**Value $**
1	Town Hall	303 N. Beeline Hwy. Payson, AZ 85541	Fire, Flood, Winter Storm	B	468,911
1	Police Facility	303 N. Beeline Hwy. Payson, AZ 85541	Fire, Flood, Winter Storm	B	1,717,507
1	Fire Station 11	400 W. Main St. Payson, AZ 85541	Fire, Flood, Winter Storm	B	887,197
1	Fire Station 12	108 E. Rancho Rd. Payson, AZ 85541	Fire, Flood, Winter Storm	B	405,103
1	Fire Station 13	103 S. Rim Club Pkwy. Payson, AZ 85541	Fire, Flood, Winter Storm	B	1,736,325
9	Green Valley Park	1000 W. Country Club Drive Payson, AZ 85541	Flood, Winter Storm	B	964,065
2	Public Works	1002 W. Airport Rd. Payson, AZ 85541	Fire, Winter Storm	B & C	1,001,566
1	Payson Library	328 N Mc Lane Rd, Payson, AZ 85541	Fire, Flood, Winter Storm	B	2,340,173
1	Community Development Building	303 N. Beeline Hwy. Payson, AZ 85541	Fire, Flood, Winter Storm	B	39,765
4	Payson Airport Buildings	Latitude: 34-15-24.6110N Longitude: 111-20-21.3210W	Flood, Winter Storm	B	418,948
1	Payson Airport Facilities	Latitude: 34-15-24.6110N Longitude: 111-20-21.3210W	Flood, Winter Storm	B	4,887,391
Multiple	Streets, curbs and gutters	Various	Fire, Flood, Winter Storm	B	98,485,815
Multiple	Water Division	Various	Flood	B	750,714

B= Building
C= Contents

Potential Losses:

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table D-3** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-Town owned facilities, even though they are deemed critical. The Town does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table D-3: Payson Summary of Vulnerabilities and Potential Loss

Hazard Type	Impacts/Costs
Climate Change	Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness. Drier weather will place increasing demands on imported and well water, and may lead to long lasting droughts that result in water rationing. Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.
Drought	Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. The Town is dependent on imported water for most of its needs. During prolonged droughts, water rationing is possible resulting in potentially higher water costs and loss of private and public landscaping.

Table D-3: Payson Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
	The Town is dependent snow runoff or imported water for most of its needs. During prolonged droughts, water rationing is possible resulting in potentially higher water costs and loss of private and public landscaping. Payson has planned well to address drought by limiting growth. The Town has also obtained water rights to the Blue Ridge Reservoir in Coconino National Forrest. Large forest fires resulting from drought have the potential to adversely affect water quality for Payson. Costs: Potential costs from drought to the County and its communities are difficult to quantify and are dependent upon drought duration and severity. In addition to increased costs for water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.
Flood/Flash Flood	Impacts: Flooding occurs in the Town during periods of heavy rain due to inadequate drainage. The flat geography also contributes to ponding. The Hilly geography tends to prevent ponding. Winter storms also result in runoff and flooding. The flood map for the Town contained in Appendix F provides street level detail of potential flood areas. Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood cost could be in excess of $20,000,000.
Severe Winds	Impacts: Severe winds in Payson are not extreme. They typically cause damage to roofs on older structures. Costs: Costs from severe winds are likely to be less than $500,000 during any single event.
Wildfire	Impacts: Structures near the urban/wildland interface are susceptible to wildland fire. Impacts on low density communities are limited. Costs: Costs to the Town will include emergency response and damage to private property. Total costs are likely to be less than $10,000,000.
Winter Storm	Impacts: The primary effects of winter storms are road, and government offices and business closures. Areas impacted are often isolated since the County does not maintain snow removal equipment. Populations with disabilities, and other access and functional needs may require special assistance. Costs: Costs to the County will include emergency response and loss from curtailed economic activity. Total cost for any single incident is likely to be less than $1,000,000.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the Town are:

- Climate Change
- DroughtPa

- Flood
- Wildfire
- Winter Storm

D.4 Capabilities Assessment

The reason for conducting a capability assessment is to identify the Town's capacity to successfully implement mitigation activities. Understanding internal and external processes, resources, and skills helps to form the foundation of a successful LHMP. Understanding strengths and weaknesses also helps ensure that goals and objectives are realistic and attainable.

The planning team conducted an assessment of the Town's capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources. Staff resources include technical personnel such as planners with knowledge of development and land management practices, engineers with an understanding of natural or human-caused hazards, and staff with expertise of the hazards. The planning team also considered ways to expand on and improve existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the Town.

In carrying out the capability assessment, several areas were examined:

- Planning and Program Capabilities
- Administrative and Political Capabilities
- Technical Capabilities
- Fiscal Capabilities
- Education and Outreach Capabilities
- NFIP Participation and Floodplain Management Activities

Tables D-4 through D-7 describe Payson's capabilities.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table D-4 contain suggested methods for expanding upon current Town plans and policies as a follow-on paragraph.

Table D-4: Payson Planning and Regulatory Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Town Code of Ordinances	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the County Building Code Ordinance in terms of hazard locations and extent.	**All**		Ordinances
Community Wildfire Protection Plan - Plan describes risks, firefighting capabilities and projects for mitigation.	The Plan is a local road map to create and maintain defensible landscapes in order to protect vital assets. It seeks to reduce firefighting cost and property loss, increase public and firefighter safety, minimize wildfire risk to communities and contribute to ecosystem health. The Plan identifies pre-suppression projects including opportunities for reducing structural ignitability, and the identification of potential fuel reduction projects and techniques for minimizing those risks. The central goals that are critical to reducing and	Wildfire	Yes, updated 2016	Plans, Manuals and/or Guidelines

	preventing the impacts of fire revolve around both suppression efforts and fire prevention efforts. Expansion - The MJLHMP fire hazard analysis and fire related mitigation measures will be used to support the Gila County Wildfire Protection Plans.			
Emergency Operations Plan (2010)	Describes what the local jurisdiction's actions will be during a response to an emergency. Includes annexes that describe in more detail the actions required of the local jurisdiction's departments/agencies. Further, this plan describes the role of the Emergency Operation Center (EOC) and the coordination between the EOC and the local/tribal jurisdictions. Lastly, the EOP describes how the EOC serves as the point of coordination between local, tribal, State, and Federal agencies during a disaster. The MJLHMP provides the basis for the hazards included and described in the EOP. Expansion - The MJLHMP will be used as an essential tool to update the Town EOP. The EOP describes applicable hazards as part of the Plan. The latest MJLHMP hazards descriptions will be included. Mitigation actions that are preparedness and response in nature will be analyzed for applicability to include in the description of EOP processes and procedures.	All		Plans, Manuals and/or Guidelines
Town of Payson Multi-Hazard Mitigation Plan (2019)	Describes hazard areas and recommends actions to mitigate hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the County Board of supervisors. Expansion - The MJLHMP and the General Safety Element will be correlated with respect to climate	All	Yes, Updated 2017-8, All Sections	Plans, Manuals and/or Guidelines

	change and the impacts of planned growth. As the Safety Element is updated, revised hazard analysis from the MHLHMP will be incorporated. Safety Element actions will be aligned with MJLHMP mitigation measures.			
General Plan	Its purpose is to conserve and promote the public health, safety and general welfare by guiding and accomplishing a coordinated, adjusted and harmonious County development and future growth. Describes hazard areas and regulates current and future development based on known hazard areas. The General Plan Safety Element may incorporate the MJLHMP by formal adoption by the County Board of supervisors. Expansion - The MJLHMP may be adopted as part of the Safety Element by the Town Council. The General Plan and the MJLHMP will be correlated with respect to climate change and the impacts of planned growth. As the Safety Element is updated, revised hazard analysis from the MHLHMP will be incorporated. Safety Element actions will be aligned with MJLHMP mitigation measures	All	Yes, updated 2017 (Safety Element)	Plans, Manuals and/or Guidelines
Capital Improvement Plan (CIP)	The CIP provides a long-term plan for maintenance, replacement and growth of Town owned infrastructure. Expansion - The MJLHMP provides maps and descriptions of hazards to consider when planning for new development. The town should consider placing new fire and police stations outside of fire and flooding hazard zones.	All	Yes, updated 2019 (Facility improvement priorities)	Plans, Manuals and/or Guidelines

Snow Removal Plan	Provides a plan to prioritize snow removal to restore surface transportation routes.	Winter Storms	Yes, updated 2017	Plans, Manuals and/or Guidelines
Evacuation Plan	Provides routes and evacuation center locations for communities in known hazard zones. Describes the process for evacuation decision making, notification, implementation and return. Expansion - The MJLHMP provides the most current hazard locations that can be used as the Evacuation Plan is updated.	All	Yes, updated 2017	Plans, Manuals and/or Guidelines

Technical and Staff

These capabilities include staff and their skills and tools used for mitigation planning and implementation such as engineers, planners, emergency managers, GIS analysts and building inspectors.

Table D-5: Payson Technical and Staff Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Planner(s) or engineer(s) with knowledge of land development and land management practices (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located in safe manor	Winter Storm Flood Fire High wind	New Town engineer and staff	Technical Staff/Personnel
Engineer(s) or professional(s) in construction practices related to buildings and/or infrastructure (Public Works – Public Works Director, Town Engineer; Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built in safe manor	Winter Storm Flood Fire High wind	New Town engineer and staff	Technical Staff/Personnel
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards (Administration – Planning and Zoning Administrator)	Checks to make sure structures/Improvements are built and located in safe manor	Winter Storm Flood Fire High wind	New Town engineer and staff	Technical Staff/Personnel
Floodplain Manager (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located outside the floodplain or provided flood protection	Flood	New Town engineer and staff	Technical Staff/Personnel

Table D-5: Payson Technical and Staff Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Surveyors (Public Works – Town Engineer)	Checks to make sure structures/Improvements are located in safe manor		New Town engineer and staff	Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Fire Department and the Planning and Zoning Department)	Checks to identify possible hazards associated with wildfire and make recommendations for mitigating the hazards	Winter Storm Flood Fire High wind	New Town engineer and staff	Technical Staff/Personnel
Personnel skilled in GIS and/or HAZUS (Public Works – Town Engineer)	Able to assist routes for detours in case of road closures, also help locate water valves in case of emergency		New Town engineer and staff	Technical Staff/Personnel
Emergency Manager (Administration – Town Manager)	Able to help identify new hazards and existing hazards	Winter Storm Flood Fire High wind	New Town manager	Technical Staff/Personnel

Fiscal

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table D-6: Payson Fiscal Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind	New fire truck purchased to fight fires	Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind	New waterlines and fire hydrants to fight fires	Fiscal
Authority to levee taxes for specific purposes	Allows capital and equipment improvements	All	Yes	Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire Wind	Raised to increase maintenance funds to repair waterlines to provide efficient fire flows	Fiscal
Incur debt through general obligation bonds	Allows capital and equipment improvements	All	No	Fiscal
Incur debt through special tax bonds	Allows capital and equipment improvements	All	No	Fiscal

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table D-7: Payson Education and Outreach Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Website	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	PaysonAZ.gov
Facebook	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	Town and Police Department
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	Winter Storm Flood Fire Wind	Ongoing updates	Operated by Police Department
Everbridge	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	Operated by County OES
Northern Gila County CERT	Teaches community members basic emergency response skills and creates a cadre of volunteers	All	Ongoing updates	Community engagement
Police Department Volunteers in Action	Teaches community members basic emergency response skills and creates a cadre of volunteers. Provides support to Police Department during incidents	All	Ongoing updates	Community engagement

Table D-7: Payson Education and Outreach Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Fire Department Auxiliary Support Group	Teaches community members basic emergency response skills and creates a cadre of volunteers. Provides support to Fire Department during incidents	All	Ongoing updates	Community engagement

NFIP Participation and Floodplain Management Activities is contained in **Table 4-5.**

D.5 Mitigation Strategy

Mitigation Actions are specific actions, projects, activities or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. General types include plans and regulations, structure and infrastructure projects, natural systems protection and education and awareness programs. Examples include:

- Plans and regulations – building codes, land use ordinances, NFIP community rating system, capital improvement projects, stormwater management plans, subdivision regulations.
- Structure and infrastructure projects – acquisition and elevation of structures in flood prone areas, structural retrofit, utility underground, retaining walls, detention and retention structures, culverts, safe rooms
- Natural system protection – erosion control, stream restoration, forest management, conservation easement, wetland restoration
- Education and awareness – radio and television, websites, real estate disclosure, presentations to schools or neighborhood organizations, mailings to residents in hazard-prone areas, Firewise and Stormready communities

Previous Plan Mitigation Action Status

Table D-8 provides the status of the 2011 Plan mitigation actions.

