2023

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

PREVENT
PREPARE
PROTECT

Yavapai County
Arizona

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SECTION 1: INTRODUCTION

1.1 Purpose

The purpose of this Plan is to identify hazards that impact the various jurisdictions located within Yavapai 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.

1.2 Background and Scope

Each year in the United States, disasters injure of take the lives of thousands of people. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because tax dollars do not reimburse for the additional expenses to insurance companies and nongovernmental entities. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

FEMA defines hazard mitigation as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of $4 in avoided future losses in addition to saving lives and preventing injuries (FEMA Federal Insurance and Mitigation Saves Lives Interim Report June 2018).

Examples of hazard mitigation measures include, but are not limited to:

- Development of mitigation standards, regulations, policies, and programs.
- Land use/zoning policies.
- Strong building code and floodplain management regulations.
- Dam safety program, seawalls, and levee systems.
- Acquisition of flood prone and environmentally sensitive lands.
- Retrofitting/hardening/elevating structures and critical facilities.
- Relocation of structures, infrastructure, and facilities out of vulnerable areas.
- Public awareness/education campaigns.
- Improvement of warning and evacuation systems.

The Hazard mitigation planning process identifies hazards that threaten communities; determines the likely effects of those hazards; sets mitigation goals; and determines, prioritizes, and implements appropriate strategies to lessen impacts to hazards that threaten communities. This Plan documents the planning process employed by the Planning Team. The Plan identifies relevant hazards and risks and identifies the strategy used to decrease vulnerability and increase resiliency and sustainability.

This Plan was prepared pursuant to the requirements of FEMA Policy-206-21-and the implementing regulations set forth in the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288). While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that hazard mitigation plans must meet in order to be eligible for certain Federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act.

Information in this Plan will be used to help guide and coordinate mitigation activities and decisions for future land use. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the community and its property owners by protecting structures, reducing exposure, and minimizing overall community impacts and disruption. Hazards have and continue to affect the community and thus the community is committed to reducing future disaster impacts and maintaining eligibility for Federal funding.

This is a multi-jurisdictional plan that geographically covers the participating communities and tribe within the

Yavapai County boundaries (hereinafter referred to as the Planning Area). The following jurisdictions participated in the planning process:

- Yavapai County
- Yavapai Prescott Indian Tribe
- Town of Camp Verde
- Town of Chino Valley
- Town of Clarkdale
- City of Cottonwood
- Town of Dewey-Humboldt
- Town of Jerome
- City of Prescott
- Town of Prescott Valley
- City of Sedona

1.3 Assurances

Participants in this Plan assure that they will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). Specifically, the Yavapai Apache Tribe will amend this Plan whenever necessary to reflect changes in Federal laws and statutes as required in 44 CFR 133.11(d).

1.4 Plan Organization

This Plan is organized as follows:

- Section 1: Introduction
- Section 2: Community Profile
- Section 3: Planning Process
- Section 4: Risk Assessment
- Section 5: Mitigation Strategy
- Section 6: Plan Maintenance

1.5 Regulatory Guidance

The Planning Team prepared this Plan in compliance with:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988
- Disaster Mitigation Act 2000
- 44 CFR Part 201
- Sandy Recovery Improvement Act of 2013
- National Flood Insurance Act of 1968
- Water Infrastructure Improvements for the Nation Act of 2016
- Local mitigation Planning Policy Guide: FP-206-21-0002
- Arizona Revised Statutes Title 26 Military Affairs and Emergency Management, Chapter 2

1.6 Plan Review and Evaluation

Yavapai County maintains the Multi Jurisdiction Hazard Mitigation Plan as a living document intended to be continuously reviewed and revised, with input from stakeholders, to guarantee the most current plan possible.

Date	Summary of Activity or change	Plan Section	Recommendation by / Entry made by

1.7 Distribution List

Yavapai County is committed to increasing awareness and growing Jurisdictional partnerships and participation in the Multi Jurisdiction Hazard Mitigation Plan.

Person	Department / Jurisdiction	Date

1.8 Training and Engagement Activity

Yavapai County is committed to ongoing training and engagement related to the Multi Jurisdiction Hazard Mitigation Plan to enhance hazard awareness and increase plan implementation.

Date	Summary of Activity	Partners Involved	Entry made by

SECTION 2: COMMUNITY PROFILES

2.1 Yavapai County

Geography

Yavapai County formed along with the original four counties created when Arizona was still a territory. Known as the "Mother of Counties", Yavapai County was initially more than 65,000 square miles from which five other counties formed. Today, Yavapai County covers 8,125 square miles, with Prescott as its County seat. Yavapai County is located in the central portion of the State of Arizona. Major roadway transportation routes through the County include Interstates 17 and 40, U.S. Highway 93, State Routes 69, 71, 89, 89A, 96, 97, 169, 179, and 260. Railways include the Burlington Northern Santa Fe Railway and Arizona Central Railway.

Yavapai County is home to portions of five rivers and four mountain ranges. The Verde River is the longest stretch of riparian area, which has yearlong flows and is located along the eastern portion of the County. All the other rivers have intermittent flows and include the Santa Maria River, Aqua Fria River, Hassayampa River, and a small segment of New River. Except to the north, Prescott is nearly surrounded by the four mountain ranges, which are the Bradshaw, Black Hills, Weaver, and Sierra Prieta. These geographical characteristics can be used to identify terrestrial ecoregions.

The geographical characteristics of Yavapai County have been mapped into three terrestrial ecoregions:

- **Arizona Mountain Forests** – this ecoregion contains a mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 3,000-7,979 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas is 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 the saguaro cactus is found. The climate is typically hot and dry during the summer and mild during the winter.
- **Colorado Plateau Shrublands** – this ecoregion covers a small portion of the North-West corner of the County with elevations that average around 4,000-5,000 feet. Vegetation in this ecoregion is comprised mainly of Plains Grassland and Great Basin Desert scrub. Temperatures can vary widely in this zone, with comparatively warm summers and cool winters.

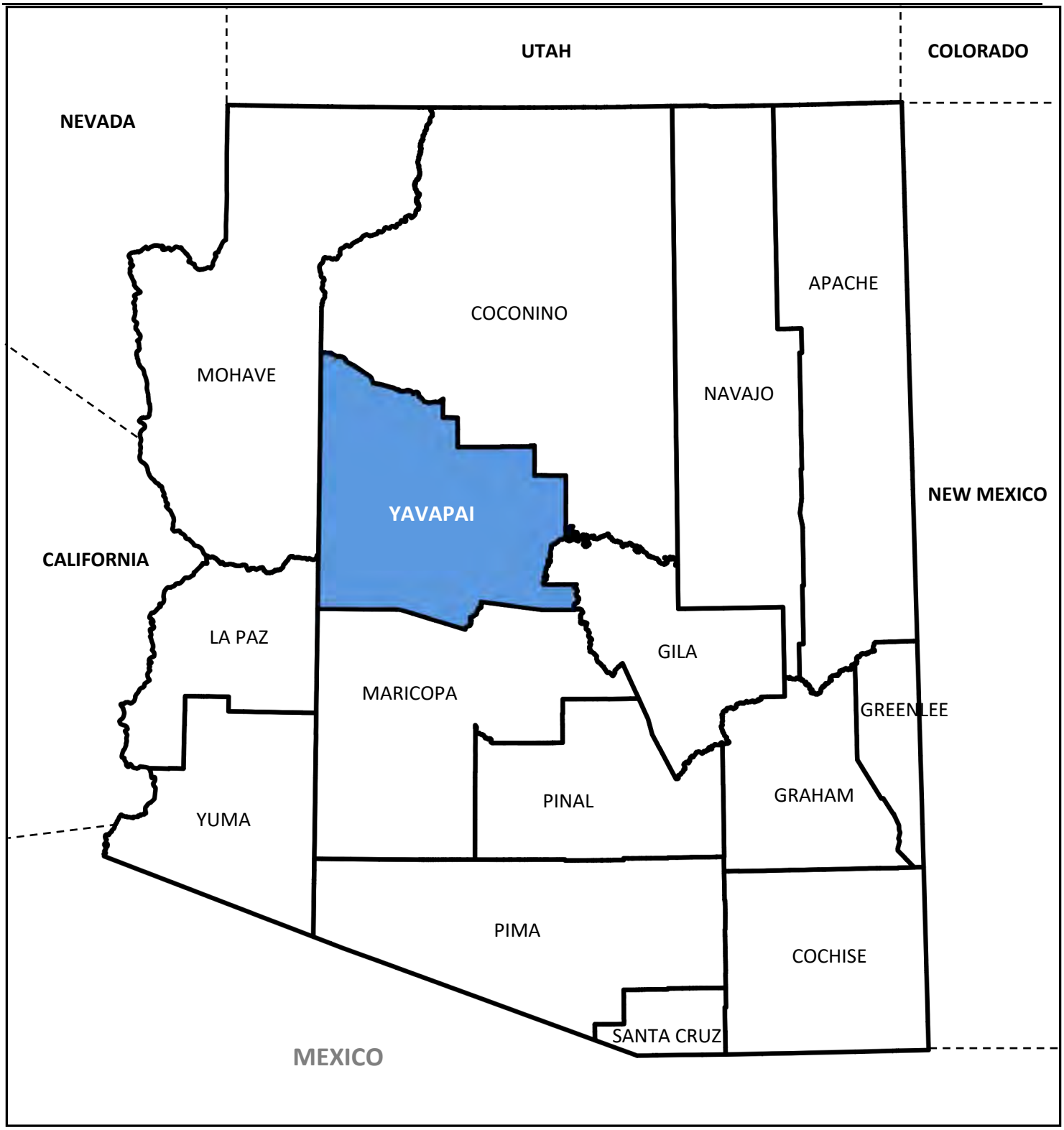

Figure 1 Vicinity Map

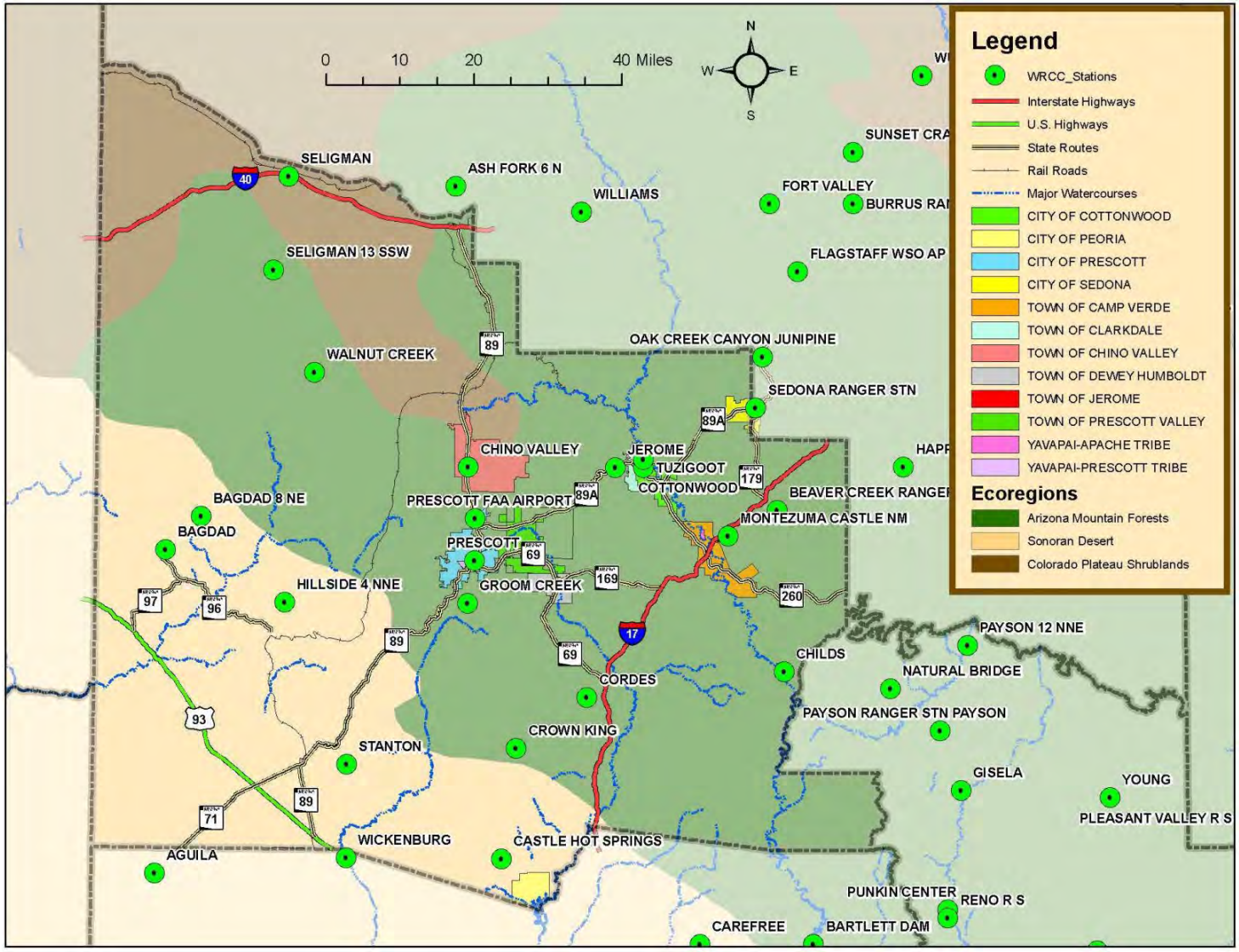

Figure 2 Terrestrial Ecoregions

Climate

The majority of Yavapai County has a climate classification of Sonoran Desert and Arizona Mountain Forest. The elevation range for these two ecoregions in the County is from approximately 2,000-8,000 feet. Such a range in elevation results in differences in climate. The Western Region Climate Center[1] produces climatic statistics for weather stations within the County and span records dating back to the early 1900's.

Average temperatures within Yavapai County range from below freezing during the winter months to over 100°F 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.

Elevation and season of the year, largely, governs the precipitation throughout Yavapai County. From November through March, storm systems from the Pacific Ocean cross the state as broad winter storms producing mild precipitation events and snowstorms at the higher elevations. Summer rainfall begins early in July and usually lasts until mid-September. Moisture-bearing winds move into Arizona at the surface from the southwest (Gulf of California) and aloft from the southeast (Gulf of Mexico). The shift in wind direction, termed the North American Monsoon, produces summer rains in the form of thunderstorms that result largely from excessive heating of the land surface and the subsequent lifting of moisture-laden air, especially along the primary mountain ranges. Thus, the strongest thunderstorms are usually found in the mountainous regions of the central southeastern portions of Arizona. Strong winds, blowing dust, and infrequent hailstorms[2] often accompany these thunderstorms.

PRESCOTT, ARIZONA

Station ids: 026796 (Coop)
USC00026796 (GHCN)
PSTA3 (NWS LI)

Period of Record Monthly Climate Summary

Period of Record: 05/01/1898 to 01/27/2023

Observation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	51.00	54.20	59.60	67.20	75.60	86.20	89.10	86.20	82.00	72.20	61.00	51.80	69.50
Average Min. Temperature (F)	21.50	24.30	28.70	34.50	41.20	49.80	57.90	56.50	49.00	37.50	27.70	22.20	37.40
Average Total Percipitation (in.)	1.73	1.80	1.65	0.09	0.48	0.37	2.97	3.20	1.69	1.05	1.19	1.66	18.24
Average Total SnowFall (in.)	5.70	4.60	4.60	1.20	0.10	0.00	0.00	0.00	0.00	0.20	1.90	4.40	21.90
Average Snow Depth (in.)	0.60	0.50	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.40	0.10

Percent of possible observations for period of record.

Max Temp.: 97.1% Min Temp.: 96.7% Precipitation: 98.1% Snowfall: 97.5% Snow Depth: 94.5%

Check Station Metadata or Metadata Graphics for more detail about data completeness.

Source: https://scacis.rcc-acis.org/ accessed January 27, 2023

[1] Western Regional Climate Center. WRCC. (n.d.). Retrieved February 24, 2023, from https://wrcc.dri.edu/Climate/narrative_az.php.

[2] Ibid.

Population

Yavapai County is home to 236,209 residents, with a large portion of the population living in Prescott and Prescott Valley.

YAVAPAI COUNTY*	Census 2010	2010**	2020	2023***	2025	2035
	211,033	**210,899**	**234,438**	**241,351**	**245,868**	**267,484**
Incorporated Places						
Camp Verde	10,873	10,875	11,224	11,361	11,435	11,971
Chino Valley	10,817	10,825	12,193	12,635	12,893	14,227
Clarkdale	4,097	4,103	4,403	4,495	4,549	4,855
Cottonwood	11,265	11,238	12,292	12,489	12,599	13,302
Dewey - Humboldt	3,894	3,896	4,108	4,173	4,208	4,445
Jerome	444	441	444	438	433	410
Peoria (part)	7	7	0	0	0	0
Prescott	39,843	39,771	42,627	42,286	42,063	42,211
Prescott Valley	38,822	38,839	45,854	46,959	47,715	53,318
Sedona (part)	7,189	7,191	7,434	7,495	7,533	7,924
Wickenburg (part) from MAG	0	0	1,007	2,302	3,655	7,180
Unincorporated Balance of County	83,782	83,714	92,854	96,718	98,785	107,642
Reservations						
Hualapai Indian Reservation and Off-Reservation Trust Land (part)	0	0	0	0	0	0
Yavapai-Apache Nation Reservation	718	718	757	771	778	823
Yavapai-Prescott Reservation	192	192	218	229	235	259
Non-reservation	210,123	209,989	233,463	240,352	244,855	266,402

* Projections for 2019 and beyond refer to July 1 of each year.

** For incorporated places, these are previously published estimates for July 1 of each year; for CDPs and reservations, these are estimates produced in the projection process.

*** Year of plan revision

Figure 3 Sub- County Population Projection Numbers[3]

[3] Arizona Commerce Authority. Population Projections. Retrieved 21 Feb. 2023 from www.azcommerce.com/oeo/population/population-projections/. Accessed. Report from 2019 Published Sub-County Project Numbers.

Economy

As with most of the state and nation, the Yavapai County economy has slowed over the last few years. According to the AZ Department of Commerce, the major industries within the county include retail trade, public and private services, and public administration.[4] Tourism also continues to serve a significant role in the economic health of the county and communities. The civilian workforce is estimated at 105,108 with an unemployment rate of 4.1%.[5]

Development History

The Arizona Territorial Government established Yavapai County in 1864, with the first Territorial Capital established in Prescott. Miners migrated to southern and western parts of Yavapai County with the building of Fort Whipple and Fort Verde. In the 1870s, large deposits of copper were discovered in Jerome spawning smelters in Clarkdale and Cottonwood (formerly Clemenceau). The railroad through northern Arizona was constructed in the 1880s and attracted farmers and ranchers in combination with the vast grasslands of the Verde, Chino, and Peeples Valleys. Mining operations continued well into the 20th century and businesses diversified maintaining growth even after the mines started shutting down in the 1940s and 50s.

In addition to the nine incorporated cities and towns, there are 41 unincorporated communities scattered across the County, with many being comprised of only one structure or a prominent landmark. Within Yavapai County, the US Forest Service, US Bureau of Land Management, and State Land, constitute nearly 75% of land ownership combined. The majority of which is owned by the US Forest Service at 38%. Twenty-five percent is individually or corporately owned and less than a half of a percent belongs to Yavapai-Prescott Indian Community and the Yavapai Apache Nation combined.[6]

[4] Arizona Commerce Authority. (2023, January 1). County profile for Yavapai County. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/15/Yavapai+County/

[5] Ibid.

[6] Ibid.

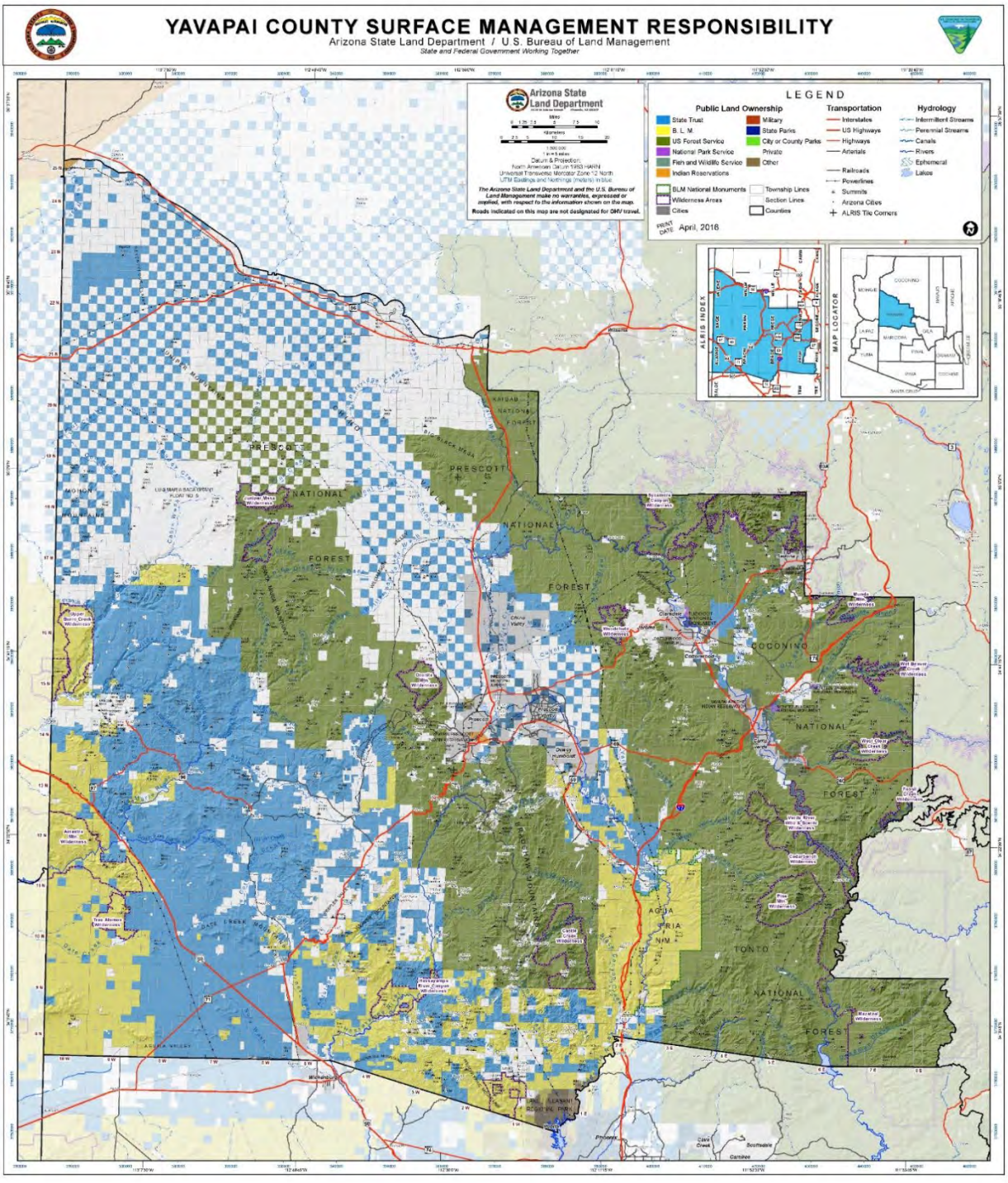

Figure 4 County Land Ownership and Location

2.2 Camp Verde

Historic Fort Verde State Park and Montezuma Castle National Monument provide a historic backdrop for the Verde Valley's oldest community. It was established as a military fort on the banks of the Verde River in 1865, to protect settlers. Founded in 1865 and incorporated in 1986, the Town now covers 46 square miles. The mostly sunny weather and moderate year-round temperatures attract retirees, tourists, and part-time residents.

Located near the geographical center of Arizona, the Town of Camp Verde is located in the eastern portion of Yavapai County and situated at an elevation of 3,160 feet. The State Route 260 and Interstate-17 pass through Camp Verde and serve as the major roadways servicing the community.

A wide variety of services provides employment in Camp Verde. Major public employers include Town of Camp Verde, Camp Verde Unified School District, Yavapai Apache Nation, Yavapai County, and the State of Arizona. Major private employers include Northern Arizona Healthcare and Bashas. The civilian labor force according to the county profile released in 2023 was 4,724 with an unemployment rate of 5.5%.[7]

Camp Verde is the oldest community in the Verde Valley. Anglo Americans settled in the Verde River Valley in the early 1860s and shortly after came into conflict with Tonto-Apache and Yavapai Indians in the area. In 1865, voluntary military units established a tent camp to protect settlers from Indian attacks. The U.S. Army relieved the voluntary military in 1866. Camp Lincoln was established in 1865 one mile north of the current site and re-named Camp Verde in 1868. The Army moved the camp in 1870 to the current location to avoid Malaria that plagued the area. Camp Verde was renamed to Fort Verde in 1879 and was eventually abandoned after the Indian Wars ceased and was eventually sold at a public auction in 1899. The Fort Verde Historic State Park offers remnants of this early history of Camp Verde.

Camp Verde has remained a strong community because of its desirable climate, geographic location, and proximity to tourist attractions including Montezuma Castle National Monument, Tuzigoot National Monument, and the Historic Fort Verde. The citizens and businesses in Camp Verde applied for 433 permits in FY 19-20 and completed the development of 117 residential buildings. Fiscal Year 20-21 saw 735 permits issued and the completion of 67 residential buildings.

[7] Ibid.

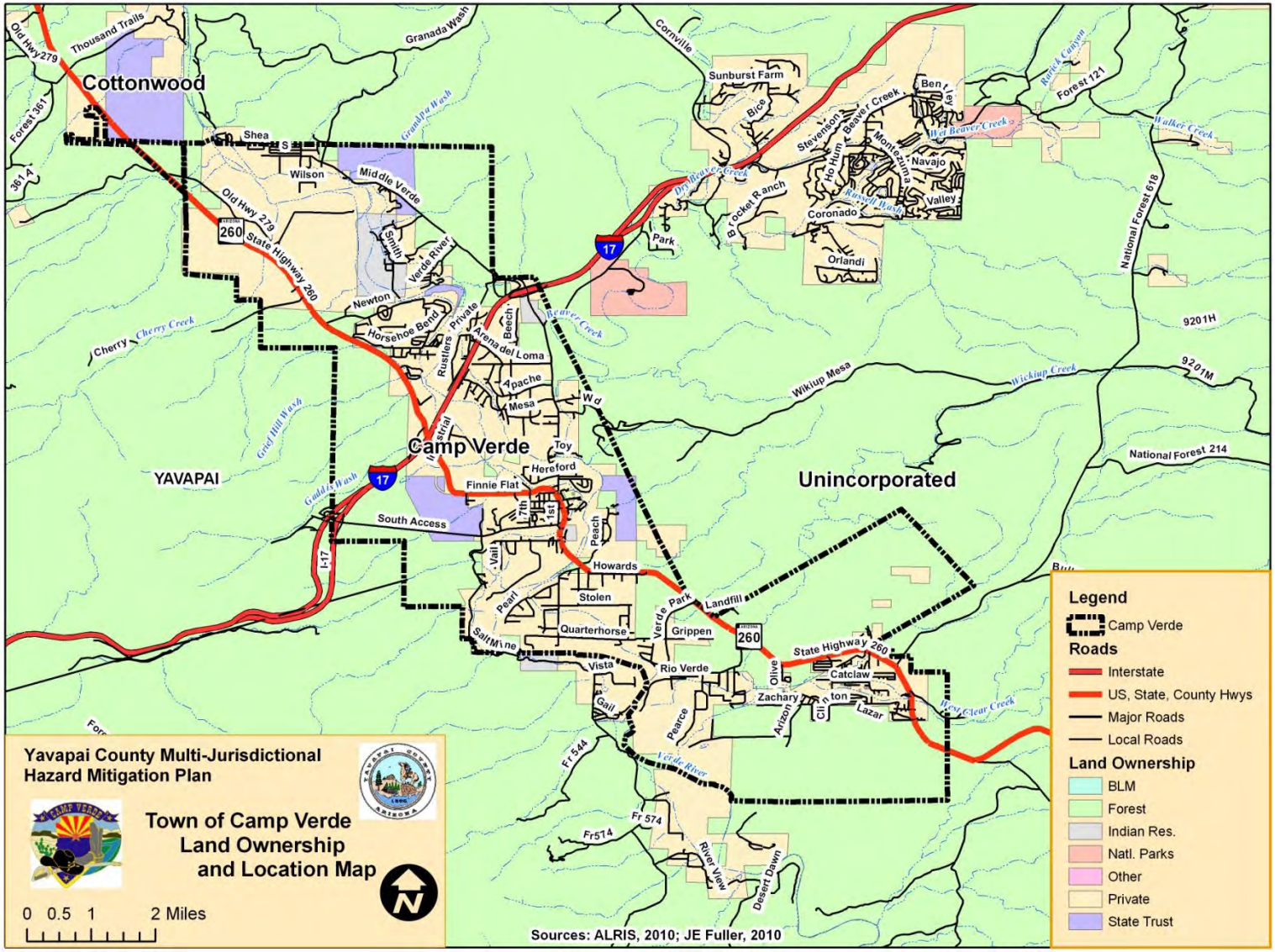

Figure 5 Camp Verde Land Ownership and Location

2.3 Chino Valley

Chino Valley is one of the Tri-Cities including Prescott and Prescott Valley and was the first Territorial Capital in Arizona, originally known as Camp Clark. Chino Valley was founded in 1871 and eventually incorporated in 1970.

Chino Valley is located in central Yavapai County and situated at an elevation of 4,750 feet. The Town is 115 miles northwest of Phoenix, 228 miles northwest of Tucson, and State Route 89 passes through Chino Valley and serves as the only major roadway servicing the community.

Chino Valley has some retail, commercial, and government employment. Major public employers include Chino Valley Unified School District #5, The Town of Chino Valley and the U.S. Post Office. The civilian labor force in 2021 was 5,516 with an unemployment rate of 3.1%. [8]

U.S. Army Cavalry Lt. Amiel W. Whipple temporarily set up a Territorial Capital at Chino Valley and named the community after the Spanish name for the grasses in the area. Soon the capital was moved to Prescott, located 15 miles south of Chino Valley. In 1895, a railway was completed to Jerome, and from 1900 to 1925, Chino Valley thrived from the activity that resulted from the railway.

New residential building permits from 2011 to 2022 have risen from 165 to 542 respectively. New commercial permits have also followed this trend with 19 being issued in 2011 and 69 in 2022.

[8] Ibid.

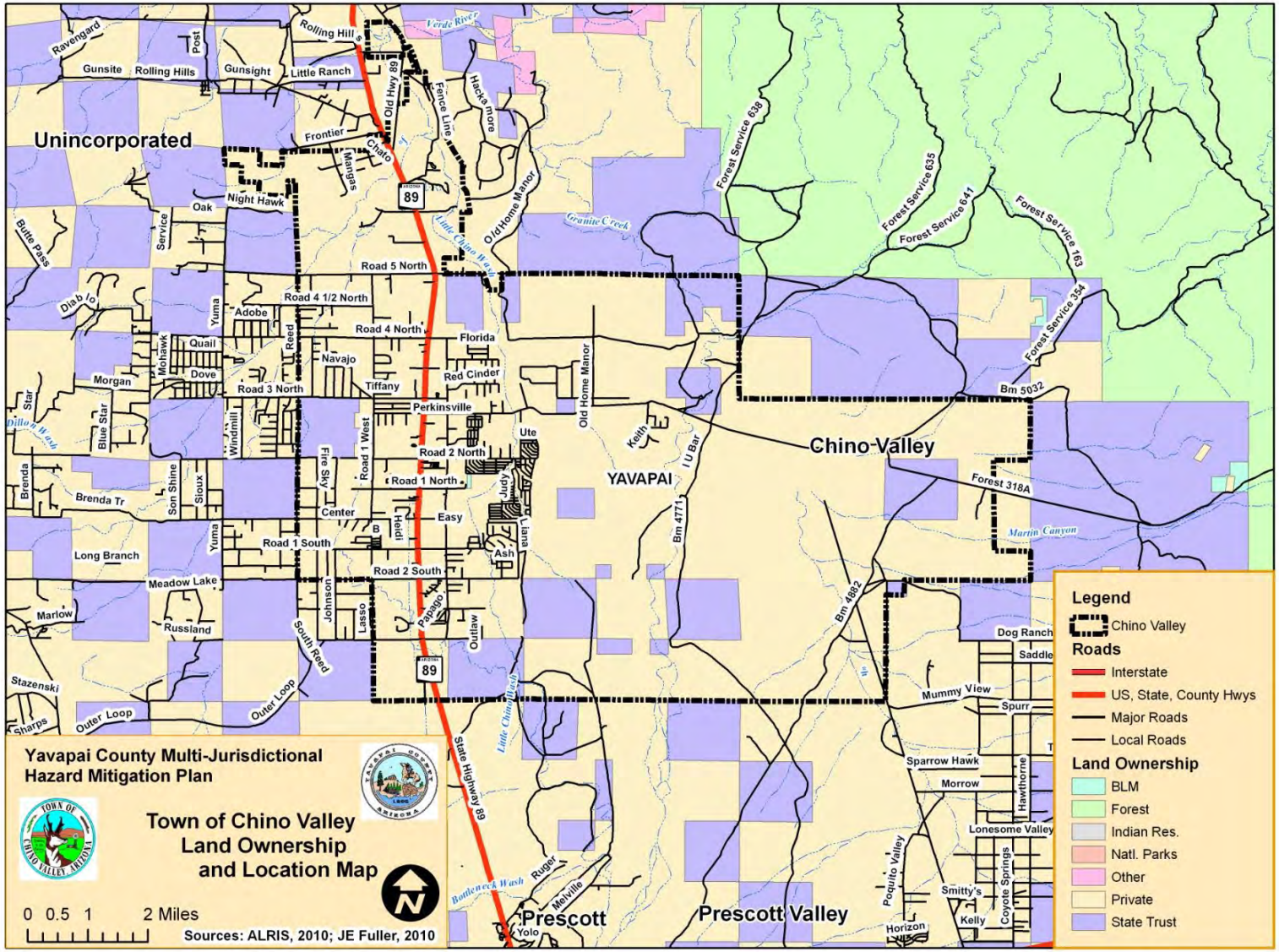

Figure 6 Chino Valley Land Ownership and Location

2.4 Clarkdale

The Town of Clarkdale was founded in 1912 and was originally owned by the United Verde Copper Company whose residents worked in the nearby smelter.[9] Clarkdale was built from a unified master plan intended to include all typical parts of a comprehensive planned small town. Because of the Clarkdale Smelter, Clarkdale was ahead of other western towns with modern amenities. Mining operations shut down in 1953 however; today many of the old mining and smelter facilities still stand. Clarkdale was incorporated in 1957.

The Town of Clarkdale, situated at an elevation of 3,550 feet, occupies approximately 10.1 square miles in the Verde Valley of North Central Arizona in Yavapai County. The Verde River bisects the north portion of the town at a low elevation of around 3,300 feet. The west side of the town boundary is located along the foothills of Mingus Mountain in the Black Hills Range at a high elevation of approximately 4,600 feet above sea level. The Town is 110 miles north of Phoenix, 50 miles southwest of Flagstaff, and 42 miles northeast of Prescott. Lands of the Prescott National Forest to the west, lands of the Coconino National Forest to the east, portions of the City of Cottonwood to the south, and various unincorporated private lands in Yavapai County surround the Town. In addition, trust lands of the Yavapai Apache Nation are located within the Town boundary. State Route 89A passes through Clarkdale and serves as the major roadway servicing the community. The figure below shows the land ownership and major transportation routes around Clarkdale.

The Town of Clarkdale is located in the Arizona Mountain Forest terrestrial eco-region as described in Section 4.2. The description of climate and elevation ranges may not be appropriate descriptors for Clarkdale.

Clarkdale's economy developed as a service center for the mining industry. Today, major public employers include Clarkdale-Jerome School District, Yavapai College, the US Post Office, Verde Valley Fire District, and the Town of Clarkdale. Major private employers include Bent River Machine, Salt River Maricopa Group (Phoenix Cement), Wolf Insulation, Mold in Graphic Systems, Olsen's Grain, and Verde Canyon Railroad. The civilian labor force in 2021 was 2,055 with an unemployment rate of 0.5%.[10]

Clarkdale has averaged 61 permits for new home construction since 2017. Clarkdale seeks to maintain and enhance the livability, health, and vitality of the Verde Valley and the natural systems to which it is a part, preserving choices for future generations, and anticipating and adapting changing community needs and external influences.

[9] Clarkdale's 2021 General Plan, April 2021

[10] Arizona Commerce Authority. (2023, January 1). County profile for Yavapai County. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/15/Yavapai+County/.

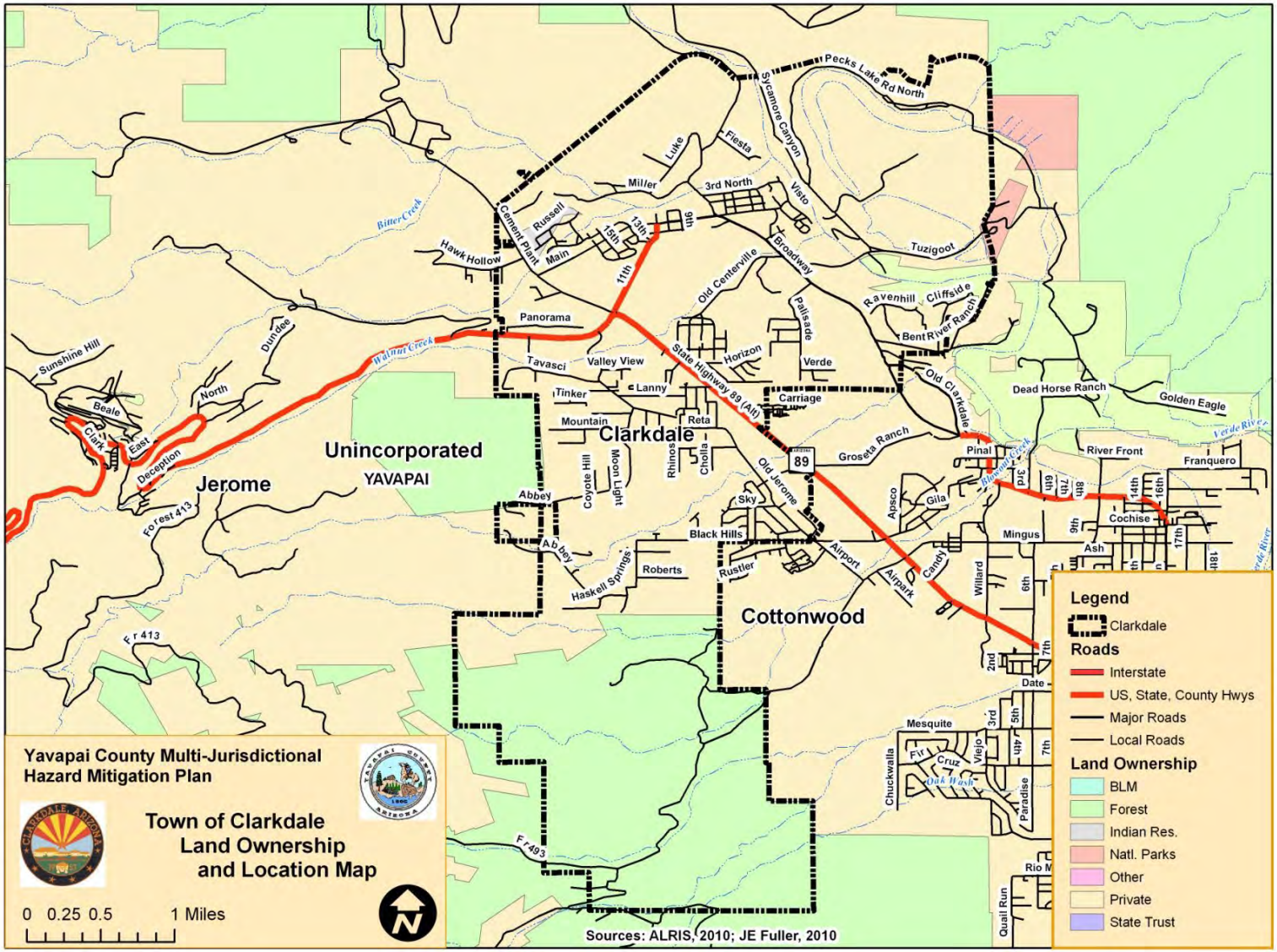

Figure 7 Clarkdale Land Ownership and Location

2.5 Cottonwood

Cottonwood is in the upper watershed of the Verde River located adjacent to and east of the Town of Clarkdale. Terrain in the Cottonwood area is generally level or of a shallow slope, although steep terrain exists close to the existing City limits. The Verde River, one of Arizona's most important perennial water bodies, traverses north to south along the East side of the city. Several intermittent streams drain through the city into the Verde River and include Del Monte wash, Railroad Wash, Silver Springs Wash, and Oak Wash. According to the Arizona Department of Commerce[11], Cottonwood was founded in 1879 and later incorporated in 1960.

Cottonwood, situated at an elevation of 3,320 feet, s located in the Northeastern portion of Yavapai County. The city is 106 miles north of Phoenix, 217 miles northwest of Tucson, and State Routes 89A and 260 pass through Cottonwood and serve as the major roadways servicing the community.

Cottonwood's economy is a trading center of the Verde Valley, providing retail, professional services, and manufacturing. Major public employers include Arizona Public Service, Cottonwood/Oak Creek School District, City of Cottonwood, and Mingus Union High School. Major private employers include Verde Valley Medical Center, Phelps & Sons, Inc., Home Depot, and Wal-Mart. The civilian labor force in 2021 was 6,065 with an unemployment rate of 2.5%.[12]

Settlers in the Cottonwood area began farming in the area and providing goods to the army in Camp Verde and miners in Jerome. More settlers began moving in and named the development after a ring of 16 cottonwood trees growing along the Verde River. Cottonwood attracted residents trying to escape prejudice and regulations from nearby company towns including Clarkdale and Clemenceau.[13] Cottonwood was a booming small town with a high density of merchants and tradesmen.

The city serves as the business and retail center of the Verde Valley as well as the educational and medical hub for the valley. New building permits are trending upwards with 184 permits issued in 2018 compared to 308 permits issued in 2022.

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[11] Arizona Commerce Authority. (2023, January 1). Community profile for Cottonwood. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/49/Cottonwood/.

[12] Ibid.

[13] City of Cottonwood. *Cottonwood General Plan 2025* Retrieved March 10, 2023, from *http://www.cottonwoodaz.gov/376/General-Plan-2025.*

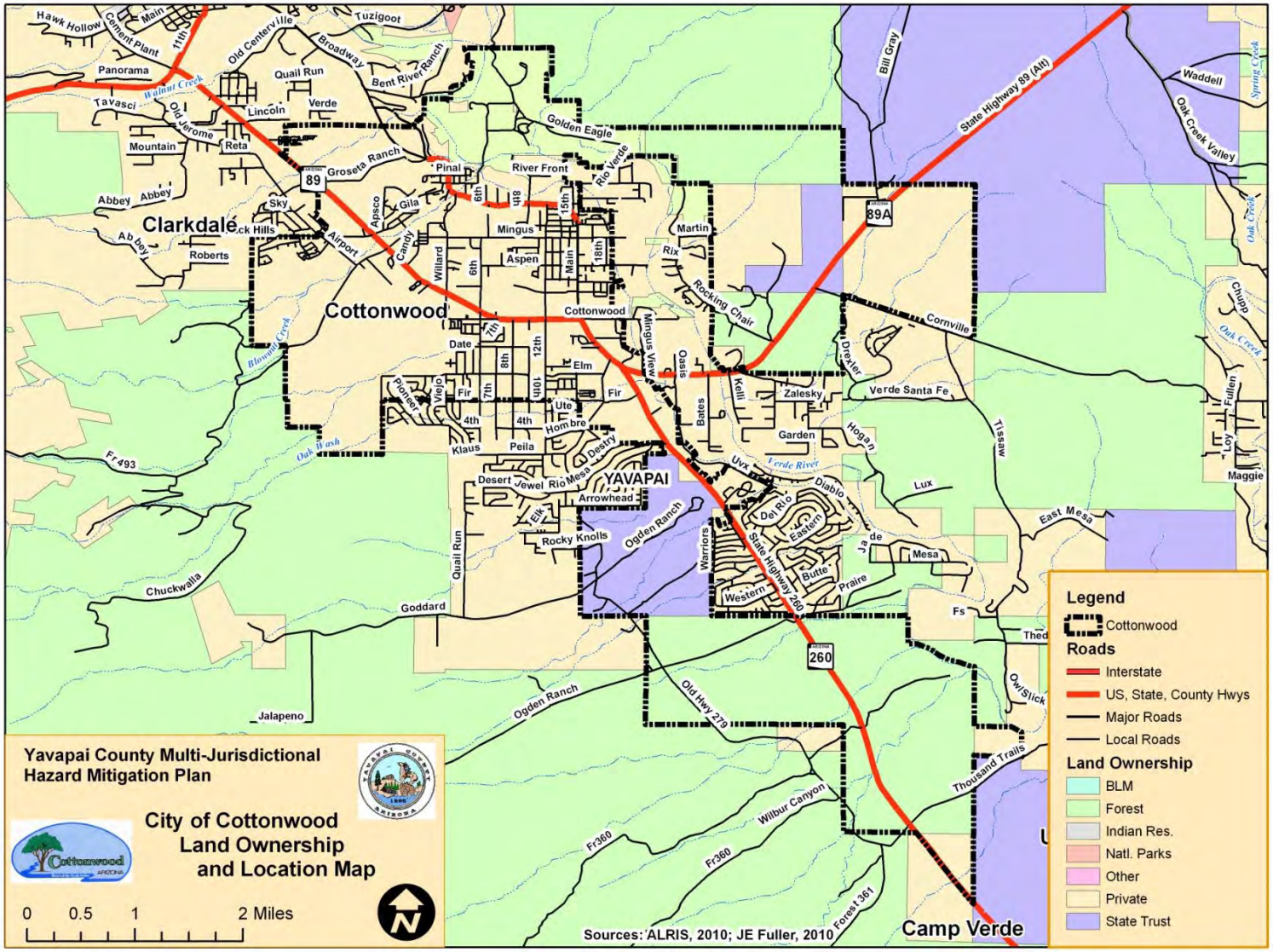


Figure 8 Cottonwood Land Ownership and Location

2.6 Dewey-Humboldt

Dewey-Humboldt is adjacent to and south of the Town of Prescott Valley, located in central Yavapai County, and at an elevation of 4,556 feet. The Town is 85 miles north of Phoenix and 199 miles North of Tucson. Dewey-Humboldt is part of the "Quad-Cities" that includes Dewey-Humboldt, Prescott, Chino Valley, and Prescott Valley. On December 20, 2004, the Town of Dewey-Humboldt was incorporated with a population estimate of 4,005.[14] State Routes 69 and 169 pass through Dewey-Humboldt and are the main roadways servicing the community.

Dewey-Humboldt's economic base is small and dependent on a regional economic base. Construction related fields provide the largest proportion of employment for residents of the Town. One of the Town's largest employers is the Humboldt Unified School District. Residents of Dewey-Humboldt cherish the very low density, rural lifestyle within the Town, one of the main drivers of incorporation in 2004.

The Dewey-Humboldt Community has a long history. Dewey-Humboldt began as two separate towns in the late 1800s. One of the towns, later named Humboldt, was established to support mining activity in the area. The first smelter, the Agua Fria Smelter (Bashford Mill), was built in 1876 in Humboldt. The other town, later named Dewey, was established for agriculture and ranching. The area was originally known as Agua Fria with the first post office named the Agua Fria Post Office that was eventually discontinued in 1895. The post office was re-established in 1898 as the Dewey Post Office.

The mining operation in Humboldt suffered closures common to other communities in the State with a short closure in 1907 and again in 1930, at which point the population in Humboldt declined to 300. The nearby Iron King Mine re-opened in 1934 and did not close again until 1968. Presently, the Humboldt Smelter site and the Iron King Mine site are classified as Environmental Protection Agency's Superfund sites. The community diligently works on the clean-up process.

[14] Arizona Commerce Authority. (2023, January 1). Community profile for Dewey-Humboldt. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/50/Dewey-Humboldt/.

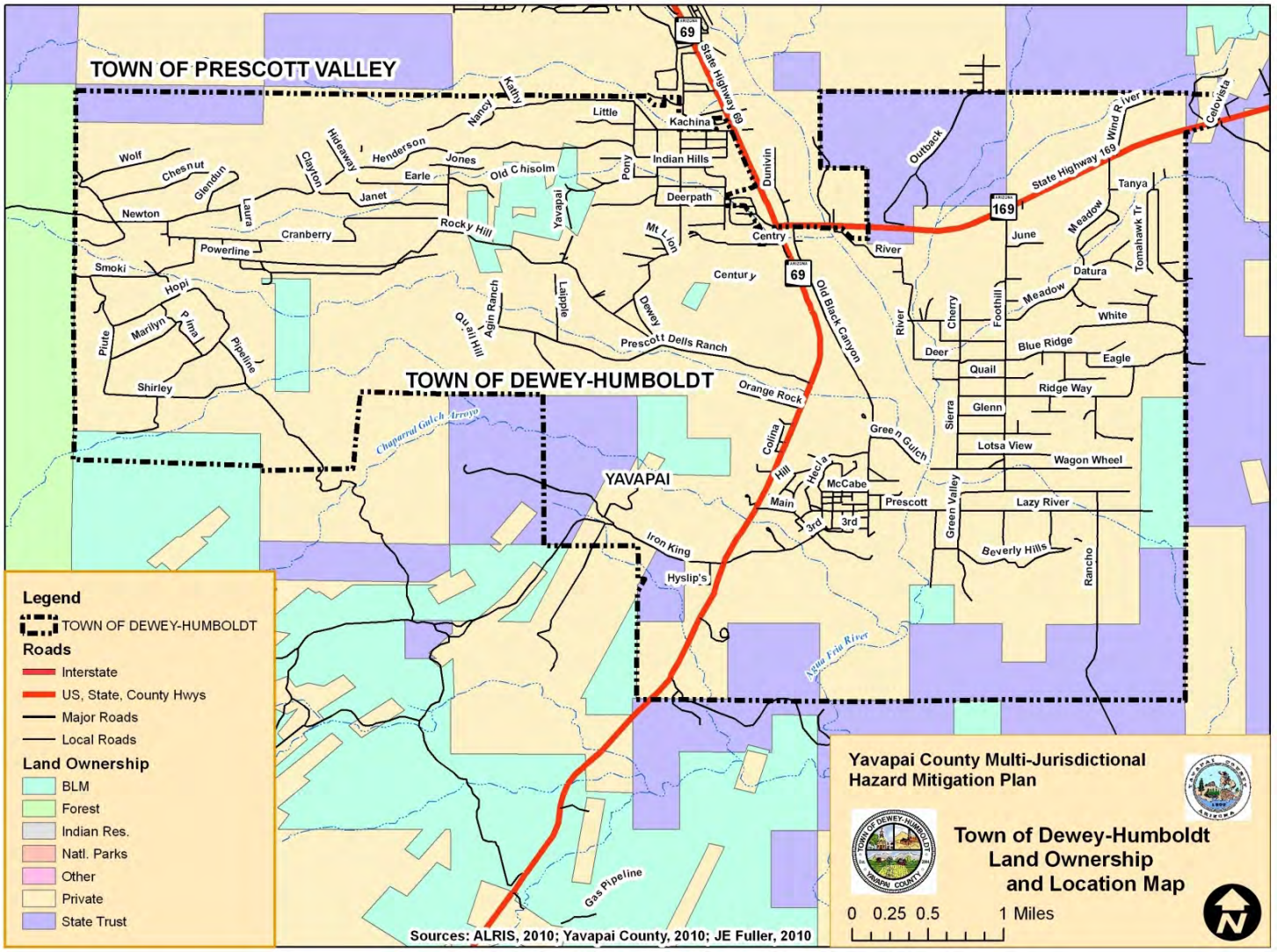


Figure 9 Map 2 - 8: Dewey-Humboldt Land Ownership and Location

2.7 Jerome

Located in the mid-northeastern portion of Yavapai County and situated on Cleopatra Hill at an elevation of 5,435 feet sites Jerome. The Town is 110 miles north of Phoenix and 224 miles northwest of Tucson and State Route 89A passes through Jerome and serves as the major roadway servicing the community.

Founded in 1876, Jerome started as a mining town and became Arizona's largest copper mine. According to the Arizona Department of Commerce[15], Jerome incorporated in 1899. Building collapse and landslides were common. During the 1930s, dynamite blasts provided the catalyst for a landslide causing the Town jail to slide a whole block from its original location. During the great depression of the 1930s, production of the Jerome mines decreased and by 1953, all production stopped. As a result, Jerome became the world's largest ghost town. The remaining residents promoted the Town as a ghost town tourist attraction, making it well known for today.

Jerome's economy is dependent upon tourism and recreation. Major public employers include Jerome Post Office, Town of Jerome, and Jerome Public Library. Major private employers include Grand Hotel, Grapes, Spirit Room, Conner Hotel, Paul & Jerry's, The English Kitchen, Western Heritage Furniture, Mile High Grill & Inn, and the Jerome Palace. The civilian labor force in 2022 was 277 with an unemployment rate of 5.8%.[16]

The Town of Jerome once had a population of 15,000. However, the drop of copper prices caused the Phelps Dodge Mine to close in 1953. Since then, Jerome has become a well-known stop for tourists and has attracted an artistic community including craft people, writers, musicians, bed and breakfast owners, museum caretakers, and gift shop proprietors[17].

[15] Arizona Commerce Authority. (2023, January 1). Community profile for Jerome. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/74/Jerome/.

[16] Ibid.

[17] Jerome, Arizona (2023, January 1). Wickedest Town in the West. Retrieved February 24, 2023, from http://www.azjerome.com/.

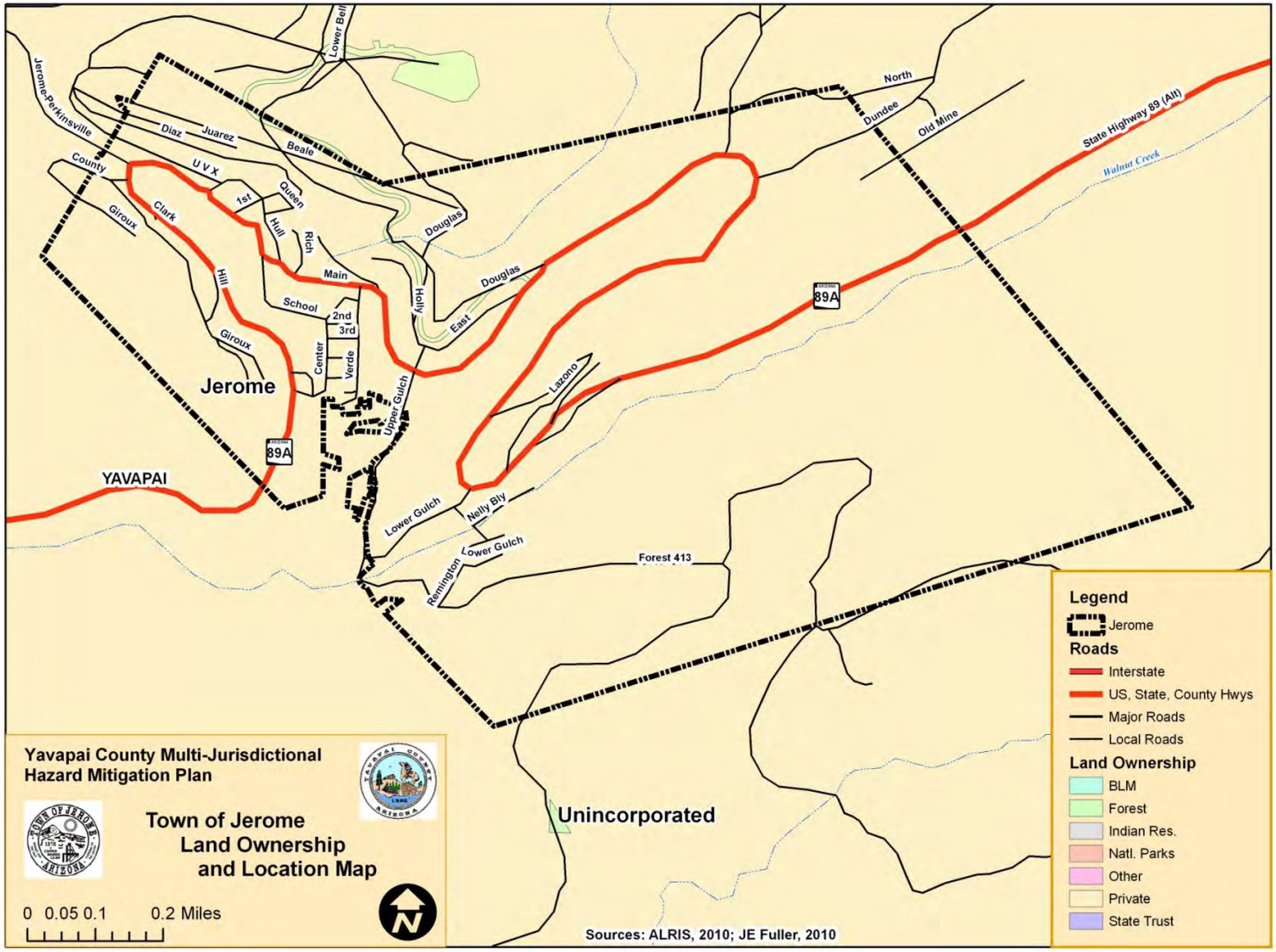


Figure 10 Map 2 - 9: Jerome Land Ownership and Location

2.8 Prescott

Founded in 1864, Prescott became the first Territorial Capital of Arizona[1]. The community was named for William Hickling Prescott, a historian and now known as one of the Quad-Cities including Prescott Valley, Chino Valley, and Dewey-Humboldt. Prescott incorporated as a town in 1883.

Located in central Yavapai County and situated at an elevation of 5,400 feet sits Prescott. The city is approximately 100 miles north-northwest of Phoenix and State Routes 69 and 89 pass through Prescott and serve as two major roadways servicing the community.

There are many outdoor activities and a rich history available in the Prescott area. As a result, tourism, culture, and governmental agencies are important to Prescott's economy. Prescott is also central to trade in the region. Major public employers include the City of Prescott, State of Arizona, Yavapai County, Prescott Unified School District, and Veterans Administration Medical Center. Major private employers include Embry-Riddle University, Sturm Ruger & Company, Yavapai Regional Medical Center, Phelp-Dodge Bagdad Copper, and Wal-Mart. The civilian labor force in 2022 was 18,234 with an unemployment rate of 4.5%.[18]

The City of Prescott has a long history as an incorporated City, dating as far back as 1883 and government has been dominant in Prescott's history and development since that time. The early economic makeup consisted of cattle ranching, mining, and government functions. Much of downtown Prescott has been designated as historic preservation districts. A fire destroyed many commercial buildings in July of 1900. When the buildings were rebuilt, they were reconstructed of brick and masonry, many of which are still standing today.

During the 20th Century, Prescott developed health care facilities, which service all of Yavapai County. Arts, cultural, and educational facilities have also been established, adding to the City's economic growth.

Prescott is a growing community with 193 building permits issued in 2022.[19]

[18] Arizona Commerce Authority. (2023, January 1). Community profile for Prescott. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/100/Prescott/.

[19] City of Prescott. Community Development Permitting Data. Retrieved 23 March 2023 from https://www.prescott-az.gov/business-development/building-permits/community-development-permitting-data/.

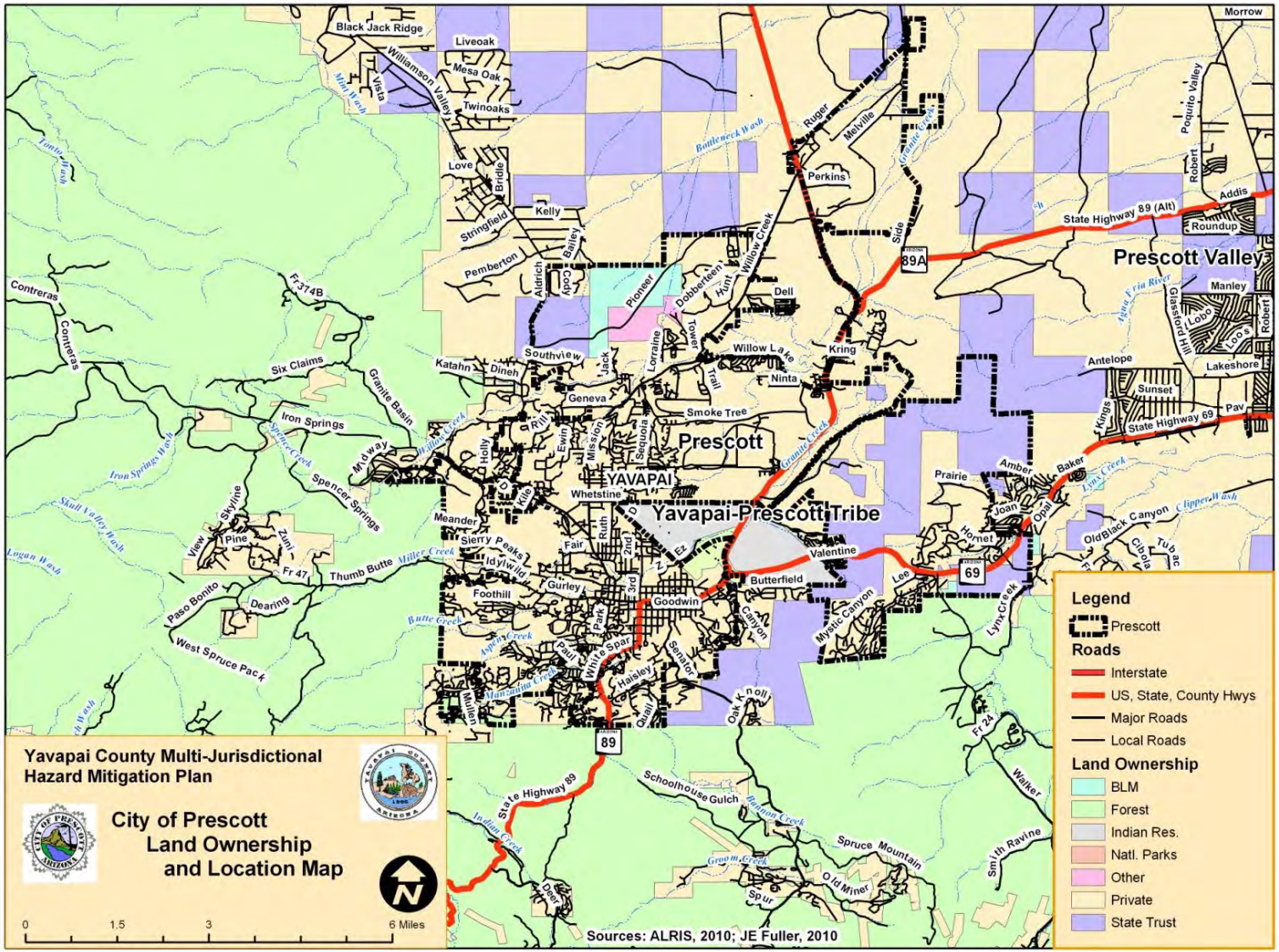


Figure 11 Map 2 - 10: Prescott Land Ownership and Location

2.9 Prescott Valley

Prescott Valley, known for its beautiful rolling hills and lush grasslands, is one of the Tri-Cities including Prescott and Chino Valley. Prescott Valley was founded in 1966 on the outskirts of the City of Prescott. Prescott Valley incorporated in 1978.

Prescott Valley is located in the central part of Yavapai County and is situated at an elevation of 5,100 feet. The Town is 87 miles north-northwest of Phoenix, 186 miles northwest of Tucson, and State Routes 69 and 89A pass through Prescott Valley and serve as two major roadways servicing the community.

The Town of Prescott Valley is located within the Arizona Mountain Forest terrestrial eco-region. However, the Colorado Plateau Shrublands describes a much better representation of Prescott Valley with its grasslands.

Growth defines Prescott Valley's economy. Its industry, manufacturing, retail, and services businesses are all growing. Major public employers include the AZ Department of Transportation, Town of Prescott Valley, and Humboldt School District. Major private employers include AAE, Arizona Public Service, Prescott Newspapers, Ace retail Support Center, and BetterBilt-Division MI Home Products. The civilian labor force in 2022 was 22,581 with an unemployment rate of 3.9%. [20]

Prescott Valley was formerly known as Lonesome Valley, when cattlemen arrived in the 1860s attracted by lush grass and water. Tom Sanders and Dan Fain were the heads of two pioneering families who established ranching in the area. [21] The Town of Prescott Valley was founded when a Phoenix based real-estate company bought a large piece of land from the Fain family. The company sold home lots in the mid-1960s to people from Arizona and extending out to the Midwest marketing the mild weather and beautiful scenery.

The Town of Prescott Valley only incorporated in 1978 but it has become one of Arizona's fastest growing communities. The population of Prescott Valley has more than quadrupled over the last 30 years growing from a population of 8,904 in 1990 to 47,988 in 2021. [22]

New building permit numbers remains steady with an estimated 558 for 2022. Taxable sales for fiscal year 2021/ 2022 are estimated at $1.26 billion.

[20] Arizona Commerce Authority. (2023, January 1). Community profile for Prescott Valley. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/101/Prescott+Valley/.

[21] Town of Prescott Valley General Plan 2020 Final, Adopted January 17, 2002

[22] Arizona Commerce Authority. (2023, January 1). Community profile for Prescott Valley. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/101/Prescott+Valley/.

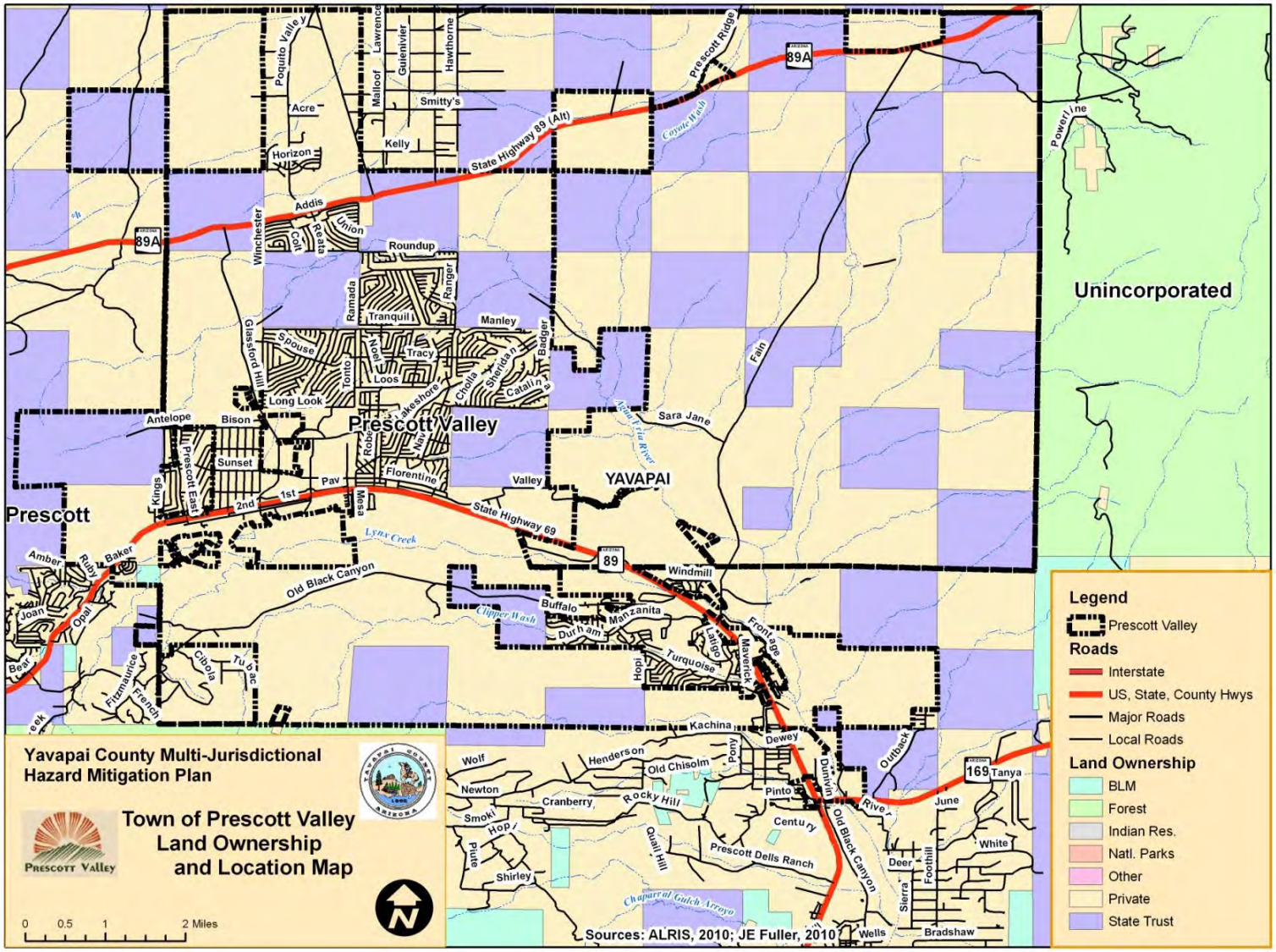


Figure 12 Map 2 - 11: Prescott Valley Land Ownership and Location

2.10 Sedona

Sedona is located at the base of the red sandstone cliffs with numerous red buttes and monoliths around the city. The beautiful Oak Creek Canyon that runs southwest bisects the city. Sedona was founded in 1902 and later incorporated in 1988.

Sedona's location is in the northeastern portion of Yavapai County and is situated at an elevation of 4,500 feet. The city is 119 miles north of Phoenix, 230 miles northwest of Tucson, and State Routes 89A and 179 pass through Sedona and serve as the major roadways servicing the community.

Sedona's economy is centered on tourism. Major public employers include the City of Sedona, Sedona-Oak Creek School District, Yavapai College (Sedona campus), and the Sedona Fire District. Major private employers include Hyatt Resort, Radisson Resort, Best Western, L 'Auberge de Sedona Resort, Los Abrigados Resort and Spa, Marriott Courtyard, Basha's' Grocery Store, Safeway Grocery Store, and Whole Foods Store. According to the U.S. Department of Labor, Bureau of Labor Statistics, the City of Sedona had a labor force of 5,173 and an unemployment rate of 4.1% in 2022.[23]

The City of Sedona is named after an early settler by the name of Sedona Schnebly. Sedona was first settled in 1876 with agricultural development and became known for the abundant apple orchards. Famous artists including Max Ernst moved to Sedona starting in 1950, establishing a thriving artist community. Sedona has evolved into a large attraction, drawing tourists to the beautiful red rock formations, the unique small-town atmosphere, recreation, resorts, and the arts centers. The numbers of tourists that visit Sedona are second only to the Grand Canyon in the State of Arizona.

New building permits remain steady with approximately 63 permits issued per year since 2018.[24]

[23] Arizona Commerce Authority. (2023, January 1). Community profile for Sedona. Retrieved February 24, 2023, from https://www.azcommerce.com/a/profiles/ViewProfile/110/Sedona/.

[24] City of Sedona. Archived building permit info. Retrieved on March22, 2023 from https://www.sedonaaz.gov/your-government/departments/community-development/permits/archived-building-permit-info.

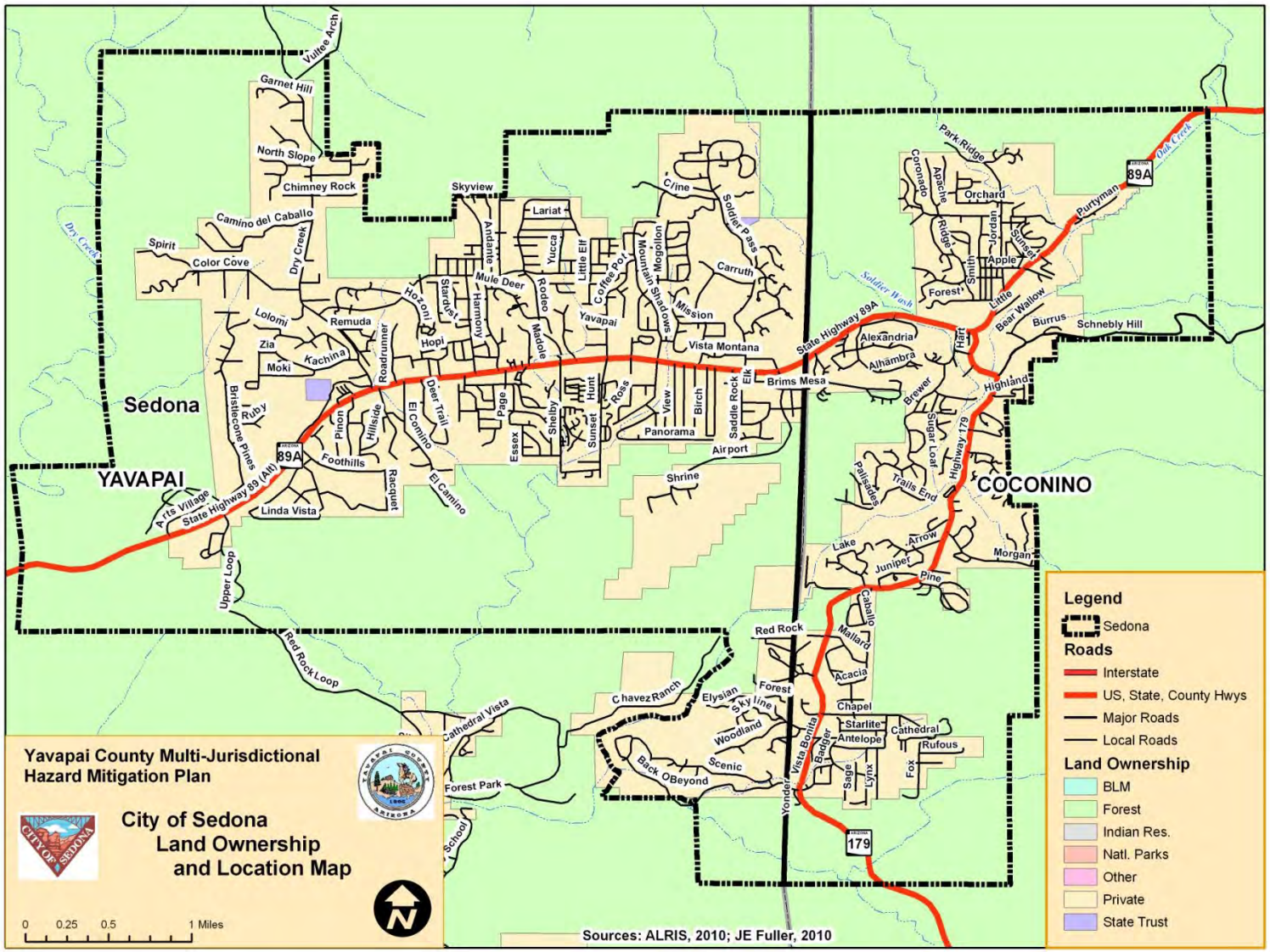


Figure 13 Map 2 - 12: Sedona Land Ownership and Location

2.11 Yavapai-Prescott Indian Tribe

The Yavapai-Prescott Indian Tribe is a federally recognized Tribe that is organized and established as a sovereign nation pursuant to the provisions of the Indian Reorganization Act of June 18, 1934. The Tribe adheres to its Tribal constitution and sovereign government status.

The Yavapai-Prescott Indian Tribe land is held in trust by the federal government through the Secretary of the Interior and, therefore, requires compliance with federal laws as it pertains to the environment and community land within the reservation boundaries. According to the Yavapai-Prescott Indian Tribe Land Use Master Plan[25], the reservation was officially established on 75 acres that were transferred from the Old Fort Whipple Military Reserve to the Interior Department on June 7, 1935. This land transfer created the only reservation just for Yavapai Indians. When the Reservation was established, the government also issued two cows to each family as a potential source of income. Over time, as the cattle herd grew, the government finally agreed to increase the Reservation by an additional 1,320 acres from the Old Fort Whipple Military Reserve. These acres were officially included as part of the Reservation on May 18, 1956.

The Yavapai-Prescott Community Association adopted its Articles of Association in 1962 and thereby established a legal community and the current day government structure. The Tribe governs itself through a five-member elected Board of Directors. The officers of the Tribal Board of Directors consist of a President, Vice-President, and Secretary/Treasurer. The Tribal government administers programs in housing, community development, health, social services, history/culture, and education.

The Yavapai-Prescott Indian Reservation (Reservation) is in central Arizona. The Reservation boundaries are within the central portion of Yavapai County and situated north of and adjacent to the City of Prescott. The Reservation contains 1,395 trust acres and approximately 29 acres of permanent easement. Elevations vary from a low of approximately 5,210 feet above sea level where Granite Creek exits the Reservation to a high of 5,900 feet at the Reservation boundary near the summit of Badger Mountain.

Terrestrial characteristics of the Reservation include terrain that varies from the nearly flat floodplain along Granite Creek to mountainous, forested land at the southeast end of the Reservation. Most of the Reservation is composed of hilly terrain that is a part of the watershed of Granite Creek, an ephemeral stream bisecting the Reservation from the southwest to the northeast. The vegetation on the Reservation ranges from open grassland to wooded mountains. Some of the wildlife that exists in the area includes coyote, brush mouse, roadrunner, pronghorn, Red-tailed hawk, Gambel's quail, common raven, rock squirrel, and mule deer.

The history of the Yavapai Tribe has its origins in the prehistory of the North American southwest. For thousands of years, the Yavapai lived within a territory encompassing over nine million acres known now as central and western Arizona. Although there were three divisions of Yavapai, they considered themselves one people who spoke the same language and shared common beliefs and customs. Except for minor skirmishes with neighboring tribes, the Yavapai lived in peace.

Prior to the 1860s, it is estimated that the Yavapai homelands supported several thousand members of the Tribe. Relatively untouched by non-Indian visitors, rapid changes to their lifestyle began to occur as settlers and miners invaded their homelands as early as the 1840s. At first, the Yavapai sought to live alongside the newcomers in peace. The Anglos, however, mistakenly identified them as Apache and attacked Yavapai at every opportunity. By the mid-1860's, the Yavapai could no longer move about freely in search of game and shelter and began to fight back in a desperate attempt to hold their land and its resources.

During the 1870's, several attempts to relocate the Yavapai onto the Reservations failed primarily due to inadequate food and supplies. Yavapai were first driven to the Rio Verde Reservation. In 1875, they were force marched to the San Carlos Apache Indian Reservation on what became known as the Trail of Tears. This difficult 180-mile journey

[25] Yavapai-Prescott Indian Tribe, 1999, *Land Use Master Plan.*

resulted in the deaths of more than 115 Yavapai men, women, and children. At the San Carlos Apache Indian Reservation, scarce supplies of food and water, illness, and disease further reduced the Yavapai population.

By the early 1900s, eight families from the San Carlos returned to the Prescott area and joined a few Yavapai that managed to escape during the earlier relocations. Some Yavapai moved to reservations at Middle Verde and Fort McDowell, while some remained at San Carlos. Historians estimate that by this time the entire Yavapai Tribe had been reduced to fewer than 600 Indians whose numbers and lifestyles were unalterably changed.

In 1935, an Act of Congress established the Yavapai-Prescott Indian Reservation on 75 acres of land transferred from the Old Fort Whipple Military Reserve. In 1956, the U.S. government added 1,320 acres, also from the Military Reserve to the Reservation.

During the last 20 years, the Tribe has successfully implemented strategies for economic development on the Reservation. The benefits of this development include the creation of a wealth of jobs, not only for Tribal members, but also for the surrounding labor force available from Prescott, Prescott Valley, and surrounding communities.

Table 2-2: On-Reservation Development & Business Ventures	
Business Venture	**Number of Employees**
Frontier Village (44 Tenants)	820
Sundog Business Park (14 Tenants)	56
Prescott Resort	130
Tribal Gaming Agency (includes Bucky's & Yavapai Casinos)	275
Government Operations	
Tribal Government (includes Tribal Administration & Regulatory)	305
TOTAL	**1,586**
Note: Figures from Yavapai-Prescott Indian Tribe as of February 2023.	

Figure 14 Table 2-2: On-Reservation Development & Business Ventures

The Yavapai-Prescott Indian Tribe Land Use Master Plan will guide future development of Reservation lands. The Master Plan identifies and maps provisions for potential future development of residential, commercial, and light industrial land uses. There are also areas that have been specifically identified as Resort Hotel, Cultural/Museum, Open Space, Riparian, and Mountain Reserves.

The residential area in the northwest portion of the Reservation is planned to meet the housing needs of the Tribal membership. This land use category is comprised of approximately 168 acres that encompass the existing housing area. In 1999, the Tribe began working with the Bureau of Indian Affairs and Indian Health Service to evaluate development alternatives to expand the existing residential infrastructure to accommodate approximately 25 new homes.

Other areas planned for future development include commercial opportunities along State Route 69 and the extreme northwest corner of the Reservation, and light industrial areas east of State Route 89 along the northern reservation boundary.

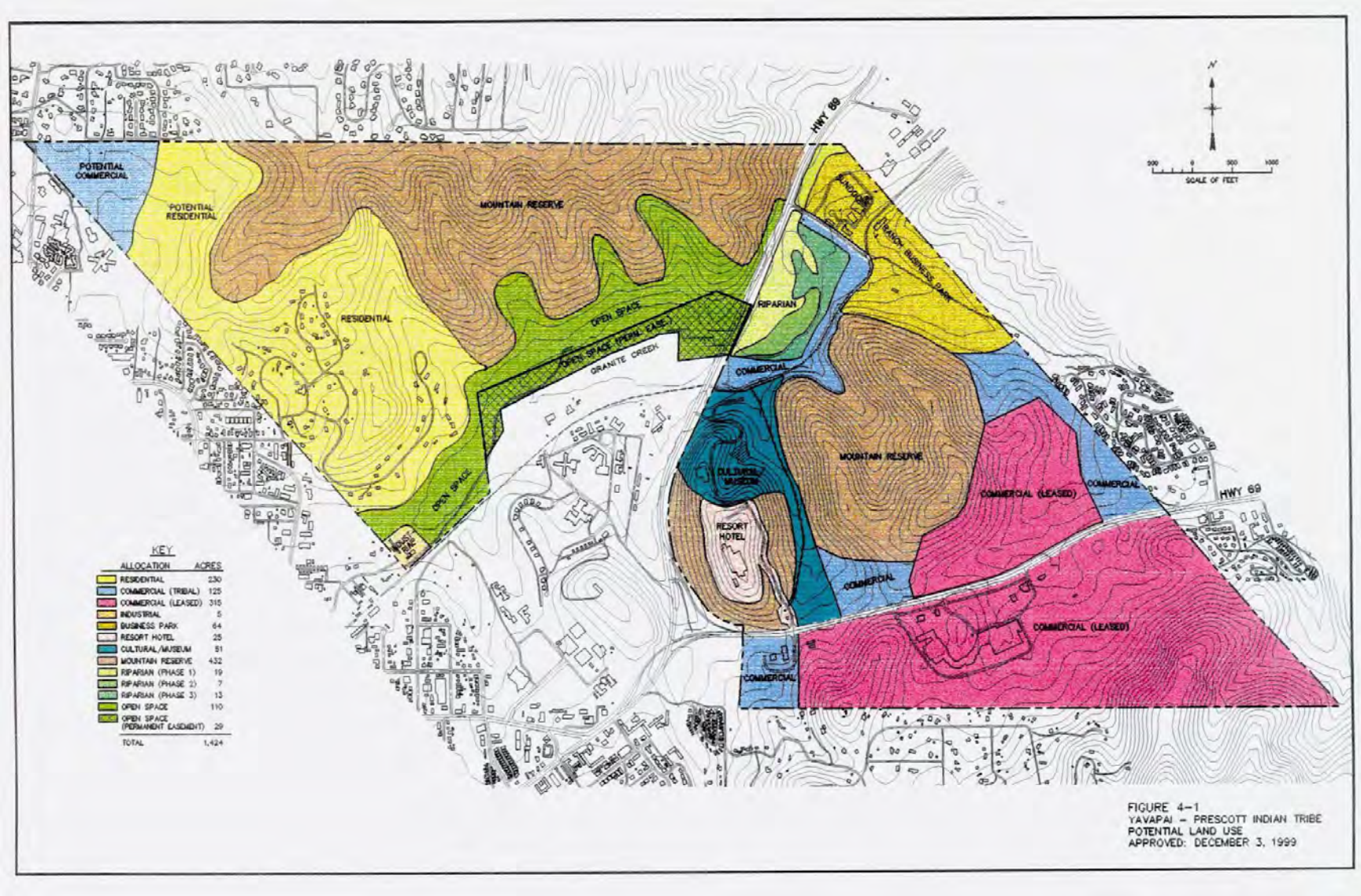


Figure 15 Map 2-13: Yavapai-Prescott Indian Tribe Land Use Master Plan

SECTION 3: PLANNING PROCESS

3.1 Planning Team and Activities

Prior to beginning the update process, the Yavapai County Office of Emergency Management contracted with NWFF Environmental to conduct a review of the Plan, coordinate the planning meetings, and to perform the revision of the 2018 Plan to meet the requirements outlined in FEMA Policy-206-21. To accomplish these tasks, NWFF conducted a Gap Analysis of the Plan and began coordinating information requests with the Yavapai County Office of Emergency Management and the primary contacts identified for each jurisdiction. Through coordination with Yavapai County planning team was established comprised of internal staff and local jurisdiction members (table 3-1). The role of the planning team was to draft and review the revised Plan. The planning team conducted three meetings over a two-month period.