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Table D-8: Payson Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Complete, Ongoing, Include in 2019 Plan	Fire Education	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		
Complete, Ongoing, Include in 2019 Plan with 2 sites	Fuel Reduction	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.	Wildfire		
Complete, Ongoing, Include in 2019 Plan. Implement 2019 Code	Codes	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	Flooding, Severe Wind, Winter Storm		
Complete, Ongoing, Include in 2019 Plan	Defensible space	Create defensible space on private property in Rim Country CWPP wildland fire prone areas. Cost share with owners.	Wildfire		

Table D-8: Payson Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Incomplete, Include in 2019 Plan	East Aero Drove flooding	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		
Incomplete, Include in 2019 Plan	West Bonita Road Flooding	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		
Incomplete, Include in 2019 Plan	South Bentley Road Flooding	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		
ADOT placed sign on SR 260, Need sign for SR 87	Variable 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.	Transportation Accident		

Table D-8: Payson Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Incomplete, Include in 2019 Plan	Mitigation Videos	Produce disaster education videos for playback on local cable providing discussions of the dangers, potential losses and mitigation measures for disaster events.	All Hazards		
Incomplete, Include in 2019 Plan	Payson Ranchos Flooding	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		
Incomplete, Include in 2019 Plan	Country Club Vista Flooding	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		
Incomplete, Include in 2019 Plan	Battery Backup Power at Intersections	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		

2019 Plan Payson Mitigation Actions

The Town's previous LHMP efforts were included in the 2011 LHMP. Many of the mitigation strategies are still relevant although some number that were general in nature were removed. **Table D-9** provides a revised set of future, Town-specific mitigation actions.

Table D-9: Payson 2019 Mitigation Plan Actions

Strategy Number	Mitigation Action	Hazard	Responsibility	Funding Source	Time Frame	Priority
1	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.	Fire	Fire Department	N/A	Ongoing	Medium
2	Continue to operate and maintain 2 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.	Fire	Fire Department	N/A	Ongoing	Medium
3	Continue to enforce building and other codes to protect against fire, flooding, severe wind and winter storm damage to existing and future buildings and infrastructure that is compliant with NFIP and other authorities.	Fire, Flood, Severe Winds, Winter Storm,	Planning	N/A	Ongoing	High
4	Create defensible space on private property in Rim Country CWPP wildland fire prone areas. Cost share with owners.	Fire	Fire Department	N/A	Ongoing	Medium
5	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.	Flood	Public Works	General Fund, Grant	2-5 Years	Medium
6	West Bonita Road Area is a flood prone area encompassing 609 acres, 120 buildings vulnerable including SR 87. A conceptual drainage solution was	Flood	Public Works	General Fund, Grant	2-5 Years	High

Table D-9: Payson 2019 Mitigation Plan Actions						
Strategy Number	**Mitigation Action**	**Hazard**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
	prepared and included culverts, channelization, storm drains and catch basins designed for a 25-year event.					
7	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.	Flood	Public Works	General Fund, Grant	2-5 Years	Medium
8	Identify locations and install fixed variable message signs along north SR 87 and south SR 87 to notify motorists of transportation accidents.	Transport-ation	Public Works	General Fund, Grant, ADOT	1 Year	Medium
9	Produce disaster education videos for playback on local cable providing discussions of the dangers, potential losses and mitigation measures for disaster events.	All	Fire Department, Planning Department	General Fund	1 Year	Medium
10	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.	Flood	Public Works	General Fund, Grant	2-5 Years	Medium
11	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.	Flood	Public Works	General Fund, Grant	2-5 Years	High
12	Install battery backup power systems at major traffic intersections to mitigate the potential for traffic	Transport-ation, HazMat	Public Works	General Fund, Grant	1 Year	High

Table D-9: Payson 2019 Mitigation Plan Actions						
Strategy Number	**Mitigation Action**	**Hazard**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
	accidents during power outages caused by severe wind, winter storm, or other hazards.					
13	Increase wildland fire public information outreach program.	Wildfire	Fire Department	N/A	Ongoing	Medium
14	Increase public sector participation in the FireWise Program.	Wildfire	Fire Department	N/A	Ongoing	Medium
15	Increase registration in the County Everbridge system.	All	Community Development	N/A	Ongoing	Medium
16	In coordination with other jurisdictions, develop a regional swiftwater rescue capability.	Flood	Fire Department	General Fund, Grant	2-5 Years	Medium
17	In coordination with other jurisdictions, create and train a regional HAZMAT response team.	Hazardous Material	Fire Department	General Fund, Grant	2-5 Years	Medium
18	Replace City vehicles with fuel efficient models.	Climate Change	All	General Fund	Annually, 1-2 years	High
19	Install Zero emission power production systems on City facilities	Climate Change	All	General Fund	2-5 years	High
20	Develop water recycling capabilities.	Drought	Planning	General Fund	1-2 years	Medium

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Annex E Town of Winkelman

E.1 Community Profile

Geography and Climate:

Winkelman is located at the southern tip of Gila County at 32°59'17"N 110°46'13"W (32.988142, -110.770240) situated at an elevation of 2,100 feet. Winkelman is adjacent to Hayden, Arizona. The unincorporated community of Dudleyville is south of Winkelman, in Pinal County. According to the United States Census, the town has a total area of 0.73 square miles all of it land. The Gila River passes along the eastern and southern sides of town.

The scenery around Winkelman is some of the most spectacular in the State and is part of the Old West Highway route. The mountain ranges provide the backdrop for the meandering Gila River and such landmarks as Saddleback and Mescal Mountain ranges.

Winkelman has a semi-arid climate, characterized by hot summers and moderate to warm winters. Winkelman's arid climate is somewhat tempered by its elevation, however, leading to slightly cooler temperatures and slightly more precipitation than Phoenix or Yuma.

Summers in Winkelman are hot, with daytime highs generally between 90 °F (32 °C) and 100 °F (38 °C). High temperatures topping 100 °F (38 °C) are not uncommon in July and August for Winkelman. Summertime lows are generally right around 65 °F (18 °C). Wintertime highs usually average between 55 °F (13 °C) and 65 °F (18 °C), and lows tend to be right at or above freezing (32 °F/0 °C).

Demographics and economy:

The 2010 population was 353, a 20 percent decline from 2000. The average age was 48. The media household income was $46,944. The median house value was $76,936. Most of Winkelman's economic activity is based on copper. The community serves primarily as a service center and residential area for families of employees associated with the mining and processing activities. The principal employer with the Town is the Hayden-Winkelman School District.

Government:

Winkel man has a Council/Town manager government.

Land use:

Figure E.1 depicts land use in Winkelman.

The Town provided a detailed description to support inclusion in the MJLHMP. See below.

206 GIFFIN AVENUE
(520) 356-7854
FAX (520) 356-7709

P.O. BOX 386
WINKELMAN, ARIZONA 85292

TO: Sharon Listiak
FROM: Sylvia Kerlock,
Town Clerk DATE:
March 05, 2019
SUBJECT: Gila County MULH Plan

HMP CAPABILITIES

The Town of Winkelman has an Intergovernmental Agreement with Gila County who administers Winkelman's Flood Plain Management. They issue the permits and inspections.

The Town of Winkelman has an Intergovernmental Agreement with Gila County who administers Code Enforcement inspections to the Town per request.

Public Works Supervisor & Wastewater Treatment Operator	Arthur C. Monterde Knowledgeable of hazards & flood control
Fire Chief Nicholas Pacheco	Certified EMT - knowledgeable of health & fire hazardous issues
Hayden Police Department	Town of Winkelman contracts police service with the Town of Hayden
Town Clerk Administration	Sylvia Kerlock Grant writer - Trained in filling out DRS and worked with FEMA during

the 1993 flooding of	the Gila River in Winkelman
Deputy Town Clerk/Magistrate Clerk	Gloria Ruiz Grant writer - Extensive training in the Blood package training,computer security,& AZTEC Training

2017-2019 FISCAL

The Town applies for CDBG grant funding every other year.	Approximately $300,000.00
Capital Improvement Project funding	none budget
Levee Taxes	Yes, able to levee taxes Non-budget
Only provide Sewer & Garbage Service	$20.00 Sewer per month $18.00 Garbage per month
Bond Debt or special taxes	None

ASSET INVENTORY

People	2010 Census 353
Special vents	Easter Holiday weekend **2,000** park users
Economy	Copper Industry & School District
Estimated household income Per capita income	$41,250.00 $20,583.00
HousingStock	85.8 % of homes are owner occupied, which 14.2% of homes are occupied by renters. Home values are predominantly below $100,000 with 20 homes value above $100,000

Built Environment

The Town has adopted a "Community Development Strategy" Plan. This plan will help the Town set priorities for redevelopment, new development, annexation, and economic development and develop strategies to move the Town forward. The goal of this plan is to create scenarios for future developments within and around the Town to create economic and community development that will improve the overall quality of life for the Town and its residents.

Natural Resources

The only critical habitats are the areas along the Gila River. However, cannot be protected because flooding of the river will destroy any improvements along the river banks.

The Town will continue making improvements to the public Park. Many visitors use the park for overnight camping, daily picnicking, use the public showers & restrooms, children play ground area, use large Ramada for special family events, birthday parties, family reunions, etc. Rodeo Arena is also used for Jack -Pot-Roping and other rodeo events. In this Park we also have a softball field with lights, concession building and a basketball court. There is also a 9-unit RV Trailer Space Park that provides all utilities.

In my opinion the greatest threat and concerns to the Town of Winkelman is the overall operations and maintenance of the Coolidge Dam. Who at the state or federal agency is following up with the emergency action plan imposed at the Coolidge Dam? Have repairs to the dam been corrected and repaired? Are state or federal officials making sure daily reports are being filled out from personnel at the Dam regarding its operations and maintenance on a daily basis?

In 1993 when the flooding of the Gila River occurred and caused millions of dollars of property damage, at that time the Dam was not maintained properly, and no one was held accountable. SCIP was responsible for the monitoring conditions of the DAM and they failed to do this.

Several of Winkelman's elderly citizens died within a 6 to 12-month period after being relocated. This was caused due to stress and being unhappy at their new location.

Figure E.1: Winkelman Land Ownership

Development trends:

Because population growth was negative since approval of the 2011 MJLHMP, there has been no development in hazard prone areas that has affected overall vulnerability of the Town.

Inclusion of dam inundation added a large area of the County to this new hazard.

The new MJLHMP addresses the new hazard of climate change. This hazard impacts the entire Town. Development in the Town, County, the State and globally with increased carbon emissions will result in increasing overall vulnerabilities to its impacts.

E.2 Hazards Identification and Analysis

Hazards:

Winkelman faces many of the hazards that are present in the County. **Table E-1** below provides a summary of hazards. Hayden faces the unique hazard of dam inundation which only affects the southern portion of the County.

Table E–1: Winkelman Summary of Hazards					
Hazard	**Frequency**	**Extent**	**Magnitude**	**Significance**	**Location**
Climate Change	Highly likely	Extensive	Catastrophic	High	Entire Town
Flood / Flash Flood	Highly likely	Significant	Critical	Low	Low Lying areas of Town
Hazardous Materials	Likely	Limited	Limited	Low	Entire Town
Severe Wind	Highly Likely	Significant	Limited	Low	Entire Town
Transportation Accidents	Likely	Limited	Limited	Low	Entire Town
Wildfire	Likely	Significant	Critical	Medium	Entire Town
Winter Storm	Likely	Significant	Critical	Medium	Entire Town

Guidelines for Hazard Rankings
Frequency of Occurrence:

Highly Likely	Near 100% probability in next year
Likely	Between 10 and 100% probability in next year or at least one chance in ten years
Occasional	Between 1 and 10% probability in next year or at least one chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Spatial Extent:

Limited	Less than 10% of planning area
Significant	10-50% of planning area
Extensive	50-100% of planning area

Potential Magnitude:

Catastrophic	More than 50% of area affected
Critical	25 to 50% of area affected
Limited	10 to 25% of area affected
Negligible	Less than 10%

Significance (subjective):
low, medium, high

E.3 Risk Assessment

Infrastructure and Values at Risk:

A risk assessment determines the vulnerability of assets within the Town by evaluating the inventory of Town owned existing property and the population exposed to a hazard. A quantitative vulnerability assessment is limited to the exposure of people, buildings, and infrastructures to the identified hazards. This risk assessment includes only those hazards that have the ability to cause damage to buildings and infrastructures, therefore, hazardous materials, drought, and climate change are not included in the assessment. More detailed assessments of risk that would include deaths and injuries, and economic losses, are beyond the scope of this plan.

Populations and Businesses at Risk

The population is estimated to be 353. The median household income was $46,944. The median property value was $76,936.

Economic Risks

Table E-2 provides list facilities in Winkelman with estimated value and associated hazards

Table E-2: Winkelman Facilities				
Premises	**Occupancy**	**Location**	**Hazards**	**Value**
1	Winkelman River Park	E Quarelli St. Winkelman, AZ 85192	Flooding	$500,000

Potential Losses:

FEMA requires that an estimation of loss be conducted for the identified hazards to include the number of potential structures impacted by the hazards and the total potential costs. The analysis of potential losses calculated in **Table B-3** used the best data currently available to produce the estimations of loss. These estimates may be used to understand relative risk from hazards and potential losses. There are uncertainties in any loss estimation method, resulting from lack of scientific study and the exact result of hazard effects on the built environment, and from the use of approximations that are necessary for a comprehensive analysis.

In addition, this assessment does not include analysis of non-Town owned facilities, even though they are deemed critical. The Town does not have replacement or content values or insured values for critical infrastructure, private businesses, schools and churches.

A qualitative assessment has been prepared for the critical facilities affected by each hazard assessed, and includes a value for percent damage. The percent damage was determined by the geographic area at stake, previous history of damage from the type of hazard, and potential for severity from the hazard profiles.

Table E-3: Winkelman Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
Climate Change	Impacts: Climate change will cause multiple effects to infrastructure and community public health. Warmer weather associated with climate change will result in more heat related illness. Drier weather will place increasing demands on imported and well water, and may lead to long lasting droughts that result in water rationing. Costs: Climate change costs are difficult to specify. They will occur and accrue over centuries. As temperatures rise, additional costs for climate control such as air conditioning will occur. Less precipitation may result in depletion of stored and ground water reserves with potential for increased water costs and rationing. Much of these costs will be borne by individuals and families. Increased costs will also affect businesses and government owned facilities. Researchers at UC Berkeley (Science, May 2017) concluded that for every 1-degree Fahrenheit increase in global

Table E-3: Winkelman Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
	temperatures, the U.S. economy stands to lose about 0.7 percent of its Gross Domestic Product, with each degree of warming costing more than the last.
Dam Inundation	Impacts: Coolidge Dam is located on the San Carlos Apache Reservation 31 miles southeast of Winkelman. The dam impounds the Gila River for 23 miles when full. The dam is operated by the Bureau of Indian Affairs and provides irrigation, hydroelectric power and recreation. Dedicated by President Coolidge on March 4, 1930, Coolidge Dam is a massive edifice, composed of three large domes, approximately 250 feet in height, anchored by two buttresses. Coolidge dam with its maximum of 1,073,000 storage of acre-feet at the spillway is rated as a high failure threat dam. The Town is in the inundation zone. Costs: Although much of the Town was relocated above the floodplain after the 1993 floods, a dam breach could be catastrophic.
Drought	Impacts: Drought produces a variety of impacts that span many sectors of the economy. Reduced crops productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality; and rationing are a few examples of direct impacts. These problems can result in increased prices for food and lumber, unemployment, reduced tax revenues, increased crime, and foreclosures on bank loans to farmers and businesses, and migration. Populations that rely on or are affected by a lack of water or annual rainfall are most directly affected by droughts. The Town is dependent on imported water for most of its needs. During prolonged droughts, water rationing is possible resulting in potentially higher water costs and loss of private and public landscaping. Costs: Potential costs from drought to the County and its communities are difficult to quantify and are dependent upon drought duration and severity. In addition to increased costs for water, prolonged drought may result in reduced property values, loss of tax revenues and migration, all of which will cause economic losses.
Flood/Flash Flood	Impacts: Flooding occurs in the County during periods of heavy rain due to inadequate drainage. The flat geography also contributes to ponding. Costs: There are no accurate costs values associated with past flood events. Future flood incidents will likely result in structural damage and lost economic activity. Flood cost could be in excess of $2,000,000,
Wildfire	Impacts: Structures near the urban/wildland interface are susceptible to wildland fire. Impacts on low density communities are limited. Costs: Costs to the County will include emergency response and damage to private property. Total costs are likely to be less than $500,000.
Winter Storm	Impacts: The primary effects of winter storms are road, and government offices and business closures. Areas impacted are often isolated since the County does not maintain snow removal equipment. Populations with disabilities, and other access and functional needs may require special assistance.

Table E-3: Winkelman Summary of Vulnerabilities and Potential Loss	
Hazard Type	**Impacts/Costs**
	Costs: Costs to the County will include emergency response and loss from curtailed economic activity. Total cost for any single incident is likely to be less than $1,000,000.

Based upon previously occurring incidents and the risk assessment, the following hazards are most likely to affect the Town are:

- Dam Inundation
- Drought
- Flood
- Wildfire
- Winter Storm

E.4 Capabilities Assessment

The reason for conducting a capability assessment is to identify the Town's capacity to successfully implement mitigation activities. Understanding internal and external processes, resources, and skills helps to form the foundation of a successful LHMP. Understanding strengths and weaknesses also helps ensure that goals and objectives are realistic and attainable.

The planning team conducted an assessment of the Town's capabilities that contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include authorities and policies, such as legal and regulatory resources, staff, and fiscal resources. Staff resources include technical personnel such as planners with knowledge of development and land management practices, engineers with an understanding of natural or human-caused hazards, and staff with expertise of the hazards. The planning team also considered ways to expand on and improve existing policies and programs with the goal of integrating hazard mitigation into the day-to-day activities and programs of the Town.

In carrying out the capability assessment, several areas were examined:

- Planning and Program Capabilities
- Administrative and Political Capabilities
- Technical Capabilities
- Fiscal Capabilities
- Education and Outreach Capabilities
- NFIP Participation and Floodplain Management Activities

Tables E-4 through E-7 describe Winkelman's capabilities.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Since legal and regulatory capabilities are captured in plans and policies, the capabilities listed in Table E-4 contain suggested methods for expanding upon current Town plans and policies as a follow-on paragraph.

Table E-4: Winkelman Planning and Regulatory Capabilities

Name	Description (Effect on Hazard Mitigation)	Hazards Addressed	Updated since 2010 (if yes, identify parts applicable to mitigation)	Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known
Winkelman Town Codes	Sets construction and repair standards for buildings. Addresses fire, structural and flood hazards by requiring new and refurbished structures to meet current mandates for safety and hazards resistance. Expansion - The updated MJLHMP will be used as a tool for reviewing and revising the County Building Code Ordinance in terms of hazard locations and extent.	**All**		Ordinances

Table E-4: Winkelman Planning and Regulatory Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Town of Winkelman Multi-Hazard Mitigation Plan (2019) Gila County Multi-Hazard Mitigation Plan (2019)	Describes hazard areas and recommends actions to mitigate hazards. based on known hazard areas. The MJLHMP is implemented by formal adoption by the County Board of supervisors. Expansion - The MJLHMP and the General Safety Element will be correlated with respect to climate change and the impacts of planned growth. As the Safety Element is updated, revised hazard analysis from the MHLHMP will be incorporated. Safety Element actions will be aligned with MJLHMP mitigation measures.	All	Yes, Updated 2017-8, All Sections	Plans, Manuals and/or Guidelines

Technical and Staff

These capabilities include staff and their skills and tools used for mitigation planning and implementation such as engineers, planners, emergency managers, GIS analysts and building inspectors.

Table E-5: Winkelman Technical and Staff Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure (Public Works – Operations Supervisor Administration – General Superintendent)				Technical Staff/Personnel
Staff with education or expertise to assess the community's vulnerability to hazards (Police Department – Police Chief)				Technical Staff/Personnel
Grant writer(s) (Administration – Magistrate Clerk)				Technical Staff/Personnel

Fiscal

These capabilities include general funds, property sales, bonds, development impact fees, or other fees.

Table E-6: Winkelman Fiscal Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Community Development Block Grants	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind	Apply every year for $300,000	Fiscal
Capital Improvements Project funding	Assists community in purchases to aid in the case of an emergency	Winter Storm Flood Fire Wind		Fiscal
Fees for water, sewer, gas or electric service	We are able to repair pipes that provide fire flow to fire hydrants	Winter Storm Flood Fire Wind		Fiscal

Education and Outreach

These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices.

Table E-7: Winkelman Education and Outreach Capabilities				
Name	**Description (Effect on Hazard Mitigation)**	**Hazards Addressed**	**Updated since 2010 (if yes, identify parts applicable to mitigation)**	**Capability Type (Planning, Regulatory, Administrative, Technical, or Financial) If known**
Website	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	Education and Outreach http://winkelmanaz.com/
TDD	Allows the hearing impaired access to information in case of an emergency or other services.	Winter Storm Flood Fire Wind	Ongoing updates	Education and Outreach
Everbridge	Gives access to community for information in case of an emergency	Winter Storm Flood Fire Wind	Ongoing updates	Education and Outreach

NFIP Participation and Floodplain Management Activities are contained in **Table 4-5**

E.5 Mitigation Strategy

Mitigation Actions are specific actions, projects, activities or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. General types include plans and regulations, structure and infrastructure projects, natural systems protection and education and awareness programs. Examples include:

- Plans and regulations – building codes, land use ordinances, NFIP community rating system, capital improvement projects, stormwater management plans, subdivision regulations.
- Structure and infrastructure projects – acquisition and elevation of structures in flood prone areas, structural retrofit, utility underground, retaining walls, detention and retention structures, culverts, safe rooms
- Natural system protection – erosion control, stream restoration, forest management, conservation easement, wetland restoration
- Education and awareness – radio and television, websites, real estate disclosure, presentations to schools or neighborhood organizations, mailings to residents in hazard-prone areas, Firewise and Stormready communities

Previous Plan Mitigation Action Status

Winkelman did not participate in the 2011 Plan. There were mitigation actions outstanding from the 2006 Plan. Their status is listed below in **Table E-8**.