Primary Planning Points of Contact:

Table 3-1: Planning Team Members

Name	Agency/Jurisdiction	Department/Position
Ashley Ahlquist	Yavapai County	Office of Emergency Management
Lynn Whitman	Yavapai County	Flood Management
John Sterling	Yavapai Prescott Indian Tribe	Environmental Protection Specialist & Tribal Emergency Manager
Heather Vinson	Camp Verde	Risk Manager
LT Josh McIntire	Chino Valley	Police Dept
LT Joe Candeleria	Clarkdale	Police Dept
Ron Sauntman	Cottonwood	Fire Chief
Bruce Smith	Dewey Humboldt	Public Works Director
Allen Muma	Jerome	Chief of Police
Amy Bonney	Prescott	Chief of Police
Holger Durre	Prescott	Fire Chief
Boyd Robertson	Prescott Valley	Public Works Director
LT Jason Kaufman	Prescott Valley	Police Dept
Stephanie Foley	Sedona	Chief of Police

Figure 16 Table 3-1 Planning Team Members

The initial planning meeting was conducted on 7 Feb 2023, and it identified the individual members and discussed the importance of the Plan with respect to community-wide benefits and access to State and Federal funding for mitigation projects. A discussion was held about the role of NWFF and items requiring revision under FEMA Policy. The team members were tasked with completing capability assessments and mitigation strategies for their respective jurisdictions. Two more meetings were convened on about a 3-week basis to step through the plan review and update process. Planning Team members used copies of the 2018 Plan for their jurisdiction for review and reference.

As a part of the plan update process each planning team member representing a local or tribal community utilized local resources and coordinated efforts with others to ensure accurate material for this Plan. This activity could range from technical assistance to having a local planning team established. The others involved in the process are captured below so that the information may be helpful in future planning efforts.

Name / Title	Jurisdiction Agency/Dept/Division
Jeremy Dye / Director	Yavapai County Development Services
Dan Cherry / Director	Yavapai County Public Works
Lynn Whitman / Director	Yavapai County Flood Control District
Joe Huot / Operations Manager	Yavapai County Public Works
Beth Evans / Town Clerk	Dewey-Humboldt
Ruth Mayday / Director	Clarkdale Community Development
Robert Ogo	YPIT President
Calvin Hunter Jr.	YPIT Vice President
Lorna Galeano	YPIT Secretary-Treasurer
Sheila Salazar	YPIT Board Member
April Caballero	YPIT Community Health Representative
Scott Desjadon	YPIT Chief of Police
Peter Bourgois	YPIT Planner

Figure 17 Involved Stakeholders

3.2 Public Outreach/Stakeholder Involvement

For the purpose of this Plan, the jurisdictions and Indian Tribe defines the 'Public' as the area residents and stakeholders.

To educate the public and stakeholders on the risks facing the communities and engage them in the planning process, the Planning Team used a whole *community approach*. This type of approach to public and stakeholder outreach can produce benefits such as a better understanding of risks and needs, increasing resources, and building more resilient communities.

Special focus was placed on involving stakeholders in the community lifelines. FEMA defines community lifelines as those services which "enables the continuous operation of critical government and business functions and is essential to human health and safety or economic security. The most fundamental services in the community that, when stabilized, enable all other aspects of society to function."[26]

To ensure the community received an equitable opportunity to voice their opinions and concerns the County posted draft public notices and a copy of the draft plan to the County website. The Tribe performed similar efforts on their website and posted notices throughout the community. The Jurisdictions and Tribe performed press releases over the radio and in local newsletters announcing the availability of the draft for public review and comment, and outreach campaigns were conducted during local events. Public outreach efforts did not produce any questions, concerns, or responses.

During the previous plan cycle, the participating jurisdictions/tribe took the following actions to keep the public and stakeholders aware of and involved in their respective risks and mitigation efforts:

[26] Federal Emergency Management Agency. Community Lifelines. Retrieved Mar 15, 2023, from https://www.fema.gov/emergency-managers/practitioners/lifelines.

Table 3-3: Past Public Outreach/Involvement	
Jurisdiction	**Activities**
Yavapai County	• Conducted public involvement efforts related to drainage and floodplain delineation studies to keep public aware of flood hazards and mitigation efforts. • Maintained a hazard mitigation webpage presence with a copy of the Plan posted for public review and comment. • Presented all major mitigation projects to the Board of Supervisors for approval and funding. • Developed Firewise and Defensible Space community education program: Expos, community meetings, education programs for civic groups, and town hall meetings. • Worked with all stakeholders from Federal, State, and Local Agencies to develop a comprehensive wildland fuel mitigation program. • Wildfire expos • Tabletop exercise with local leadership for EM issues
Camp Verde	• Provided a public notice in local papers of progress, including completed mitigation actions/projects, at least once per year. • Provided an update on the mitigation plan status to the Town Council during a public hearing at least annually, as well as provide public awareness of the potential hazards in the community. • Maintained and updated the Town's Hazard Mitigation webpage. • Educated the public to increase the awareness of hazards and opportunities for mitigation actions with informational hazard mitigation brochures at local events such as National Night Out, Pecan and Wine Festival Fort Verde Days).
Chino Valley	• Maintained a website linking the public to the county website where the Plan will be posted. • Provided hazard mitigation brochures provided by ADEM at Town Hall and other public venues. • Presented and obtain approval for all hazard mitigation related projects from the Town Council
Clarkdale	• The Town maintained a website linking to the county website where the Plan was posted. • Educated the public to increase the awareness of hazards and opportunities for mitigation actions with informational hazard mitigation brochures at local events such as National Night Out, July 4th, Halloween. • Informed and encouraged residents to join the County Code Red emergency notification system through website, newsletter articles and social media information blasts. • Conducted public involvement efforts related to drainage and floodplain to keep the public aware of flood hazards and mitigation efforts. • Provided brochures provided by DEMA at Town Hall and other public venues
Cottonwood	• The city maintained a website or link to the county website, where the Plan was posted, and the public will have an opportunity to comment and make recommendations for changes. • PSA announcements in the local newspapers and public notices were posted with the development of mitigation activities.
Dewey-Humboldt	• Provided the public the opportunity to view and discuss projects contained within the hazard mitigation plan in the previous 5 years by participating in the budget meetings every year.
Jerome	• Continued the Drainage Master Plan work on Golf Road through public input. • Distributed flyers, pamphlets, newsletters, posting of mitigation issues throughout the town as wells as during the Annual Firewise Community Day.
Prescott	• Participated in a vast array of local stakeholder meetings to garner input to various community needs associated with city issues at Public Works Forums, Fire Dept Open House Events, and as part of public comment periods at regular voting meetings of the City Council • Participated in the annual Home Show sponsored by the Yavapai County Contractors Association distributing fire and public safety awareness materials.

	• Regularly attended and serve as participant at the Prescott Area Wildland Urban Interface Commission (PAWUIC) and interact with community leaders in each of the 22 Fire Wise communities within Prescott. • Participated in Earth Day activities on the Courthouse Square to interact with the visiting public and showcase the inter-agency cooperation between the City of Prescott, US Forest Service, Dept of Forestry and Fire Management, PAWUIC, and our other local fire districts focusing on Wildfire risk and prevention.
Prescott Valley	• Conducted public involvement efforts related to floodplain delineation studies, as well as all hazards to keep public aware of the various hazards and mitigation efforts. • Maintained a hazard mitigation webpage with the Plan posted for public review and comment. • Presented all major mitigation related projects to the Town Council for approval and funding. • The Town continued to provide the same public involvement opportunities as is in the past. • Maintained website link to the county's website where the Plan will be posted.
Sedona	• The Sedona Fire District (SFD) continuously conducted outreach on defensible space for wildfire. Every year in May residents of the SFD can bring in yard brush and tree cuttings in an effort to mitigate the extent of residential structural damage from a wildfire. • The City of Sedona has an email address of FloodStatus@SedonaAZ.gov for real estate agents and members of the community to request Flood Status Reports on any parcel within the city. • Created a Community Emergency Preparedness Guide to ensure the community can be ready and resilient for any disaster that may arise in the future. • Participated in the Climate Profile for the Verde Valley in 2020 with CLIMAS. • Adopted Climate Action Plan in July 2021. • Built two demonstration gardens for drought-resistant plants that attract pollinators. • Watershed cleanups with Oak Creek Watershed Council. • The process of implementing the Evacuation Zone Plan has involved residents from the community.
Yavapai-Prescott Indian Tribe	The Tribe conducted continued public involvement through the following: • LEPG meetings (conducted quarterly), • Regular public outreach through Environmental Program events (events are conducted 6 times throughout a year from August to July; every couple of months), • TEDC Newsletter (published 4 times a yr.)

Figure 18 Table 3-3: Past Public Outreach/Involvement

3.3 Plan Adoption

This Plan was developed for the utilization of the citizens and government offices throughout Yavapai County. It is intended to inform public policy and decision making. Prior to the plan becoming an official government, guiding, document of Yavapai County or the Yavapai Prescott Indian Tribe, the Arizona Department of Emergency and Military Affairs (AZ DEMA) will review and approve the plan. Upon AZ DEMA's approval, each jurisdiction shall incorporate the Plan. Once each stakeholder jurisdiction has adopted the Plan, Yavapai County will adopt and enact the plan. See Appendix C for each jurisdiction's letter of incorporation.

3.4 Program Incorporation

During the planning process, the Planning Team reviewed various plans, studies, reports, and technical information for incorporation or reference purposes in this Plan. Table 3-4 lists the primary documents and technical resources reviewed by the Planning Team and identifies how they were useful to the planning process.

Similarly, the findings identified, and planning process used in this plan, will inform the jurisdictions and tribal

ongoing planning efforts. The findings, which include the capabilities identified and mitigation strategies noted, will be integrated into other plans such as the emergency operations plan, continuity of government plan, and other phase plans. The Yavapai Prescott Indian Tribe, for example, is concurrently using this information to assist in the development of a THIRA and EOP update. The planning process has also driven YPIT to join regular calls with FEMA and Department of Emergency and Military affairs to local hazards like fire danger and mitigation efforts. They are expanding their partnerships with the Prescott National Forest.

Table 3-4: Review/Incorporation of Existing Plans and Resources	
Resource	**Description of Reference and Its Use**
2021 International Fire Code	Resource for Town of Camp Verde
2021 International Building Code	Resource for Town of Camp Verde
Applied Climate Information System (ACIS)	Resource for historic climate data including, temperature, precipitation, snowfall, snow depth, etc.
AZ Department of Commerce	Reference for demographic, population projections and economic data for the county. Used for community descriptions
AZ Division of Emergency Management	Resource for state and federal disaster declaration information for Arizona. Also, a resource for hazard mitigation planning guidance and documents.
AZ Department of Water Resources	Resource for data on drought conditions and statewide drought management (AzGDTF), and dam safety data. Used in risk assessment.
AZ Geological Survey	Resource for earthquake, fissure, landslide/mudslide, subsidence, and other geological hazards. Used in the risk assessment.
AZ State Land Department	Source for statewide GIS coverages (ALRIS) and statewide wildfire hazard profile information (Division of Forestry). Used in the risk assessment.
AZ Wildland Urban Interface Assessment	Source of wildfire hazard profile data and urban interface at risk communities. Used in the risk assessment.
Cottonwood General Plan	Source for history, demographic, and development trend data for the city.
Clarkdale General Plan	Source for history, demographic, and development trend data for the town.
Clarkdale General Plan	Source for history, demographic, and development trend data for the city.
Northern Arizona University Website	Source for historical earthquake information for Clarkdale. Used in Risk Assessment
Clarkdale Town Code	2022 International Building Codes for building, residential, plumbing, mechanical, electric, fuel gas, fire, and property maintenance. Flood Damage Prevention Ordinance. Grading Ordinance.
FEMA – 2021 Flood Insurance Study	Used to establish vulnerable areas needing mitigation work for county flood grant projects and infrastructure enhancements.
FEMA – Community Lifelines	Used in conjunction with HAZUS to determine assets available throughout the coverage area.
Town Area Master Drainage Study	Used to establish vulnerable areas needing mitigation work for county flood grant projects and infrastructure enhancements.
Yavapai County Comprehensive Plan Update 2023	Resource for land use and growth areas throughout the County.
Yavapai County Flood Control District	Resource for identification of flood hazard areas.
National Weather Service	Historical data to determine winter storm risk

Table 3-4: Review/Incorporation of Existing Plans and Resources	
Resource	**Description of Reference and Its Use**
Cottonwood Master Drainage Study	Resource to determine hazard levels posed by low water crossings on city streets
Cottonwood General Plan	Source for history, demographic, and development trend data for the city.
Yavapai County Emergency Operations Plan	Source for history, demographic, and development trend data for the county, as well as hazard demographics.
Yavapai County Community Wildfire Protection Plan	Source of data and strategy for wildland fire mitigation. It is a collaborative document used in planning and technical information
Yavapai County Geographic Information Systems Department	Source for countywide GIS coverage. Used in the risk assessment.
Yavapai County Recovery Plan	Source for history, demographic, and development trend data for the county, as well as hazard demographics.
Yavapai County Gap Analysis	Source for history, demographic, and development trend data for the county, as well as hazard demographics.
Dewey-Humboldt General Plan	Source for history, demographic, and development trend data for the city.
Dewey-Humboldt Transportation Study	Source for town wide road conditions and needs.
Jerome Master Drainage Plan – on file at Town Hall	Source for the history and development of Jerome's drainage plan – Identification of drainage projects and prioritization of improvements for excessive overflow and/or flood control
Prescott Valley Community Ingress/Egress Study	Evaluate communities and subdivisions for ingress and egress for the purpose of evacuation and emergency response. A traffic impact analysis is required for all new development
Prescott Valley Floodway Channelization Study	Data associated with the four major floodway channels intersecting Prescott Valley.
Prescott Valley Historical Data	Historical Data of hazardous events in Prescott Valley
Yavapai County Flood Control District Flood Data Sets	GIS Data Layers of district water courses, elevation, and capacity.
Sedona Community Plan	Source for history, demographic, and development trend data for the city.
U.S. Department of the Interior – Indian Affairs	Used for native tribal land plots throughout the county.
United States Geological Survey	Used for Fault Lines, Earthquake epicenter historic locations, base map elements.
Yavapai-Prescott Indian Tribe's Land Use Master Plan	Source of land planning information on tribal lands.
Yavapai-Prescott Indian Tribe Water Management Plan	Information and data are shared between the Water Management Plan and the drought hazard profile where it pertains to the Tribe.
Wildland Fire Management Plan Yavapai-Prescott Indian Reservation	Information and data are shared between the Wildland Fire Management Plan and the wildfire hazard profile where it pertains to the Tribe.

Figure 19 Table 3-4: Review/Incorporation of Existing Plans and Resources

SECTION 4: RISK ASSESSMENT

4.1 Section Changes

- Hazard Risk Profiles modified to include the following sections:
    - **History** -- Counties and jurisdictions incorporated significant recent hazard events which occurred in the past five years.
    - **Extent** – This section helps define the characteristics of the hazard with regards to the size or scale.
    - **Probability of Future Events** – This section discusses the likelihood of future event based on the vulnerabilities created by future conditions.
    - **Vulnerability** – This is a narrative statement explaining the jurisdiction's vulnerability to each hazard.
    - **Changes in Development in the Hazard Area** – This section identifies any changes in development in the hazard area over the last five years.
- The Risk Assessment Summary was modified to include the following sections:
    - **Additional Considerations –** This section details special and/or unique considerations for jurisdictions within the planning area.
    - **Populations at Risk –** This section provides a discussion about community members with attributes that limit their accessibility or resilience.

4.2 Hazard Identification

The Planning Team reviewed the list of hazards identified in the 2018 Plan with the goal of refining the list to reflect the hazards that pose the greatest risk to the jurisdictions represented by this Plan.

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

- Experiential knowledge of the Planning Team about 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 the Planning Team to develop effective mitigation for the hazard.
- Compatibility with the State Hazard Mitigation Plan hazards.
- Duplication of effects attributed to each hazard.

As part of the screening, the Planning Team reviewed historic hazard information. Table 4-1 outlines declared disaster events within Yavapai County.

Declared Hazard Events in Yavapai Co [27]		
	Total (since 1966)	Last 10 years (since FY14)
AZ State Disasters	52	7
Federal Disasters	11	1
Yavapai County Disasters	52	7
Types of Disasters	22	5
Agricultural/Insect	3	0
Civil / Law Enforcement	4	1
Drought	1	0
Fire / Wildfire	19	3
Flooding	12	1
Flooding & Earthquake	0	0
Flooding & Snow	2	0
Flooding & Wind	1	0
HAZMAT	2	0
Intrastate Assist	0	0
Landslide	0	0
Other	1	0
Public Health	1	1
Search & Rescue	1	0
Snow	3	0
Snow & Extreme Temperatures	0	0
Snow & Wind	1	0
Terrorism	0	0
Tornado	0	0
Tribal Assist	0	0
Utility	1	0
Wind	0	0
Open State Disasters (as of 02/02/2023)	5	3
Open Federal Disasters (as of 02/02/2023)	2	1
Governor's Emergency Fund Allocations (Not adjusted for current dollar value)	$66,235,132.65	$8,645,219.10
Federal Expenditures (Not adjusted for current dollar value)	$642,311,136.93	$256,759,886.12

Figure 20 Table 4-1: Declared Hazard Events in Yavapai Co

Each participating jurisdiction shares similar hazards with no significant deviation in type, although the potential risk associated with the hazard varies by location. Each jurisdiction must plan for and anticipate encountering the entirety of the hazards listed in Table 4-1. Their individual Threat and Hazard Identification and Risk Assessments (THIRA) will inform the jurisdictions of the capabilities and resources available and required to manage those hazards. For the Hazard Mitigation Plan, the Planning Team narrowed the hazard types to down to six categories—some of the hazard types are interrelated, that is they present compounding factors which could increase the severity of hazard. The Planning Team selected the following list of hazards for profiling and updating based on the above explanations and screening process:

[27] Information provided by the Arizona Department of Emergency and Military Affairs.

Earthquake	Severe Wind
Flooding	Fire / Wildfire
Landslide/Mudslide	Winter Storms

Figure 21 Profiled Hazards

4.3 Vulnerability Analysis Methodology

For this Plan, the Planning Team reviewed the vulnerability analysis and where necessary, updated the Plan to reflect the hazard categories, the availability of new data, or differing loss estimation methodology.

Calculated Priority Risk Index (CPRI) Evaluation

The Planning Team used the CPRI to assess the perceived overall risk of each hazard identified in this Plan. The CPRI value is obtained by assigning varying degrees of risk to four categories for each hazard, and then calculating an index value based on a weighting scheme.

4.4 Hazard Risk Profiles

For each hazard, the following elements address the overall risk profile:

- Description
- History
- Extent (of the hazard in the planning area)
- Probability of Future Events
- Vulnerability
    - CPRI Results
    - Jurisdictional Vulnerability Narrative
- Changes in development in the Hazard Area

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

Figure 22 Table 4-2: CPRI Categories & Risk Levels

4.4.1 Earthquake

Description

There are several common measures of earthquakes. The Richter Magnitude Scale is a mathematical scale, which measures the intensity of ground motion. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a ten-fold increase in measured amplitude, and 31 times more energy released. The Modified Mercalli Intensity Scale measures the earthquake intensity by the damage it causes. Peak Ground Acceleration (PGA) is a measure of the strength of ground movements. It expresses an earthquake's severity by comparing its acceleration to the normal acceleration due to gravity. The severity of an earthquake is also dependent upon the source of the quake. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter.

Soil type can also affect the severity of an earthquake at a given location. This is because seismic waves propagate from the epicenter and travel outward through the bedrock up into the soil layers. As the waves move into the soils, the soil consistency affects the wave speed and velocity. In stiff or hard soil, the wave generally will travel at lower velocities. With slower waves, the seismic energy is modified, resulting in waves with greater amplitude. This amplification results in greater earthquake damage.

Magnitude	Danger Level	Earthquake Effects
2.5 or greater	1	Noticed by few people. No likelihood of damage to buildings.
3.5 or greater	2	Felt in scattered locations outdoors and noticed by many people in buildings. Generally, no likelihood of damage to buildings.
4 or greater	3	Likelihood of damage to buildings such as cracks in plaster. High likelihood of larger cracks in walls and interior wall collapse in less stable buildings. Damage is likely to be caused by falling objects in buildings. The earthquake is felt across a wide area, people are alarmed.
4.7 or greater	4	Likelihood of severe damage to buildings. Less stable structures may have collapsed. Damage was highly likely to be caused by falling objects in buildings. The earthquake was felt strongly, people were alarmed and lost their balance.
5.4 or greater	5	High likelihood of severe damage to buildings, even to very stable structures. Buildings may have collapsed. The earthquake was felt very strongly, people were alarmed and lost their balance.

Figure 23 Fig 4-1: Richter Scale

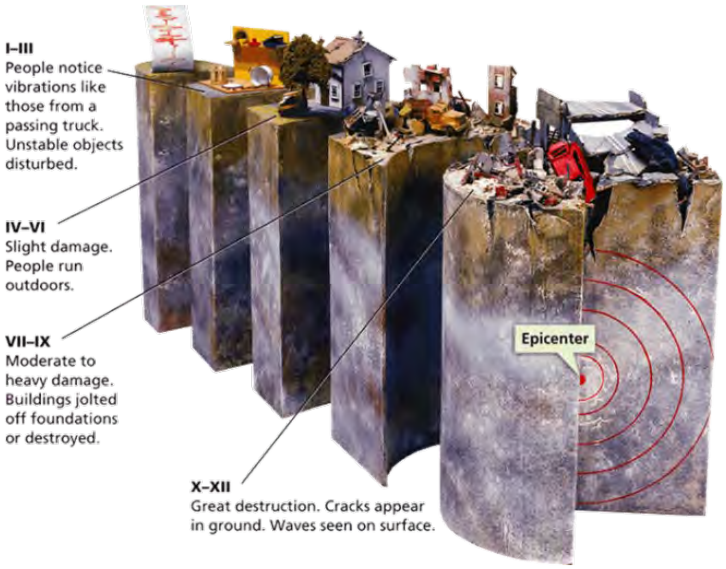


Figure 24 Fig 4-2: Mercalli Scale

An earthquake occurs when the pressure of seismic stress is abruptly released. The seismic energy is dispersed in waves that move through the earth and cause the ground to shake violently. It is this shaking motion and the subsequent behavior of the earth's surface which is strongest in areas of soft soils, such as in river valleys or along the shorelines of bays and lakes that cause liquefaction, landslides, ruptures, or ground failure that destroy buildings and other infrastructure. Wave velocity is slower in soils than in the underlying rock of the earth's crust. Softer soils amplify ground shaking. The greater the wave velocity difference, the greater the amplification of ground surface shaking. Consequently, ground shaking in areas of soft soils underlain by stiffer soils or rock is generally stronger than in areas where there is little or no variation between the surface and lower layer. Ground failures include surface faulting, landslides, subsidence, and uplifting. Surface faulting is the differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults. Subsidence is the sinking of soils. Uplifting is the elevation of soils. Unstable and unconsolidated soils are most vulnerable to ground failures and surface faulting. Liquefaction is the phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength. Lateral spreads develop upon gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies. Loss of bearing strength results when the soil supporting the structures liquefies. This can cause structures to tip and topple. Liquefaction typically occurs in artificial fills and in areas of loose sandy soils that are saturated with water, such as low-lying coastal areas, lakeshores, and river valleys.

The magnetic data of the Upper and Middle Verde maps paleochannels that were filled with basalt and reveals a predominantly northeast to North-striking structural grain within Proterozoic basement rocks. The magnetic grain may serve as a proxy for fracturing and impermeable rocks.

History

Yavapai County has a moderate earthquake risk. Since 1931, the county has experienced 21 earthquakes with the largest occurring in 1976 at M_L 5.1. The County is subject to ground shaking from earthquakes originating on neo tectonic faults within the County, as well as from other nearby earthquake sources, such as the Hurricane or Toroweap faults and the Northern Arizona Seismic Belt (NASB). The Arizona Earthquake Information Center (AEIC) at Northern Arizona University in Flagstaff notes that any of the Yavapai faults have the potential of a 7.25 magnitude quake. Jerome is particularly prone to severe damage due to its mountain perch and history of landslides.

Historically, earthquakes originating in the NASB have resulted in ground shaking to the Yavapai County region in 1906 (M 6.2), 1910 (M 6.0), and 1912 (M 6.2). The M_L 5.1 Chino Valley earthquake of February 1976 resulted in minor damage to several Yavapai County communities. Other historical accounts describe earthquake shaking in the Yavapai County area (DuBois and others, 1982). Portions of Yavapai County are underlain by a northwest trending system of faults, including the Aubrey, Big Chino, Verde, and Horseshoe faults. These faults bisect the County from the northwest to the southeast. Paleo seismological studies by Euge and others (1992) indicate movement within the past 100,000 years and the potential to produce a magnitude 7.25 earthquake.

A large ground-rupturing earthquake on either of the Aubrey, Big Chino, Verde, or Horseshoe is considered a worst-case scenario for the Yavapai County community. The largest event of spring 2011, was the ML 3.7 north of Clarkdale, AZ, which was widely felt in Cottonwood, Arizona, and as far east as Winslow. The AEIC received felt reports for this event from several Cottonwood residents, all of whom experienced the shaking from indoors. Based on community feedback, the US Geological Survey assigned this event a Modified Mercalli Intensity of IV -- weak shaking and no apparent damage. This event followed a ML3.6 earthquake that occurred January 23, 2011, in virtually the same location, near the mouth of Sycamore Canyon. The felt area for this second event was much smaller, and no reports were filed at the AEIC. These two Sycamore Canyon events are considerably larger than any recent or historic activity at this location.

Within a 50-mile radius, the other significant activity included two magnitude 2 events near Perkinsville to the northwest and a few small events near Clarkdale, possibly mining related. For the largest fault in the area, the Big Chino, maximum credible earthquakes are estimated between 7.0-7.25 with long recurrence intervals. The largest historic event on record in this zone is the 4.9 earthquake that occurred in 1976, possibly associated with the Prescott

Valley Grabens near Williamson, Arizona; in the late 1990's, several lower magnitude events occurred in the area. Overall, micro seismicity rates in this area are an order of magnitude lower than in the Intermountain Seismic Belt to the north. Despite this, continued seismicity indicates that low-level deformation here, as well as within the NASB, is ongoing. More significant recent earthquakes have been recorded. A magnitude-4.7 earthquake hit Arizona December 2, 2014. There were no injuries or damage because of the earthquake; however, the temblor's epicenter was 7 miles north of Sedona, Arizona, or 16 miles south-southwest of Flagstaff, the USGS reported. The earthquake could be felt in areas such as Flagstaff, Prescott, Sedona, Winslow and Tuba City, Arizona. On November 1, 2015, a magnitude 3.2 quake struck at 8:59 p.m. (10:59 p.m. ET), the second, a magnitude 4.1 tremor, happened at 11:29 p.m. The third, a magnitude 4.0 quake, took place at 11:49 p.m. Several cities in the area felt shaking. All three took place near Black Canyon City, Arizona, about 45 miles north of Phoenix sending shockwaves through several cities.

Yavapai County is geographically located in an area of numerous seismic zones, and the potential for damage exists to critical infrastructures and facilities as well as the possibility for loss of life.

Earthquake events since 2018.[28]		
Date	**Magnitude**	**Location**
11-5-2022	2.87	14.7 miles SW of Cottonwood AZ
12-30-2018	2.5	14 miles from Seligman, AZ
12-30-2018	3.2	14 miles from Seligman, AZ
12-30-2018	3.0	16.1 miles E of Seligman
9-24-2018	2.33	6.2 miles NW Cottonwood

Figure 25 Table 4-3: Earthquake events since 2018

[28] Arizona Earthquake Information Center. Arizona Earthquakes 1830-2023. Retrieved 16 March 2023 from https://aeic.nau.edu/eq_history.html.

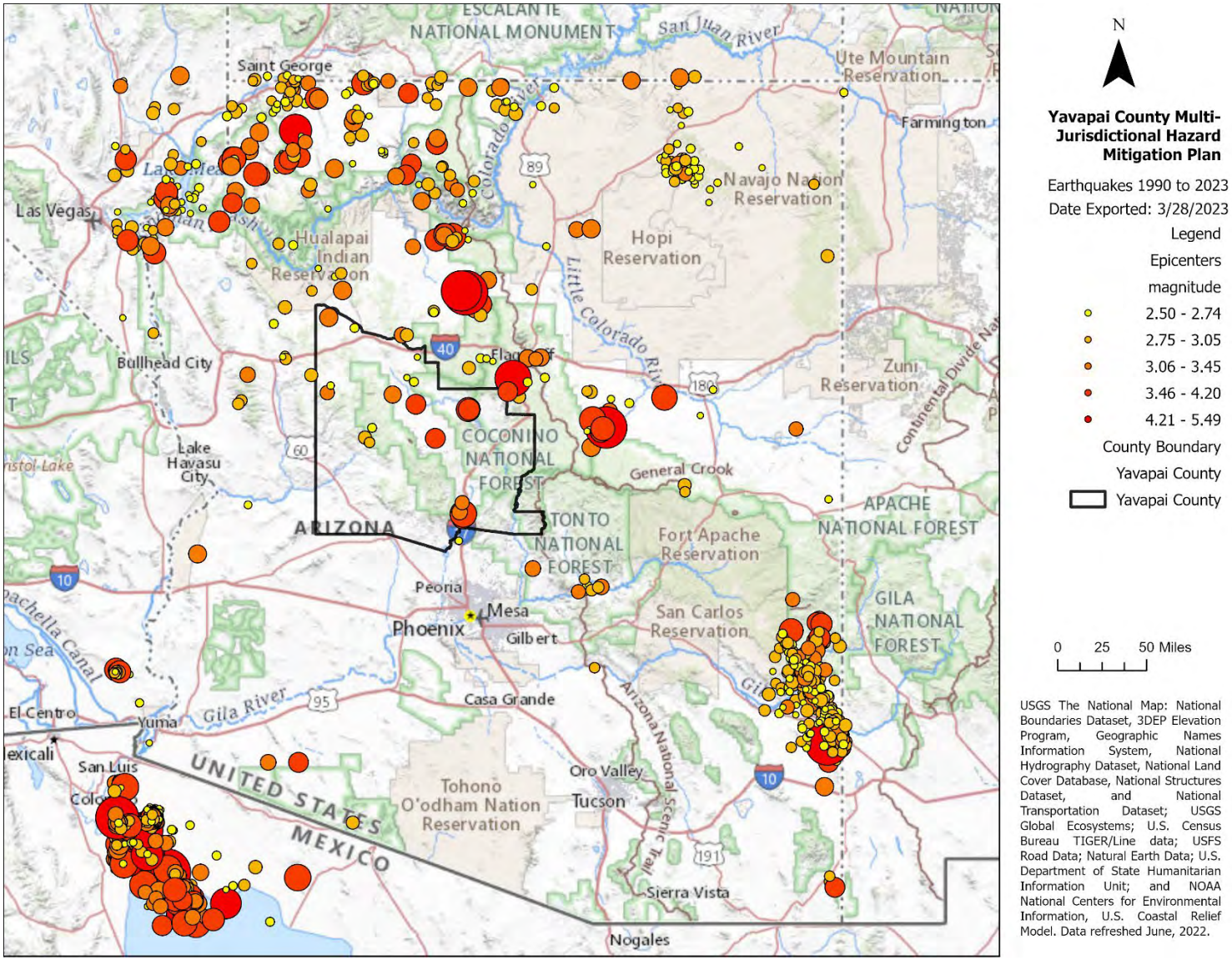


Figure 26 Map 4-1: Earthquake Hazard Area

Extent

The Big Chino Fault and Verde Fault Zone have the largest amounts of vertical throw of the faults in the study area based on gravity, magnetic, and limited well data. These faults bound deep (0.62-1.25 mi or 1-2 km) basins in Big Chino and Verde Valleys. The geophysical data also reveal concealed faults in Williamson Valley that bound a previously undiscovered basin with approximately 0.62 mi (1 km) of Cenozoic fill inferred from inversion of gravity data. Little Chino and Lonesome Valleys, including the upper reach of the Agua Fria Basin are characterized by basin fill that has an irregular distribution with local North to Northwest striking pockets of thicker sediment, but nowhere exceeds 0.62 mi (1 km) of thickness. A 9.3 to 12.5 mi (15 to 20 km) long Northwest striking magnetic lineament that passes through Page Springs in Verde Valley can be used to project a mapped fault3.1 – 6.2 mi (5-10 km) Northwest and Southeast of its mapped trace. The collocation of the lineament, mapped fault, and Page Springs suggests structural influence on the location of this large spring.

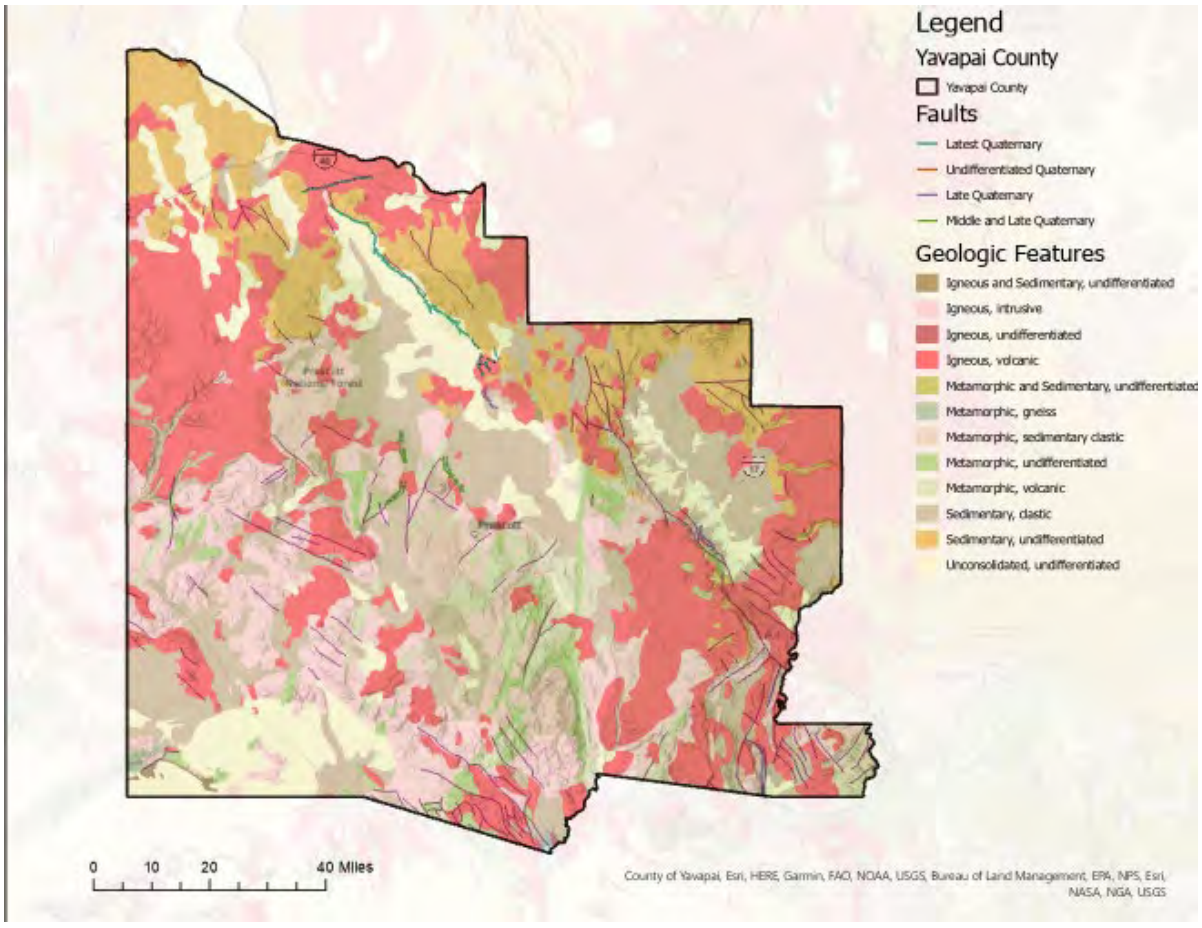


Figure 27 Map 4.2: Yavapai County Seismic Fault Map

Abrupt, linear changes in magnetization and density are often the result of faulting or fracturing. Because of this, linear magnetic and gravity boundaries can be used to estimate the distribution of faults, large fracture systems, or both. The Big Chino Fault is steeply dipping, and other prominent magnetic and density boundaries coincide, in part, with mapped faults, which locally project into areas that are covered by surficial deposits. Because of this relation, the geophysical boundaries can be used to map extensions of the faults, such as the Verde Fault Zone Northwest of Interstate 17, where it is beneath young sedimentary deposits.

Other gravity and magnetic lineaments do not coincide with mapped faults but can be used to infer the locations of concealed faults, such as the basin-bounding faults beneath Williamson Valley and faults forming the eastern margin of the basins along the Verde Fault Zone. Northwest striking anomalies West and Northwest of exposed 6-4 Ma

basalt in the Paulden area are most likely caused by faulting related relief on the upper surface of the buried basalt or by relief on the bottom surface in fault-controlled paleochannels.

Mapped faults in Little Chino Valley cut across many magnetic boundaries, suggesting that their displacements are small. We included the interpreted lineaments from an earlier study and expanded the area of analysis to include the new aeromagnetic survey. Many of the lineaments are produced by physical property variations in the Proterozoic basement that parallel faults and folds mapped in outcrop. The structural grain may serve as a proxy for fracturing, an important source of permeability in these generally impermeable basement rocks. In some cases, the Precambrian structural grain may have influenced subsequent faulting.

The Bear Wallow Canyon Fault, an east-west striking fault that bisects Sedona, offsets Permian sedimentary rocks. The maximum displacement is 52 m (170 ft.) with offset down to the south. A change in magnetic signature coincides with the fault, suggesting that Precambrian basement rocks are a controlling factor. The magnetic data can be used to extend the Bear Wallow Canyon Fault west of its mapped extent into the northern part of Verde Valley, where it curves to the southwest. This fault appears to disrupt the regional ground-water flow.

The Cathedral Rock Fault, a northwest-striking fault that merges into the Bear Wallow Canyon Fault, coincides with the edge of a magnetic block where it offsets weakly magnetic sedimentary rocks as much as 244 m (800 ft.). South of the Bear Wallow Canyon Fault are pronounced northwest striking magnetic gradients. One of these gradients coincides with the trace of the Sheepshead Fault.

The Sheepshead Fault served as a growth fault during deposition of the Hickey Formation and older sediment of the Verde Formation, but not for the beds at the ground surface. The aeromagnetic data can be used to project the concealed trace of this normal fault beneath the Verde Formation 5 km (3.1 mi) southward of its mapped location. Parallel to and northeast of the Sheepshead Fault is another magnetic lineament. Part of this lineament coincides with a normal fault mapped through Page Springs suggesting that structure plays a role in the location of this large spring. The magnetic data can be used to project this structure another 5-10 km (3.1 – 6.2 mi) northwest and southeast of its mapped trace. Prominent in the eastern part of Verde Valley are northeast-striking magnetic anomalies. Some of these anomalies have gentle to moderate gradients that indicate sources within the Proterozoic basement.

One such anomaly is in the northern part of the Valley near Sedona. Three narrow anomalies with steep gradients occur between Dry Beaver Creek and Lake Montezuma. The width and steep gradients of these anomalies suggest that the sources are either exposed or only shallowly buried. Modeling of the southernmost anomaly near Montezuma Well indicates that a source at 300 m depth (approximately the top of Proterozoic basement) would have to be no more than 1 meter wide and have unreasonably high magnetizations to reproduce the width and amplitude of the observed anomaly.

The southernmost anomaly projects northeast towards outcrops of Paleozoic sedimentary rocks but does not continue onto these outcrops. It corresponds with outcrops of the 6-4 Ma “ramp” basalts that are considered the likely source. The linear nature of the anomalies suggests either fault-controlled channels or dikes. Both geologic scenarios have drawbacks. The 6-4 Ma basalts do not appear to fill paleochannels into the Verde Formation, and dikes are not likely because virtually all the dikes feeding Tertiary basalt flows in this area strike northwest, perpendicular to the direction of Basin and Range extension. Tertiary dikes, however, may have been influenced by the preexisting Proterozoic structural grain, as imaged by northeast-striking anomalies in the basement gravity and filtered magnetic data.

North of Clarkdale a magnetic grain striking north-northeast to north-northwest is pervasive. The anomalies that cause this grain coincide in part with mapped faults that offset the Paleozoic sedimentary sequence. From depth estimates based on the anomaly gradients, we infer that these anomalies are caused by magnetization variations in the Proterozoic basement. Superposed on these anomalies are very subtle features that appear on the residual and vertical derivative maps. The gradients and amplitudes of these subtle anomalies suggest that weakly magnetic Paleozoic rocks are the cause. Despite difficulties in attributing the source of magnetic and gravity lineaments to rock type and age, these data are effective in mapping structure concealed beneath sedimentary cover.

Table 4.4. Communities Affected by Seismic Actives		
Ash Fork	Cottonwood	Sedona
Bagdad	Dewey Humboldt	Seligman
Black Canyon City	Jerome	Spring Valley
Camp Verde	Lake Montezuma	Verde Village
Chino Valley	Mayer	Village of Oak Creek
Clarkdale	Paulden	Wilhoit
Congress	Peeples Valley	Williamson
Cordes Lakes	Prescott	Yarnell
Cornville	Prescott Valley	Yavapai Prescott Indian Tribe

Figure 28 Table 4.4. Communities Affected by Seismic Actives

Probability of Future Events

The probability of future earthquakes in Arizona is ever rising. The USGS database shows that there is a 20.62% chance of a major earthquake within 31 mi (50 km) of Yavapai County, AZ within the next 50 years. Yavapai County and they Yavapai-Prescott Indian Tribe have taken significant measures to reduce exposure to these events. Measures taken include building code updates, building retrofits, and community education.