FEMA REGULATION CHECKLIST: PLAN REVIEW AND REVISION

Progress in Local Mitigation Efforts

44 CFR § 201.6(c)(d)(3): "A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . .."

Element

D2. Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).
Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

Table E-8: Winkelman Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Current, Include in 2019 Plan	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.	Fire	$100,000	
Current, Include in 2019 Plan	Backup 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 schools in Winkelman.	Fire, Flood, High Winds, Winter Storm	?	
Current, Include in 2019 Plan	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.	Fire, Flood, High Winds, Winter Storm	$20,000/ year	
Current, Include in 2019 Plan	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.	Flood	?	
Current, Include in 2019 Plan	Wildland Fire Fuel Reduction	Create defensible space on private property in wildland interface areas including the San Pedro	Fire		

Table E-8: Winkelman Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
		Wash area to protect existing and future buildings and infrastructure.			
Current, Include in 2019 Plan	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.	Fire		
Current, Include in 2019 Plan	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.	Fire		
Completed 2007	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.	All		

Table E-8: Winkelman Previous Mitigation Actions					
Status (New, Current, Ongoing, or Completed) If completed include date	**Project Name**	**Description**	**Hazards Addressed**	**Costs of Construction (if known)**	**Any Additional Comments/ Description**
Current, Include in 2019 Plan	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.	Fire		
Not a mitigation action	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.	All		
Current, Include in 2019 Plan	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.	Transportation Incident		

2019 Plan Winkelman Mitigation Actions

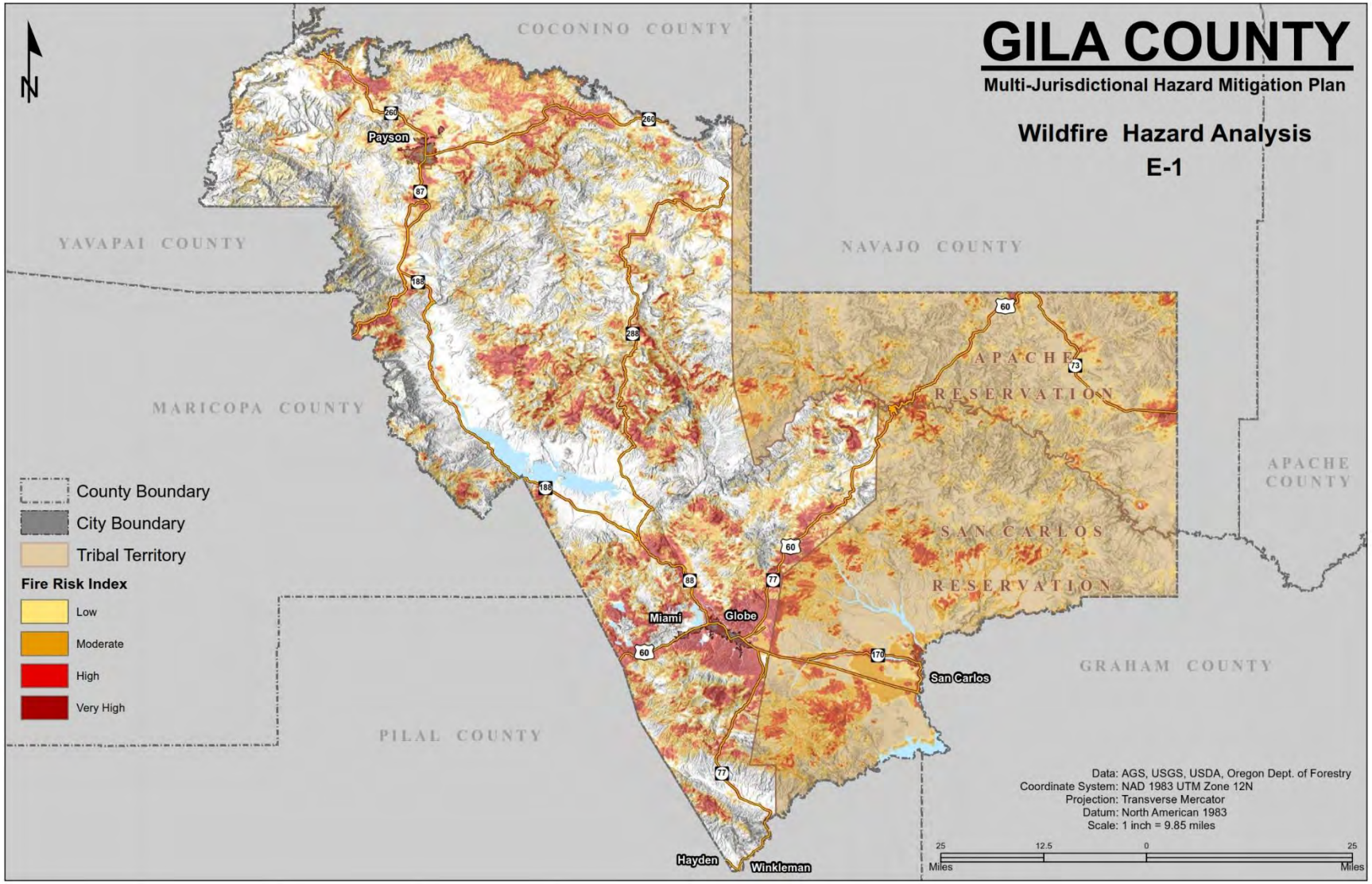
The Town's previous LHMP efforts were included in the 2011 LHMP. Many of the mitigation strategies are still relevant although some number that were general in nature were removed. **Table E-9** provides a set of future, Town-specific mitigation actions.

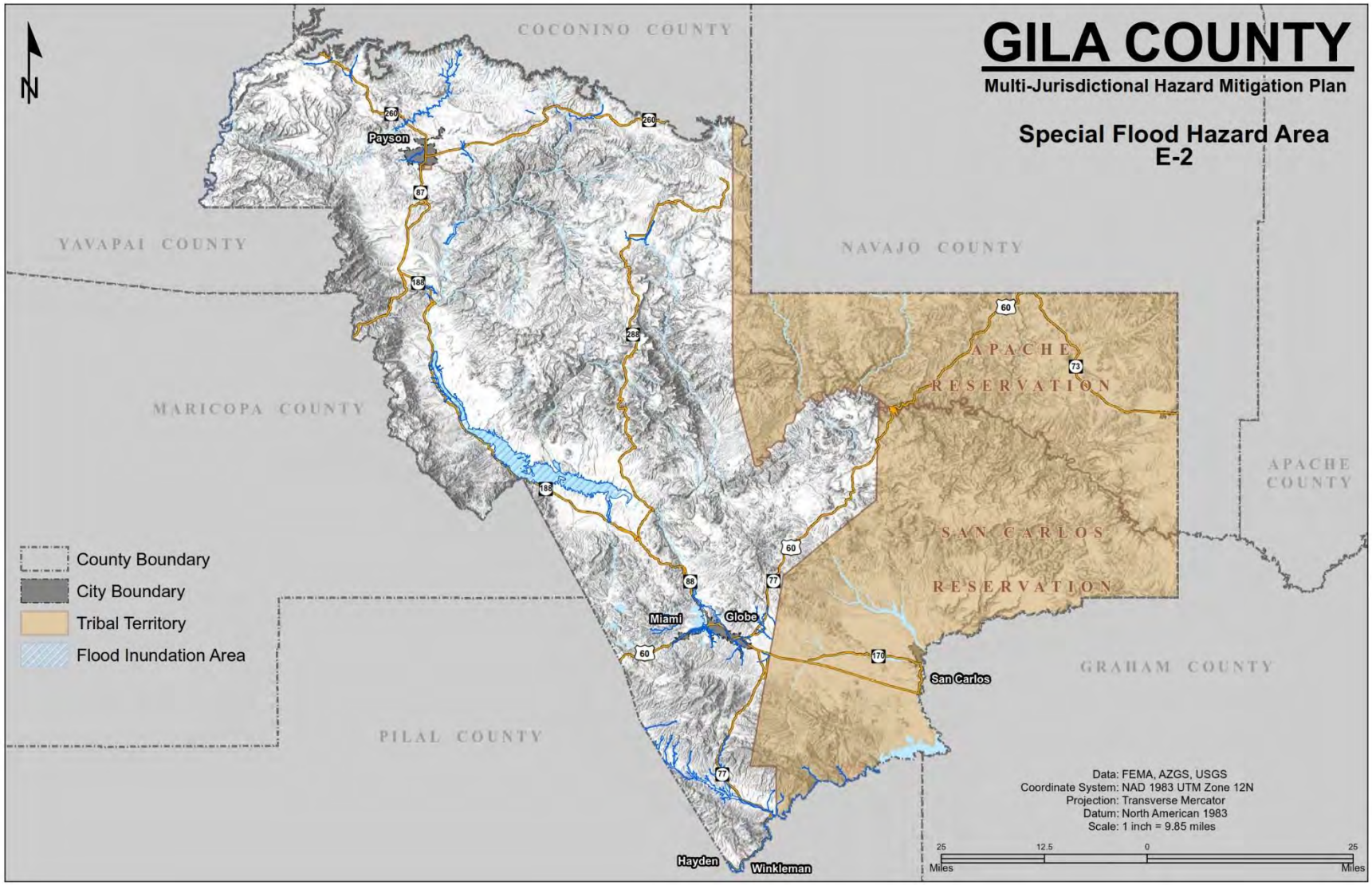
Table E-9 Winkelman 2019 Mitigation Plan Actions

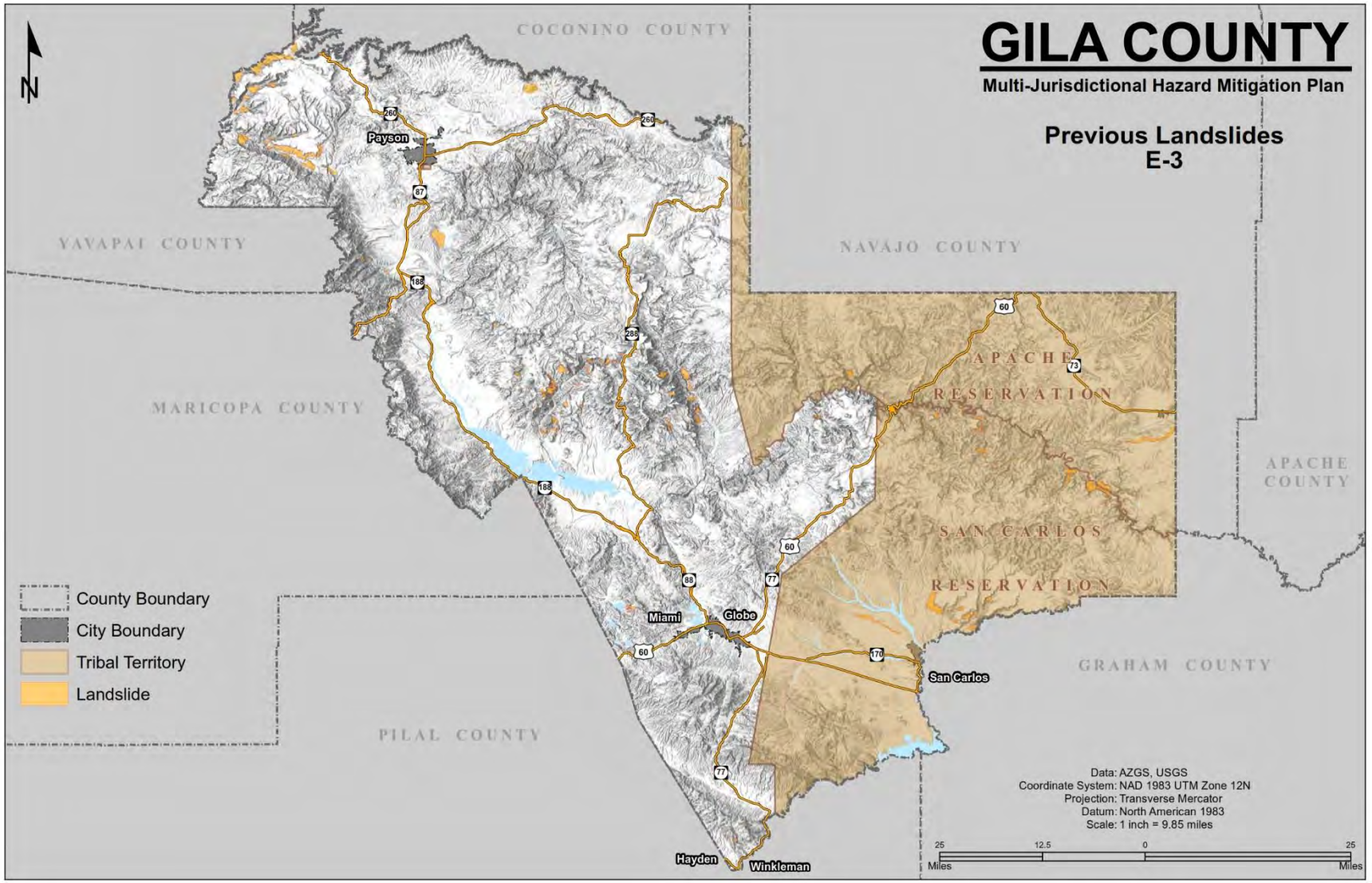
Strategy Number	Mitigation Action	Hazard	Responsibility	Funding Source	Time Frame	Priority
1	Collaborate with Bureau of Indian Affairs San Carlos Irrigation Program to assess, monitor, repair and maintain Coolidge Dam	Dam inundation	Town Council	BIA	More than 5 years	High
2	Create defensible space on 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.	Fire	Planning	General Fund, Grant	Ongoing	High
3	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 Town Hall.	Fire, Flood, Severe Winds, Winter Storm,	Town Council	General Fund, Grant	1 – 2 Years	High
4	Continue to cooperate with Gila County to enforce building codes to mitigate severe wind damage to protect existing and future buildings and infrastructure.	Severe Winds	Planning	General Fund	Ongoing	High
5	Collaborate with the Bureau of Indian Affairs to conduct dam inundation drills to address the hazard of Coolidge Dam	Dam inundation	Town Council	General Fund	2-5 years	High
6	Install zero emission power production systems on City facilities.	Climate Change	All	General Fund	2-5 years	Medium
7	Develop water recycling capabilities.	Drought	Planning	General Fund	1-2 years	Medium

Table E-9 Winkelman 2019 Mitigation Plan Actions						
Strategy Number	**Mitigation Action**	**Hazard**	**Responsibility**	**Funding Source**	**Time Frame**	**Priority**
8	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.	All	Police	General Fund, Grant	1 – 2 Years	High
9	Develop evacuation plan to better deal with a required evacuation in the event of a disaster.	All	Police	General Fund, Grant	1 – 2 Years	High
10	Update and revise emergency operation plan to comply with NIMS criteria.	All	Police	General Fund, Grant	1 – 2 Years	High
11	Develop Fire Wise programs for all neighborhoods within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies.	Fire	Fire Department	General Fund, Grant	1 – 2 Years	High
12	Develop a plan to mitigate the length of transportation delays, emergency response, and the secondary effects of transportation accidents.	Transportation Incidents, HazMat	Planning	?	1-2 years	Medium

APPENDIX F: MAPS




GILA COUNTY
Multi-Jurisdictional Hazard Mitigation Plan
Special Flood Hazard Area
E-2
N
COCONINO COUNTY
YAVAPAI COUNTY
NAVAJO COUNTY
MARICOPA COUNTY
APACHE COUNTY
GRAHAM COUNTY
PILAL COUNTY
APACHE RESERVATION
SAN CARLOS RESERVATION
Payson
Miami
Globe
San Carlos
Hayden
Winkleman
County Boundary
City Boundary
Tribal Territory
Flood Inundation Area
Data: FEMA, AZGS, USGS
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 9.85 miles
25 12.5 0 25
Miles Miles


GILA COUNTY
Multi-Jurisdictional Hazard Mitigation Plan
Previous Landslides
E-3
N
COCONINO COUNTY
YAVAPAI COUNTY
NAVAJO COUNTY
MARICOPA COUNTY
APACHE COUNTY
GRAHAM COUNTY
PILAL COUNTY
APACHE RESERVATION
SAN CARLOS RESERVATION
Payson
Miami
Globe
San Carlos
Hayden
Winkleman
County Boundary
City Boundary
Tribal Territory
Landslide
Data: AZGS, USGS
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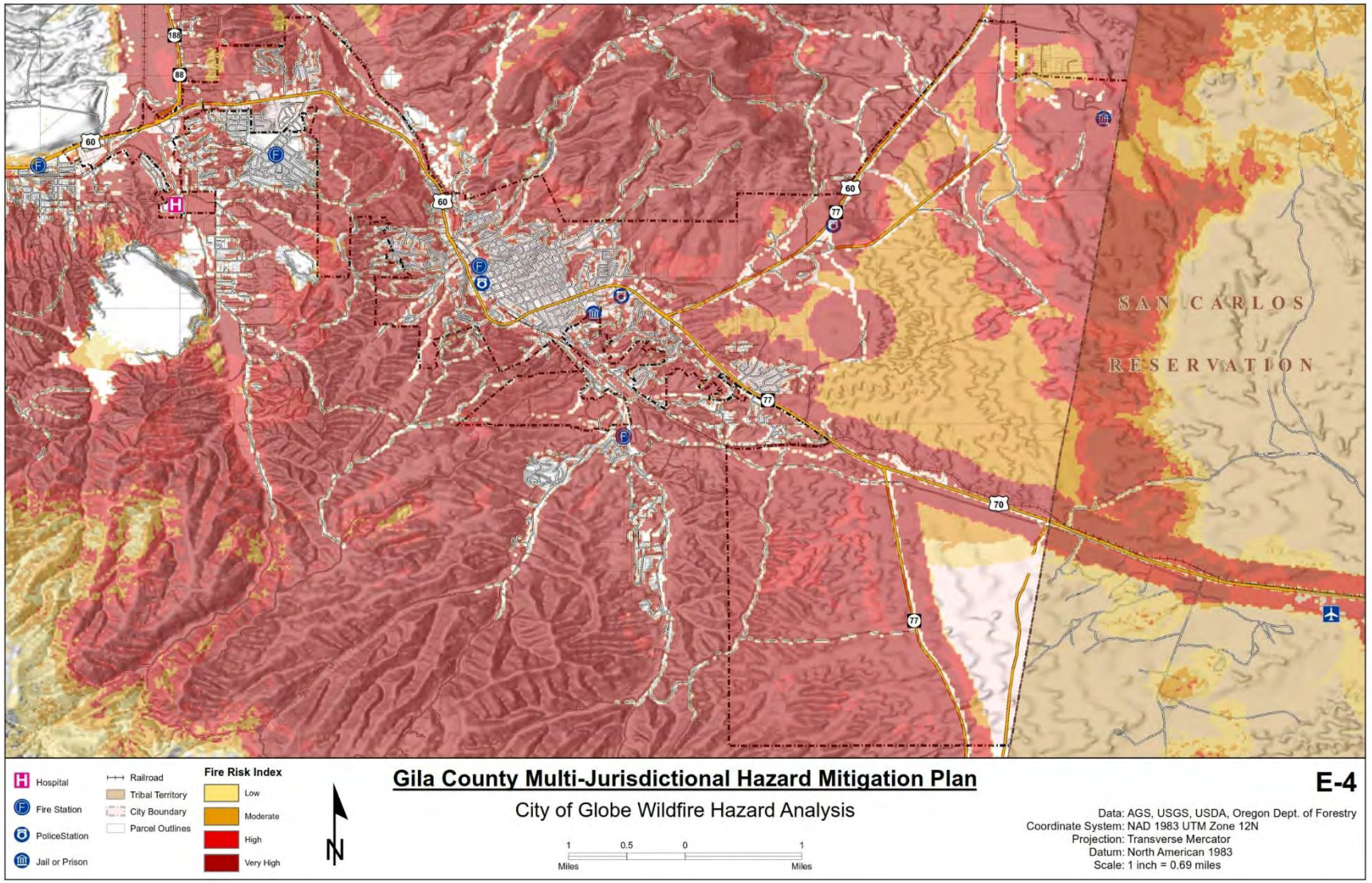
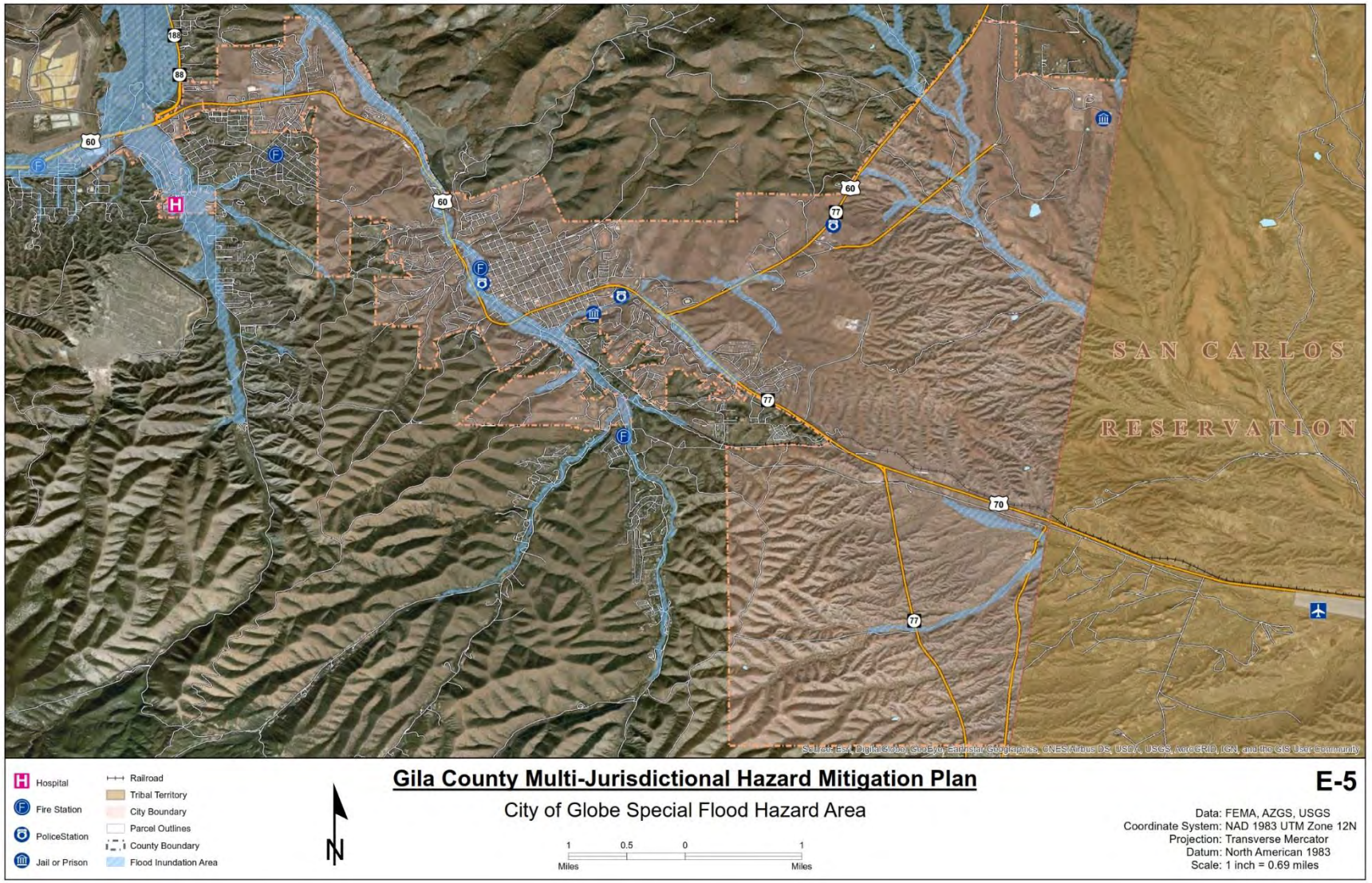
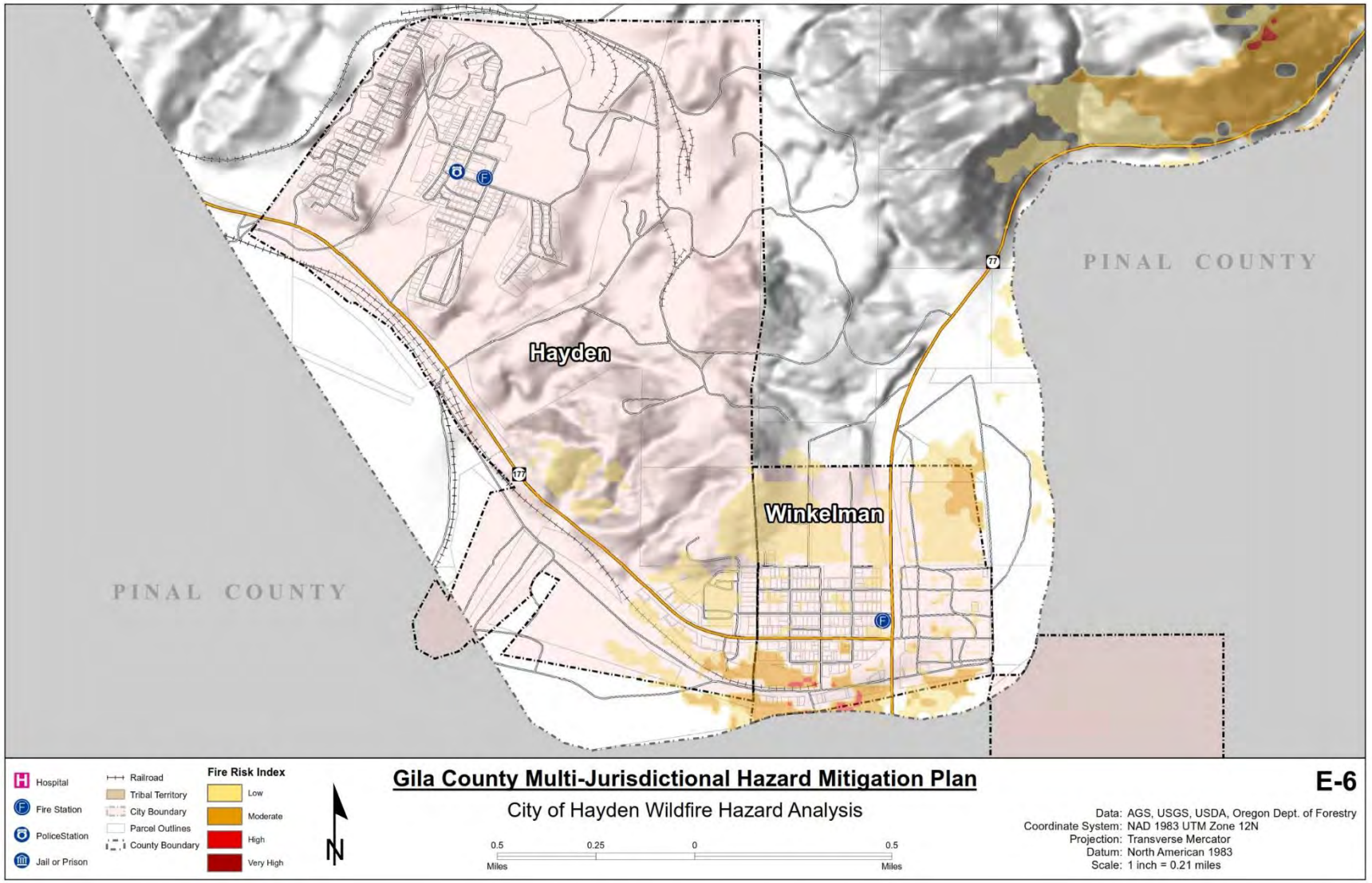
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 9.85 miles
25 12.5 0 25
Miles Miles