Climate Change

Climate change does not directly cause earthquakes, as they are primarily the result of tectonic activity and the movement of Earth's tectonic plates. However, some studies suggest that climate change can have secondary effects on seismic activity in certain situations. Climate change can alter precipitation patterns and lead to shifts in regional groundwater levels. Excessive groundwater extraction for human use, such as that found in the arid climate of Arizona where the population is continuing to swell, coupled with reduced replenishment, can result in the compaction of underground sediment layers. This compaction can cause stress changes on faults and potentially influence earthquake activity.

It is important to note that the impact of climate change on earthquakes is an area of ongoing research, and the specific interactions and their magnitudes are not yet fully understood. The primary concern regarding climate change and geophysical hazards typically revolves around the indirect consequences, such as the potential for increased flooding and landslides, which can indirectly affect human populations and infrastructure.

Vulnerability

Table 4-4: Earthquake CPRI Rating					
Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Rating**
Camp Verde	Possible	Limited	< 6 hours	< 6 hours	2.20
Chino Valley	Possible	Catastrophic	< 6 hours	< 6 hours	2.80
Clarkdale	Possible	Negligible	< 6 hours	< 6 hours	1.90
Cottonwood	Possible	Negligible	< 6 hours	< 6 hours	1.90
Dewey-Humboldt	Possible	Critical	< 6 hours	< 6 hours	1.90
Jerome	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Prescott	Possible	Limited	< 6 hours	> 1 week	2.50
Prescott Valley	Possible	Catastrophic	< 6 hours	< 6 hours	2.80
Sedona	Likely	Negligible	< 6 hours	< 24 hours	2.35
Unincorporated Yavapai Co	Possible	Catastrophic	< 6 hours	< 6 hours	2.80
Yavapai-Prescott Indian Tribe	Possible	Limited	12-24 hours	< 24 hours	2.00

Figure 29 Table 4-4: Earthquake CPRI Rating

Within minutes of shaking, the earthquake reveals the vulnerabilities of buildings, households, communities, and of a country. The consequences expose flaws in governance, planning, siting of physical structure, design, construction, and use of the built environment with seismic hazard. It reveals the influence of prevailing culture and way of life, on the capacity of the community to be prepared for an earthquake hazard. The scale of physical damage and social disruption inflicted upon a community or a nation by an earthquake event is the measure of how vulnerable the community or the nation is. Vulnerability is a set of prevailing or consequential conditions, which adversely affect an individual, a household, or a community's ability to mitigate, prepare for, or respond to the earthquake hazard. Vulnerability can also be defined as the degree of loss to a given element at risk, or set of such elements, resulting from an earthquake of a given magnitude or intensity, which is usually expressed on a scale from zero (no damage) to 10 (total loss). Earthquake vulnerability is thus a function of the potential losses from earthquakes (death and injury to people, damage, and other physical structures) and the level of preparedness (the extent to which a society has been able to translate mitigation measures into practice). It reflects the unattended weakness in the built environment of a community and the constraints in the society that affects ability (or inability) to absorb losses after an earthquake and to recover from the damage. Vulnerability condition precedes the earthquake event and contributes to its severity, impedes emergency response, and usually continues long after the earthquake has struck.

Distinguishing characteristics of a community that is earthquake-resistant:

- The extent of investments in public policies to protect people, property, and community resources through the adoption and implementation of mitigation, preparedness, emergency response, and recovery and reconstruction measures and regulations, and
- The attitudinal extent of policymakers and stakeholders who seek to add a value of at least one dollar for every dollar invested in mitigation. Antonyms of the phrase “earthquake vulnerability” are “earthquake-resistance” in case of the built environment, and “earthquake resilience” in case of social vulnerabilities.

Vulnerability Categories a range of factors, including, determines vulnerability:

- The population density
- Level and nature of physical assets
- Economic activities located in the earthquake risk zones. Human action and hazard risks continually interact to alter vulnerability, both at the household and macroeconomic level. Anderson and Woodrow (1989) grouped vulnerabilities into three categories:

- Physical/material vulnerability: inherent weakness of the built environment and lack of access to resources, especially of poor section of the population
- Social/organizational vulnerability: inherent weakness in the coping mechanism, lack of resiliency, lack of commitment
- Attitudinal/motivational vulnerability: fatalism, ignorance, and low level of awareness.

Vulnerable elements in the physical environment:

The likelihood of an earthquake disaster increases when the community's-built environment (i.e., buildings and lifeline systems--or community infrastructure) is comprised of the following vulnerable elements.

- Older residential and commercial buildings and infrastructure constructed of unreinforced masonry (i.e., URM's) or any other construction materials having inadequate resistance to lateral forces of ground shaking, or if they were built to seismic codes and standards that are now considered by engineers to be outdated and inadequate
- Older non-engineered residential and commercial buildings that have no lateral resistance and are vulnerable to fire following an earthquake.
- New buildings and infrastructure that have not been sited, designed, and constructed with adequate enforcement of modern, state-of-the-art building regulations, lifeline standards, and land use ordinances.
- Buildings and lifeline systems sited near an active fault system, or on poor soils that either enhance ground shaking or fail through permanent displacements (e.g., liquefaction and landslides), or in low-lying or coastal areas subject to either seiches or tsunami flood waves.
- Modern buildings of poor design and construction (examples are buildings that were damaged seriously even in low intensity of shaking in Ahmedabad and Bhuj in the January 2001 earthquake).
- Schools and other buildings that have been built to low construction standards.
- Communication and control centers that is concentrated in one area.
- Hospital facilities that is insufficient for large number of casualties and injuries.
- Bridges, overhead crossings, and viaducts that have not been built to withstand lateral forces of earthquakes and are likely to collapse or be rendered unusable by ground shaking.
- Electrical, gas, and water supply lines that are likely to be knocked out of service by ground failure (i.e., liquefaction, lateral spreads, and landslides).

Factors contributing to earthquake vulnerability of built environment:

There are large human settlements located in earthquake/prone areas. Many of these settlements have a significant proportion of old buildings that are of poor quality because of either aging or lack of maintenance, or because of the deterioration of the material quality.

Prevalence of the use of poor building typologies

The type of housing construction is a major risk factor for injuries due to earthquakes. Statistics for 1950-1990 shows that the greatest proportion of victims dies in the collapse of masonry buildings (e.g., adobe, rubble stone, rammed earth, or unreinforced firebrick and concrete block masonry buildings). Such buildings are known to have collapsed even at low intensities of ground shaking. Generally, these buildings have heavy roofs and walls. During collapse, they kill many of the people inside. Concrete-frame houses are generally safer i.e., they are less likely to collapse, if constructed properly with adequate engineering. Non-engineered concrete-frame buildings are vulnerable and, when they collapse, they are considerably more lethal and kill higher percentage of people than masonry structures.

Magnitude	Danger Level	Jurisdiction Actions
2.5 or greater	1 & 2	No Action. Maintain normal operations
4 or greater	3	Partial EOC Activation. Perform damage assessments as required.
4.7 or greater	4 & 5	Full EOC Activation. Perform damage assessment and prepare shelters as required.

Figure 30 Table 4-5: Yavapai County and YPIT Earthquake Action Levels

Who is vulnerable?

Household level Earthquakes affect the full range of social classes – from the wealthy to the homeless. Apparently, earthquake treats everyone equally. However, some are more equal than others are! The poor and socially disadvantaged groups of the society are the most vulnerable to, and affected by, earthquakes and other natural hazards, reflecting their social, cultural, economic, and political environment. Usually, communities in seismic countries are subject to a multitude of natural hazards and environmental problems. The natural hazards themselves are the source of transient hardship and distress, and a factor contributing to persistent poverty. Disasters exacerbate poverty by inflicting physical damage, loss of income-generating opportunities, and the resulting indebtedness. Thus, at the household level, poverty is the single most important factor determining vulnerability to natural hazards including earthquake. The poor are the vulnerable. The vulnerability is reflective of

- The location of housing (poor and marginal lands)
- Poor quality building (non-engineered, using poor quality materials)
- Primary types of occupation, level of access to capital (low)
- Degree (low) of concentration of assets

Community Lifelines at Risk				
Jurisdiction	**Population**	**Est. Building Inventory**	**Transportation System***	**Utility System***
Yavapai County	236,209	127,000	6,339	3,688
Camp Verde	17,394	8,000	872	41
Chino Valley	24,228	12,000	685	537
Clarkdale	6,061	3,000	1,451	258
Cottonwood	25,728	11,000	607	218
Dewey-Humboldt	6,742	4,000	1,761	364
Jerome	3,678	2,000	1,449	256
Prescott	48,805	26,000	1271	146
Prescott Valley	43,295	18,000	864	418
Sedona (West Sedona)	7,921	5,000	162	19
Yavapai-Prescott Indian Tribe	7,701	4,000	766	145
*Values are in millions of dollars				

Figure 31 Table 4-6: Community Lifelines at Risk

Yavapai County – Yavapai County has four major *"Normal"* faults, which intersect at various points the communities of Chino Valley, Cottonwood, Jerome, Paulden, Perkinsville, Poquito Valley, and Seligman. USGS estimates that the maximum moment intensity potential of the "Big Chino" and "Aubrey" faults would be 7.1 MMI (USGS, 2015). Critical infrastructure impacted would be power distribution from Hoover Dam to Yavapai County and Phoenix, high-pressure natural gas from the Trans western pipeline servicing Arizona, California, New Mexico, and Texas, as well as possible impacts to the Chino aquifer servicing the greater Prescott basin. BNSF railroad provides east west service

across this region transporting millions of tons of goods. Unknown is the scope and size of the "Little Chino" fault.

Graben(s) exists across the greater Prescott Basin, as well as the western side of the Sierra Prieta's (Skull Valley) and are susceptible to point ruptures. A notable example is the 3.7 MMI point rupture on October 2011, 3.7 miles west-northwest of Chino Valley.

Figure 32 Figure 4-4: Historical Earthquakes Countywide

Black Canyon City was affected by three earthquakes on November 1, 2015. At 8:59PM, a 3.2-magnitude earthquake was reported about 6 miles northeast of Black Canyon City. A second earthquake, registering 4.1 magnitude, was reported at around 11:29 p.m. about 7 miles northeast of Black Canyon City, and a third earthquake happened at around 11:49 p.m. at 4.0-magnitude about 3 miles northeast of Black Canyon City.[29] [30] This was a previously unknown fault system.

Approximately 160,000 people are vulnerable to a major earthquake in this region.

Camp Verde – Camp Verde is located between the "Verde Valley" and "Horseshoe" fault zones. Potential losses from earthquakes are slight; however, the possibility from damage would exist in interruption of electricity to the municipality as well as disruption of some water delivery systems by private water companies. The possibility of disruption of municipal sewer services would be of a concern. Should the Town of Camp Verde eventually purchase water delivery companies and expand with additional sewer services the potential for increased loss would be experienced and appropriate planning would have to be considered.

Current essential facilities include eleven (11) schools four (4) fire stations, and three (3) police stations. Lifeline infrastructure includes highway transportation systems, potable water, wastewater, electrical transmission, and communication.

HAZUS modeling data, considers geologic features, building materials, and other environmental factors, estimates that approximately 313 buildings will sustain moderate to extensive damage. It is unlikely that any building will be considered a total loss. Of the most vulnerable buildings in Camp Verde, residential housing has the greatest vulnerability. It is estimated that less than 20 vulnerable buildings are in commercial, industrial, or governmental categories. Manufactured housing faces the greatest risk.

While essential facilities and lifeline infrastructure do represent some vulnerability for Camp Verde, HAZUS modeling forecasts recovery of these facilities and infrastructure components to greater than 50% capacity after Day 1. Service outages for electric, water, sewer, natural gas, and communication are expected to be minimal with service restoration estimated to be greater than 50% after Day 1.

[29] USGS. Earthquake Hazards Program. Retrieved 16 March 2023 from https://earthquake.usgs.gov/earthquakes/eventpage/us2000419p/executive#general_summary.

[30] USGS. Earthquake Hazards Program. Retrieved 16 March 2023 from https://earthquake.usgs.gov/earthquakes/eventpage/us2000419q/executive#general_summary.

Minimal displacement of households or individuals in need of public shelter would be anticipated. HAZUS estimates 6 households displaced and 3 individuals in need of public shelter. Casualties would be minimal regardless of the time of occurrence.

Approximately 4,000 tons of debris is likely to be generated from an earthquake impacting Camp Verde. 56% would likely be wood/brick with the balance consisting of reinforced concrete/steel. Restoration crews should be prepared to haul approximately 160 truckloads.

Chino Valley – To the north of Chino Valley exists the "Aubrey" fault which extends northwest along the western boundary of the Mogollon Rim. North of Chino Valley and extending west to east is the "Big Chino" fault. It lies just south of the west side of Mogollon Rim. On the east side of Chino Valley lies the little known "Little Chino" fault zone. West and south of Chino Valley are grabens.

Chino Valley has a moderate earthquake risk, with 15 earthquakes since 1931. The USGS database shows that there is a 21.84% chance of a major earthquake within 50km of Chino Valley, AZ within the next 50 years. The largest earthquake within 30 miles of Chino Valley, AZ was a 4.9 Magnitude in 1976. (USGS)

Vulnerabilities in Chino Valley include highway and railway infrastructure, and airport runway, natural gas pipelines, an electrical transmission network, nine (9) schools, three (3) fire stations, one (1) police station, and an estimated 12 thousand buidlings. HAZUS modeling data, taking into account geoglogic features, building materials, and environmental factors, estimate that approximately 736 buildings will sustain moderate damage, 67 will sustain extensive damage, and 2 will be considered total loss. Of the buildings at risk or moderate to extensive damage, approximately 10 are agricultural facilities, 25 are commercial buildings, 3 are government facilities, 11, are industrial facilities, 145 are single family residential homes, 2 are religions facilities, and approximately 600 are other residential structures. Manufactured housing units face the greatest risk for moderate to extensive damage when compared to other building types.

While there are essential services and critical infrastructure at risk in the Chino Valley area, HAZUS modeling estimates that roadways, railways, and airports will have greater than 50% functionality after Day 1. The electric transmission network is estimated to be recoverable to 50% of greater after Day 1. Damage to potable water, waste water, and natural gas systems are estimated to be minimal with most households able to be restored immediately after impact if service is lost at all.

Casualty estimates are low regardless of the time of day, and should not be expected to exceed the capacity of local emergency responders. Based on vulerability and damage estimates, planning should be done to ensure availability for upwards of 17 displaced households and 8 individual persons seeking termporary public shelther.

Based on the damage estimates, an approximate 10,000 tons of debris can be expected, with about 56% being brick/wood debris and the remainder being reinfoced concreate or steel. Recovery teams should be prepared to load out an estimated 400 truckloads of debris following a major earthquake.

Clarkdale – The outlying areas of Clarkdale have experienced tremor type earthquake activity that has produced negligible damages to date. While Clarkdale does have highway, railway, natural gas pipeline, and electrical transmission infrastructure, damage estimates calculated by HAZUS are relatively low. Essential services include one (1) school, two (2) police stations, and three (3) fire stations. Based on HAZUS data, which considers geological features, building materials, and other environmental factors, it is estimated that these services are likely to recover to greater than 50% capacity after Day 1.

Of the approximately 3,000 buildings in Clarkdale, it is estimated that 112 would sustain moderate to extensive damage, but none would be considered a total loss. Only two households are estimated to be displaced, and the need for temporary public shelter is expected to be minimal. Service disruptions to power, water, wastewater, natural gas, and communications are also expected to be minimal with services restored to 50% or greater capacity by Day 1. Casualties are estimated to be minimal regardless of the time of day the incident occurs.

It is estimated that up to 2,000 pounds of debris would be generated from an earthquake impacting Clarkdale. Materials would be evenly split between wood/brick and reinforced concrete/steel. Restoration crews should prepare to haul approximately 80 truckloads of debris.

Cottonwood – Earthquakes are very infrequent in the immediate Cottonwood area. Earthquakes can result in damage to and loss of municipal and private utilities such as water, power, and natural gas pipelines. Essential facilities in Cottonwood include two (2) hospitals with a total bed capacity of 110; fourteen (14) schools, three (3) fire stations, and three (3) police stations. Transportation infrastructure includes 54.68 miles of highway and 15 rail segments. Cottonwood also has two (2) bus terminals and an airport with an active runway. Other infrastructure includes water, sewer, gas pipelines, electrical transmission networks, and communications.

In general, Cottonwood's vulnerability to earthquakes is low. HAZUS modeling, taking geographic features, building materials, and other environmental factors into consideration, estimates that 370 buildings could experience moderate to extensive damage. It is unlikely that any buildings would be considered a total loss. Residential structures are the most vulnerable.

Essential facilities are likely to gain 50% or greater functionality on Day 1. Infrastructure services are expected to recover to 50% or greater functionality after Day 1. HAZUS forecast models indicate it's most likely all services will be immediately restored with minimal damage to components.

Three (3) to Four (4) casualties requiring medical attention but not hospitalization may be expected depending on the time of day the incident occurs. Up to eleven (11) households could experience displacement with approximately six (6) people needing to seek public shelter.

An estimated 6,000 tons of debris could be generated by an earthquake event. 54% of this debris is likely to be wood/brick with the balance most likely being reinforced concrete and steel. Recovery crews should prepare to haul approximately 240 truckloads of debris.

Dewey-Humboldt - Although, there are no known fault zones associated with Dewey Humboldt. Dewey Humboldt is at risk for a regional event of large magnitude. Fault lines associated with the "Little Chino and Verde Valley" seismic zones, as well as the "Chino and Aubrey" faults could potentially affect the residents and town. State Highway 169 and 69 intersect our community and are major transportation routes into Yavapai County. Residential areas of Dewey Humboldt may experience utility power outage, interruption in transportation, gas line breakage, or water interruption. Most residential areas are on private wells, which may become impacted due to a major seismic event.

Essential facilities in Dewey-Humboldt include two (2) schools and three (3) fire stations. Utility infrastructure includes three (3) gas pipelines, water, sewer, electrical transmission, and communications.

Considering geological features, building materials, and other environmental factors, HAZUS modeling estimates that around 100 buildings could sustain moderate to extensive damage. Most of these buildings would be residential structures with manufactured housing being the most vulnerable.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities would be operational at 50% or greater capacity by Day 1. Utility outages, while possible are forecast by HAZUS to be minimal and quickly restored with the majority if not all homes receiving complete service restoration on Day 1. Only one (1) household is estimated to experience displacement and casualties are not expected.

An earthquake impacting this area could result in up to 1,000 tons of debris with 58% deriving from wood/brick and the balance from reinforced concrete/steel. Restoration crews can remove this debris with approximately 40 truckloads.

Jerome - Jerome's vulnerability of individual households contributes to the communities' vulnerability to earthquakes. Existing social and cultural structures within any community determines the resilience of that community to the disaster. Jerome has an extended family of neighbor's, community organizations, and interdependence within the Town to provide strength during a disaster. Any destruction of network for example by relocation during the reconstruction phase of an earthquake can cause a community to become vulnerable as well as traditional values that can be disturbed. The coping mechanism is no longer capable of resiliency to disasters at this point and individual and collective preparedness towards earthquakes are necessary. Earthquakes can be a difficult societal problem because they have low annual probability of occurrence, but a high probability of causing adverse societal consequences. Continuing preparedness and making it a culture of community life makes Jerome's community resilient towards earthquakes and a lack of it makes our community vulnerable.

Essential facilities in Jerome include two (2) fire stations and one (1) police station. There are no schools or hospitals. Transportation infrastructure includes 126 miles of highway and 25 railway segments. Utility infrastructure includes water, sewer, natural gas, electrical transmission, and communication.

Based on geological features, building construction, and other environmental factors, HAZUS modeling estimates 68 buildings would sustain moderate to extensive damage in the event of an earthquake. Most of the vulnerability lies with residential structures. Manufactured housing is most vulnerable to damage.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities will be operational at 50% or greater capacity by Day 1. Utility outages, while possible, are forecast by HAZUS to be minimal and quickly restored with the majority if not all homes receiving complete service restoration on Day 1. Only one (1) household is estimated to experience displacement and casualties are not expected regardless of the time of day the event should occur.

An earthquake impacting this area could result in up to 1,000 tons of debris with 47% deriving from wood/brick and the balance from reinforced concrete/steel. Restoration crews can remove this debris with approximately 40 truckloads.

Prescott – The City of Prescott is located among many active and inactive seismic zones. Although there is no recent history as it relates to damaging earthquakes within the city it remains a possibility. Being there are no definitive boundaries of an earthquake, and the magnitude or intensity of an earthquake will determine the levels of impact to people, residential areas and structures, critical infrastructure, (including but not limited to transportation routes, government offices, medical facilities, food supply industry, potable water supply and distribution points), operations of government, private enterprise, and utilities. Earthquakes can occur anytime and have occurred in the City of Prescott since recorded history.

Essential facilities in Prescott include four (4) hospitals with a total bed capacity of 158 beds, 25 schools, seven (7) fire stations, four (4) police stations and one (1) emergency operations center. The transportation infrastructure includes 105 miles of highway, one (1) railway segment, one (1) bus terminal, and an airport with one (1) active runway. Utility infrastructure includes water, sewer, electrical generation, electrical transmission, and communication.

Based on geological features, building construction, and other environmental factors, HAZUS modeling estimates 550 buildings would sustain moderate to extensive damage in the event of an earthquake. Most of the vulnerability lies with residential structures, however around 70 commercial and industrial facilities could also sustain moderate to extensive damage.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities will be operational at 50% or greater capacity by Day 1. Utility outages, while possible, are forecast by HAZUS to be minimal and quickly restored with the majority if not all homes receiving complete service restoration on Day 1. Fourteen (14) households are estimated to experience displacement and six (6) persons are anticipated to need public shelter. An event during the day could result in up to 9 casualties. In the early morning or evening, an event may result in 4 – 6 casualties requiring medical attention but not hospitalization.

An estimated 14,000 tons of debris could be generated from an event in this area. Of this debris it is likely that up to 55% will be wood and brick with the balance being reinforced concrete and steel. Recovery crews should plan for 650 truckloads to handle the debris.

Prescott Valley – Prescott Valley resides in proximity to larger Yavapai County faults; it sits at the south end of the Little Chino fault and is at a moderate risk. On February 4, 1976, a 4.9 magnitude earthquake with an epicenter in Chino Valley occurred. The seismic transmission of energy was to the southeast. Prescott Valley had little development, however, today; it would affect over 65,000 people.

Essential facilities in Prescott Valley include three (3) hospitals with a total bed capacity of 88 beds, 21 schools, four (4) fire stations, and one (1) police station. The transportation infrastructure includes 76 miles of highway. Utility infrastructure includes water, sewer, natural gas, electrical transmission, and communication.

Based on geological features, building construction, and other environmental factors, HAZUS modeling estimates 660 buildings would sustain moderate to extensive damage in the event of an earthquake. Most of the vulnerability lies with residential structures, however around 46 commercial and industrial facilities could also sustain moderate to extensive damage.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities will be operational at 50% or greater capacity by Day 1. Utility outages, while possible, are forecast by HAZUS to be minimal and quickly restored with the majority if not all homes receiving complete service restoration on Day 1. Twenty (20) households are estimated to experience displacement and up to eleven (11) persons are anticipated to need public shelter. An earthquake in Prescott Valley at any time of the day could result in 5 - 7 casualties requiring medical attention but not hospitalization.

An estimated 11,000 tons of debris could be generated from an event in this area. Of this debris it is likely that up to 55% will be wood and brick with the balance being reinforced concrete and steel. Recovery crews should plan for 440 truckloads to handle the debris.

Sedona – Sedona has a moderate earthquake risk, with seven earthquakes since 1931. The USGS database shows that there is a 23.33% chance of a 5.0 Magnitude earthquake within 50km of Sedona, AZ within the next 50 years and a 4.25% chance of a 6.0 Magnitude earthquake within 50km of Sedona, AZ within the next 50 years. Since 1931, the largest earthquake within 30 miles of Sedona, AZ was a 4.7 Magnitude in November 2014. No major damage or injuries were reported because of the 2014 earthquake.

Essential facilities in Sedona include one (1) hospital, six (6) schools, one (1) fire station, and one (1) police station. The transportation infrastructure includes 17 miles of highway and 15 railway segments, one (1) bus terminal and an airport with one (1) active runway. Utility infrastructure includes water, sewer, natural gas, electrical transmission, and communication.

Based on geological features, building construction, and other environmental factors, HAZUS modeling estimates 159 buildings would sustain moderate to extensive damage in the event of an earthquake. Most of the vulnerability lies with residential structures.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities will be operational at 50% or greater capacity by Day 1. Utility outages, while possible, are forecast by HAZUS to be minimal and quickly restored with the majority if not all homes receiving complete service restoration on Day 1. Three (3) households are estimated to experience displacement and one (1) person is anticipated to need public shelter. An earthquake in Sedona at any time of the day could result in 1 – 2 casualties requiring medical attention but not hospitalization.

An estimated 3,000 tons of debris could be generated from an event in this area. Of this debris it is likely that up to 58% will be wood and brick with the balance being reinforced concrete and steel. Recovery crews should plan for 120 truckloads to handle the debris.

Yavapai-Prescott Indian Tribe – Yavapai Prescott Indian Tribal lands reside in proximity to larger Yavapai County faults and is in an area surrounded by normal faulting identified by a series of Graben, as identified by Northern Arizona Geology Department. The area is also identified by the USGS as having a series of micro faults extending primarily east to west across the Prescott Basin. All the Yavapai Prescott Indian Tribe's land, as well as infrastructure is within this seismic zone.

Essential facilities include one (1) school, one (1) fire stations, and one (1) police station. The transportation infrastructure includes 67 miles of highway. Utility infrastructure includes water, sewer, natural gas, electrical transmission, and communication.

Based on geological features, building construction, and other environmental factors, HAZUS modeling estimates 99 buildings would sustain moderate to extensive damage in the event of an earthquake. Most of the vulnerability lies with residential structures.

HAZUS modeling forecasts negligible damage to essential facilities and that all essential facilities will be operational at 50% or greater capacity by Day 1. Utility outages, while possible, are forecast by HAZUS to be minimal and quickly

restored with the majority if not all homes receiving complete service restoration on Day 1. Two (2) households are estimated to experience displacement with no anticipated public shelter needs. An earthquake in this area at any time of the day could result in one (1) casualty requiring medical attention but not hospitalization.

An estimated 2,000 tons of debris could be generated from an event in this area. Of this debris it is likely that up to 52% will be wood and brick with the balance being reinforced concrete and steel. Recovery crews should plan for 80 truckloads to handle the debris.

Changes in Development in the Hazard Area

Yavapai County
Growth in Yavapai County increased by 12% over the last ten years, and by over 40% in the last twenty years. Due to its cooler temperatures, pristine forests and unique communities, Yavapai County has also become a hot spot for travelers out of the Phoenix and Tucson metropolitan areas, as well as from outside the state. The increasing population size has resulted in steady urban development and home growth. This growth is expanding the burden on livable area, the road system, public utilities, and critical infrastructure. It is also encroaching on previously undeveloped areas and straining water resources. An increase in the population density and development heightens the County's vulnerability to multiple hazard types.

Camp Verde
To support a growing population, Camp Verde issued 184 commercial and residential building permits from 2019-2021. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 60-70 permits per year. The new facilities are tapping into and expanding the city's infrastructure. The new buildings comply with 2018 International Building Codes and the community is expanding in line with their 2021 Zoning Plan. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Risk exposure is increasing, and the resilience of the new building inventory is also increasing. The vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Chino Valley
Chino Valley issued 611 commercial and residential building permits from 2019-2023. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 80-90 permits per year. Chino Valley adheres to the 2018 International Building Codes and the community is expanding in line with their 2022 Unified Development Ordinance. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a catastrophic severity, however; the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Clarkdale
The community of Clarkdale averaged a steady growth of 61 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The new facilities are tapping into and expanding the city's infrastructure. With regards to risk associated with earthquakes, Clarkdale adheres to the 2018 International Building Codes and the community is expanding in line with their 2021 General Plan. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a negligible severity, and the community is taking deliberate measures to maintain minimal risk in new construction.

Cottonwood
The town of Cottonwood issued over 500 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 150 to 180 permits per year. With regards to risk associated with earthquakes, Cottonwood adheres to the 2018 International Building Codes and the community is expanding in line with Ordinance 723 (April 2023). Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a negligible severity, and the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Dewey-Humboldt
The town of Dewey-Humboldt issued 210 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 35 to 40 permits per year. With regards to risk associated with earthquakes, Dewey-Humboldt adheres to the 2018 International Building Codes and the community is expanding in line with the Zoning Map approved in 2005. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a critical severity, and the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Jerome
Jerome did not issue new building permits. There are no changes in this development area. Current and future development is limited. There are no changes in vulnerability based on new development.

Prescott
The city of Prescott averaged a steady growth of 193 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The new facilities are tapping into and expanding the city's infrastructure. With regards to risk associated with earthquakes, Prescott adheres to the 2018 International Building Codes and the community is expanding in line with their 2020 Zoning Plan. Homes built onto the steep hillsides of Prescott capture exceptional vies, but they also create heightened areas of risk associated with earthquakes. It is risk that can be mitigated with proper engineering. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a limited severity, and the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Prescott Valley
The city of Prescott Valley averaged a steady growth of 558 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The new facilities are tapping into and expanding the city's infrastructure. With regards to risk associated with earthquakes, Prescott Valley adheres to the 2018 International Building Codes and the community is expanding in line with their 2022 Zoning Plan. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a catastrophic severity, and the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Sedona
The city of Sedona issued an average of 63 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. With regards to

risk associated with earthquakes, Sedona adheres to the 2018 International Building Codes and the community is expanding in line with their Ordinance #2018-12. Risk exposure associated with earthquakes and population growth are increasing in lock step, however; the community is engineering risk mitigation into their building codes and zoning requirements. Exposure is rising and the resilience of the new building inventory is also increasing. The impact of an earthquake in this area has a negligible severity, and the vulnerability of the community is not increasing as the community is taking deliberate measures to minimize risk in new construction.

Yavapai Prescott Indian Tribe

There are no changes in this development area. Current and future development is limited. The Tribe has not issued any building permits over the past five years. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

4.4.2 Flood

Description

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

- *Tropical Storm Remnants*: Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the State. These events occur infrequently and mostly in the early autumn, usually bringing heavy and intense precipitation over large regions causing severe flooding.
- *Winter Rains*: Winter brings the threat of low intensity; but long duration rains covering large areas that cause extensive flooding and erosion, particularly when combined with snowmelt.
- *Summer Monsoons*: The annual monsoon season brings flooding to Arizona in mid to late summer. Heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. This causes 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.

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

problems result. Erosion is also often associated with damages due to flooding.

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

History

Summary Info for Floods and Flash Floods.[31]	
Number of County/Zone areas affected:	4
Number of Days with Event:	193
Number of Days with Event and Death:	4
Number of Days with Event and Death or Injury:	4
Number of Days with Event and Property Damage:	10
Number of Days with Event and Crop Damage:	0
Total Directly Related Deaths	4
Total Directly Related Injuries	0
Sum of Property Damage Estimates	$11.273M
Sum of Crop Damage Estimates	$0

Figure 33 Summary Info for Floods and Flash Floods

Flooding is clearly a major hazard in Yavapai County with several disaster declarations. The following incidents represent examples of major flooding that have affected Yavapai County and the Yavapai-Prescott Indian Tribe:

- In August 2022, the river gauge at Granite Creek showed nearly a 4-foot rise in one hour. It rose from 7.19 feet at 230 PM to 10.96 feet at 3:20 PM. Ten feet is considered moderate flood stage and 11 feet major flood stage. The gauge dropped below major flood stage at 4:45 PM and below flood stage at 5:45 PM. Aa high-pressure circulation centered near the Four Corners allowed deep monsoon moisture to become thoroughly entrenched across northern Arizona. Surface dew points were generally above 60 F south of the Mogollon Rim, with values in the 50s along and north of the Rim. Precipitable water ranged from 1.0 to 1.75 inches, with the highest values across southern Yavapai County.

- In August 2021, A stream gauge on Granite Creek (northeast of downtown Prescott--GRCA3) reported a 6.7-foot rise with a peak flow of 3,558 CFS. At least five roads were closed in Prescott due to flooding between 2:50 and 3:50 PM. Several roads were also closed in Wilhoit due to flooding. Two cars were stuck in flowing washes near Chino Valley/Paulden. Water was beginning to move the vehicles, so Law Enforcement was called to the scene.

[31] NOAA. Storm Events Database. Retrieved 23 March 2023 from https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Flash+Flood&eventType=%28Z%29+Flood&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=2018&endDate_mm=12&endDate_dd=31&endDate_yyyy=9999&county=YAVAPAI%3A25&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=4%2CARIZONA.

- In November 2019, the Community of Yarnell was inundated with two significant rain events of about 2 inches/hour within a 10-day span. Several residences and businesses were flooded east of Highway 89. Despite mitigation efforts by the County, the sediment runoff was significant due to the Tenderfoot Fire, which occurred the prior month. A very large are of low pressure brought wind, rain, and snow to northern Arizona Thanksgiving Day and Black Friday. Strong southerly winds brought very moist air over Arizona with rising snow levels. Heavy rain fell below an elevation around 7,500 feet through much of Thanksgiving Day. Snow levels lowered the night of November 29th into the 30th with the passage of a cold front. Snowfall was eventually reported at the bottom of The Grand Canyon. Significant snow was reported as well as increased flows in lower elevations creeks and rivers.

- In September 2019, Black Canyon Wash was flowing over Maren Ave about 1.5 feet deep by 1250 PM (from a river gauge reading of about 3.25 feet). The river eventually rose to 16 feet on the river gauge (a 13.5-foot rise). The river dropped to around 5 feet on the river gauge by around 8 PM on December 4.

- In February 2019, the stream gauge on Wet Beaver Creek near Rimrock reported a 7-foot rise between 6 PM and 8 PM. The river gauge on Wet Beaver Creek at Montezuma Castle showed a 15-foot rise in two hours (945 PM to 1145 PM). Officials estimate about 25 homes were damaged as a result of the flooding, and some were declared unsafe. Multiple rescues performed in the Montezuma and Rimrock areas. Black Canyon Creek at Maren Avenue River gauge showed a 2-foot rise in four hours (830 PM to 1230 AM). West Clear Creek near Camp Verde showed a 5.7-foot rise in 45 minutes (11 PM to 1145 PM).

- In July 2018, a trained spotter in Ash Fork reported 1.76 inches of rain between 200 PM and 4:36 PM. This led to flash flooding of Double “A” Ranch Road with 3-4 inches of standing water on the roadways. Portions of dirt roadways were washed away as a result of the localized flooding. Big Bug Creek experienced flash flood conditions during the mid-afternoon which lasted for approximately two hours. Water rose out the banks and flooded East Antelope Road. Much of the rain fell over the Goodwin Fire scar. Winds also gusted up to 45 MPH between 315 and 415 PM MST. The flood waters continued down the Agua Fria Wash for another 6 to 9 hours. This water eventually flowed into Black Canyon Creek near Black Canyon City. The Agua Fria River gauge at Old Black Canyon City Highway showed a rapid rise of 2.2 feet at 230 AM on July 16.

2023 Yavapai County Flood Damages

Sedona Fire Department rescues 3 adults, 1 child, and 2 dogs from a stranded vehicle

Sycamore Park in Rimrock during the flooding.

Dry Beaver Creek during flooding

Sullivan Lake Dam

Big Chino Wash at SR 89

Verde River at SR 89A and Bates Road in Cottonwood

Figure 34 2023 Yavapai County Flood Damages

Yavapai Prescott Indian Tribe

The top picture illustrates erosion along Granite Creek on the Yavapai Prescott Indian Tribe lands. The Tribal lands are bifurcated by Granite Creek and during times of heavy flow the tribe is cut off from responding resources and parts of the tribal lands are isolated. The Tribe is working to improve the resilience of the Slaughterhouse Gulch area and control erosion caused by the flood waters by using HMA funds to build gabions.

Extent

The land of Yavapai County and the Yavapai-Prescott Indian Tribe are prone to flooding, particularly flash flood events. Since 1950, there have been 301 flood and flashflood events according to the NOAA Storm Events Database. The topography and soil composition contribute to intense flooding events from relatively small amounts of rain over short durations of time. The probability of these events is high due to the ground being dry and the relative infrequency of rain events. The timeframe of these occurrences is also very small, creating a mass event in minutes. For consistency in terminology and graphic representation FEMA's Flood Zone Definitions are used in maps 4-2 through 4-13 to display the extent of flood areas.

Moderate to Low-Risk Areas	
ZONE	**DESCRIPTION**
B and X (shaded)	Between the limits of the 100-year and 500-year Floodplain, area with a 0.2% (or 1 in 500 chance) annual chance of flooding. This zone is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	500-year Floodplain, area of minimal flood hazard.

Figure 35 FEMA Flood Zones - Moderate to Low-Risk Areas

ZONE	**DESCRIPTION**
A	100-year Floodplain, areas with a 1% annual chance of flooding. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	100-year Floodplain. The base floodplain where base flood elevations are provided.
AH	100-year Floodplain, areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. flood elevations derived from detailed analyses are shown at selected intervals within these zones
AO	100-year Floodplain, river or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam).
A99	100-year Floodplain, areas with a 1% annual chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
Undetermined Risk Areas	
ZONE	**DESCRIPTION**
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Figure 36 FEMA Flood Zones - High & Undetermined Risk Areas

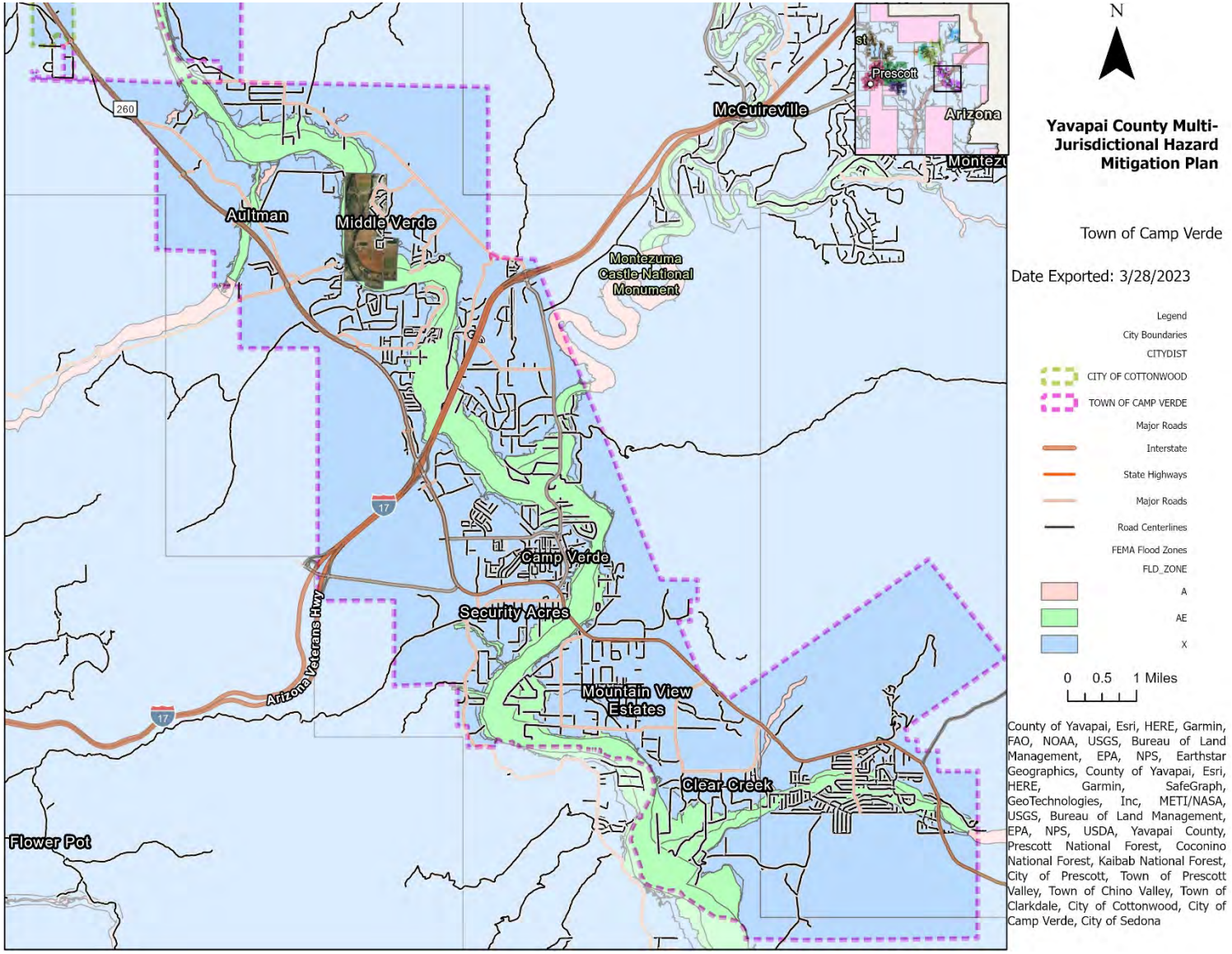


Figure 37 Map 4-2: Camp Verde Flood Map

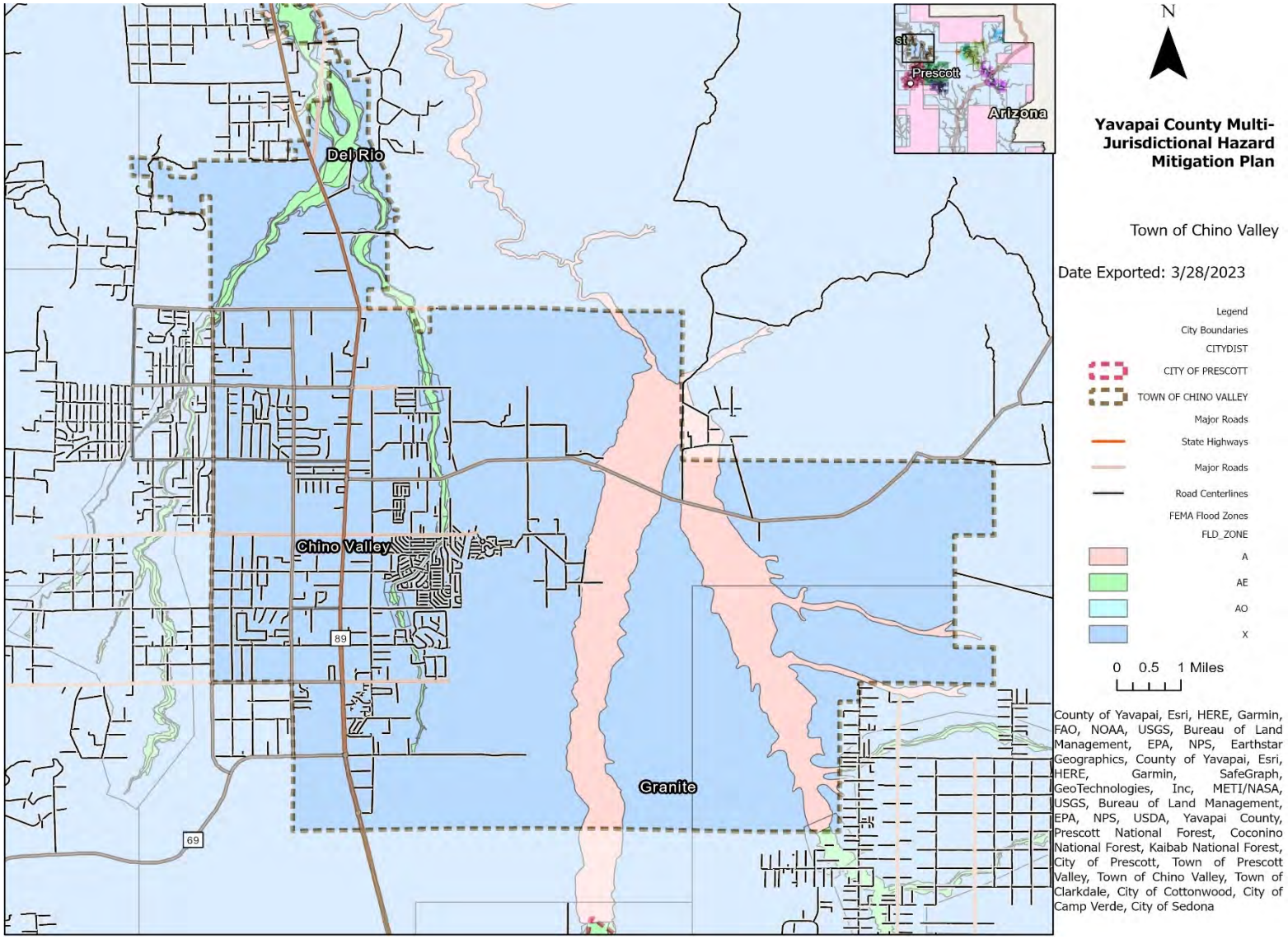


Figure 38 Map 4-3: Chino Valley Flood Map

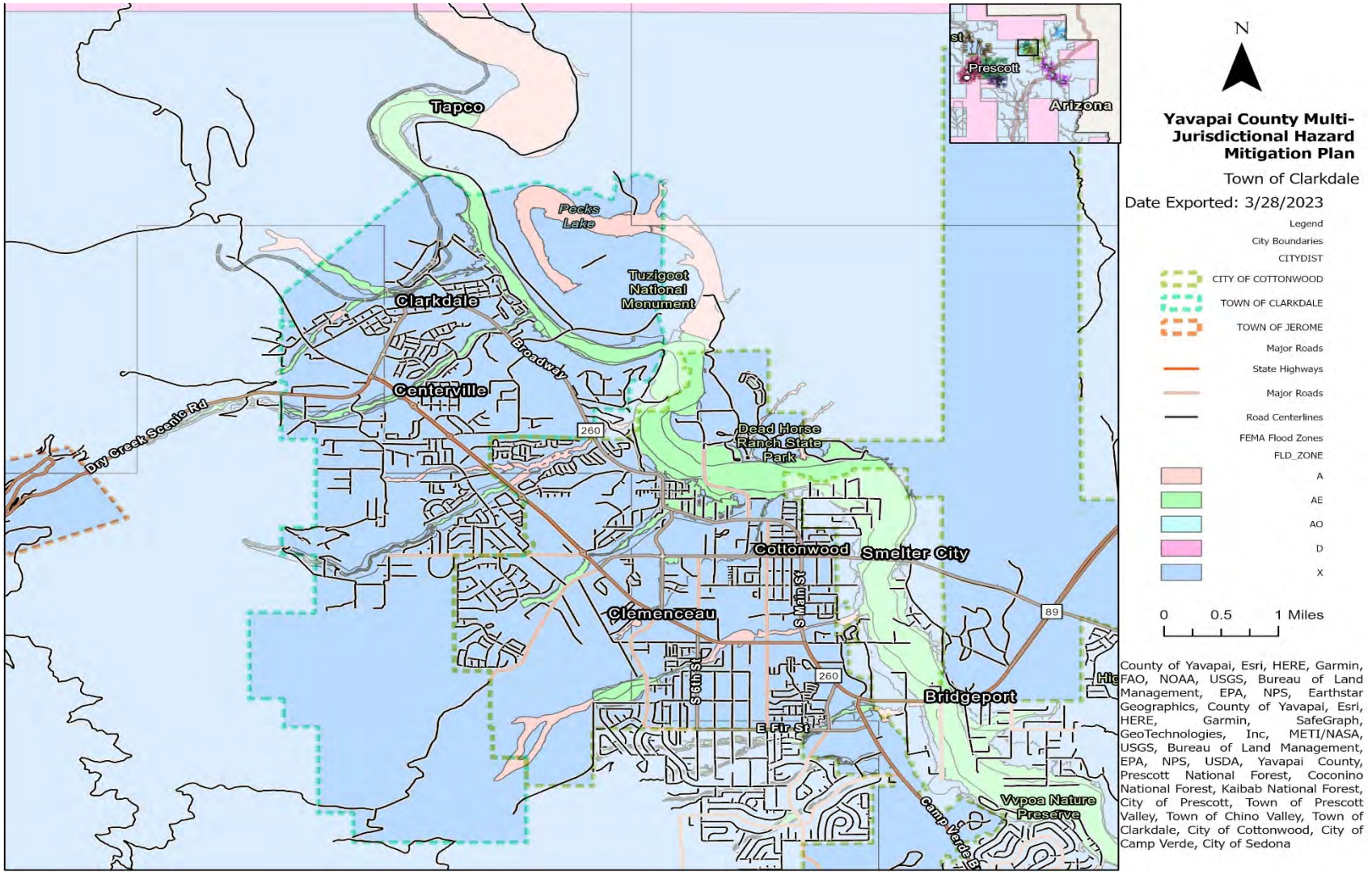


Figure 39 Map 4-4: Clarkdale Flood Map

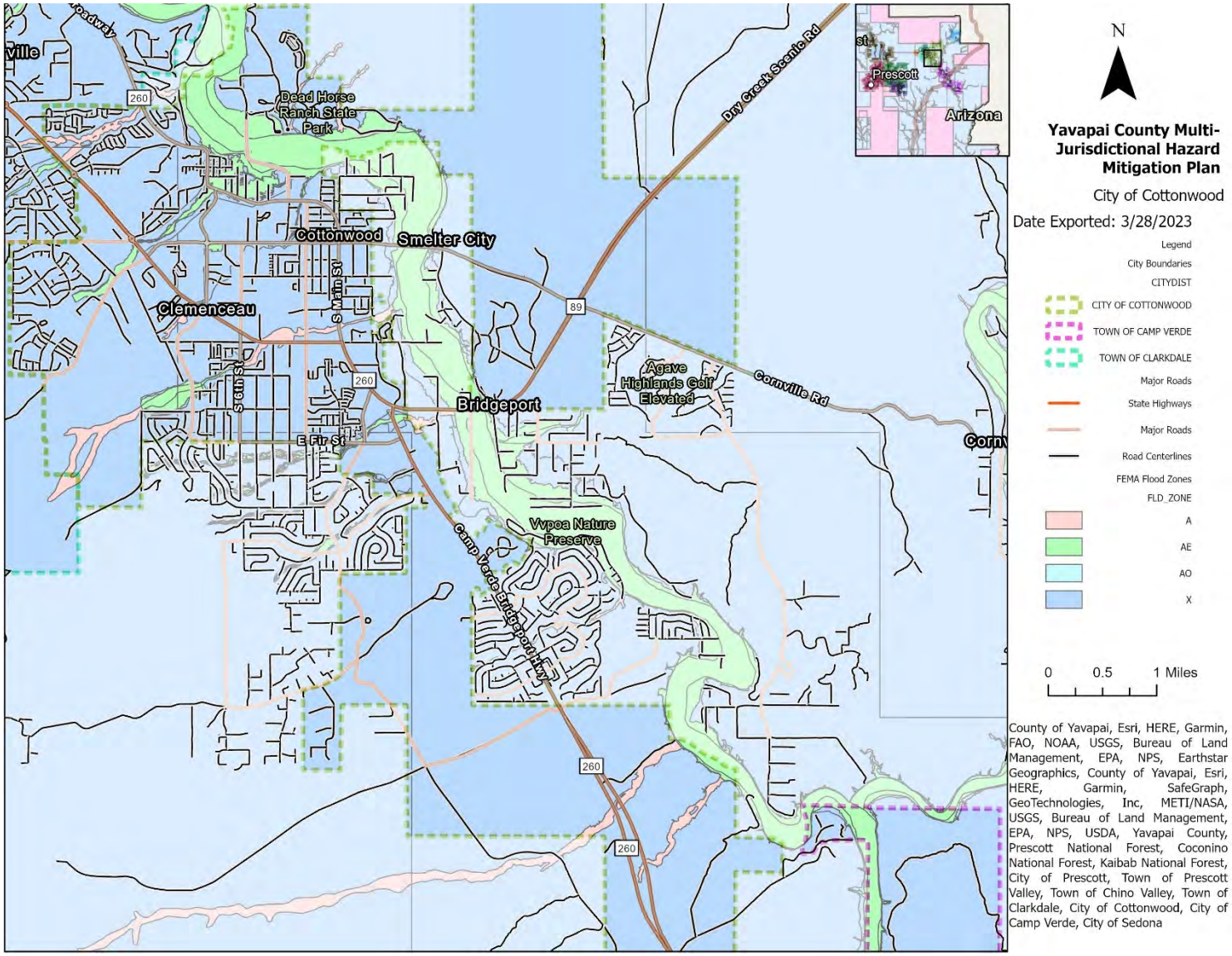


Figure 40 Map 4-5: Cottonwood Flood Map

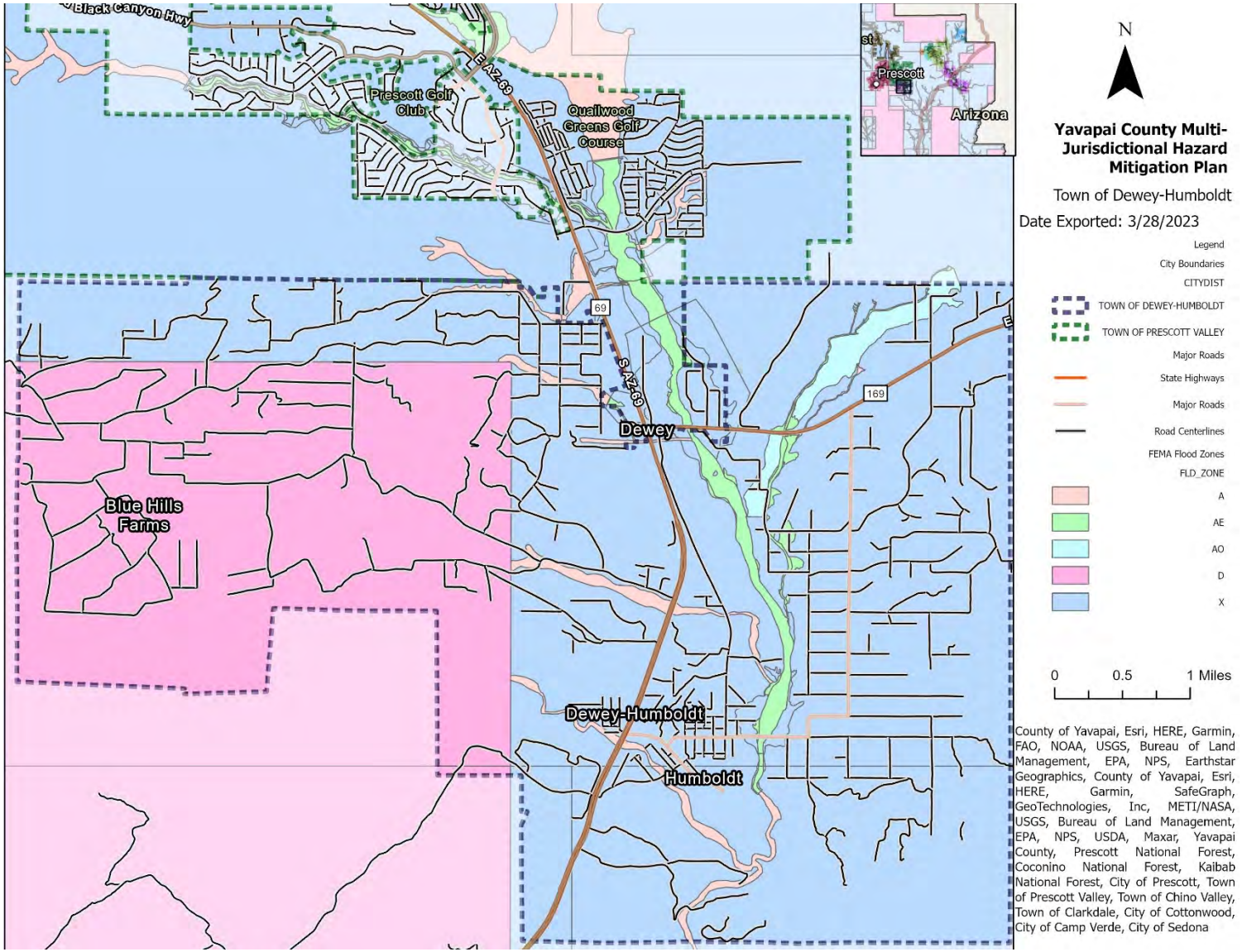


Figure 41 Map 4-6: Dewey-Humboldt Flood Map

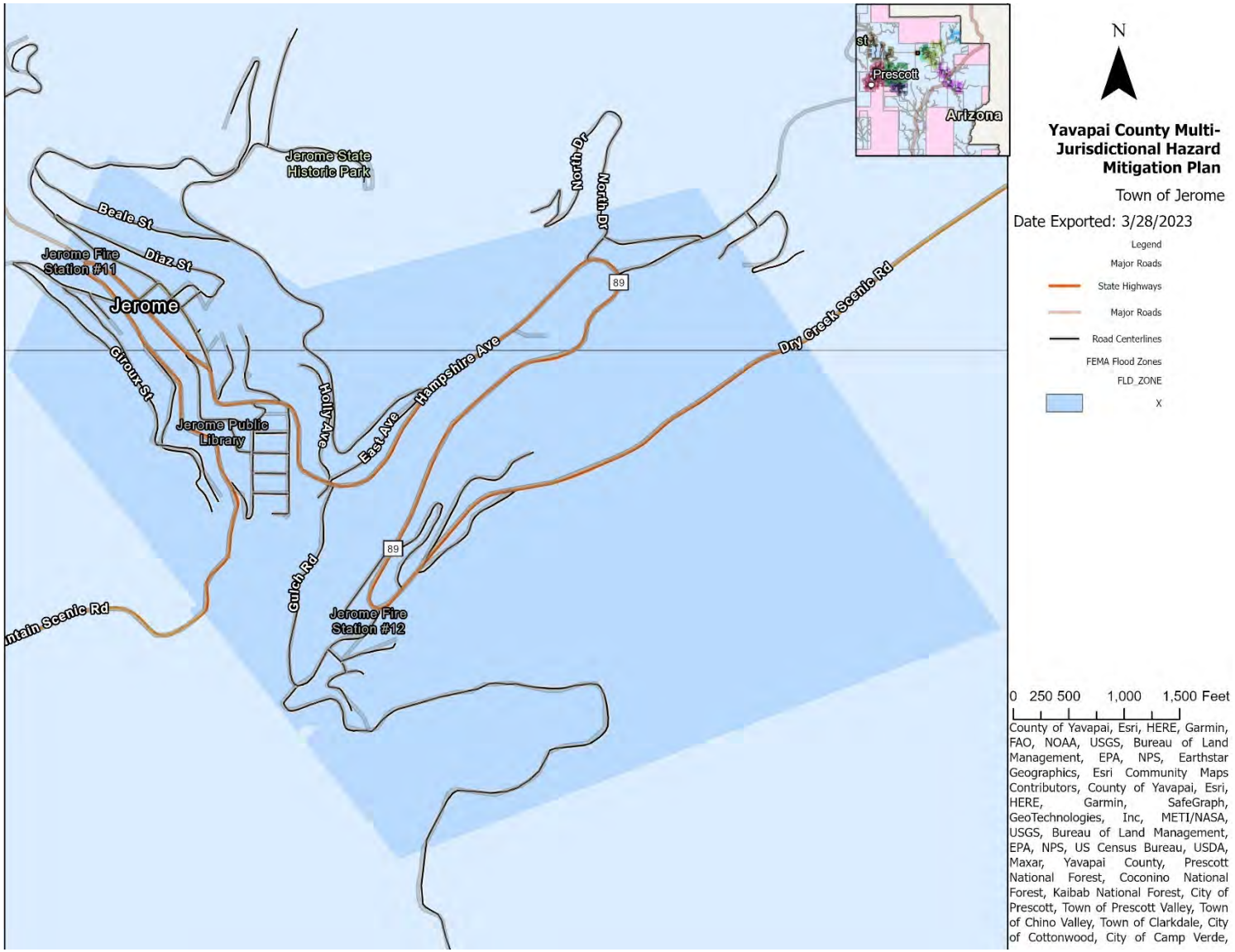


Figure 42 Map 4-7: Jerome Flood Map

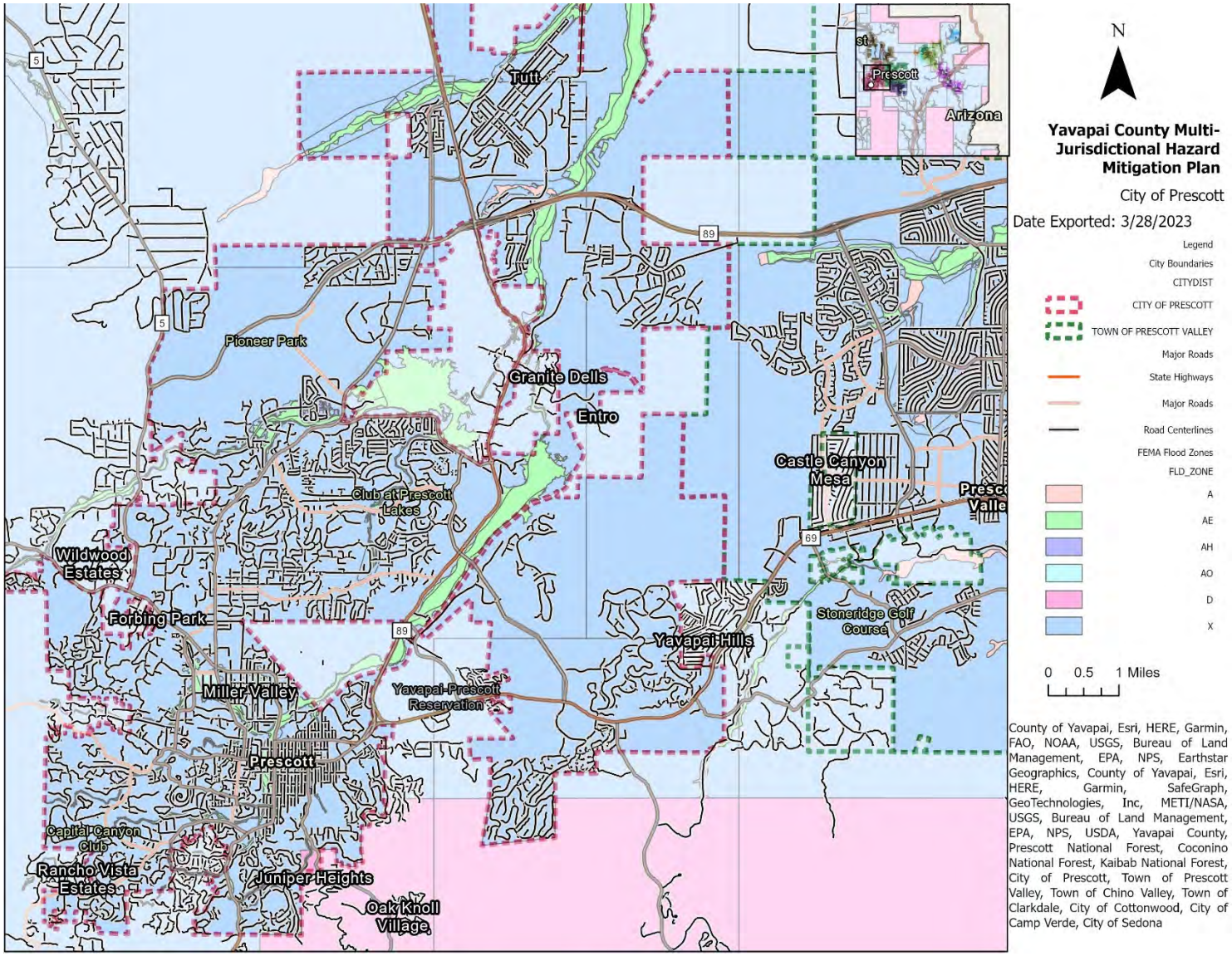


Figure 43 Map 4-8: Prescott Flood Map

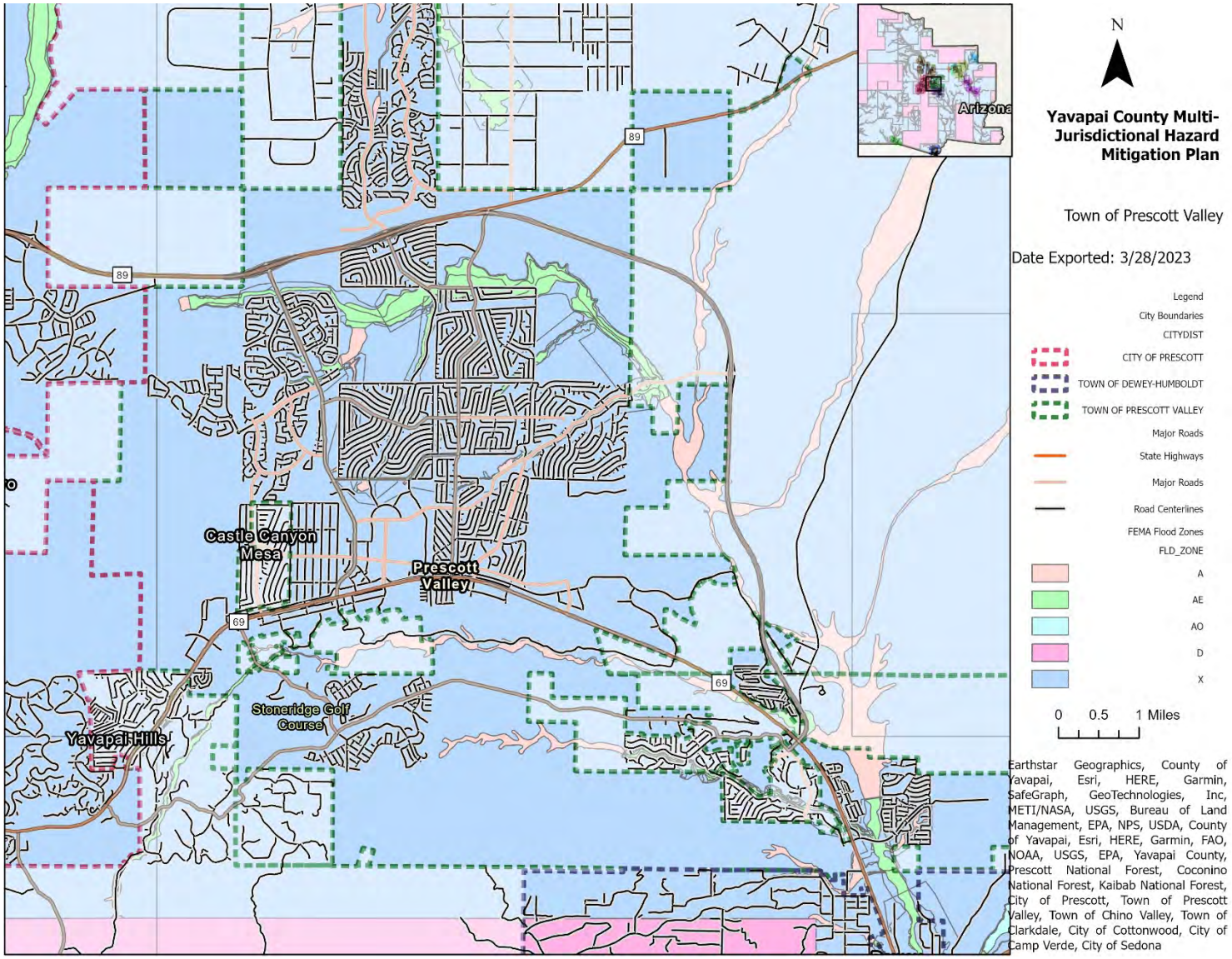


Figure 44 Map 4-9: Prescott Valley Flood Map

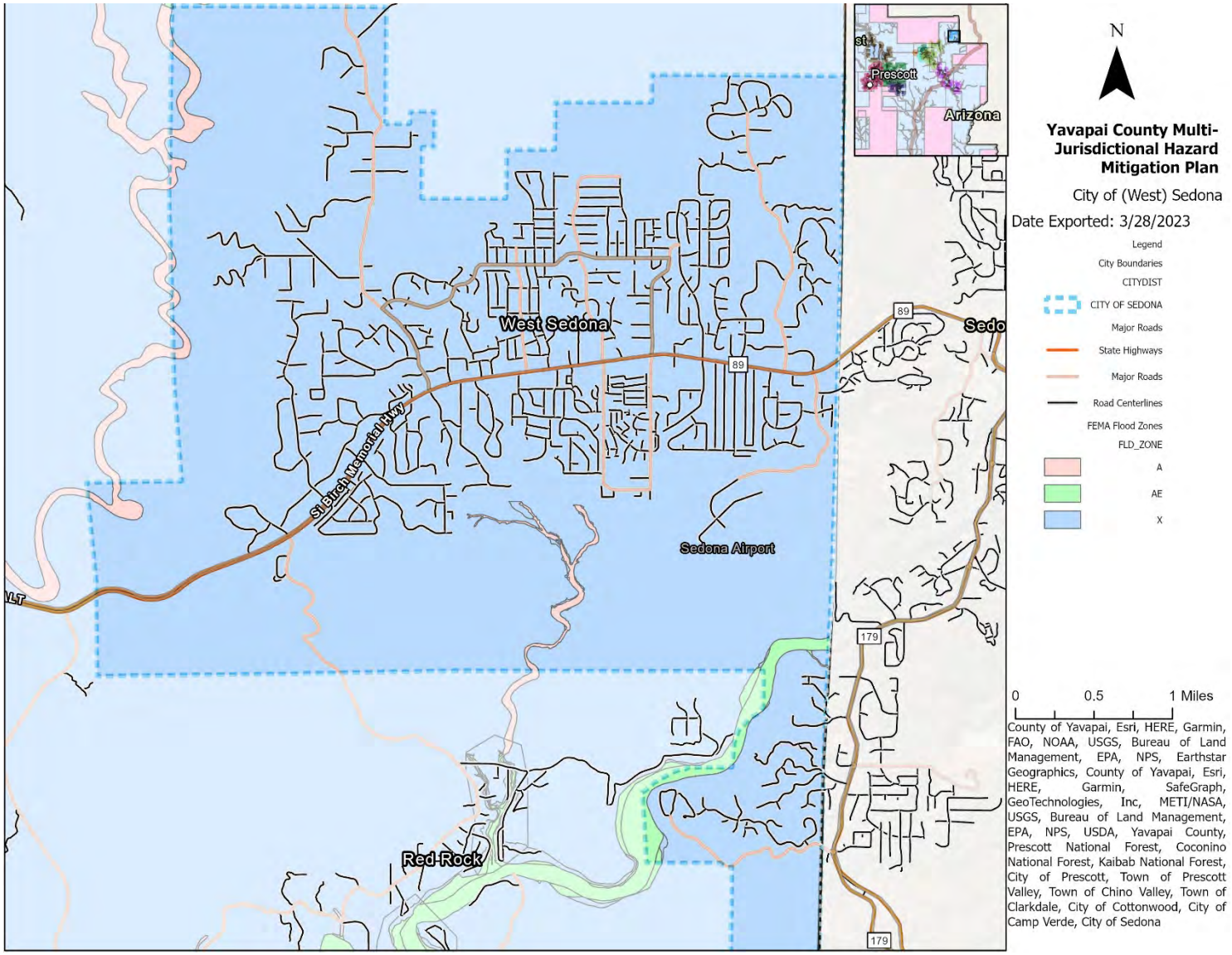


Figure 45 Map 4-10: Sedona Flood Map

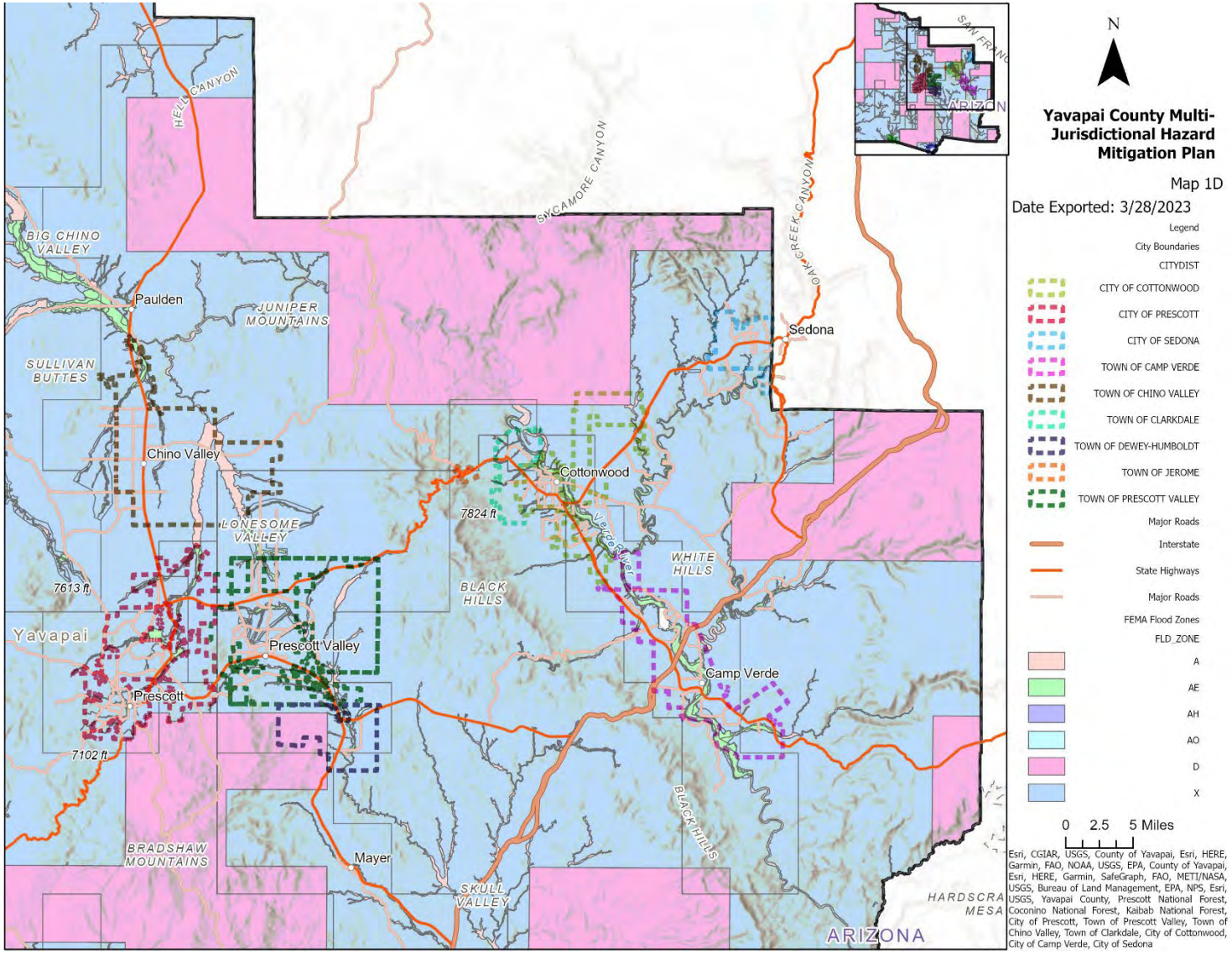


Figure 46 Map 4-11a: Yavapai County Flood Map – NE

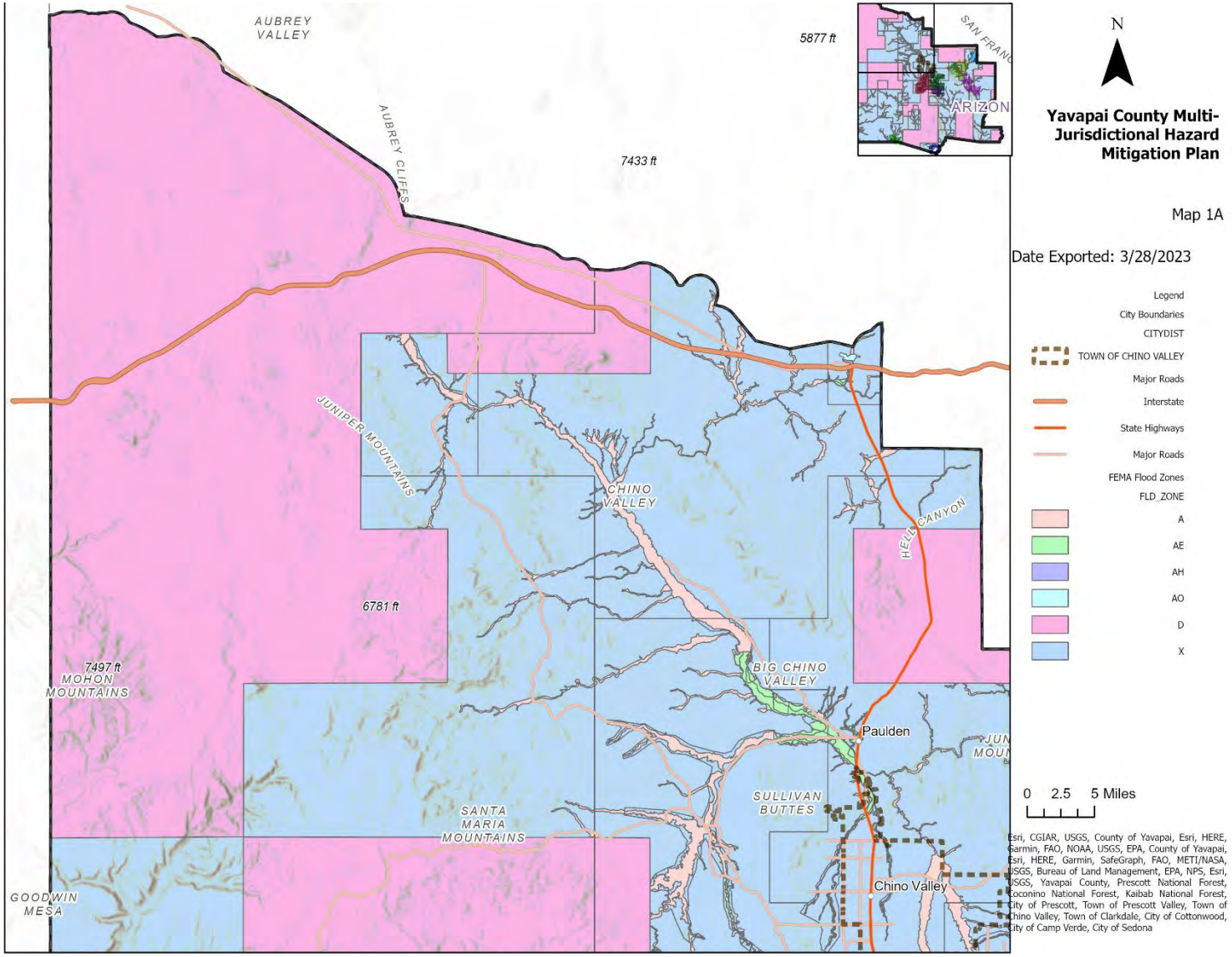


Figure 47 Map 4-11b: Yavapai County Flood Map – NW

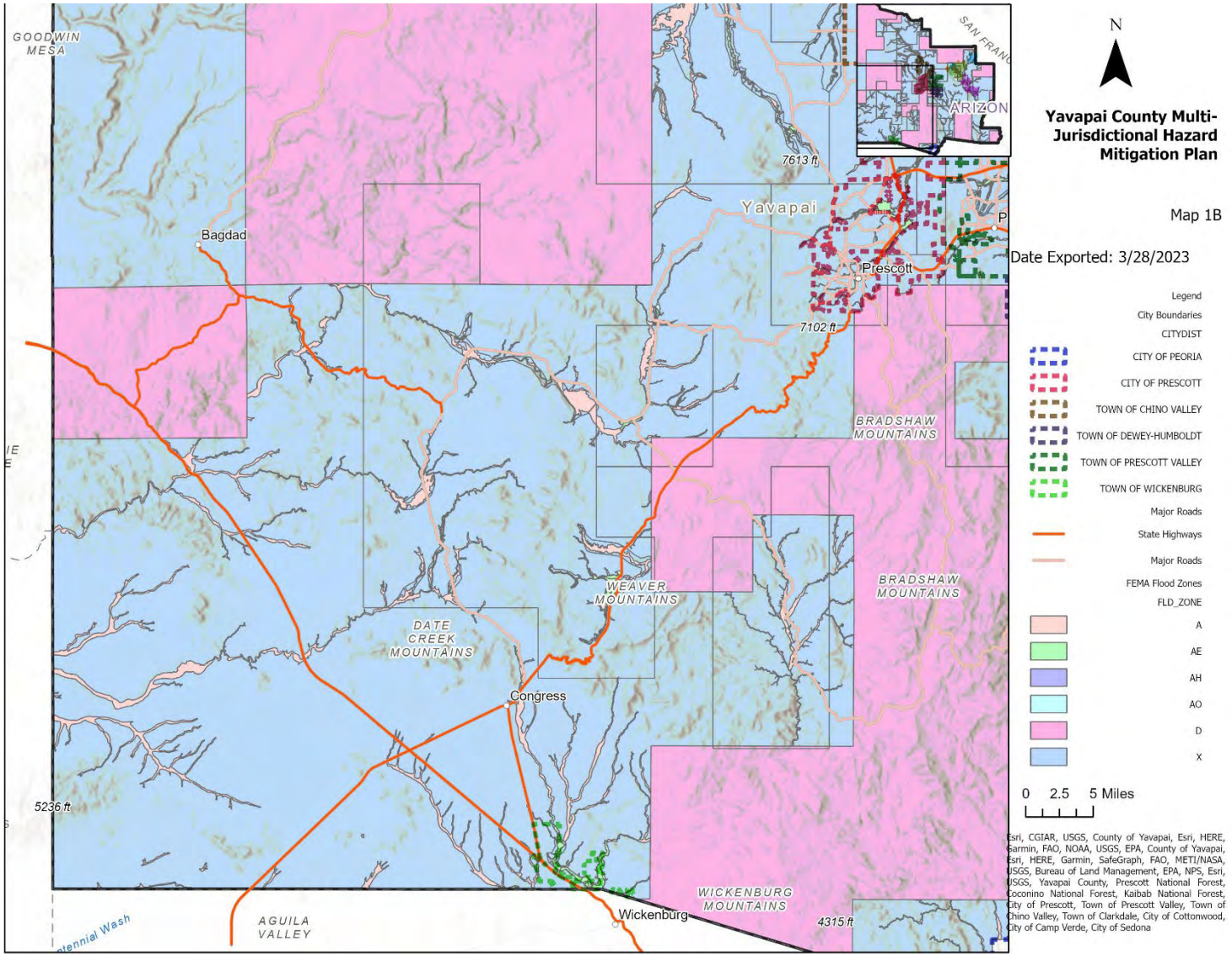


Figure 48 Map 4-11c: Yavapai County Flood Map – SW

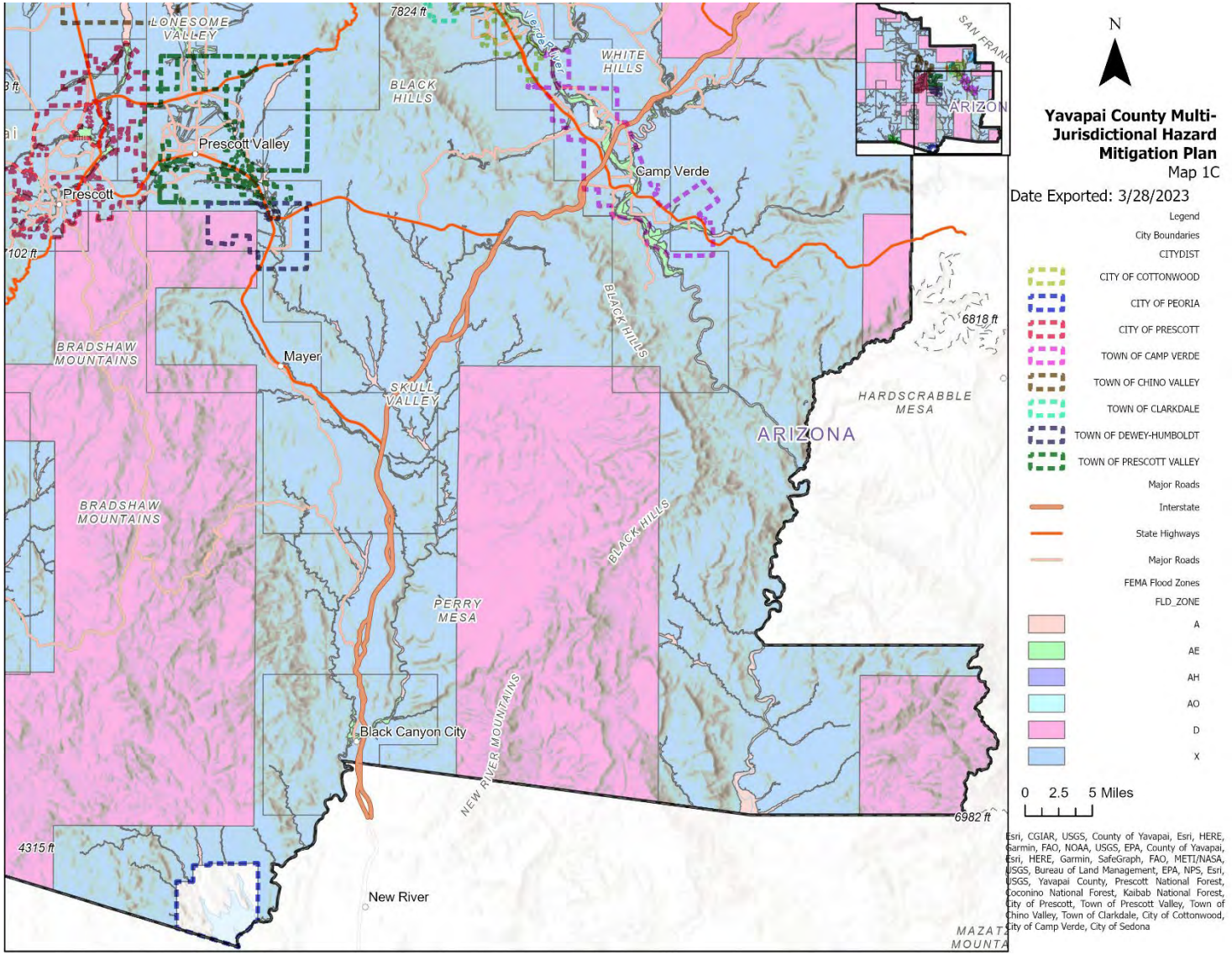


Figure 49 Map 4-11d: Yavapai County Flood Map – SE

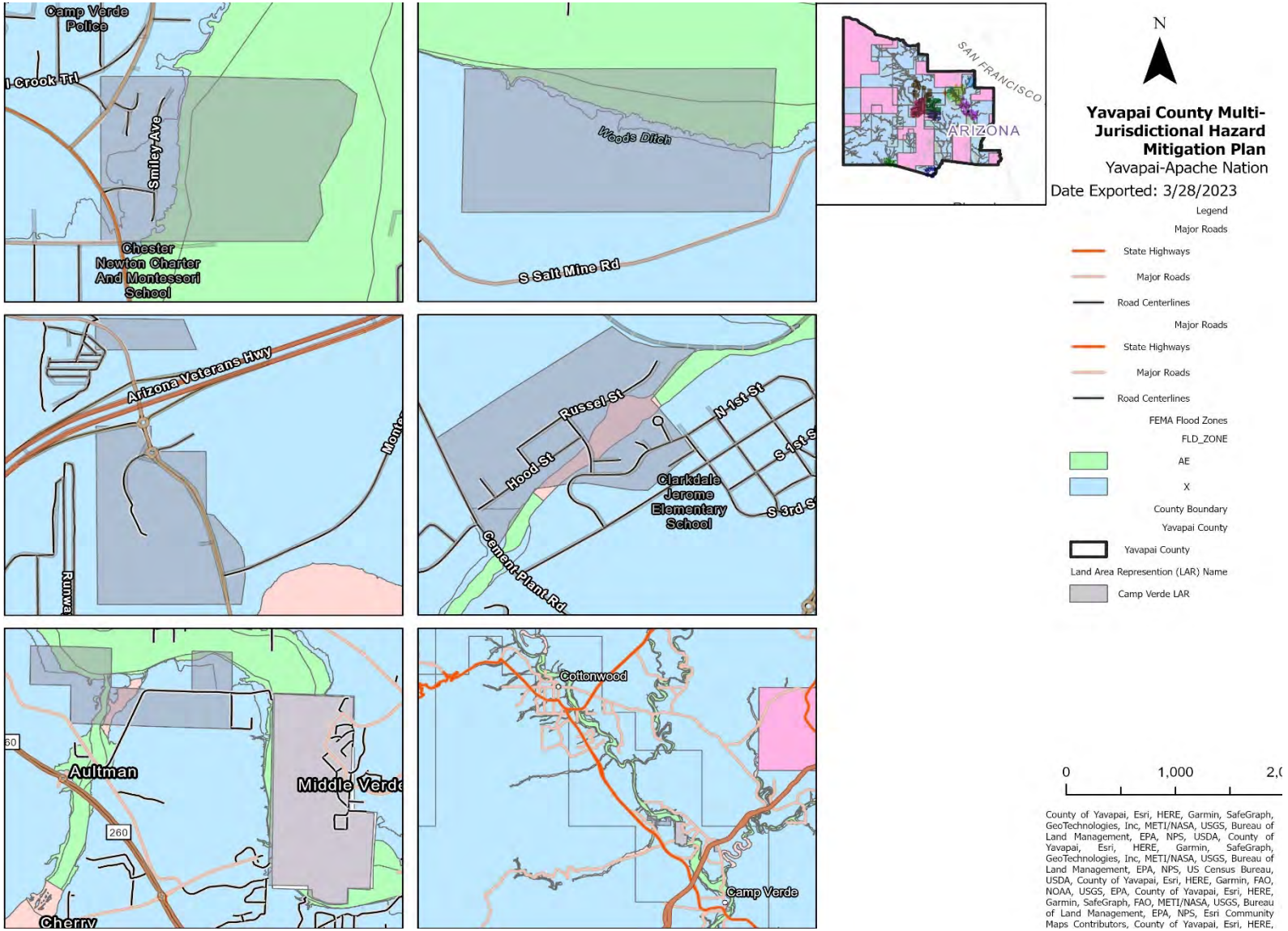


Figure 50 Map 4-12: Yavapai-Apache Nation

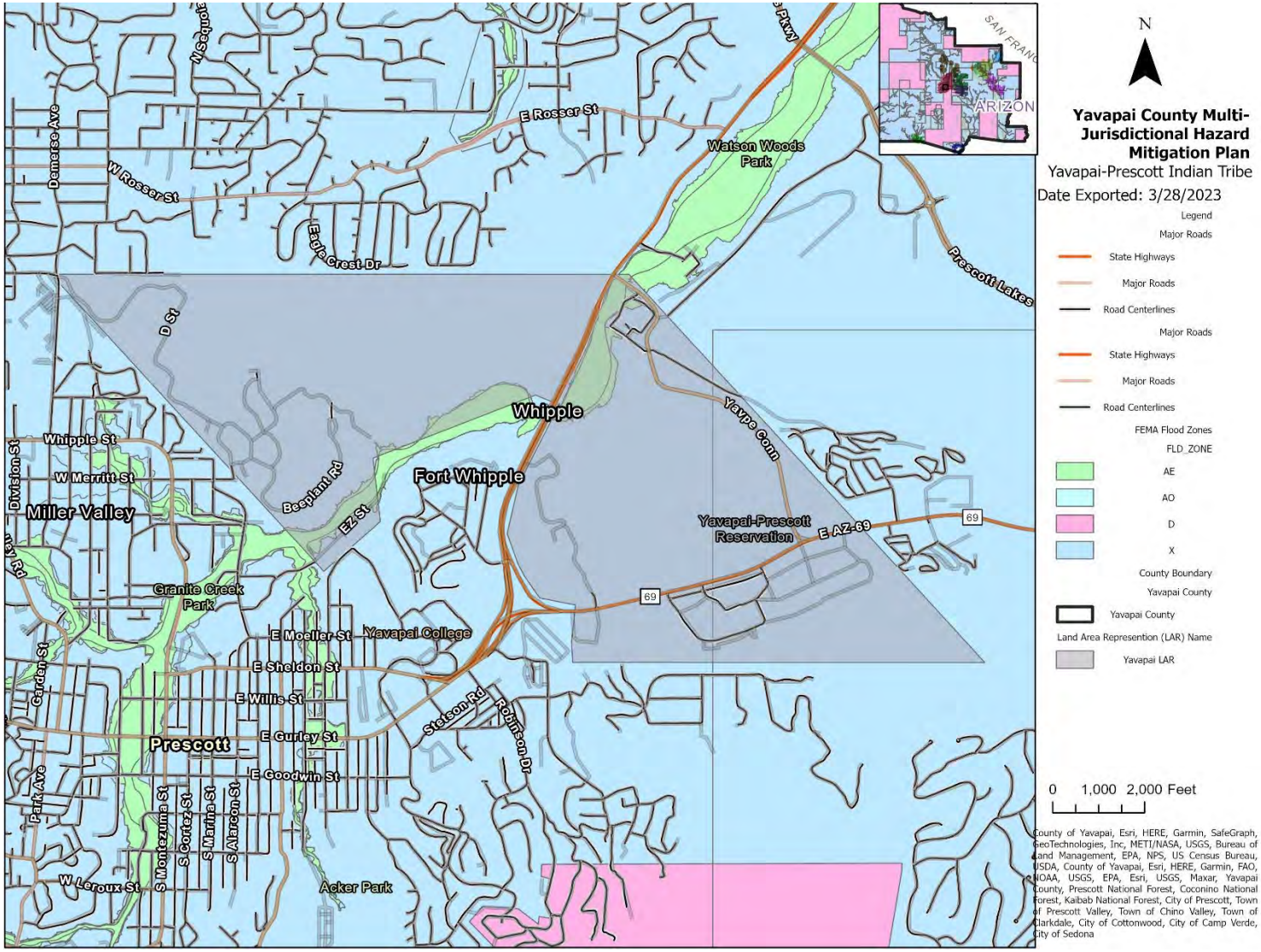


Figure 51 Map 4-13: Yavapai-Prescott Indian Tribe Flood Map

Probability of Future Events

Yavapai County is prone to two types of flooding: Riverine and Flash Flooding. Riverine flooding occurs over periods of extended precipitation and primary watercourses are affected: Oak Creek, Verde River, Black Canyon River, and Agua Fria River.

Probability increases with future development altering the perviousness of landscapes, and climate change shifting weather patterns. Although climate change will not greatly affect the probability; it does affect the severity. Trends across the country have shown increases in precipitation and resulting flood events. Flash flooding is the county's most dangerous type of flood event. Over the summer of 2017, the community of Mayer experienced a 100-year event, which occurred in a matter of 30 minutes. Within 3 minutes, the Bug Creek rose from 26 inches to over 9 feet topping local bridges and affecting 133 homes. The probability of flash flooding is 100 percent for Yavapai County and the Yavapai-Prescott Indian Tribe due to the mountainous terrain, wildfire potential, and perviousness of the soil. Flash flooding most likely occurs during the summer monsoon season and the rapid water accumulation in areas such as Granite Creek will result in continued flash floods throughout the area. Table 4-6 provides an assessment of the probability and maps 4-14 to 4-23 illustrate areas affected by 100-year and 500-year flood level events.

Climate Change

Climate change has the potential to cause significant effects on flooding throughout Yavapai County and the YPIT tribal areas in the region. The 2018 National Climate Assessment predicts that climate change will contribute to an increase in the frequency and intensity of certain weather events, including heavy rainfall and flash floods.

- Intensified Rainfall: Climate change can lead to an increase in extreme weather events, resulting in more intense and concentrated rainfall. When heavy rain falls on the arid landscapes of Yavapai County, the dry soil may struggle to absorb the water quickly, leading to surface runoff and an increased risk of flooding.
- Reduced Snowpack and Early Snowmelt: Yavapai County 's high-elevation regions, such as the mountains, receive winter precipitation in the form of snow. However, climate change can cause a decrease in snow accumulation and an earlier snowmelt. This situation can lead to a shift in the timing of water runoff, potentially causing flooding downstream when the melted snow combines with rainfall.
- Changes in Monsoon Patterns: The monsoon season in Arizona typically occurs from June to September and brings much-needed rainfall to the region. Climate change can alter monsoon patterns, resulting in changes in precipitation distribution and intensity. This variability can increase the risk of flash flooding as heavy downpours become more common.
- Increased Wildfire Risk: Climate change can contribute to drier conditions and more prolonged drought periods. These conditions can increase the risk of wildfires. When wildfires occur, they can intensify the likelihood of flooding by reducing vegetation cover that helps absorb rainfall and increasing the chances of debris flow and erosion during heavy rains.

Changes in Development

The increased urbanization and infrastructure development throughout Yavapai County is perceptibly altering the landscape. It is also altering the surfaces which reduce the potential for flood risk. As populations grow and urban areas expand, land development and changes in land use exacerbate flooding issues. Impermeable surfaces like concrete and asphalt prevent rainwater from naturally infiltrating into the ground, increasing runoff and flooding in urban areas. Throughout the County and Tribal areas, urbanization will increase the frequency and severity of future flood events even though new developments are created using modern flood calculations and better building codes.

Secondary or Cascading Effects

The type or range of cascading events are largely determined by the magnitude and location of the event, and various other factors, including burn scars from previous wildland fires and landslides from those previous fires preventing proper drainage. Additional cascading events may include ruptured gas and water lines and collapsed bridges along the previously mentioned transportation routes. Breached dams, landslides, rock falls, and communications failures

are possibilities.

National Flood Insurance Program Participation

Participation in the NFIP is a key element of any community's local floodplain management and flood mitigation strategy. Yavapai County and all incorporated jurisdictions other than Jerome and the Yavapai-Prescott Indian Tribe, 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: NFIP Statistics as of Oct 2022[32]

Jurisdiction	Number of Policies	Amount of Coverage (x $1,000)	Floodplain Management Role
Yavapai County	732	$178,933	Provides floodplain management for the Unincorporated County, Camp Verde, Clarkdale, Dewey-Humboldt, and Sedona
Camp Verde	275	$59,888	Town will do an initial review with ultimate floodplain management provided by Yavapai County
Chino Valley	21	$5,748	Floodplain management provided by Town staff.
Clarkdale	10	$2,476	Town will do an initial review with ultimate floodplain management provided by Yavapai County
Cottonwood	67	$18,685	Floodplain management provided by City staff.
Dewey-Humboldt	18	$3,956	Town will do an initial review with ultimate floodplain management provided by Yavapai County
Jerome	NSFH	$700	
Prescott	411	$115,170	Floodplain management provided by City staff.
Prescott Valley	62	$18,511	Floodplain management provided by Town staff.
Sedona	40	$11,412	City will do an initial review with ultimate floodplain management provided by Yavapai County
Unincorporated areas	311	81,525	

Figure 52 TABLE 4-5: NFIP STATISTICS AS OF OCT 2022

[32] FEMA. National Flood Insurance Program: Flood Insurance Data and Analytics. Retrieved 23 March 2023 from https://nfipservices.floodsmart.gov//reports-flood-insurance-data.

Vulnerability

Table 4-7: Flooding CPRI Rating					
Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Rating**
Camp Verde	Likely	Catastrophic	<6 hours	< 1 week	3.45
Chino Valley	Highly Likely	Limited	< 6 hours	< 6 hours	3.10
Clarkdale	Highly Likely	Limited	< 6 hours	< 1 week	3.30
Cottonwood	Likely	Limited	12-24 hours	< 1 week	2.55
Dewey-Humboldt	Likely	Critical	6-12 hours	< 24 hours	2.90
Jerome	Highly Likely	Critical	< 6 hours	< 1 week	3.60
Prescott	Possibly	Limited	12-24 hours	< 1 week	2.10
Prescott Valley	Highly Likely	Critical	< 6 hours	< 1 week	3.60
Sedona	Highly Likely	Limited	< 6 hours	< 1 week	3.30
Unincorporated Yavapai Co	Highly Likely	Critical	< 6 hours	< 1 week	3.60
Yavapai-Prescott Indian Tribe	Likely	Limited	6 - 12 hours	< 24 hours	2.60

Figure 53 Table 4-7: Flooding CPRI Rating

Based on information generated in HAZUS, $12.2 and $5 billion in high and medium flood losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Yavapai County jurisdictions. Regarding human vulnerability, a total population of 37,323 people, or 15.8% of the total population, is potentially exposed to a high hazard flood event. A total population of 7,336 people, or 3.1% of the total population, is potentially exposed to a medium hazard flood event. Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

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

Unincorporated County – Although Yavapai County is the third largest County in Arizona by population, it is 8,126 square miles with a majority of the county classified as rural. The county has eight distinct mountain ranges with elevation ranging from 1,000 to nearly 8,000 feet. This huge elevation differential contributes to flash flooding. Typical Monsoon patterns traverse from Southwest to Northeast developing over the low laying Sonora desert. As these storms intersect the mountainous regions of North Central Arizona, uplift creating shear and copious amounts of precipitation occurs. Other scenarios include the rapid condensing of moisture over higher elevation creating monsoons with rapid onset increasing the potential of dangerous flash flooding.

Winter storms, which create riverine flooding, are Pacific sub topical frontal systems, which create rain snow events. These events are most pronounced when higher elevation has been impacted by heavy snowfall, followed by rapid warming and a rain event. The winter storm of 2010 created a flood event along the Oak Creek and Verde Rivers in 2010 due to this phenomenon. The flood exceeded the 100-year event threshold.

Camp Verde – Camp Verde has experienced flooding through summer rains, tropical depressions, and winter rains on snowpacks. With Clear Creek flowing through municipal boundaries and connecting with the Verde River, it has brought almost annual loss to roadways constructed across the river course in the Verde Lakes area. Rising flood waters routinely damage the asphalt and rights of way. The 17 miles of the Verde River coursing through the municipal boundaries provides the potential for loss during higher-than-normal flood events. The advent of FEMA's flood plain maps and the resulting restrictions on where and how structures may be built within flood zones has reduced the possible exposure to flood events and thereby reducing losses. There are some areas where excessive

amounts of rainfall i.e., 5" within an hour has caused severe flooding in areas flowing off forest lands and encroaching into some populated areas in other than the historical and traditional drainages. Changes in those course ways has been the result of the municipality's inability to enter those drainages without costly studies with no guarantee of access or permit to repair drainages by removing the accumulated sediment. This accumulation has created alluvial fans thereby forcing floodwaters to seek alternative drainages into populated areas, which has caused repeated damage to homeowners and businesses.

Overall vulnerability in Camp Verde consists of over 8,000 buildings. Essential facilities include eleven (11) schools, four (4) fire stations, and three (3) police stations. Vulnerabilities also include 75.81 miles of highway, 69 bridges, and 1,294.32 miles of pipe.

Chino Valley – Sits North of the Prescott Basin and South of the Western Mogollon Rim. It is surrounded by higher terrain. The streams and creeks bisect the community and have alluvial qualities. Chino Valley also sits just south of the headwaters of the Verde River. The area is prone to shallow inundation, as well as flash flooding.

Overall vulnerability in Chino Valley consists of over 12,000 buildings. Essential facilities include nine (9) schools, three (3) fire stations, and one (1) police station. Critical infrastructure includes 44.74 miles of highway, 15 bridges, and 1,393.11 miles of pipes.

Clarkdale – The Verde River and feeder washes bisect a corner of the Town of Clarkdale forming a major riparian corridor lined with large Cottonwood trees. There are Town roads and residential properties along the river that would be affected during flood stage of the Verde River. Some of those properties lie outside the Town limits in Yavapai County but are the responsibility of the Town of Clarkdale during an event. Sycamore Canyon Road and Broadway (Bitter Creek Bridge) would be evacuation routes for those residences, and if compromised, would be a deterrent for evacuation. Clarkdale is susceptible to debris flows that can occur along steep mountain slopes, canyons, and along road cuts from the Town of Jerome. The Town of Clarkdale also has area washes that flood, closing some intersections along with residential properties in the area.

Overall vulnerability in Clarkdale consists of 3,000 buildings. Essential facilities include one (1) school, three (3) fire stations, and two (2) police stations. Critical infrastructure includes 128.62 miles of highway, 23 bridges, and 767.39 miles of pipes.

Cottonwood – Due to the proximity of the Verde River, the City of Cottonwood has the potential for damaging flood events to occur. However, there are relatively few structures within the floodplain of the Verde River, so the likelihood of substantial property loss is limited.

Overall vulnerability in Cottonwood consists of 11,000 buildings. Essential facilities include two (2) hospitals, fourteen (14) schools, three (3) fire stations, and three (3) police stations. Critical infrastructure includes 54.68 miles of highways, 38 bridges, and 429.37 miles of pipes.