SAN CARLOS
RESERVATION
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
Fire Risk Index
Low
Moderate
High
Very High
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Globe Wildfire Hazard Analysis
1 0.5 0 1
Miles Miles
E-4
Data: AGS, USGS, USDA, Oregon Dept. of Forestry
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.69 miles


SAN CARLOS
RESERVATION
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Flood Inundation Area
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Globe Special Flood Hazard Area
1 0.5 0 1
Miles Miles
E-5
Data: FEMA, AZGS, USGS
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.69 miles


Hayden
Winkelman
PINAL COUNTY
PINAL COUNTY
77
177
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Fire Risk Index
Low
Moderate
High
Very High
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Hayden Wildfire Hazard Analysis
0.5 0.25 0 0.5
Miles Miles
E-6
Data: AGS, USGS, USDA, Oregon Dept. of Forestry
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.21 miles


Hayden
Winkelman
PINAL COUNTY
PINAL COUNTY
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Flood Inundation Area
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Hayden Special Flood Hazard Area
0.5 0.25 0 0.5
Miles Miles
E-7
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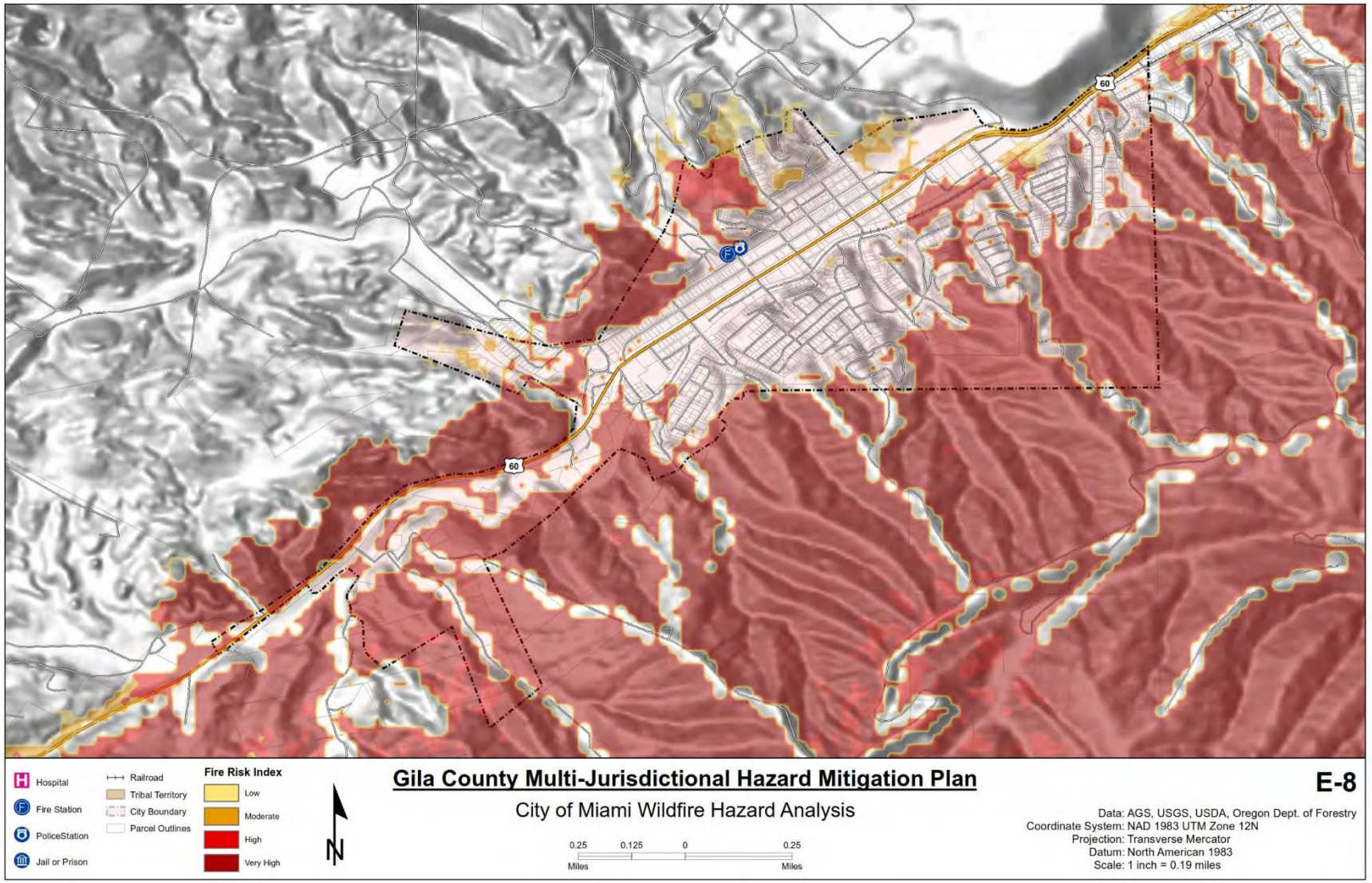
60
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Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
Fire Risk Index
Low
Moderate
High
Very High
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Miami Wildfire Hazard Analysis
0.25 0.125 0 0.25
Miles Miles
E-8
Data: AGS, USGS, USDA, Oregon Dept. of Forestry
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.19 miles