Dewey-Humboldt – This community is naturally bifurcated by the Agua Fria River. The Agua Fria being an intermittent river has never been effectively mitigated. An event greater than 10 years effectively bifurcates the community. Historically, the river is highly susceptible to rapid flash flood rise due to monsoonal activity, and quickly recedes when the rain passes. However, the greatest impacts have been observed in 2017, 2016, 2015, 2010, and 2009 when the river demonstrated riverine flooding characteristics over multiple days and multiple events. Impacted tributaries during a regional event greatly enhance flow and output to Dewey Humboldt essentially cutting off the community from emergency services and residential ingress and egress.

Most of the damage caused by these events have been to public infrastructure as a repetitive loss. Dewey Humboldt has worked to mitigate public infrastructure; roads, culverts, and crossing over the last 6 years using local flood control and town funds.

With a five percent year over year growth since 2010, Dewey-Humboldt has grown significantly. Along with this growth has come an increased focus on mitigating the effects a flood event has on the jurisdiction and its residents. With this being said, the vulnerability to a flood event has only slightly increased. This is due to many of the damages being repetitive losses and allows for a focused effort on mitigation.

Overall vulnerability in Dewey-Humboldt consists of 4,000 buildings. Essential facilities include two (2) schools and three (3) fire stations. Critical infrastructure includes 161.56 miles of highway, 27 bridges, and 1,256.41 miles of pipes.

Jerome – Storm water runoff management was given very little consideration during the early years of Jerome's development. An extensive array of spillways, catch basins and culverts have been constructed and modified over the years to convey runoff through the community. Most of the Town's drainage system consists of obsolete or non-working structures that have been abandoned, damaged, or not maintained and are no longer functioning. The primary drainage conveyance structure is a deteriorating concrete flume that conveys excess spring water from the Cleopatra Hill water tanks through Town and outfalls into Bitter Creek Wash. The flume captures a large amount of runoff from Cleopatra Hill and intercepts flows from a significant portion of the downtown area.

The neglected drainage infrastructure and town budget limitations have resulted in many residents, commercial properties and roadways being adversely affected by storm water runoff. Historical drainage patterns have been changed by private runoff diversionary improvements and other projects have been completed without adequate drainage planning.

Jerome received funding from Yavapai County Flood Control District (YCFCD) to evaluate the existing drainage facilities within the Town for adequacy of the overall drainage system and to provide recommendations for areas of improvement. The project included: existing drainage structure inventory, drainage basin delineations based on existing structures, channels, roadway configurations and site evaluations, modeling of the drainage basins for current runoff data, floodplain delineation for Bitter Creek Wash adjacent to the Jerome Waste Water Treatment Plant (WWTP), hydraulic analysis on the capacity of the existing major drainage structures and to provide recommendations for improvements to mitigate damage from storm water runoff experienced by the community. The watersheds affecting the Town were subdivided into 12 major drainage basins. Most of the basins contribute to two major washes that flow through Jerome, Bitter Creek Wash and Deception Gulch. The basin located west of the visitor's parking area has no outlet and was not included in the calculations. The north side of Town drains to Bitter Creek Wash and the south side drains into Deception Gulch Wash. Deception Gulch, which is the larger of the two, commences on top of Woodchute Mountain approximately 3.6 miles west of Town limits. The wash flows through Town and continues downstream until it converges with the Verde River. Bitter Creek Wash originates on Cleopatra Hill adjacent to the westerly Town limits. The wash is routed through Town within existing drainage structures and flows downstream to the WWTP. Bitter Creek continues to the east through Clarkdale and converges with the Verde River.

In Sept 2014, SWI coordinated with Jerome and issued a Project Notification and Request for Information (RFI) form to the residents of the Town. The RFI asked residents to indicate if they have ever experienced storm water drainage issues on their property. SWI received 22 responses from residents that had experienced runoff related issues. Many attached photos and written descriptions of the problems they observed. The reported problems ranged from minor landscape issues to more severe drainage issues including earth subsidence, severe erosion, flooded garages and homes, road damage, and damage to retaining walls. From these responses, site visits, discussions with homeowners, field reconnaissance, access to businesses, critical crossings, life safety issues, Town Council concerns, and the results of the drainage analysis of the existing infrastructure, SWI identified 10 drainage improvement priorities. A decision matrix was also developed for the projects to assist in the prioritization. There are a significant number of drainage problem areas within Jerome that would benefit from drainage improvements. The drainage issues encountered by the residents include lack of drainage easements, erosion, inadequate planning for storm water runoff management during the early development of the town, undersized existing drainage facilities, very few defined drainage channel improvements, roadways constructed without curb and gutter, unmaintained roadway ditches, catch basins and culverts. A substantial number of residences are constructed well below the level of adjacent roadways. The lack of curbed streets within the Town results in many of the homes at lower elevations to receive runoff directly from the roadway surface. The goal is to mitigate the frequency and severity of the storm water impacts on the residences and the community.

Overall vulnerability in Jerome consists of 2,000 buildings. Essential facilities include two (2) fire stations and one (1) police station. Critical infrastructure includes 128.62 miles of highway, 18 bridges, and 728.87 miles of pipes.

Prescott – Flooding events are very seasonal however whether they occur as part of the Monsoon (July-early Oct) or in conjunction with winter (Nov-April) they remain a risk to the City of Prescott community at-large. Real and fixed property along with undermining of utilities and excessive capacity to channels for run-off place the community at risk. Loss estimations could reach into the millions of dollars. With its high curbs much of the historic downtown area of the city to include the infamous "Whiskey Row" have been able to stave off any significant event however Granite Creek immediately to the west has flooded in the past and may be expected to flood in the future. The other significant area of concerning is at the bottom of Willow Creek as it enters a plateau prior to entering Willow Lake. A significant amount of affordable housing is located within the flood plain there as well as some minor commercial outlets too.

Overall vulnerability in Prescott consists of 26,000 buildings. Essential facilities include four (4) hospitals, twenty-five (25) schools, seven (7) fire stations, four (4) police stations, and one (1) emergency operations center. Critical infrastructure includes 105.01 miles of highway, 47 bridges, and 1,111.63 miles of pipes.

Prescott Valley – In 2017 a series of heavy monsoons, West and North of Prescott Valley affected the Lynx Creek basin. The ensuing event created heavy flows impacting the local park. Flood control devices along the watercourse worked as designed but left heavy debris flows. Other areas within Prescott Valley experienced extremely heavy flows along the tributaries of the Agua Fria. These flows closed roads, impacted residential areas, and created dangerous fast-moving flows in residential areas. The potential for loss of life exists during these events.

Overall vulnerability in Prescott Valley consists of 18,000 buildings. Essential facilities include three (3) hospitals, twenty-one (21) schools, four (4) fire stations and one (1) police station. Critical infrastructure includes 75.81 miles of highway,18 bridges, and 489.64 miles of pipes.

Sedona – Sedona has approximately 140 (100 in Coconino and 40 in Yavapai County) FEMA floodplain properties with structures along Oak Creek and its tributaries. While some of these structures are outside of the Special Flood Hazard Area, many are not. Property damage typically occurs in the larger runoff events that involve rain on snow in the higher elevations. Sedona has floodplains that were mapped as part of a Soil Conservation Service Floodplain Management Plan in 1994. These local floodplains typically flood during the more intense summer monsoon rain events. Many structures are located in the local floodplains; however, lowest finished floor elevation of BFE +1' is required for new homes. Sedona continues to leverage county flood control funds to design and build capital improvement drainage projects that mitigate and reduce losses.

Overall vulnerability in Sedona consists of 5,000 buildings. Essential facilities include one (1) hospital, six (6) schools, one (1) fire station, and one (1) police station. Critical infrastructure includes 17.4 miles of highway, 13 bridges, and 587.82 miles of pipes.

Yavapai-Prescott Indian Tribe - The Tribe has the largest/longest portion of Granite Creek that bisects the Reservation, should Granite Creek flood this would severely affect the Maintenance yard. The Tribe has several tributaries that bisect ingress and egress on to the Residential portion of the Reservation.

Overall vulnerability to the Yavapai-Prescott Indian Tribe consists of 4,000 buildings. Essential facilities include one (1) school, one (1) fire station and one (1) police station. Critical infrastructure includes 68.97 miles of highway, seven (7) bridges, and 204.43 miles of pipes.

Repetitive Loss Properties

Repetitive Loss (RL) properties are defined by FEMA as an NFIP-insured structure that has had at least 2 paid flood losses of more than $1,000 each in any 10-year period since 1978[1]. FEMA designates as Severe Repetitive Loss (SRL) any NFIP-insured single-family or multi-family residential building that has incurred flood-related damage for which four or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding $5,000, and with the cumulative amount of such claims payments exceeding $20,000; or for which at least two separate claims payments (building payments only) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the building[2]. FEMA tracks statistics on RL properties, with a specific focus on identifying properties with SRL. 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. The table below summarizes the RL property characteristics by jurisdiction.

Repetitive Loss Statistics as of Mar 2023 – All Residential	
Jurisdiction	**No. of Properties**
Camp Verde	5
Unincorporated Yavapai County	8

Figure 54 TABLE 4-8: REPETITIVE LOSS STATISTICS AS OF MAR 2023

Changes in Development in the Hazard Area

Yavapai County – Growth in Yavapai County increased by 12% over the last ten years, and by over 40% in the last twenty years. The increasing population size has resulted in steady urban development and home growth. This growth is altering the perviousness of the environment and increasing the probability and severity of flooding events. The vulnerability of the community is managed through adherence to modern building codes and observance of proper land zoning.

Camp Verde
To support a growing population, Camp Verde issued 184 commercial and residential building permits from 2019-2021. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 60-70 permits per year. The community is expanding in line with their 2021 Zoning Plan. Risk exposure associated with flooding and population growth are increasing in lock step, however; the community is engineering risk mitigation into their zoning requirements. Risk exposure is increasing with the boost in population and building inventory. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Chino Valley
Chino Valley issued 611 commercial and residential building permits from 2019-2023. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 80-90 permits per year. Chino Valley is expanding in line with their 2022 Unified Development Ordinance. The community is engineering risk mitigation into their zoning requirements. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Clarkdale
The community of Clarkdale averaged a steady growth of 61 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The community is expanding in line with their 2021 General Plan. Risk exposure associated with flooding is minimized by the Zoning guidance in the General Plan. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Cottonwood
The town of Cottonwood issued over 500 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 150 to 180 permits per year. is expanding in line with Ordinance 723 (April 2023). The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Dewey-Humboldt
Growing at a rate of 5% since the 2010 census, Dewey-Humboldt issued 210 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 35 to 40 permits per year. Although the community is growing the risk remains unaffected. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Jerome
Jerome did not issue new building permits. There are no changes in this development area. Current and future development is limited. There are no changes in vulnerability.

Prescott
The city of Prescott averaged a steady growth of 193 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. Prescott adheres to their 2020 Zoning Plan in the identification of buildable areas. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Prescott Valley
The city of Prescott Valley averaged a steady growth of 558 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. Prescott Valley adheres to their 2022 Zoning Plan in the development of new areas. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Sedona
The city of Sedona issued an average of 63 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The community is expanding in line with their Ordinance #2018-12. The current and future development will increase the probability and severity of a flooding; however, the vulnerability of the community is not increasing.

Yavapai Prescott Indian Tribe
There are no changes in this development area. Current and future development is limited. The Tribe has not issued any building permits over the past five years. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