60
60
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Flood Inundation Area
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Miami Special Flood Hazard Area
0.5
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Miles
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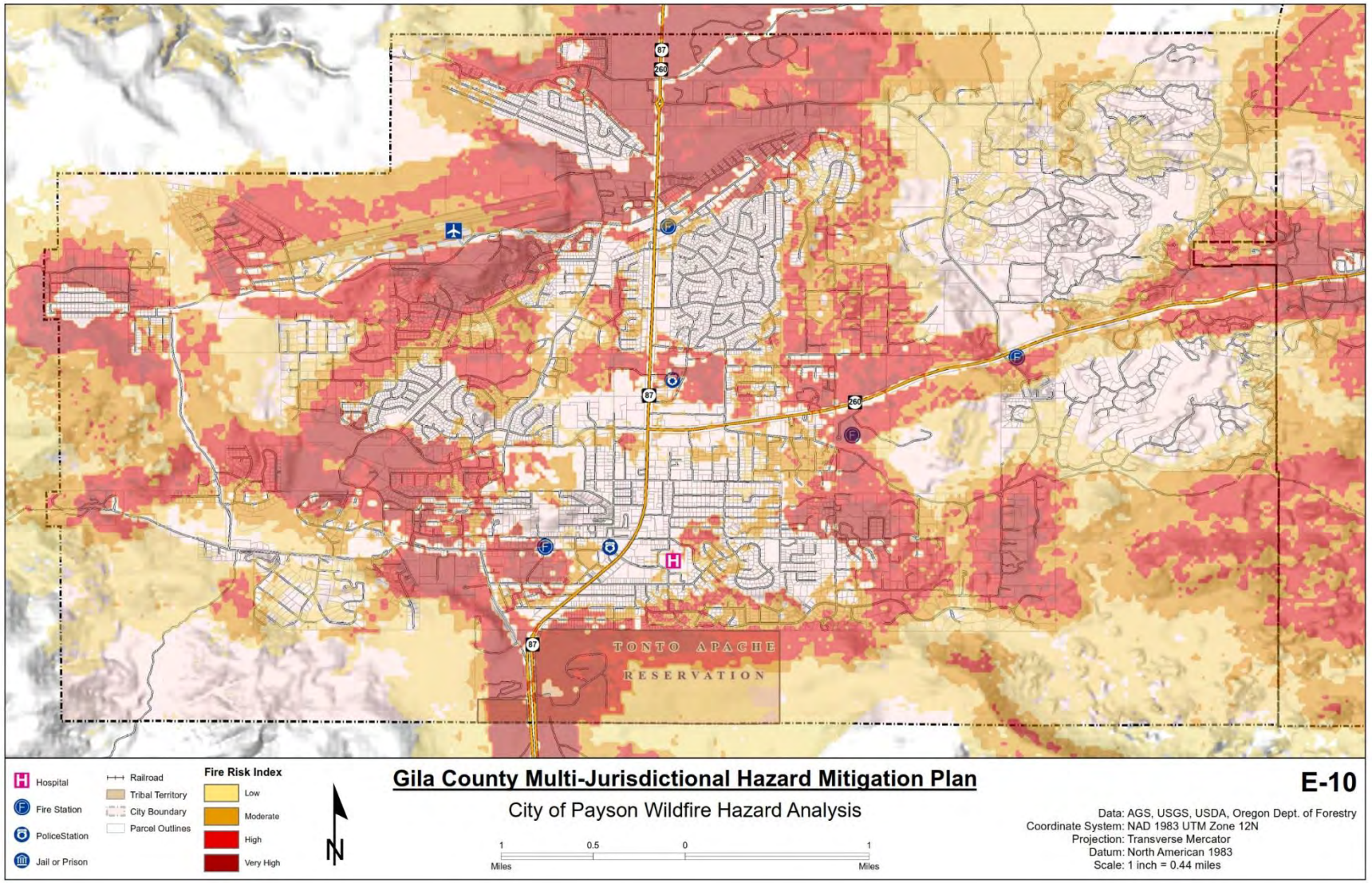
TONTO APACHE
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Tribal Territory
City Boundary
Parcel Outlines
Fire Risk Index
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Moderate
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Very High
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Payson Wildfire Hazard Analysis
1 0.5 0 1
Miles Miles
E-10
Data: AGS, USGS, USDA, Oregon Dept. of Forestry
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.44 miles


87
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TONTO APACHE
RESERVATION
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Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Flood Inundation Area
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Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Payson Special Flood Hazard Area
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Miles Miles
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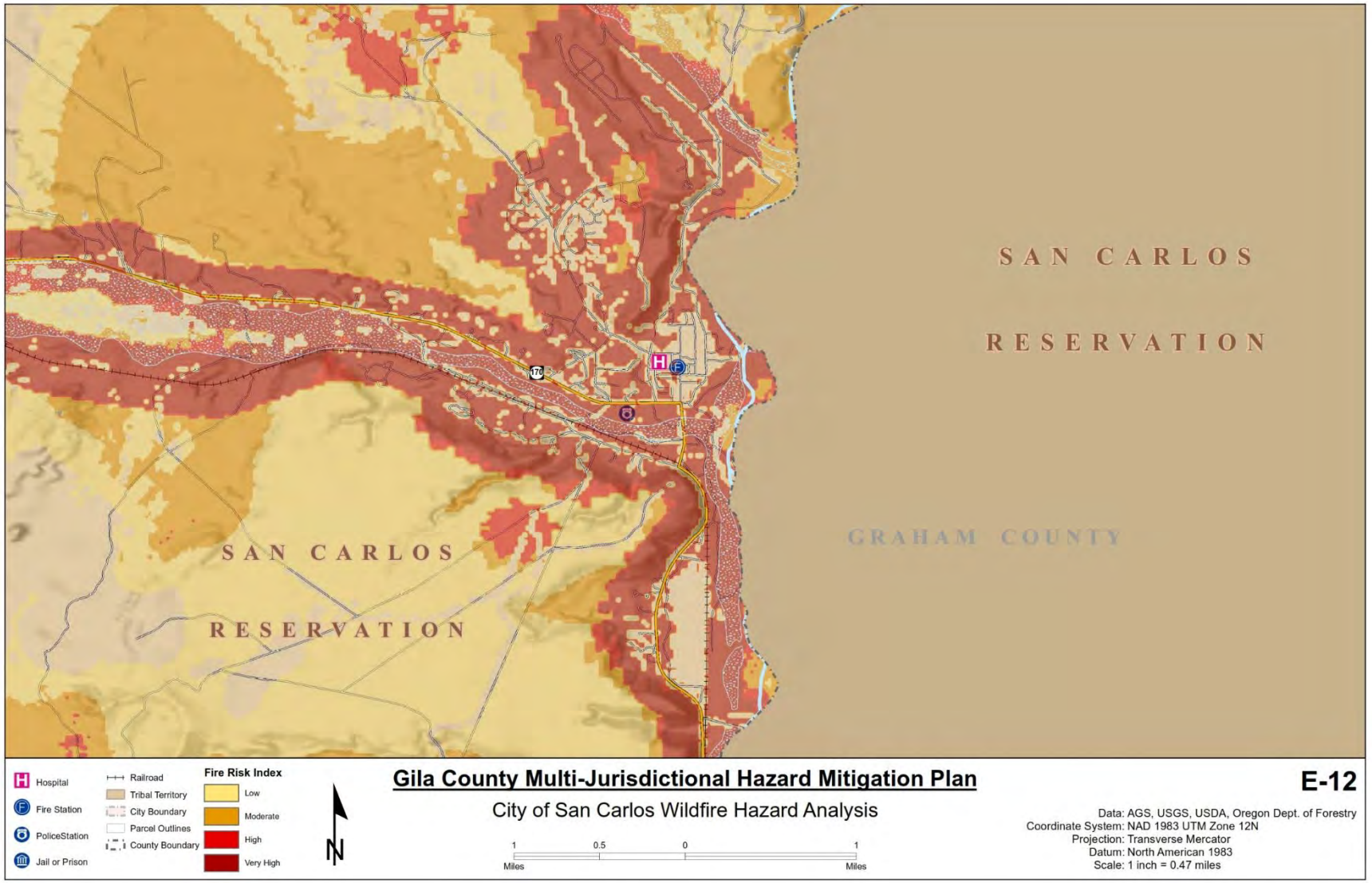
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RESERVATION
GRAHAM COUNTY
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Railroad
Tribal Territory
City Boundary
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County Boundary
Fire Risk Index
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Very High
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City of San Carlos Wildfire Hazard Analysis
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Miles Miles
E-12
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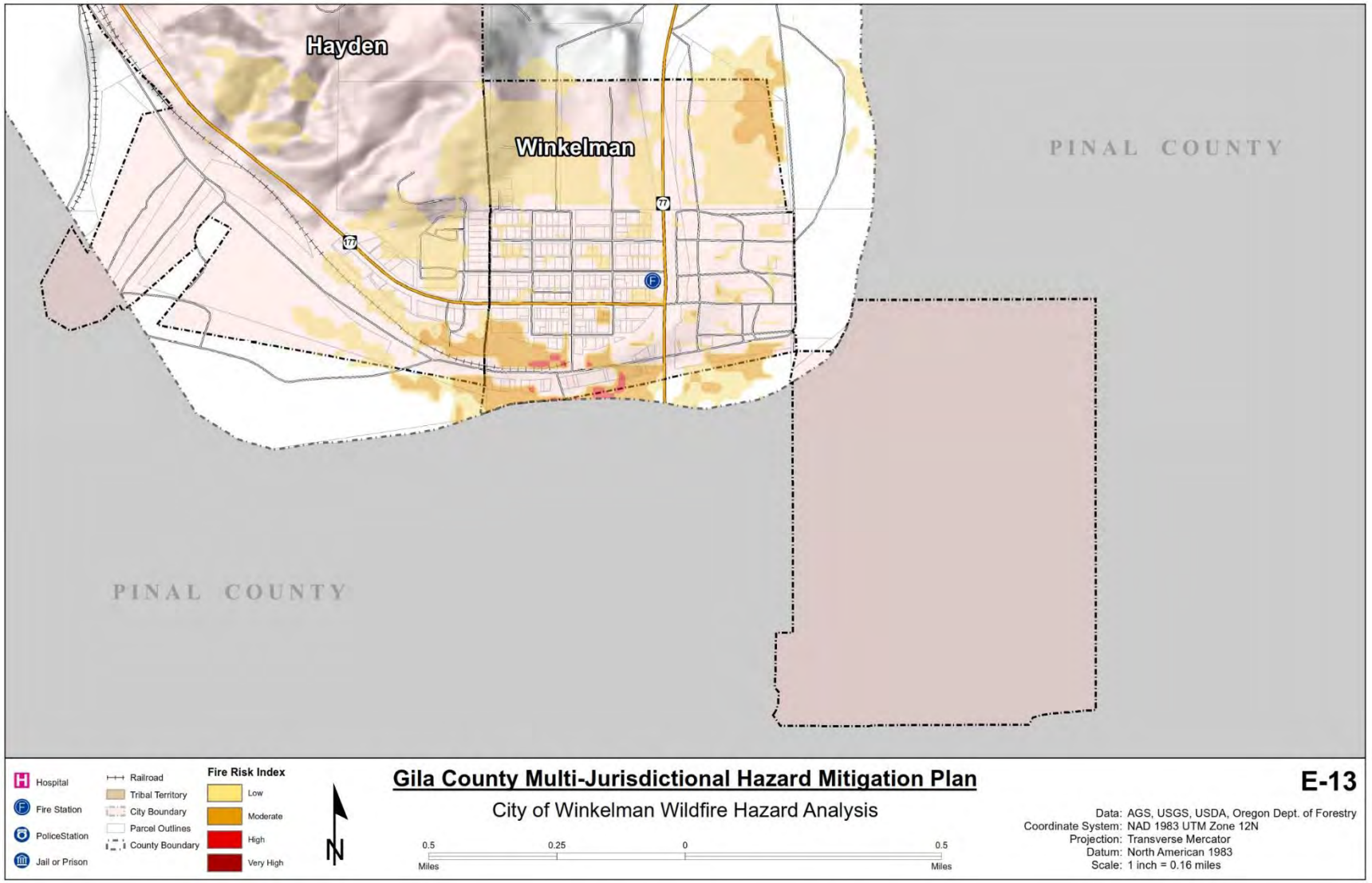
Hayden
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Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Winkelman Wildfire Hazard Analysis
0.5 0.25 0 0.5
Miles Miles
E-13
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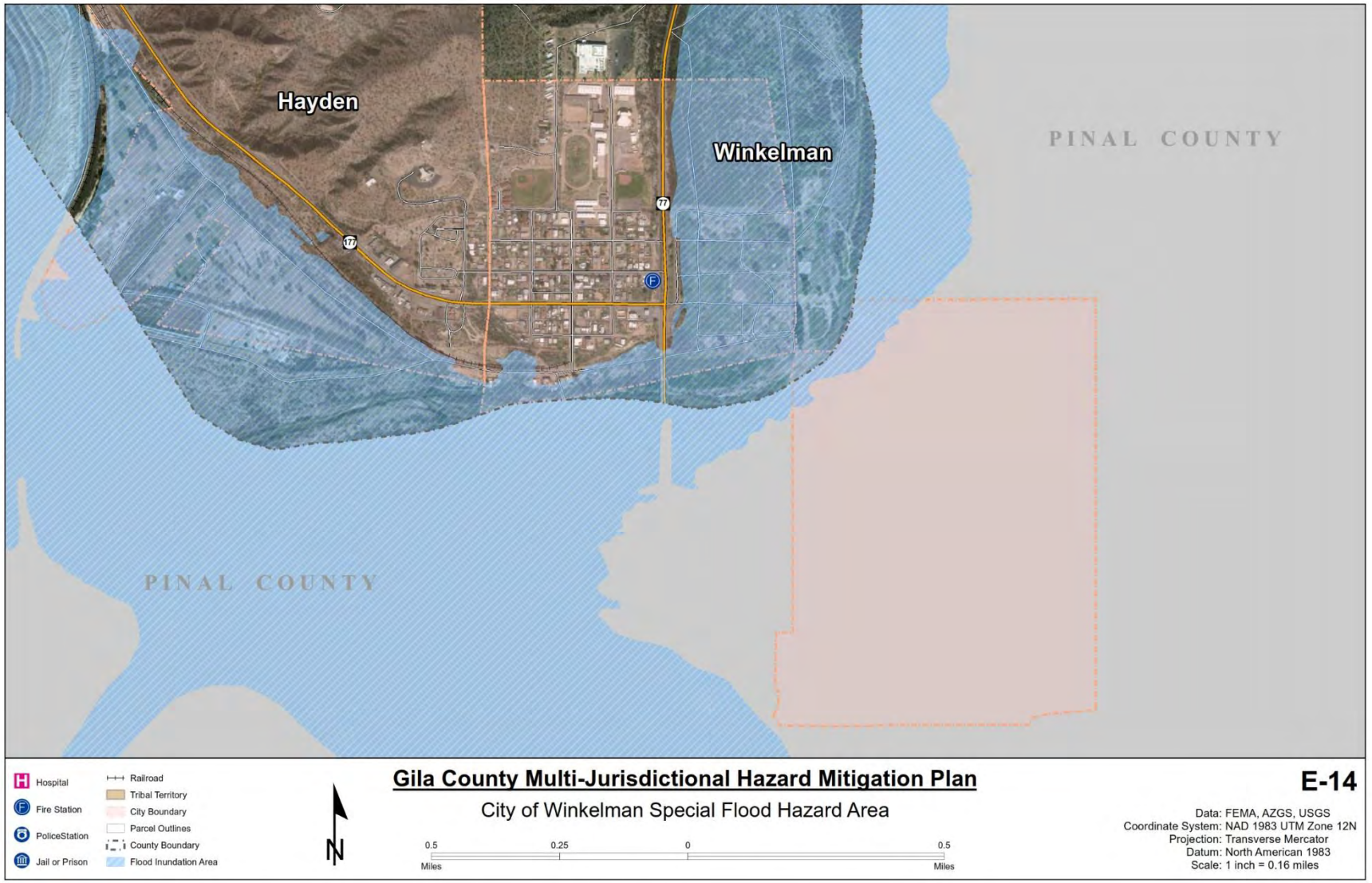
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.16 miles