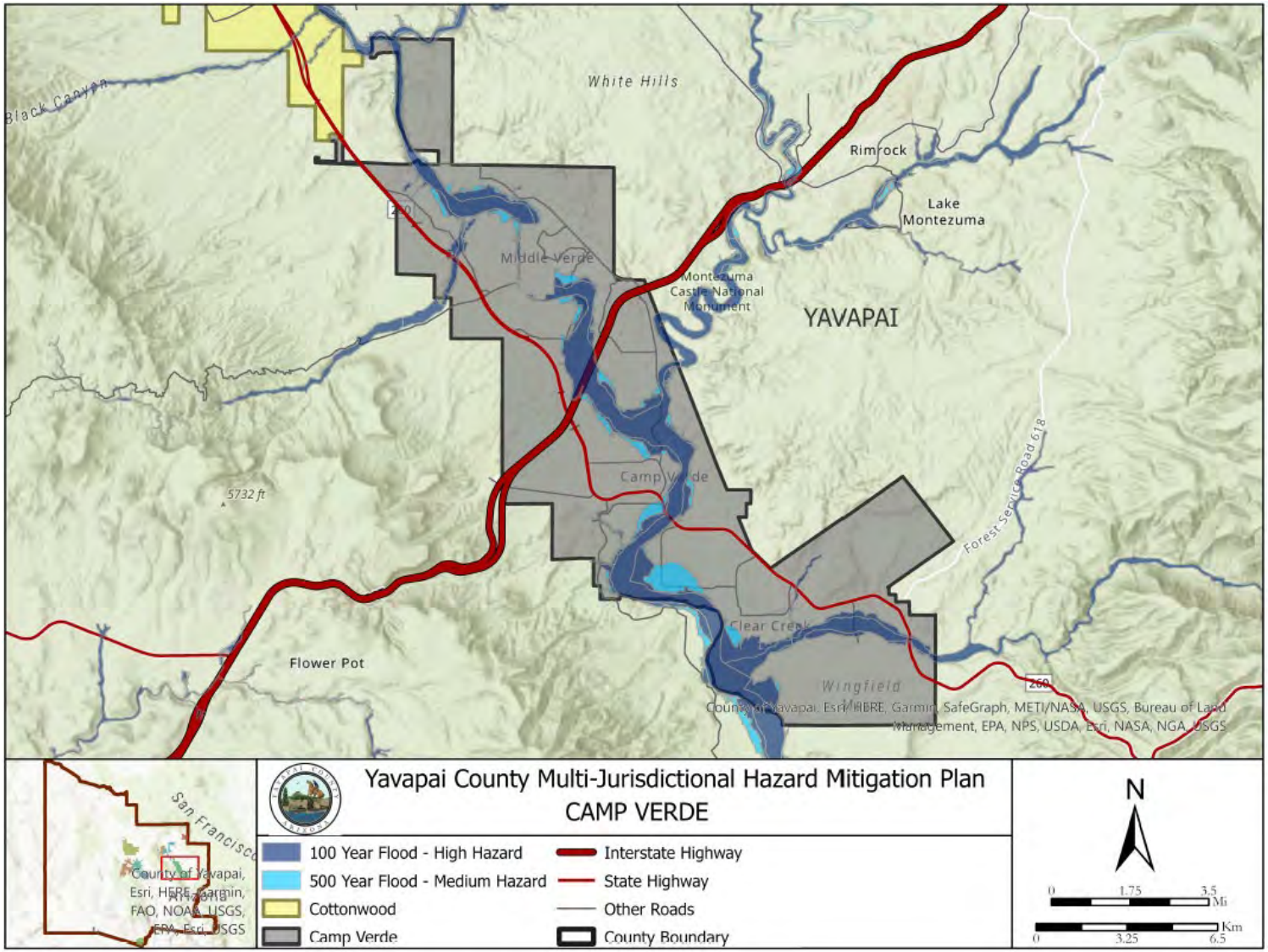


Figure 55 Map 4-14 Camp Verde Flood Probability

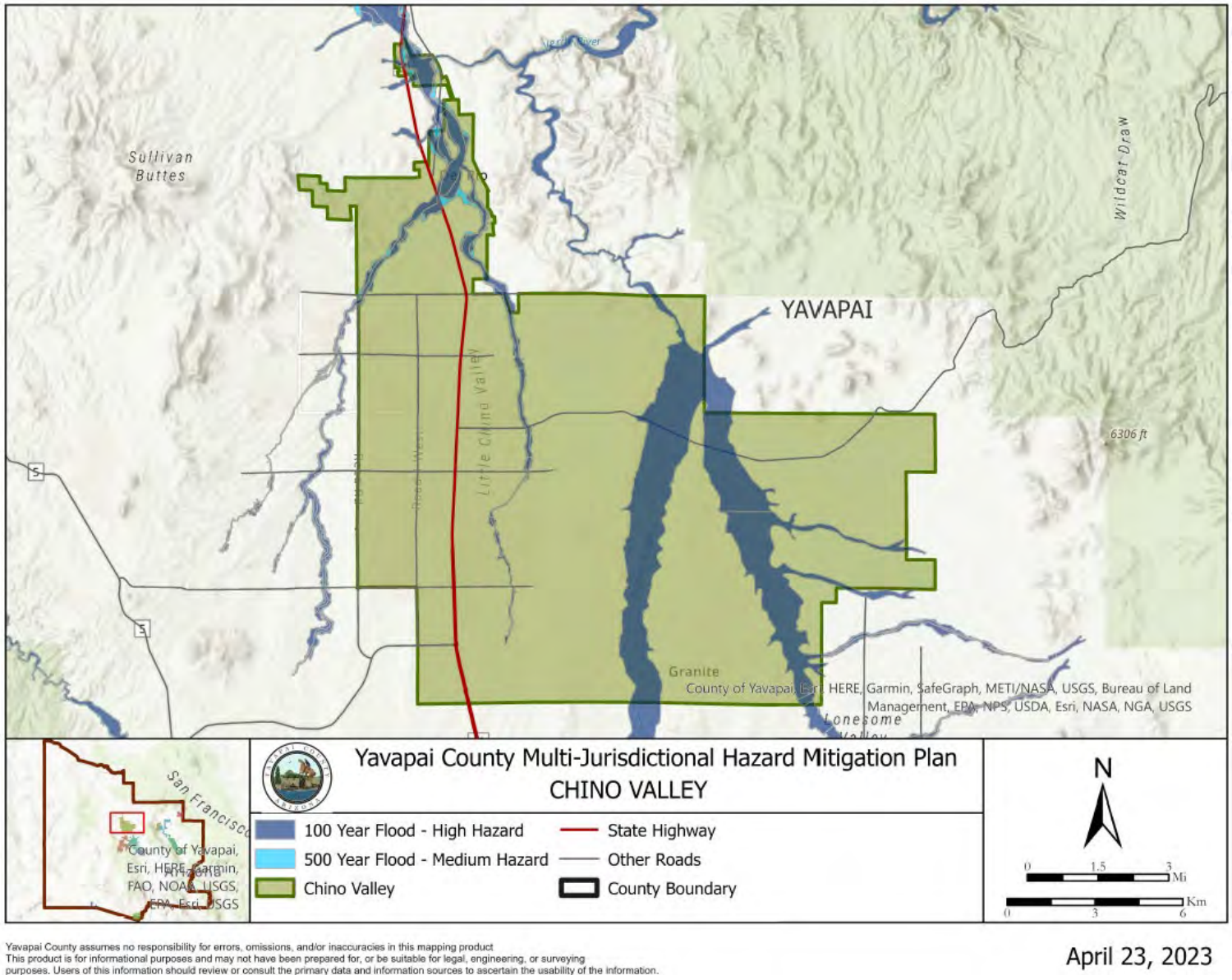


Figure 56 Map 4-15 Chino Valley Flood Probability

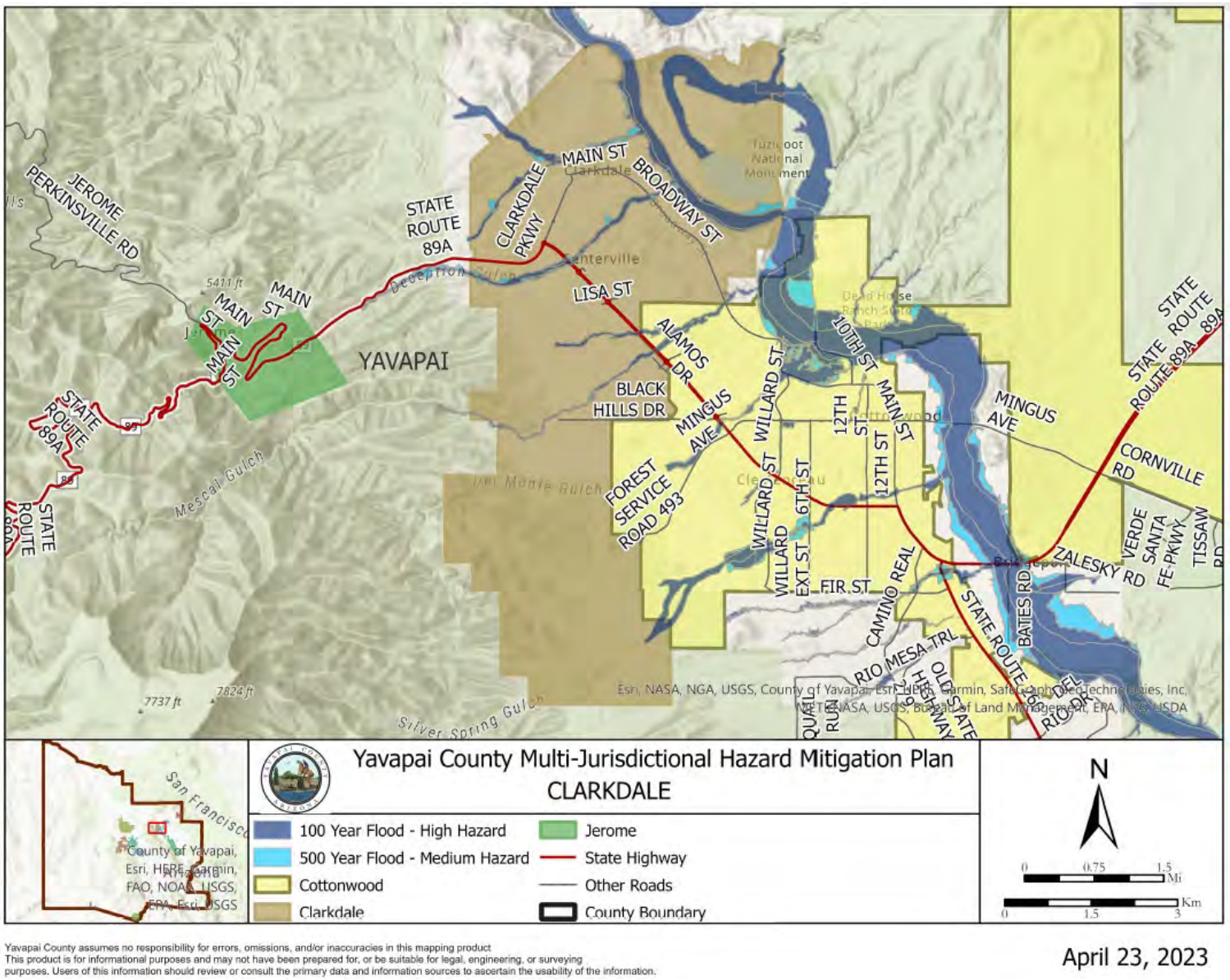


Figure 57 Map 4-16 Clarkdale Flood Probability

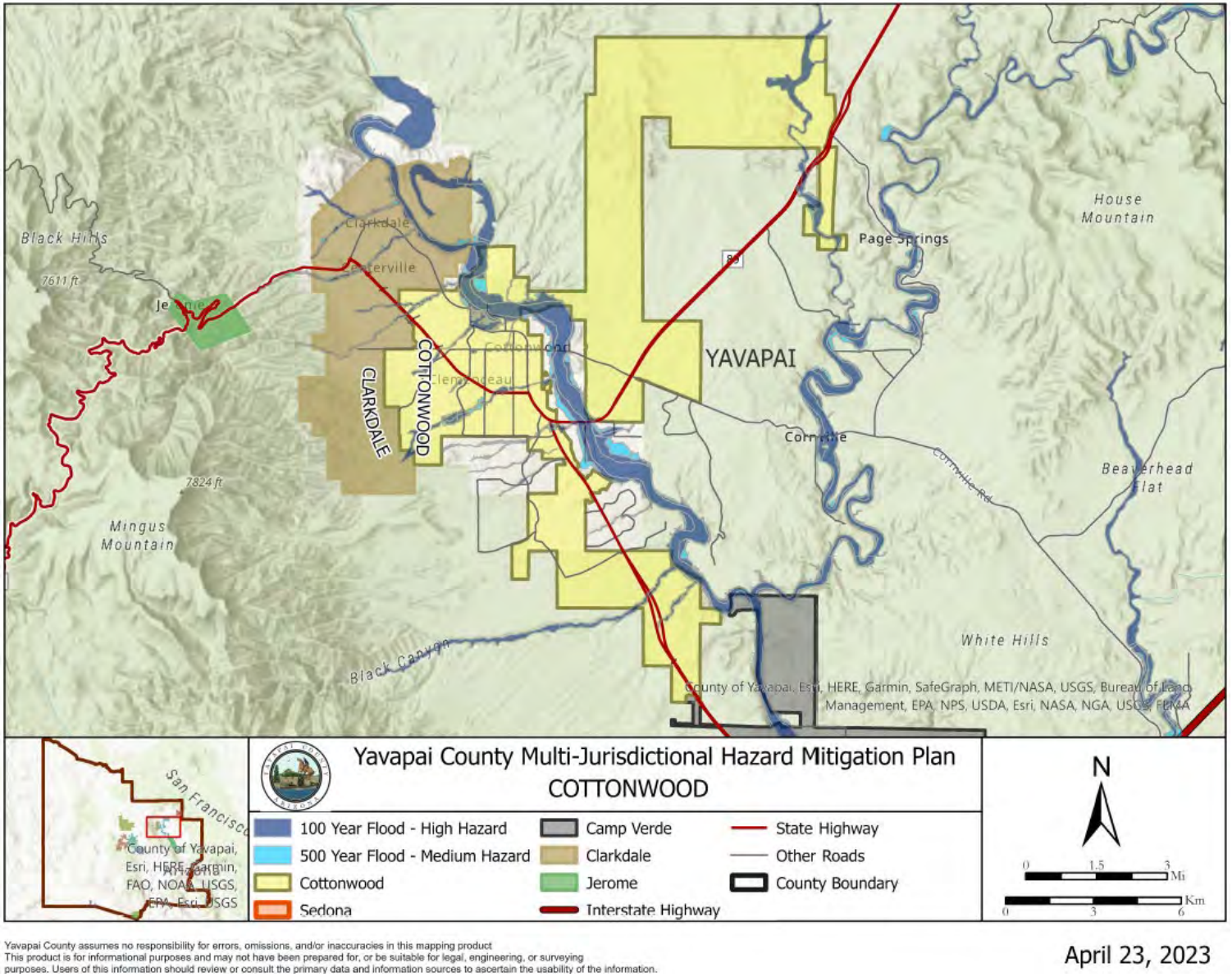


Figure 58 Map 4-17 Cottonwood Flood Probability

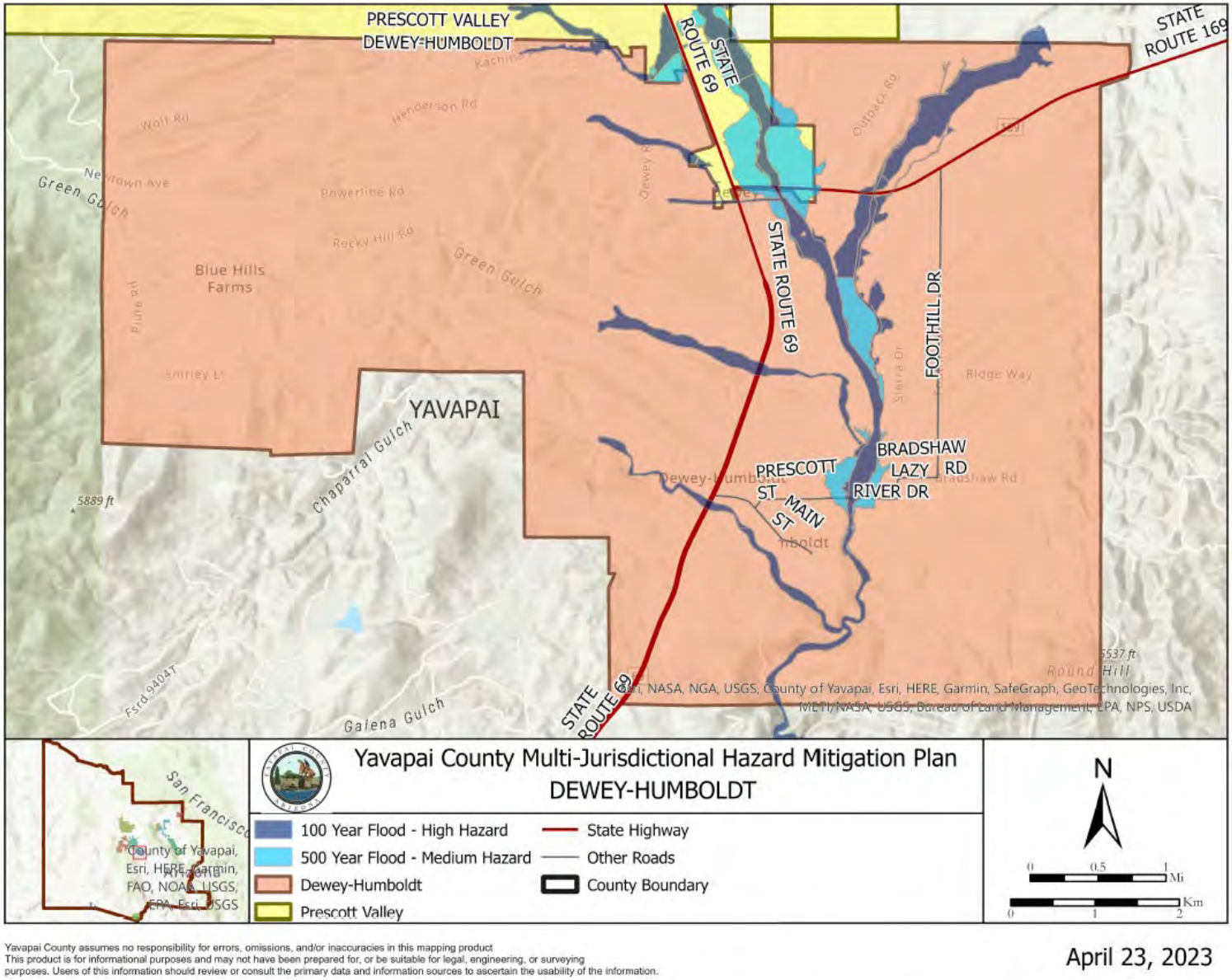


Figure 59 Map 4-18 Dewey Humboldt Flood Probability

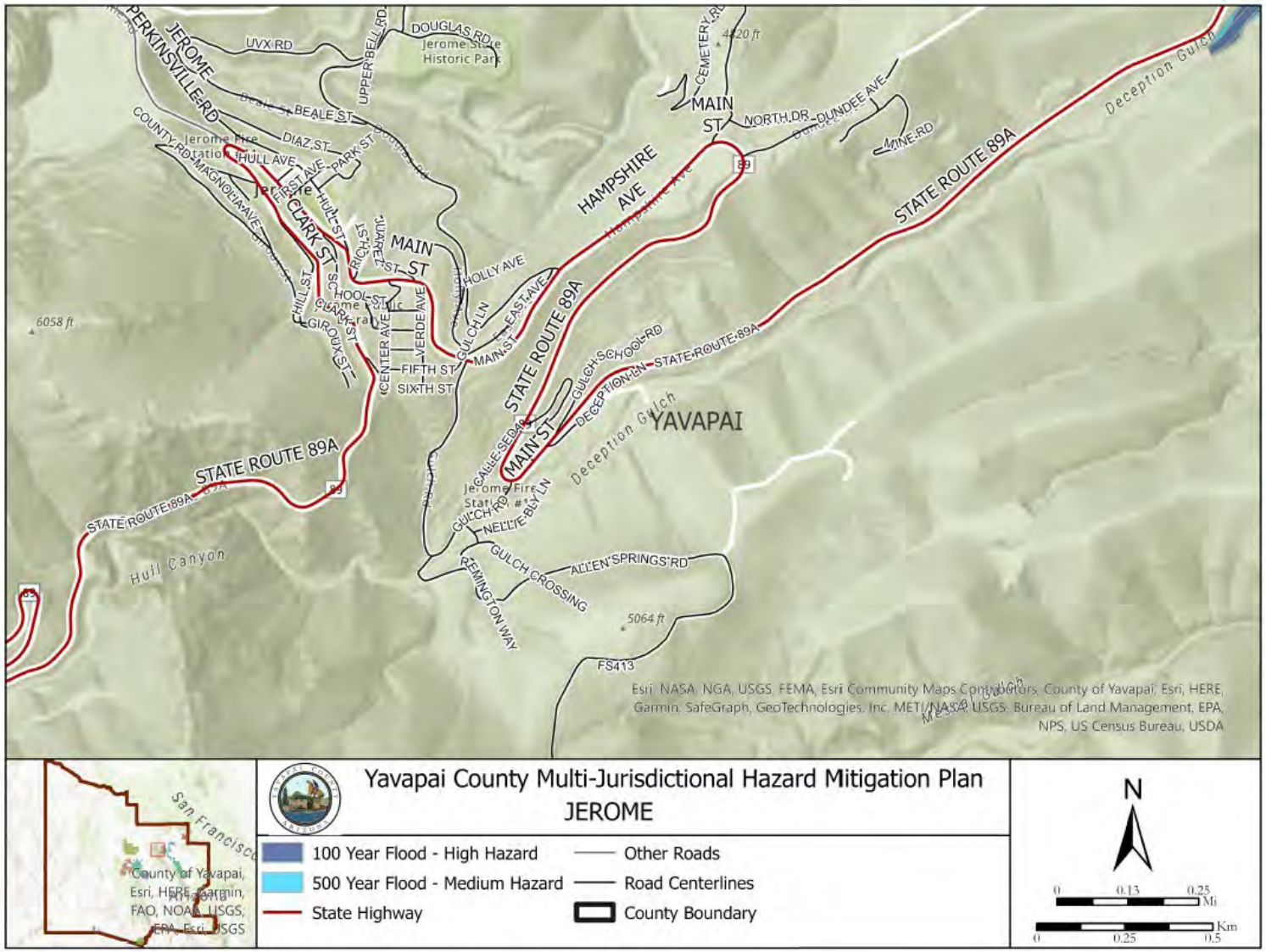


Figure 60 Map 4-19 Jerome Flood Probability

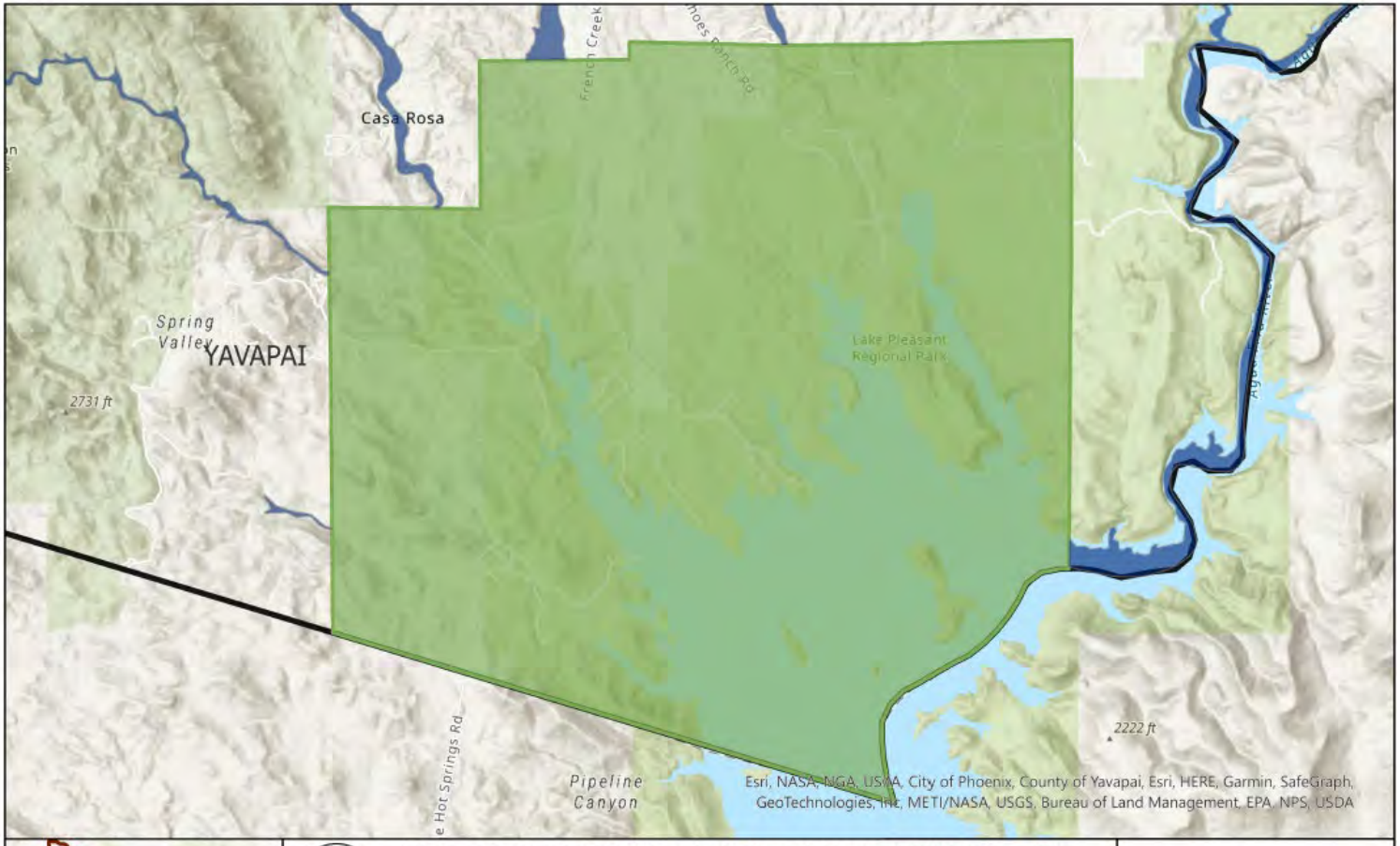


Figure 61 Map 4-20 Peoria Flood Probability

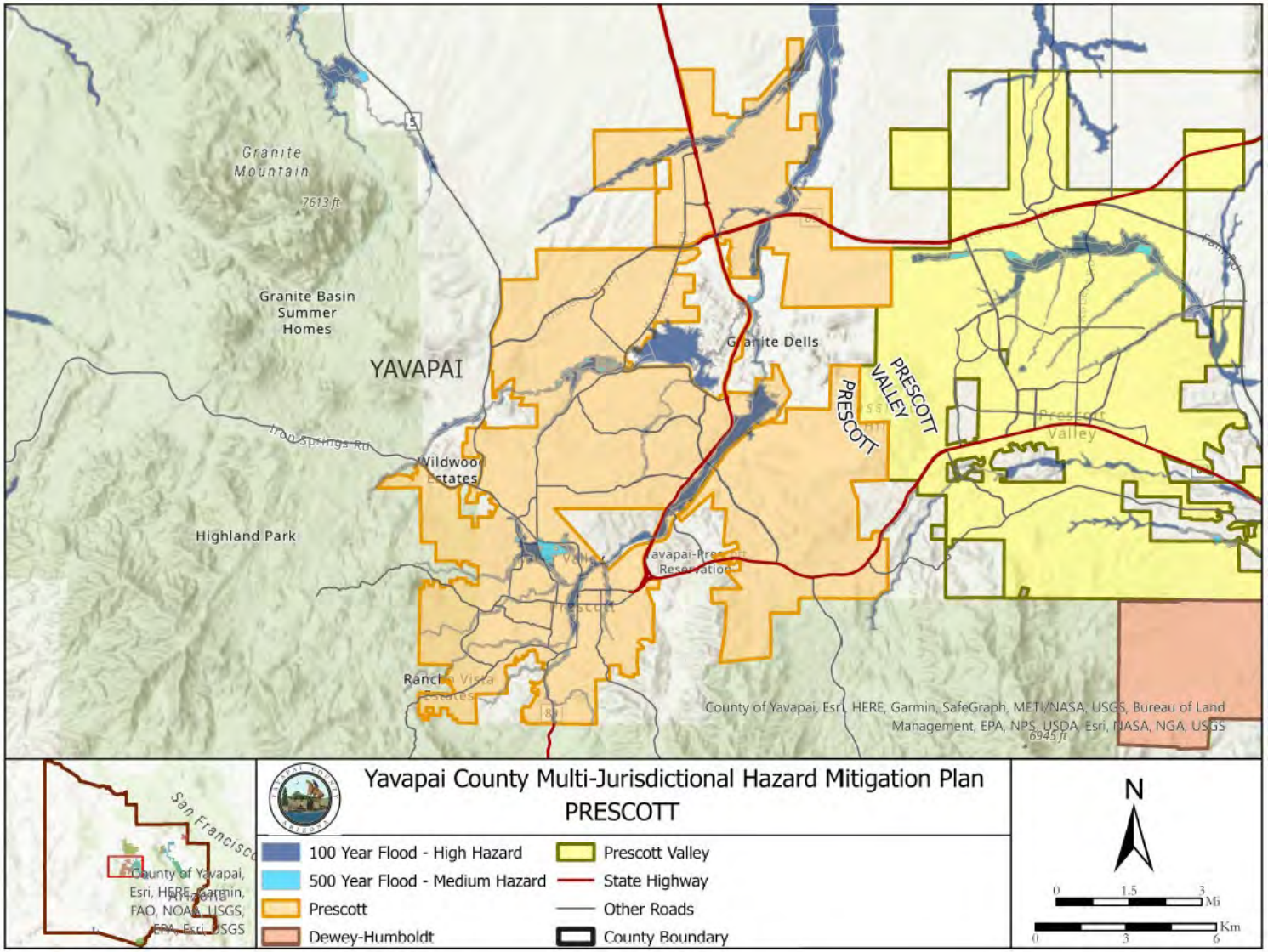


Figure 62 Map 4-21 Prescott Flood Probability

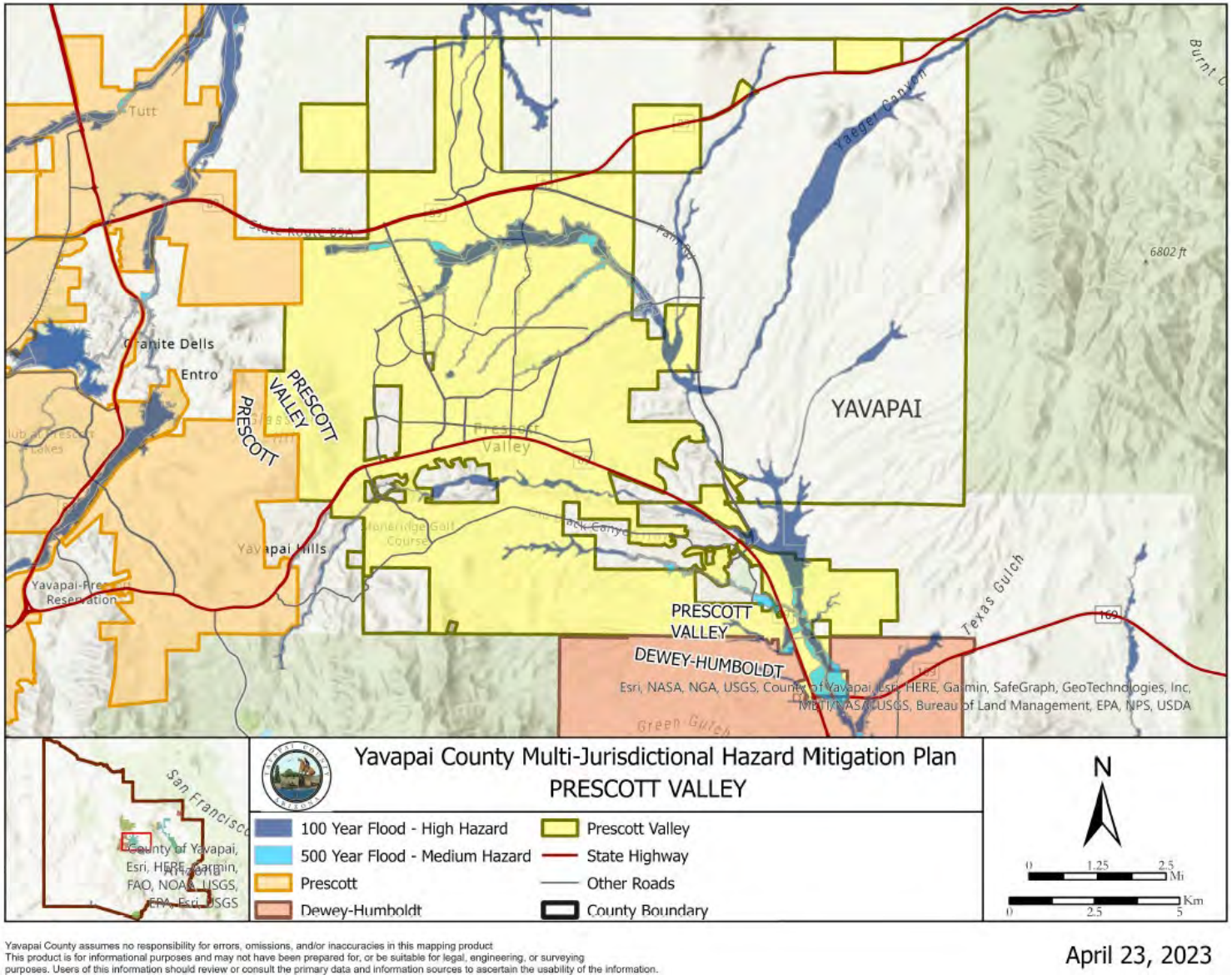
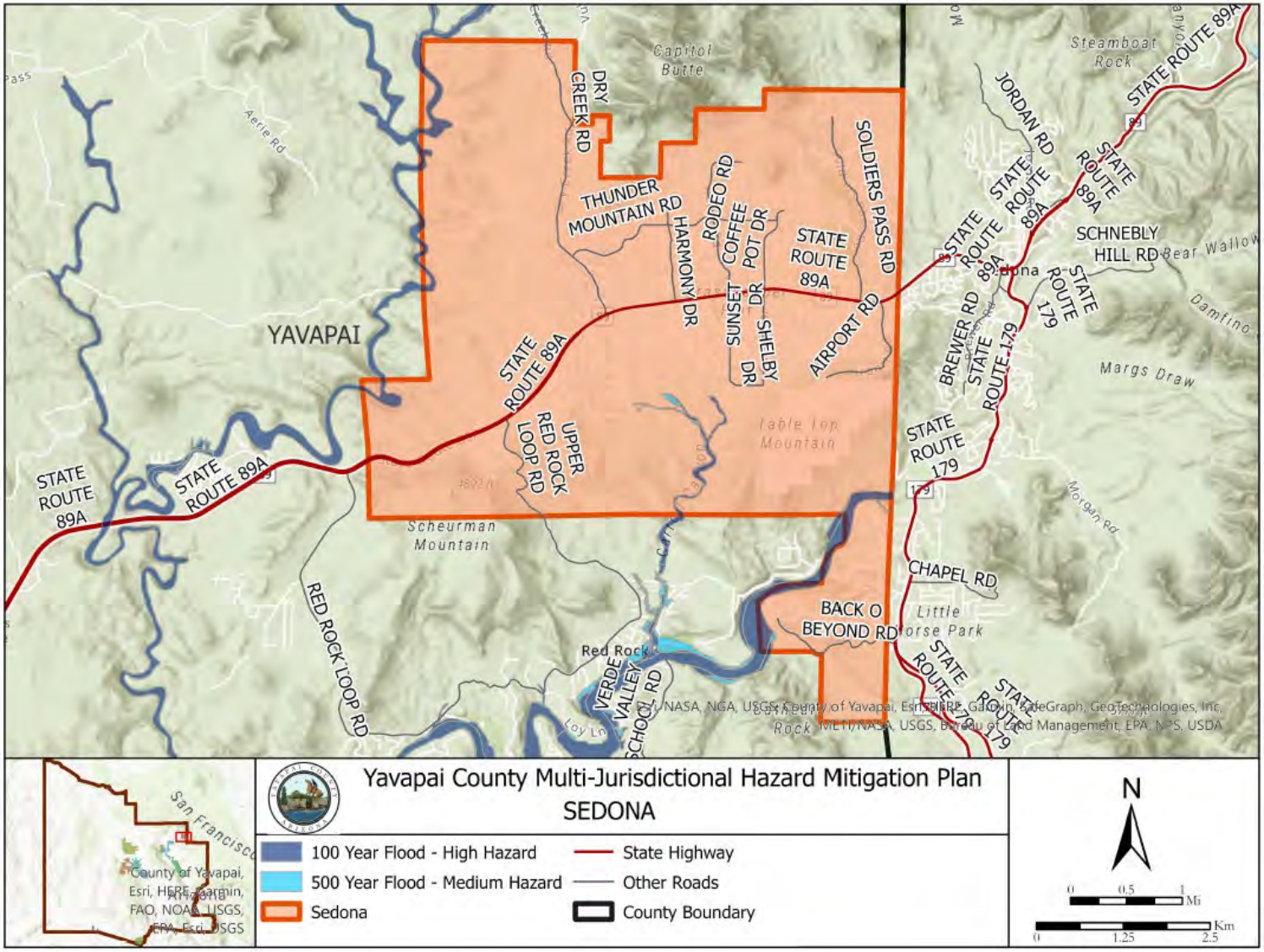


Figure 63 Map 4-22 Prescott Valley Flood Probability



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This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Figure 64 Map 4-23 Sedona Flood Probability

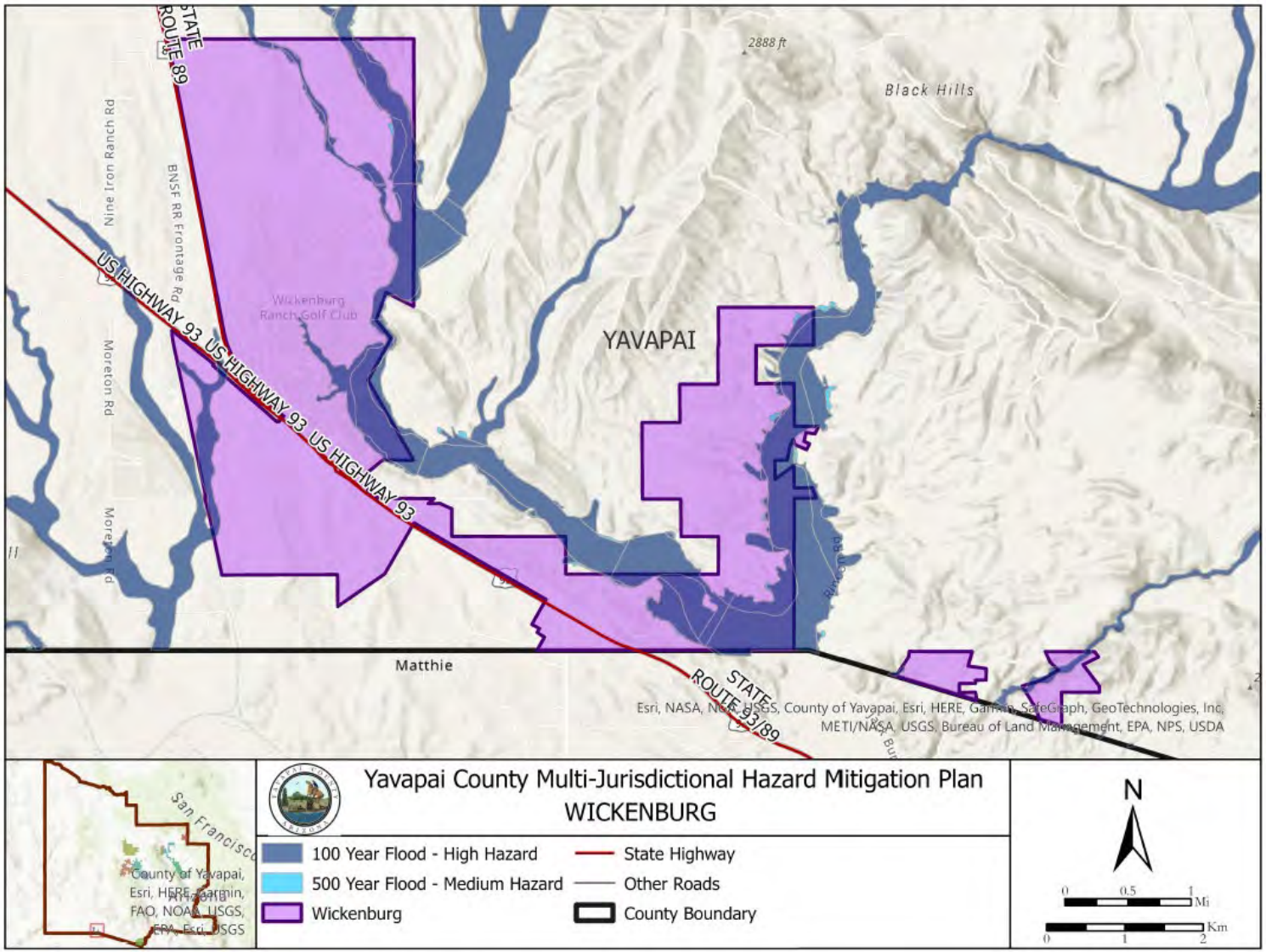


Figure 65 Map 4-23 Wickenburg Flood Probability

4.4.3 Landslide/Mudslide

Description

Landslide is the generic term used to describe the down slope movement of earth materials due to gravity. Landslides may be triggered by earthquakes, extreme precipitation, flooding, or otherwise removing support from the slope. There are several different types of landslides that are categorized by the depth of failure, the type of material moved, the water content, and rate of movement (see below). Landslides may also cause flooding, either by displacing great volumes of water with surficial materials, or by damming a stream until it breaches and floods. Typical types of landslides are illustrated below. Diagrams A, B, C, D, E, F, and I are typical of the Transition Zone in which Yavapai County is mostly situated.

Many areas of Yavapai County are susceptible to various types of rock falls, landslides, and debris flows that can occur along steep mountain slopes, canyons, and along road cuts. Extreme precipitation, freeze/thaw, and snowmelt are the primary triggers, but post wildfire conditions also significantly increase the risk of debris flows and slope failures.

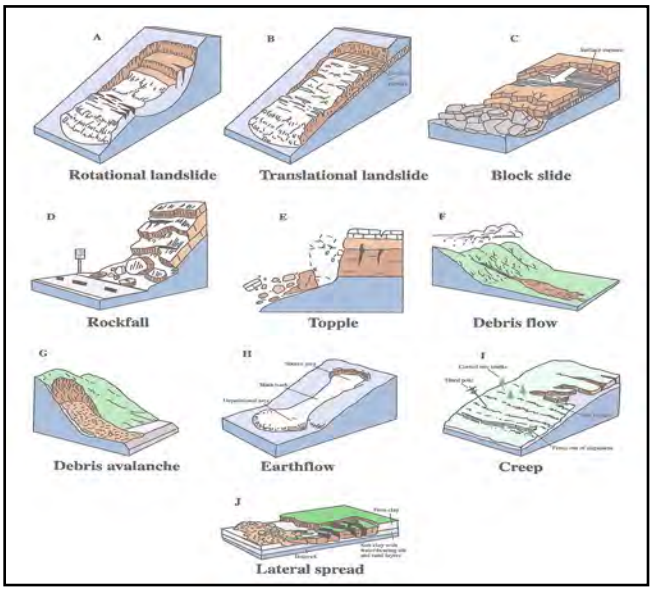


Figure 66 Figure 4-1 Landslide Types

Historical Hazard Information

The Town of Jerome, which is constructed on the steep slopes of Cleopatra Hill, presents the most prominent history of landslide activity and damages for Yavapai County. The following is an excerpt from a summary of the Jerome landslide history that was provided by the Town (author unknown):

> In the first half of this century, Jerome was a town on the move, literally. Perched precariously on the side of Cleopatra Hill with mining occurring directly underneath, Jerome was asking for trouble. Maybe the ground movement was Mother Nature's way of reminding people who were in charge.
>
> Jerome reached a peak population of about 15,000 people in the late 1920's. Two major mines, the United Verde and the United Verde Extension (UVX) kept the economy booming. Main and Hull Streets were lined with businesses. However, the Great Depression reversed this prosperity. Most of the miners lost their jobs and businesses closed. It was during this era of economic hardship when the town's buildings began to show the most damage from earth movement.

Slides have been a persistent problem throughout Jerome's history. Harry Dicus testified: "I built seven or eight houses, businesses, and residences on the hill slopes, several of which were constructed before UVX started operations [in 1914]. They would not stand up. I had to jack up the building because they would get out of level, especially if they were not on bed rock." (Small vs. UVX)

The sliding jail was the only building severely damaged by the earth movement which still stands. The concrete structure pulled apart from the wooden structure, to which it was attached, and slowly began creeping across the road. The jail eventually came to rest 225 feet from its original location. After the sliding stopped, the jail was preserved as a lasting monument to this era in Jerome's history.

Before *After*

Many times, the human error element relates to engineering and engineering systems that are important in determining human-caused disasters. The lower parking lot in Jerome subsided in 2016 due to human error in development of this parcel of land as fill was placed on top of the existing land without being compacted. Although this is not a natural occurrence, the landslide was a direct result of human error and should be a consideration when developing areas with extreme slope. To identify potential human errors that may be overlooked by the more traditional hazard evaluation techniques, a process hazard evaluation technique for procedures is clearly needed. We have found that a “what-if” analysis structured to address procedures can be used effectively for this purpose. The parking lot was addressed with proper grading and fill to correct the problem.

Before *After*

Other historic landslides in Yavapai County are mostly related to incidents reported along highways.

History of Events

- Mar 21, 2023, A small rockslide closed SR 89A between Flagstaff and Sedona. The slide was caused by heavy rain and erosion.
- July 15, 2022, Demonstrating the hazard created by fire and the resultant hydrophobic soil, a large mudflow occurred in the burnt areas of the Pipeline Fire moving debris and large boulders down an alluvial fan.
- July 30, 2016, A small landslide came down onto the Old Jerome Highway due to heavy rainfall. The road in this area would wash out frequently, but past mitigation efforts cemented the crossing area to prevent this.

In the event of a slide, it is blocked until the City of Clarkdale can remove the debris. The road was also closed the following two days due to heavy rains.

- January 2014, moisture due to heavy precipitation along a rock outcropping on Senator Highway froze expanding the rock face creating a landslide, which cut off residents' south of the landslide. High explosives were used to clear the fallen rocks and open the road.
- July 2013, post fire flooding on the Gladiator burn scar removed millions of tons of material off Lincoln Ridge creating landslides of granular granite material closing Crown King Road. In addition, the scouring effect dislodged huge boulders that bifurcated Crown King Rd effectively cutting off the only access to the mountain community of Crown King. One family was trapped in their automobile, which was extricated from the debris flow.

- September 1936, the rate of movement accelerated, a sidewalk suddenly parted company with the building it paralleled, in a trice it was six feet away, and more than four feet lower. A theater and several other buildings showed huge cracks as the irresistible force of gravity exerted itself on the 45% diagonal, and it was necessary for authorities to condemn them and tear them down. (AZ Republic, Dec 1936) Buildings began cracking and became unstable. The Kovacovich Building's back fell out and then collapsed without warning one week later. The Post Office, Miller Building, Kelly's Garage, and the JC Penny Building all sank forcing them to be abandoned and eventually demolished. The Boyd Hotel and a nearby drugstore were spared through extensive repair work. The water, sewer, and fire lines underneath the town were also severely damaged and needed repairs costing the Town an estimated $134,871 (approximately $2.1M in 2010 dollars).
- 1926, the first significant slide happened when the Episcopal Church, located uphill from the Catholic Church, became unstable. The oldest church in Town, built in 1896 by the Baptists and later sold to the Episcopalians, moved three feet off its base. The church was demolished and replaced with the new Episcopal Church, now the History Center. The next noticeable ground movement occurred in 1927 when the south wing of the United Verde Clubhouse had to be destroyed. This structure, originally built as the third United Verde Hospital was found to sit directly on the Verde Fault.
- 1924, the first noticeable ground movement on Main and Hull Streets began. The buildings in a three-acre zone from Main Street near the Boyd Hotel down through Hull Street to just below Rich Street became unstable and had to be razed. The destruction from this slide is still very noticeable today. The parking lot on Main Street between First Street and what is now Made in Jerome Pottery was once crowded with buildings. The parking lot and park directly below this on Hull Street was also filled with structures including the Sliding Jail. All these buildings suffered damage in 1936-37 when the land abruptly moved. Although this disaster may have increased the parking in Jerome, it was severe blow to a town already reeling from the Great Depression.

Extent

Probability and magnitude statistics have not been developed for landslide hazards in Arizona. Landslide potential for Yavapai County varies in size and frequency and can range from small, nuisance events (minor shallow landslides, rock falls) along roads or uninhabited areas, to large, fast moving, destructive debris flows (commonly referred to as mudslides), with varying effects depending on location. Areas with the highest probability of landslides are highway corridors with deep cuts through hillsides, developments on steep hillsides, and areas downstream of wildfire burn areas.

Landslides in Yavapai County and in the Yavapai-Prescott Indian Tribe areas are for the most part unlikely-- Jerome, Clarkdale, and Dewey-Humboldt present a likely probability, and the remainder of the county is negligible. Although the County is in a transition zone, the mitigation projects completed have lowered the extent of the damage that will occur. There is no real scale to determine the intensity of a landslide, so it defaults back to damage in dollars and lives lost, as well as the area affected. In the last decade, the landslides occurring have all been on a small scale, not affecting much property or square footage. Table 4-8 provides an assessment of the probability.

Probability of Future Hazard Events

Climate change is a contributing factor to the probability of future landslides. It is altering the frequency of natural hazards. Climate change can lead to more frequent and intense rainfall events. Heavy rainfall saturates the soil, reducing its stability and increasing the likelihood of landslides. The excess water adds weight to the slope, reducing its shear strength and triggering slope failures. It can also alter precipitation patterns, including shifts in the timing, duration, and intensity of rainfall. Unusual or prolonged wet periods followed by dry spells can create conditions conducive to landslides. When rain alternates with dry periods, the soil may undergo cycles of expansion and contraction, increasing the potential for slope failure. Additionally, climate change is altering the duration of the fire season which compounds the probability and intensity of landslides and mudslides especially in areas that experience burn activity.

Yavapai County will continue to suffer the ill-effects of landslides for the foreseeable future. Typical landslides areas (likely probability) include sections of Route 89 and 89A where steep embankments cut through the surrounding mountains. Jerome with its limited routes of entry and egress as well as its steep terrain is particularly vulnerable to this hazard as well as portions of Dewey-Humboldt. Climate change will increase the probabilities of a landslide in these areas. Additional areas prone (i.e., likely probability) to landslide are outlined in Map 4-14.

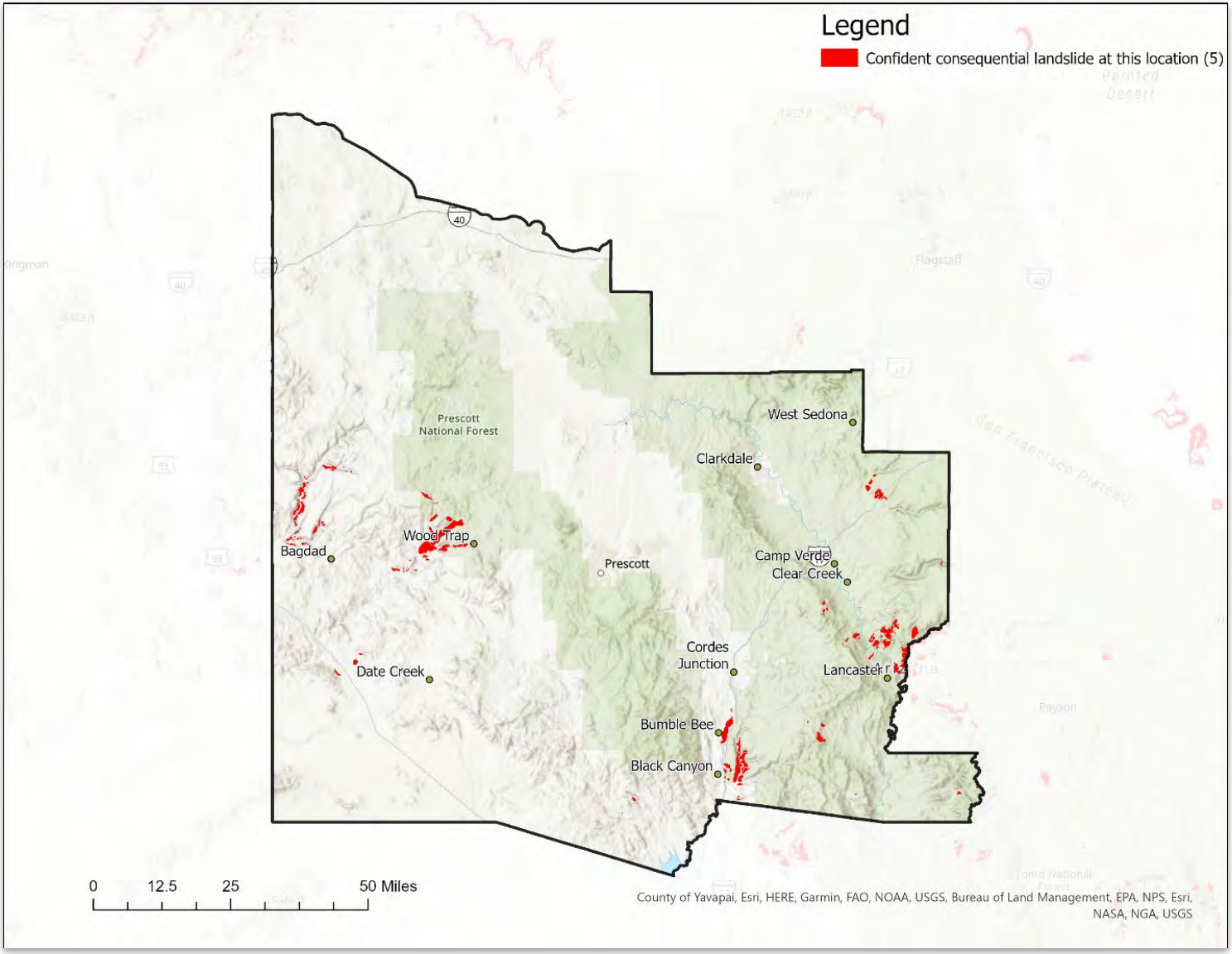


Figure 67: Landslide Areas within Yavapai County

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	Rating
Camp Verde	Unlikely	Limited	< 6 hours	< 24 hours	1.85
Chino Valley	Unlikely	Negligible	< 6 hours	< 6 hours	1.45
Clarkdale	Likely	Negligible	< 6 hours	< 24 hours	2.35
Cottonwood	Unlikely	Negligible	12-24 hours	< 24 hours	1.25
Dewey-Humboldt	Likely	Limited	< 6 hours	< 6 hours	2.65
Jerome	Likely	Critical	< 6 hours	< 6 hours	2.95
Prescott	Possible	Negligible	12-24 hours	< 24 hours	1.70
Prescott Valley	Possible	Limited	< 6 hours	< 6 hours	2.20
Sedona	Possible	Negligible	< 6 hours	< 24 hours	2.00
Unincorporated Yavapai County	Possible	Negligible	< 6 hours	< 1 week	2.10
Yavapai-Prescott Indian Tribe	Possible	Negligible	< 6 hours	< 1 week	2.10

Figure 68 Table 4-9: Landslide/Mudslide CPRI Rating

Vulnerability

Critical facilities most vulnerable to landslides/mudslides are the roadways, bridges, and culverts along known debris flow areas and hillside cuts. Facilities located downhill of intensely burned wildfire areas are also at an elevated risk to debris flows and mudslides. Underground utility lines are also vulnerable to landslides.