Hayden
Winkelman
PINAL COUNTY
PINAL COUNTY
77
77
Hospital
Fire Station
PoliceStation
Jail or Prison
Railroad
Tribal Territory
City Boundary
Parcel Outlines
County Boundary
Flood Inundation Area
N
Gila County Multi-Jurisdictional Hazard Mitigation Plan
City of Winkelman Special Flood Hazard Area
0.5
0.25
0
0.5
Miles
Miles
E-14
Data: FEMA, AZGS, USGS
Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Scale: 1 inch = 0.16 miles

APPENDIX G: ADOPTION RESOLUTIONS

County of Gila

After Recording Please Return To Melissa Henderson - BOS

RESOLUTION NO. 19-10-03

A RESOLUTION OF THE GILA COUNTY BOARD OF SUPERVISORS APPROVING AND ADOPTING THE 2019 GILA COUNTY MULTI-JURISTICTIONAL HAZARD MITIGATION PLAN.

WHEREAS, the Gila County Board of Supervisors recognizes the threat that natural hazards pose to people and property within Gila County; and

WHEREAS, in accordance with 44 CFR §201.6, Gila County must have a local mitigation plan approved by Federal Emergency Management Agency (FEMA) to apply for and/or receive project grants under the following hazard mitigation assistance programs; and

WHEREAS, Gila County prepared a multi-jurisdictional hazard mitigation plan in 2011 in accordance with the Disaster Mitigation Act of 2000; reviewed and updated the plan in March 2019; and hereinafter shall be known as the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Gila County from the impacts of future hazards and disasters; and

WHEREAS, the Director of Gila County Emergency Management has reviewed the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan and recommends the plan be adopted by the Board of Supervisors. The acceptance of the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan supersedes all previous emergency operations plans; and

WHEREAS, adoption of the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan by the Gila County Board of Supervisors demonstrates its commitment to the hazard mitigation and achieving the goals outlined in the Plan;

NOW, THEREFORE, BE IT RESOLVED that the Gila County Board of Supervisors does hereby adopt the 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan.

Resolution 19-10-03 2019 Gila County Multi-Jurisdictional Hazard Mitigation Plan Page 1 of 2

PASSED AND ADOPTED this 1st day of October 2019, at Globe, Gila County, Arizona.

Attest:

Marian Sheppard, Clerk

GILA COUNTY BOARD OF SUPERVISORS

Woody Cline, Chairman

Approved as to form:

The Gila County Attorney's Office

City of Globe

RESOLUTION NO. 1793

A RESOLUTION OF THE CITY OF GLOBE, COUNTY OF GILA, STATE OF ARIZONA APPROVING THE 2019 GILA COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Globe has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Gila County is able to act on behalf of the City of Globe in the analysis and development of a hazard mitigation plan; and

WHEREAS, Gila County shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.R.S. 201.6; and

WHEREAS, Gila County shall deliver a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW THEREFORE, the Globe City Council authorizes Gila County on behalf of the City of Globe to prepare the 2019 Gila County Multi-Hazard Mitigation Plan, which shall be reviewed and considered for adoption by the Globe City Council upon completion.

PASSED AND ADOPTED this 11th day of June 2019, at Globe, Gila County, Arizona

Attest:

Shelly Salazar, Clerk

Al Gameros, Mayor Vice Mayor

Approved as to form:

Bill Sims, City Attorney

Town of Hayden

RESOLUTION NO. 19-06

A RESOLUTION OF THE TOWN OF HAYDEN, ARIZONA, ADOPTING THE GILA COUNTY 2019 MULTIJURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

WHEREAS, the Town of Hayden has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Gila County is able to act on behalf of the Town of Hayden in the analysis and development of a hazard mitigation plan; and

WHEREAS, Gila County has prepared a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Gila County has delivered a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW THEREFORE, the Town of Hayden, authorizes Gila County on behalf of the Town of Hayden to prepare the Gila County Multi-Hazard Mitigation Plan, which shall be reviewed and considered for adoption by the Hayden Town Council upon completion.

ADOPTED this _____ of May, 2019, at the Meeting of the Hayden Town Council.

Dean Hetrick, Mayor

ATTEST:

Laura Romero, Town Clerk

APPROVED AS TO FORM:

Stephen R. Cooper, Town Attorney

Town of Miami

TOWN OF MIAMI

RESOLUTION NO. 1220

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF MIAMI, GILA COUNTY, ARIZONA AUTHORIZING GILA COUNTY TO ACT ON BEHALF OF THE TOWN OF MIAMI TO PREPARE THE GILA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

WHEREAS, the Miami Town Council recognizes the threat that natural hazards pose to people and property within Gila County; and

WHEREAS, the Town of Miami has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Gila is able to act on behalf of the Town of Miami in the analysis and development of a hazard mitigation plan; and

WHEREAS, Gila County shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Gila County shall deliver a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW, THEREFORE, the Town of Miami authorizes Gila County on behalf of the Town of Miami to prepare the Gila County Multi-Jurisdictional Hazard Mitigation Plan, which shall be reviewed and considered for adoption by the Town Council upon completion.

APPROVED AND ADOPTED this 13th day of **May**, 2019.

ATTEST:
Karen Norris, Town Clerk

APPROVED:
Sammy Gonzales, Vice Mayor

1

RES NO 1220

APPROVED AS TO FORM:

Gust Rosenfeld, PLC
Town Attorneys
By: Susan D. Goodwin

I hereby certify the above foregoing Resolution No. **1220** was duly passed by the Council of the Town of Miami, Arizona, at a regular meeting held on **May 13**, 2019, and that a quorum was present thereat and that the vote thereon was 6 ayes and 0 nays and 0 abstentions. 1 Councilmembers were absent or excused.

Karen Norris, Town Clerk

Town of Payson

RESOLUTION NO: 3167

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF PAYSON, ARIZONA ACCEPTING AND APPROVING THE GILA COUNTY 2019 MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN ("MJLHMP") IN ACCORDANCE WITH REQUIRMENTS AT 44 C.F.R. 201.6.

WHEREAS, the Town of Payson staff worked with Gila County staff to draft a 2019 Multi-Jurisdiction Local Hazard Mitigation Plan; and

WHEREAS, the Plan Author prepared a hazard mitigation plan in accordance with 44 C.F.R. 201.6; and

WHEREAS, the Town of Payson staff presented a final copy of the 2019 Multi-Jurisdictional Local Hazard Mitigation Plan to the Town Council; and

NOW, THEREFORE, the Town Council approved and accepts the 2019 Multi-Jurisdictional Local Hazard Mitigation Plan as submitted.

ADOPTED this 12th day of September, 2019.

Thomas Morrissey, Mayor

ATTEST:

Silvia Smith, Town Clerk

APPROVED AS TO FORM:

Justin Pierce, Town Attorney

Prepared by Town of Payson Legal Department
JP:dkk September 5, 2019 (12:01PM)
P:\Clerks\3167.TPFD.GILA.FEMA.MJLHMP.doc

cc Fire Dept

SEP 12 2019 F.1

Town of Winkelman

520 356 7709 TOWN OF WINKELMAN 01:03:18 a.m. 04-18-2019 2 /2

RESOLUTION NO. 163-2019

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF WINKELMAN, COUNTY OF GILA AND PINAL, ARIZONA, AUTHORIZING GILA COUNTY REPRESENTATION ON THE PREPARATION OF A HAZARD MILIGATION PLAN ON BEHALF OF THE TOWN OF WINKELMAN

WHEREAS, the Town of Winkelman has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Gila County can act on behalf of the Town of Winkelman in the analysis and development of a hazard mitigation plan; and

WHEREAS, Gila County shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Gila County shall deliver a draft copy of the Plan for public comments as well as the governing body's comments during the planning process and prior to adoption.

NOW, THEREFORE, the Winkelman Town Council authorizes Gila County representation on behalf of the Town of Winkelman, to prepare the **Gila County Multi-Hazard Mitigation Plan,** which shall be reviewed and considered for adoption by the Winkelman Town Council upon completion.

PASSED AND ADOPTED this **8th day** of **April 2019,** at the Town of Winkelman, Arizona

Louis C. Bracamonte, Mayor

ATTEST:

Sylvia Kerlock, Town Clerk

APPROVED AS TO FORM:

J. Dee Flake, Town Attorney