Losses are difficult to estimate given a lack of accepted standards, however, the County and some communities have spent significant time and money removing and repairing landslide/mudslide related damages along the state highways especially following heavy precipitation events and post-wildfire debris flows. For the period of 1978-1985, 17 landslide incidents were cataloged by the Arizona Department of Transportation (ADOT) with repair costs ranging from $1,000-$150,000 adjusted to 2023 values that is $4,61-$691,500 (see Table 4-10). Eleven of these events are considered minor with repair costs of less than $1,500 each. Comparatively, the damages experienced in Jerome in the 1920's and 1930's were equivalent to approximately $2.9M in 2023 dollars. Accordingly, losses associated with landslides/mudslides are highly variable and difficult to predict.

Loss Estimates from 1978 - 1985[1]			
EVENT	DATE	TYPE OF SLIDE	COST (Not adjusted)
YP 1	1978-1983	Earth Slump	$20,000.00
YP 2	1979	Rockslide	Not available
YP 3	1983	Debris Flow	Not available
YP 4	1980	Earth Slump	$100,000.00
YP 5	1978	Rock Fall	$150,000.00
YP 6	1984	Earth Slump	$100,000.00
YP 7	1985	Slide Removal	$1,197.00
YP 8	1985	Slide Removal	$1,063.00
YP 9	1985	Slide Removal	$1,213.00
YP 10	1984	Slide Removal	$1,082.00
YP 11	1984	Slide Removal	$1,198.00
YP 12	1985	Slide Removal	$1,394.00
YP 13	1981	Slide Removal	$1,097.00
YP 14	1981	Slide Removal	$1,057.00
YP 15	1983	Slide Removal	$1,164.00
YP 16	1983	Slide Removal	$1,055.00
YP 17	1983	Slide Removal	$1,226.00

Figure 69 Table 4-10 ADOT Loss Estimates

[1] Realmuto, V.J. (1985). *Preliminary Map of Selected Mass-Movement Events in Arizona.* Retrieved 18 May 2023 from https://hdl.handle.net/10150/630999

Unincorporated County – Landslides occur frequently in Yavapai County due to the radical inclines in elevation. Primary routes and mountain passes are susceptible to closure due to landslides. Impacts include transportation routes used for emergency services, local residential access, and commerce along State Highway 89, 89A, and County maintained roads of Crown King Rd, Senator Highway, County Roads 10, 15, Copper Basin, Iron Springs, and numerous Prescott National Forest Roads.

In 2012, post Gladiator Wildfire, heavy localized rain led to flash flooding and landslides along Lincoln Ridge along Crown King Road. The road was cut in four locations effectively isolating the mountain community of Crown King. In the winter of 2013, Senator Highway was cut off due to a landslide along the Hassayampa.

Figure 70 Photo of Jerome Landslide Related Damage

Camp Verde – There is some potential for disruption to travel within the boundaries of the municipality of Camp Verde. However, there are very limited spots where this event could occur due to the topographical nature of the location of roadways. There is perhaps a higher potential for impact with the possibility of major events occurring on Hwy 260 to the east and to Hwy 17 south. The topography lends itself to slides southeast towards the access roadways to the Verde Valley. Major slides could potentially restrict and/or delay the delivery of goods and services to the municipalities within the Verde Valley.

Chino Valley – It is highly unlikely for this type of vulnerability to exist in this jurisdiction.

Clarkdale – Many areas of Clarkdale are susceptible to various types of rock falls, landslides, and debris flows that can occur along steep mountain slopes, canyons, and along road cuts coming from Jerome. Extreme precipitation and snowmelt are the primary triggers. Although landslides are possible in Clarkdale, property damage would probably be negligible as most of the damage would be due to inundated washes, culverts, and road cut infrastructure.

Cottonwood – Due to topography, Cottonwood has very limited exposure to these events.

Dewey-Humboldt – The community would only be susceptible to this during post wildland fire flooding. Residential areas adjacent to the town are in the wildland urban interface and are on slopes conducive to moderate landslide activity. This hazard would be enhanced through increased hydrological flows as a transport media. The areas associated with slope and potential landslides are along Hwy 169 and outlying residential areas.

Jerome – Many landslides have occurred in the past cutting off SR 89A, which has put Jerome in a state of isolation for lengthy periods. The Town's utilities are also at stake; the water tanks are the only water supply and in the event of telephone system failure, Jerome's backup communications capability is nearly nonexistent. Power failure could also be a result of landslides placing the Town in extreme peril considering our location and possible transportation/ evacuation routes being blocked. Given the extensive mining operations that have taken place here, landslides are highly probable and could cause disastrous results.

Prescott – The City has a varied and unique topography that renders it susceptible to a landslide/mudslide event. There are several million-dollar homes scattered throughout the community that are built on and into the hillsides overlooking the Town. Although there is limited history as it relates to such events occurring, the hazards remain. Commercial properties are better insulated against such events; however, there are some businesses that may still be susceptible.

Prescott Valley - There is really nothing that creates landslide/mudslide vulnerability to this jurisdiction.

Sedona – Sedona has some steep terrain, but the bedrock and soil types are not conducive to landslides and mudslides. When they do occur, the most likely area is in Oak Creek Canyon. Burn areas increase the likelihood of mudslides in the Sedona region.

Yavapai-Prescott Indian Tribe – The tribe has numerous buildings located on steep hills/ cliffs. Over the past ten years, the tribe completed repairs and stabilizations to several commercial structures in vulnerable areas which decreased the vulnerability of the buildings and increased the resilience of the community.

Changes in Development in the Hazard Area

In many of the communities within Yavapai County, development of hillside areas is both popular and sometimes necessary, as are hillside cuts that are required as a part of roadway improvements. Areas of greater slope will also be areas of greatest risk to landslides. Adequate geologic investigations should be made for any improvements involving construction on hillsides, creation of large hillside cuts, or both.

Camp Verde – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Chino Valley – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Clarkdale – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Cottonwood – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Dewey-Humboldt – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Jerome – This community has witnessed limited growth over the past ten years and although the risk and vulnerability associated with landslides remain high, it is not increased from development in the hazard area.

Prescott – The residents and new homebuyer's that flock to Prescott actively take advantage of the steep hillsides to build homes with breathtaking views. These new homes are built within the hazard area increasing the overall severity and vulnerability potential of the hazard.

Prescott Valley -- There is really nothing that creates landslide/mudslide vulnerability to this jurisdiction.

Sedona – There are limited, current and potential, changes in the development area which decreases the vulnerability, probability, and severity of landslides.

Yavapai-Prescott Indian Tribe -- There are no changes in this development area. Current and future development is limited. The Tribe has not issued any building permits over the past five years. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

4.4.4 Severe Wind

Description

The hazard of severe wind encompasses all climatic events that produce damaging winds. For Yavapai County and the Yavapai-Prescott Indian Tribe, severe winds typically result either from extreme pressure gradients that normally 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 storm remnants 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 reach 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 sandstorms, 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 Yavapai County, tornadoes are the least common type of severe wind to accompany a thunderstorm.

History

Yavapai County has been subject to over 100 severe wind events, 32 events occurred between 2018 and 2022. In total the economic loss exceeds $20M in damages to structures and agriculture in the last 50 years. There has also been one recorded fatality and several injuries associated with wind events, most of which related to an F1 tornado that touched down in 1977. Severe wind events occur on a significantly more frequent basis throughout the County, but do not always have reported damage. The following are examples of significant past events:

- February 22, 2023 – High winds caused road closures and power outages for residents in the Dewey-Humboldt, Mayer, and Chino Valley areas with winds in the 50-and-60-miles-per-hour range around the region.
- June 25, 2022 -- A land spout tornado was seen northeast of Prescott Valley on June 25.[1]
- July 11, 2021 -- A trained spotter observed a tornado west of Outer Loop Road and State Route 89 for 45 seconds.[2]

[1] NOAA. Storm Events Database. Retrieved March 24, 2023, from https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=977487.

[2] Ibid

- Sept 1, 2019 -- Thunderstorms produced heavy rain, flash flooding, and strong winds in Yavapai County with recorded winds up to 52 kts. and 0.75 to 1.10 inches of rain in the Prescott and Dewey areas.[1]

Extent

The extent of severe wind events in Yavapai County, the jurisdictions, and the Tribal areas is relatively similar. Many of the factors that determine the extent of a severe wind event has on the county are not geographical, but rather demographical and topographical based. These events are generally limited to Dewey-Humboldt and Prescott Valley, where the effect is critical. These two (2) jurisdictions have a larger effect due to straight-line winds that occur in the area. Table 4-10 provides an assessment of the probability.

Despite the broad seasonal range of severe wind events (spring, summer, fall, and winter), most severe wind events occur in conjunction with thunderstorms. The annual number of thunderstorms, on average, varies from 40-80 per year across the county. The highest number of storms occur in the northeastern part of the county affecting the jurisdiction of Camp Verde, Chino Valley, Clarkdale, Cottonwood, Dewey-Humboldt, Jerome, Prescott, Prescott Valley, Sedona, and Yavapai Prescott Indian Tribe. The lowest number of thunderstorms occur along the western border.

Lightning strikes are another indicator of thunderstorm hazard. Strike densities across Yavapai County vary from two to eight lightning strikes per square kilometer annually, with the higher density of lightning strikes in the northern areas of the county.

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 Yavapai County is designated with a design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds. (ASCE, 1999)

Likewise, FEMA identifies most of the County to be in design wind speed Zone I. In this zone, a design wind speed of 130 mph is recommended for the design and construction of community shelters.

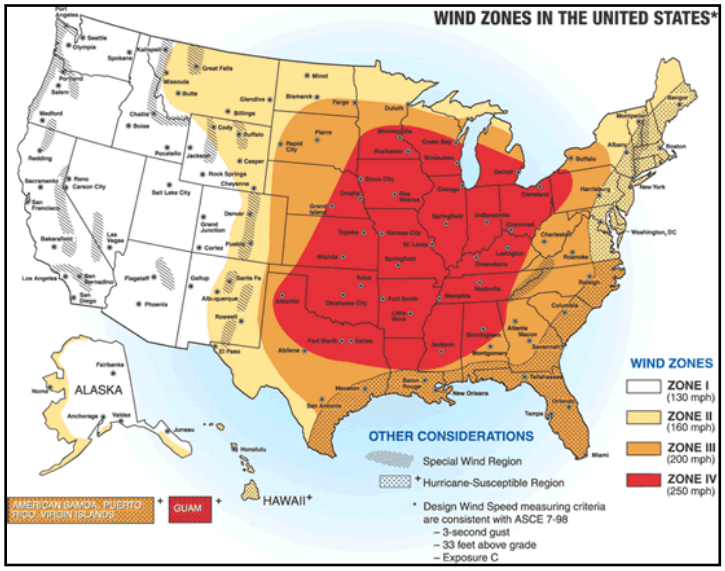


Figure 71 FEMA Wind Zones

Probability of Future Hazard Events

Most severe wind events in Yavapai County and the Yavapai-Prescott Indian Tribal areas are associated with thunderstorms. 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 Yavapai County ranges from 90-110 minutes and is among the longest in the nation (DEMA, 2018). Damage from severe wind events is likely to increase in areas where buffer zones created by thick forest areas have been destroyed by wildland fire. As wildland fire hazards and risk increase due to climate change variables, this cascading impact must be considered.

Climate change, seen as warmer temperatures, can increase the availability of moisture in the air. This increase in

[1] Ibid.

moisture translates to increased frequency, severity, and duration of thunderstorms. Climate change can alter atmospheric circulation patterns, influencing the paths that storms take. While the exact impact on storm tracks is still an area of active research, there is evidence to suggest that some regions may experience shifts in the tracks of storms. This can result in changes in the areas affected by specific storm types, including mid-latitude storms which may increase the occurrence of the hazard throughout Yavapai County and the YPIT areas. Year over year increases in severe thunderstorms and severe winds are expected.

Yavapai County, each jurisdiction therein, and the Yavapai Prescott Indian Tribe will experience an increased hazard probability from climate change. Changes in weather patterns and the severity, and frequency of storms will adversely affect these communities. The probability and severity of severe storm and wind occurrence is listed in Table 4-10.

Tornadoes

Based on historic record, the probability of tornados occurring in Yavapai County is limited. Tornado damage severity is measured by the Fujita Tornado Scale, which assigns a numerical value of 0-5 based on wind speeds. Most tornadoes in Arizona last less than 30 minutes and the paths can range from a few hundred feet to a few miles. The width of a tornado may range from tens of yards to more than a quarter of a mile.

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	Rating
Camp Verde	Likely	Limited	12-24 hours	> 6 hours	2.80
Chino Valley	Highly Likely	Limited	12-24 hours	< 24 hours	2.60
Clarkdale	Likely	Limited	6-12 hours	< 24 hours	2.60
Cottonwood	Possible	Limited	12–24 hours	< 6 hours	1.90
Dewey-Humboldt	Likely	Critical	6–12 hours	< 1 week	2.10
Jerome	Highly Likely	Limited	6-12 hours	< 6 hours	2.95
Prescott	Likely	Limited	12–24 hours	< 24 hours	2.45
Prescott Valley	Likely	Critical	6-12 hours	< 24 hours	2.90
Sedona	Highly Likely	Limited	12-24 hours	< 6 hours	2.80
Unincorporated Yavapai County	Highly Likely	Limited	6-12 hours	< 1 week	3.15
Yavapai-Prescott Indian Tribe	Highly Likely	Limited	> 24 hours	< 6 hours	2.65

Figure 72 Table 4-11: Severe Wind CPRI Rating

Vulnerability

The entire County is assumed equally exposed to the damage risks associated with severe winds. Typically, incidents are localized, and damages associated with individual events are small. Based on the historic records over the last five years, it is feasible to expect average annual losses of $1.0 to $1.5 million (countywide). It is difficult to estimate losses for individual jurisdictions within the County due to the lack of discrete data.

Unincorporated County – Yavapai County is susceptible to localized severe wind events; some events have led to death. Straight-line winds have also caused damage to structures due to dissipating monsoons. Typical impacts to severe wind events in Yavapai County are loss of utility power, accidents, and structural damage.

Camp Verde – The Town's potential loss from severe wind events is comparatively small. There have been historical instances where there has been loss to roofs, downed power lines involving trees and/or branches. APS increased their tree trimming efforts to reduce the incidents of power outages due to branches falling as the results of severe wind. Mobile homes have been the most often incident involving loss in the historical recollections/documentations of loss. However, with more recent code requirements of having those homes anchored to prevent loss from severe wind events has reduced the recorded losses.

Overall vulnerability in Camp Verde consists of over 8,000 buildings. Essential facilities include eleven (11) schools,

four (4) fire stations, and three (3) police stations. Vulnerabilities also include 75.81 miles of highway, 69 bridges, and 1,294.32 miles of pipe.

Chino Valley – Most severe winds in Chino Valley are associated with severe thunderstorms. From June to August Chino Valley is at risk for microburst, straight-line winds, and low intensity tornadic activity. Weather warnings from NOAA provide minimal warning as Monsoons can develop and dissipate quickly over higher elevations.

Overall vulnerability in Chino Valley consists of over 12,000 buildings. Essential facilities include nine (9) schools, three (3) fire stations, and one (1) police station. Critical infrastructure includes 44.74 miles of highway, 15 bridges, and 1,393.11 miles of pipes.

Clarkdale – Most of the severe winds in Clarkdale are associated with thunderstorms. The National Weather Service issues a severe thunderstorm watch when conditions are favorable for development of severe thunderstorms, which produce severe winds. In Clarkdale, weather fronts can sometimes be accompanied by high winds coming through Sycamore Canyon. The probability of a severe thunderstorm occurring with high velocity is likely with limited damage with the most vulnerability coming from downed trees and road blockages. The community has a large number of mobile and manufactured homes, which are more vulnerable to severe weather than other structures.

Overall vulnerability in Clarkdale consists of 3,000 buildings. Essential facilities include one (1) school, three (3) fire stations, and two (2) police stations. Critical infrastructure includes 128.62 miles of highway, 23 bridges, and 767.39 miles of pipes.

Cottonwood – While Cottonwood has the potential for severe wind events, historically there have been few such events and limited property loss from severe wind.

Overall vulnerability in Cottonwood consists of 11,000 buildings. Essential facilities include two (2) hospitals, fourteen (14) schools, three (3) fire stations, and three (3) police stations. Critical infrastructure includes 54.68 miles of highways, 38 bridges, and 429.37 miles of pipes.

Dewey-Humboldt – Severe wind is an occasional event normally associated with winter storms and monsoonal weather. The community is vulnerable to moderate residential, public utility, and public infrastructure loss due to straight-line winds associated with winter storms and monsoons.

Overall vulnerability in Dewey-Humboldt consists of 4,000 buildings. Essential facilities include two (2) schools and three (3) fire stations. Critical infrastructure includes 161.56 miles of highway, 27 bridges, and 1,256.41 miles of pipes.

Jerome – Jerome is built on a side of a hill that provides an excellent conduit for wind. It often sweeps down the hill in energetic bursts. It can be windy year-round, but spring and fall are generally the strongest. The National Weather Service statistics prove that tornadoes can occur in association with any severe thunderstorm activity. Tornadoes only occurring on flat terrain are a myth and Jerome is subject to numerous, severe mountain storms each year, which could include tornadoes, “straight line” or high winds. In association with heavy rains, these could produce landslides as well as devastation to residential and public commercial structures. Constructed on the steep slopes of Woodchute Mountain, Jerome is susceptible to more than just damaged roofs. Many of these structures are built on stilts that are poorly built or have sustained damage from age or blasting and other mining operations. Most recently, a historic structure here in Jerome was lost due to both age and the high line winds that struck Jerome on March 5, 2017. The entire SW facing wall was blown over separating it from the rest of the building creating damage to the remaining walls. Structures like this one simply cannot handle high winds and are in danger of being damaged by severe wind.

Overall vulnerability in Jerome consists of 2,000 buildings. Essential facilities include two (2) fire stations and one (1) police station. Critical infrastructure includes 128.62 miles of highway, 18 bridges, and 728.87 miles of pipes.

Prescott – The City can expect some degree of seasonal severe winds. Historically, these events have been known to interrupt utility services, primarily electricity, as well as down trees onto fixed structures and in the public rights of way. The impact of such events is somewhat limited and rarely has it been overly problematic to any significant sites within the city limits. However, when high winds and red flag conditions are prevalent during a wildfire as part

of a winter storm, such events may be catastrophic and affect wide segments of infrastructure and community members.

Overall vulnerability in Prescott consists of 26,000 buildings. Essential facilities include four (4) hospitals, twenty-five (25) schools, seven (7) fire stations, four (4) police stations, and one (1) emergency operations center. Critical infrastructure includes 105.01 miles of highway, 47 bridges, and 1,111.63 miles of pipes.

Prescott Valley - Most severe winds in Prescott Valley are associated with severe thunderstorms. From June to August Prescott Valley is at risk for microburst, straight-line winds, and low intensity tornadic activity. Weather warnings from NOAA provide minimal warning as Monsoons can develop and dissipate quickly over higher elevations. Annually, Prescott Valley residents file multiple claims for Monsoon related wind damage.

Overall vulnerability in Prescott Valley consists of 18,000 buildings. Essential facilities include three (3) hospitals, twenty-one (21) schools, four (4) fire stations and one (1) police station. Critical infrastructure includes 75.81 miles of highway,18 bridges, and 489.64 miles of pipes.

Sedona – The City has had few wind-related events that have resulted in property damage. Downed trees and road blockages from high wind present the greatest threat.

Overall vulnerability in Sedona consists of 5,000 buildings. Essential facilities include one (1) hospital, six (6) schools, one (1) fire station, and one (1) police station. Critical infrastructure includes 17.4 miles of highway, 13 bridges, and 587.82 miles of pipes.

Yavapai-Prescott Indian Tribe – Because the Reservation is so small, many natural disasters can severely affect commerce and life on the Reservation. Severe winds affect all areas in the Prescott basin, and several tornados have been sighted in the area. Severe wind has the potential to damage critical infrastructure, disrupt the delivery of essential services, and restrict, or temporarily halt, ingress and egress to the residential and commercial areas of the Reservation.

Overall vulnerability to the Yavapai-Prescott Indian Tribe consists of 4,000 buildings. Essential facilities include one (1) school, one (1) fire station and one (1) police station. Critical infrastructure includes 68.97 miles of highway, seven (7) bridges, and 204.43 miles of pipes.

Changes in Development in the Hazard Area

Yavapai County-- As a general statement of change Yavapai County's population grew by 12% from 2010 to 2020. The county is growing, and each jurisdiction is expanding its developed areas with new housing communities, apartments, and single-family homes. Growth of the communities more than any other factor will increase the exposure to severe wind damage. New properties developed in the wildland urban interface are removing natural barriers to sustained winds. Homes built or parked in the open plain areas of Prescott Valley, Chino Valley, and Dewey-Humboldt have an increased likelihood of experiencing wind damage. The communities throughout Yavapai County will continue to experience damage and utility disruptions in their expanded community footprint. As a growing county, Yavapai County has increased exposure. To mitigate this hazard, Yavapai and all jurisdictions have worked together to lessen the effect of severe wind events by improving building codes, building materials, and regulation.

Camp Verde – The town boasts a population of 12,261 which is an increase of 12% over the 2010 Census data. Camp Verde issued 184 commercial and residential building permits from 2019-2021. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 60-70 permits per year. The current and planned development of the community is not increasing the hazard probability or vulnerability—it does increase the potential severity.

Chino Valley –. The community has experienced a residential growth of 12.6% since the 2010 Census. Chino Valley issued 611 commercial and residential building permits from 2019-2023. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 80-90 permits per year. The current and planned development of the community is not increasing the hazard probability or vulnerability — it does increase the potential severity.

Clarkdale – The town of Clarkdale has grown by 4.8% since the 2010 census and has averaged a steady growth of 61 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The current and planned development of the community is not increasing the hazard probability or vulnerability —it does increase the potential severity.

Cottonwood – Since 2010, the population has grown by 9% and the community has issued over 500 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 150 to 180 permits per year. The current and planned development of the community is not increasing the hazard probability or vulnerability —it does increase the potential severity.

Dewey-Humboldt – Growing at a rate of 5% since the 2010 census, Dewey-Humboldt issued 210 commercial and residential building permits from 2018-2022. The current and planned development of the community is not increasing the hazard probability or vulnerability —it does increase the potential severity.

Jerome – Jerome is a community built on a steep hillside with limited transportation routes. Because of this, the community has experienced limited growth in population and there are no changes in this development area. Current and future development is limited to actions which improve the towns infrastructure. There are no appreciable changes in vulnerability.

Prescott – The City of Prescott is one of the largest communities in the Plan's coverage area. The community has grown by 7% since the 2010 census. Prescott averaged a steady growth of 193 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The current and planned development of the community is not increasing the hazard probability or vulnerability —it does increase the potential severity.

Prescott Valley – Prescott Valley has seen vast changes in development and an 18.4% growth in population since 2010. The city is projected to continue growing at a rate of 2.4% per year. To support a growing population, the city has averaged a steady growth of 558 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. This has resulted in massive growth in commercial and residential homes throughout the community. The current and planned development of the community is not increasing the hazard probability or vulnerability —it does increase the potential severity.

Sedona –Community growth remains stable and slow with little increase over the 2010 census; the city experienced a 4% growth. The City issued an average of 63 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. There are minimal changes in the hazard area with a small increase in population and building inventory. The current and planned development of the community is not increasing the hazard probability or vulnerability.

Yavapai-Prescott Indian Tribe – The Yavapai Prescott Indian Tribe has experienced significant growth since 2010. The community has grown by 19.2%; however, it is still a small community with less than 230 residents. Despite the addition of approximately 46 community members, there are no changes in this development area. The Tribe has not issued any building permits over the past five years. Current and future development is limited. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

4.4.5 Wildfires

Description

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

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

A tree burning during an active wildfire.

For the period of 1980 to 2008, data compiled by the Arizona State Forestry Division for the 2013 State Plan update indicates that at least 124 wildfires greater than 100 acres in size have occurred in all of Yavapai County.

History

For the period of 1980 to 2008, data compiled by the Arizona State Forestry Division for the 2013 State Plan update indicates that at least 124 wildfires greater than 100 acres in size have occurred in all of Yavapai County. According to the National Wildfire Coordination Group (NWCG, 2010), there have been 13 fires larger than 100 acres, which burned within Yavapai County during the period of 2004 to 2009. The list below highlights several fires which occurred in the past 6 years:

- April 2022, The Crooks Fire sparked to life about two miles north of Palace Station from human activity. The fire consumed 9,000 acres in the Prescott National Forest and prompted evacuation orders for several communities south of Prescott.
- May 2021, The Spur Fire burned 150 acres and damaged 24 homes in the small mining community of Bagdad. Nearly 1,000 people were evacuated during the blaze.
- June 2021, beginning with a lightning strike in the Prescott National Forest, the Tiger Fire consumed 16,278 acres and cost $5.6 million to suppress.

- July 2019, The Cellar Fire burned 7,000 acres approximately 15 miles south of Prescott within the rugged Prescott National Forest. The Forest Service did not fully suppress the fire but allowed it to burn to minimize fuel density.
- June 2017, The Goodwin Fire started outside of the community of Pine Flats just north of the Gladiator burn scar. The fire transitioned East and North affecting the community of Pine Flats burning down two homes and continued in a Northeasterly direction threatening the community of Mayer. In Mayer, the fire burnt two residences. On the third day, the fire pushed north threatening the communities of Poland Junction, Breezy Pines, and Dewey Humboldt; one home was lost outside of Breezy Pines. The fire continued to push to the North threatening four additional communities. In all over 28,000 acres burned and forced the evacuation of over 7500 families.

Extent

- Class A - one-fourth acre or less;
- Class B - more than one-fourth acre, but less than 10 acres;
- Class C - 10 acres or more, but less than 100 acres;
- Class D - 100 acres or more, but less than 300 acres;
- Class E - 300 acres or more, but less than 1,000 acres;
- Class F - 1,000 acres or more, but less than 5,000 acres;
- Class G - 5,000 acres or more.

Figure 73 Wildfire Classification

Yavapai County has a high intensity of wildfires. The National Wildfire Coordinating Group (NWCG) has created a scale for the classification of wildfires. All the wildfires have been Class F except for two within the past 5 years. Yavapai County, its subsidiary jurisdictions, and the Yavapai-Prescott Indian Tribe are in a prime area for wildfires. The intensity comes from not a loss of life, but a property and asset loss. This is why there is a high severity of damage.

Probability of Future Hazard Events

The probability and magnitude of wildfire incidents for Yavapai County and the Yavapai-Prescott Indian Tribe are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source (human or natural), topographic aspect and slope, and remoteness of area.

Climate Change

Climate change will adversely impact the probability of future hazard events caused by wildfires It has a multitiered effect on the environment and a compounding effect on probability and severity. Climate change:

- Contributes to warmer temperatures and altered precipitation patterns, leading to more frequent and severe drought conditions throughout the county. Drier conditions increase the availability of dry vegetation, which acts as fuel for wildfires. When vegetation becomes more susceptible to ignition due to prolonged drought, wildfires can ignite more easily and spread rapidly.
- Extends the duration of the fire season in certain areas. Warmer temperatures and earlier snowmelt result in drier vegetation for longer periods, prolonging the window of opportunity for wildfires to occur. This extended fire season increases the likelihood of ignition and allows wildfires to spread over a greater time frame.
- Negatively impacts vegetation by stressing ecosystems and making them more susceptible to wildfires. Higher temperatures, drought, and insect outbreaks (which can be influenced by climate change) can weaken and kill vegetation, creating a larger fuel load for fires. Dead and dry vegetation acts as highly flammable material, increasing the likelihood and severity of wildfires.

- influences weather patterns, including changes in wind patterns and the frequency of extreme weather events. Stronger winds can help spread wildfires more rapidly, making them harder to control. Additionally, climate change can lead to more extreme weather events like thunderstorms, which may produce lightning strikes that can ignite fires.
- Creates Wildfire-Climate Feedback Loops. Large wildfires emit significant amounts of carbon dioxide, a greenhouse gas that contributes to climate change. This emission of greenhouse gases can further exacerbate climate change, creating a feedback loop. As climate change continues, it can lead to more favorable conditions for wildfires, which release more greenhouse gases, contributing to a vicious cycle.

Increased temperatures, drought conditions, and low levels of reservoir water will further exacerbate the effects of climate change and increase the probability and severity of wildland fires in the future. The probability for wildfire occurrence is listed in table 4-11. The effects of climate change are globally felt, and within the Plan area it will impact each jurisdiction. The severity of the hazard is increased in fuel dense areas and areas with critical infrastructure exposure. Of the eleven participating jurisdictions seven rate the hazard as critical or catastrophic and this is in no small part because of the effects of climate change.

Vulnerability

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	Rating
Camp Verde	Highly Likely	Catastrophic	< 6 hours	< 1 week	3.90
Chino Valley	Unlikely	Negligible	> 24 hours	< 6 hours	1.45
Clarkdale	Possible	Limited	< 6 hours	< 24 hours	2.30
Cottonwood	Possibly	Critical	12-24 hours	< 1 week	2.40
Dewey-Humboldt	Likely	Limited	< 6 hours	< 1 week	2.85
Jerome	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Prescott	Highly Likely	Catastrophic	< 6 hours	< 1 week	3.90
Prescott Valley	Possibly	Limited	< 6 hours	< 24 hours	2.30
Sedona	Highly Likely	Catastrophic	< 6 hours	< 1 week	3.90
Unincorporated Yavapai Co	Highly Likely	Catastrophic	< 6 hours	> 1 week	4.00
Yavapai-Prescott Indian Tribe	Likely	Critical	6-12 hours	> 1 week	3.10

Figure 74 Table 4-12: Wildfire CPRI Rating

Based on the previous Plan, $31 and $23 million in asset related losses are estimated for high and medium wildfire hazards, for all the participating jurisdictions in Yavapai County. An additional $392 and $111 million in high and medium hazard wildfire losses to HAZUS defined residential, commercial, and industrial facilities, is estimated for all participating Yavapai County jurisdictions. It should be noted that these exposure dollar amounts do not include the cost of wildfire suppression, which can be substantial. For example, a Type 1 wildfire fighter crew costs about $1 million per day.

Regarding human vulnerability, a countywide population of 15,695 and 23,979 people, or 9.38% and 14.33% of the total, is potentially exposed to a high and medium hazard wildfire event, respectively. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death, injury, or both, may be plausible. There is also a high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas.

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

Unincorporated County – The largest impacts from wildland fire are in the wildland urban interface. That transitional area is where the wildland meets civilization. Community development in the wildland urban interface increases the

risk to life and property. Fire is a good tool for managing hazardous fuels in the wildlands, however, mitigation efforts need to focus on healthy forest, sound fire regiments, and building defensible space. Most at risk are the communities in the wildland interface and adjacent to the transitional vegetation zones: Wilhoit, Dewey-Humboldt, Groom Creek, Camp Wood, Crown King, Mayer, Ruger Ranch, Peeples Valley, Potato Patch, Walker, Mount Union Communities, Jerome, and Breezy Pines.

Camp Verde – Camp Verde's historical profile for wildfire loss is relatively small. Forest and State lands along with some private lands do however provide a potential for damage to populated areas located adjacent to those specific landmasses. There is little threat posed by large growth trees except for along the Verde River corridor of 17 miles located within the Town's municipal boundaries. Likewise, there is a small section of large tree growth and deadfall flood debris, which is located on private, and forestlands within the Clear Creek corridor within the Town's municipal boundaries. The most likely potential for loss and threat is from grass fires burning into populated areas from private lands.

Overall vulnerability in Camp Verde consists of over 8,000 buildings. Essential facilities include eleven (11) schools, four (4) fire stations, and three (3) police stations. Vulnerabilities also include 75.81 miles of highway, 69 bridges, and 1,294.32 miles of pipe.

Chino Valley – The vegetation type around the town of Chino Valley is primarily grass or prairie. Although a range fire is very probable, the impacts are minimal.

Overall vulnerability in Chino Valley consists of over 12,000 buildings. Essential facilities include nine (9) schools, three (3) fire stations, and one (1) police station. Critical infrastructure includes 44.74 miles of highway, 15 bridges, and 1,393.11 miles of pipes.

Clarkdale – The historical and potential damage to the small community of Clarkdale due to wildfire events has been relatively minor. Clarkdale does have the possibility of wildfire due to the large amount of undeveloped land along Sycamore Canyon Road and portions of the Verde River where people recreate, which could inadvertently start a wildfire. Overgrown washes and vegetation along the Verde River would also be avenues of wildfire throughout the Town of Clarkdale.

Overall vulnerability in Clarkdale consists of 3,000 buildings. Essential facilities include one (1) school, three (3) fire stations, and two (2) police stations. Critical infrastructure includes 128.62 miles of highway, 23 bridges, and 767.39 miles of pipes.

Cottonwood – The City of Cottonwood is primarily surrounded by wildland fuel types that minimize the potential for wildland-urban interface fire situations. The greatest risk for wildland fire is along the Verde River corridor that runs through the northern portion of the city. There has been a project undertaken by non-governmental groups during the last two years to remove invasive species of plants along this corridor lessening the potential of fire. Fortunately, there are few structures located in proximity to the Verde River corridor limiting the potential for substantial property loss.

Overall vulnerability in Cottonwood consists of 11,000 buildings. Essential facilities include two (2) hospitals, fourteen (14) schools, three (3) fire stations, and three (3) police stations. Critical infrastructure includes 54.68 miles of highways, 38 bridges, and 429.37 miles of pipes.

Dewey-Humboldt – The community sits in the transitional zone between the low laying deserts and the alpine forest at 4300 feet above sea level. Chaparral is the predominate vegetation which encapsulates the community. Within the Town, residents have worked to effectively mitigate the propagation of wildland fire through Firewise mitigation strategies. However, there remain outlying areas, which require additional attention. Historically, Dewey Humboldt has been threatened by wildfire. The 2012 Cherry Hill Fire started southeast of town and burned towards the Orme community. In 2014, the White Horse community had a wildland start associated with a structure fire, which burned into the Prescott National Forest. Dewey Humboldt has promoted a Community Firewise Program to enhance defensible space and worked with stakeholders in hazardous fuels mitigation. Emphasis currently is those properties on the west and southwest side of Town.

Overall vulnerability in Dewey-Humboldt consists of 4,000 buildings. Essential facilities include two (2) schools and

three (3) fire stations. Critical infrastructure includes 161.56 miles of highway, 27 bridges, and 1,256.41 miles of pipes.

Jerome – The town of Jerome sits at an elevation of 5100 feet and is in the transitional zone of the Prescott National Forest. The community is on the Northeast side of the Woodchute Mountain Range and is in the Wildland Urban Interface. The community has mixed vegetation of chaparral and conifer. The topography is steep and promotes the rapid spread of wildfire. The community has a very high visitor population and with its historic building at a high risk for wildfire. The highest potential and impacts for wildfire are from May to August during the driest months with highest tourist traffic.

Overall vulnerability in Jerome consists of 2,000 buildings. Essential facilities include two (2) fire stations and one (1) police station. Critical infrastructure includes 128.62 miles of highway, 18 bridges, and 728.87 miles of pipes.

Prescott – Wildfire is the premier hazard within the incorporated boundaries of the City of Prescott along with the communities surrounding it. Unseasonably warm temperatures, low humidity, and red-flag conditions can turn a seemingly benign event into a career fire suppression campaign in just a few hours. Loss estimations could reach the billions of dollars and loss of life could result. Successful coordinated mitigations efforts have been undertaken over many years but with a roughly 7-year re-growth in is nearly impossible to “keep up”. Virtually all segments of the community are vulnerable. This includes million-dollar residential properties, multi-family dwellings, the historic downtown area, schools, hospital, and vast areas of commercial development. Without reservations, this is the greatest risk to the City of Prescott, and it has historically experienced many negative outcomes from this risk.

Overall vulnerability in Prescott consists of 26,000 buildings. Essential facilities include four (4) hospitals, twenty-five (25) schools, seven (7) fire stations, four (4) police stations, and one (1) emergency operations center. Critical infrastructure includes 105.01 miles of highway, 47 bridges, and 1,111.63 miles of pipes.

Prescott Valley – While there is minimal risk, overall vulnerability in Prescott Valley consists of 18,000 buildings. Essential facilities include three (3) hospitals, twenty-one (21) schools, four (4) fire stations and one (1) police station. Critical infrastructure includes 75.81 miles of highway,18 bridges, and 489.64 miles of pipes.

Sedona – While Sedona is vulnerable and has a large wildland-urban interface exposure around its entire perimeter, losses in the greater Sedona area have been rare. Two large fires have occurred in and along Oak Creek in the past 10 years (the Brins Fire and the Slide Fire). Structural and personal losses from these fires were fortunately minimal.

Overall vulnerability in Sedona consists of 5,000 buildings. Essential facilities include one (1) hospital, six (6) schools, one (1) fire station, and one (1) police station. Critical infrastructure includes 17.4 miles of highway, 13 bridges, and 587.82 miles of pipes.

Yavapai-Prescott Indian Tribe – The Tribe has a lot of open land that consists of mostly shrub oak. While the Tribe has pushed to be Firewise wildfires are extremely likely to occur on our Reservation. Any wildfire of any size would severely affect Reservation life by disrupting the delivery of utilities, restricting routes of egress and entry, and potentially damaging residential and commercial properties. In addition, wildfire and burn scar soils are typically hydrophobic, compounding the risk of flooding after rain events.

Overall vulnerability to the Yavapai-Prescott Indian Tribe consists of 4,000 buildings. Essential facilities include one (1) school, one (1) fire station and one (1) police station. Critical infrastructure includes 68.97 miles of highway, seven (7) bridges, and 204.43 miles of pipes.

Changes in Development in the Hazard Area

Yavapai County – The population Growth in Yavapai County increased by 12% over the last ten years, and by over 40% in the last twenty years. The increasing population size has resulted in steady urban development and home growth. This growth is encroaching on previously undeveloped areas and straining water resources. The population growth and housing development within the Unincorporated County and especially the wildland urban interface (WUI) is increasing the hazard probability and severity. Current and future developments are occurring in the hazard area, people are drawn to the WUI. The risk is increasing and so is the awareness of wildfire hazards. The incorporation of defensible space into urban areas is common but it is not the standard and vulnerability is increasing

wherever mitigation measures are not observed.

Camp Verde – The town boasts a population of 12,261 which is an increase of 12% over the 2010 Census data. Camp Verde issued 184 commercial and residential building permits from 2019-2021. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 60-70 permits per year. The current and planned development of the community is not increasing the hazard probability or vulnerability—it does increase the potential severity.

Chino Valley – This area has an unlikely probability of a wildfire. The community has experienced a residential growth of 12.6% since the 2010 Census. Chino Valley issued 611 commercial and residential building permits from 2019-2023. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 80-90 permits per year. The area will experience fires in the future, but the growth of the community does not significantly affect the vulnerability rating.

Clarkdale – The town of Clarkdale has grown by 4.8% since the 2010 census and has averaged a steady growth of 61 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The current and planned developments are not significantly increasing the hazard vulnerability, in some areas they may lessen it; in Clarkdale, the undeveloped areas present the greatest risk.

Cottonwood – Since 2010, the population has grown by 9% and the community has issued over 500 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 150 to 180 permits per year. The current and planned development of the community is not increasing the hazard vulnerability.

Dewey-Humboldt – Growing at a rate of 5% since the 2010 census, Dewey-Humboldt issued 210 commercial and residential building permits from 2018-2022. The current and planned development of the community is decreasing the hazard vulnerability by developing areas and removing potential fuel loads.

Jerome – Jerome is a community built on a steep hillside with limited transportation routes and buildable areas. Because of this, the community has experienced limited growth in population and there are no changes in this development area. Current and future development is limited to actions which improve the towns infrastructure.

Prescott – The City of Prescott is one of the largest communities in the Plan's coverage area. The community has grown by 7% since the 2010 census. Prescott averaged a steady growth of 193 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. Many new developments are placed within the WUI. Residential properties are built on the steep hillsides of previously undeveloped areas. The community is vulnerable to wildfire and the increased building stock and population growth, both current and projected, are increasing the vulnerability, probability, and severity of this hazard.

Prescott Valley – Prescott Valley has seen vast changes in development and an 18.4% growth in population since 2010. The city is projected to continue growing at a rate of 2.4% per year. To support a growing population, the city has averaged a steady growth of 558 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. This has resulted in massive growth in commercial and residential homes throughout the community. The current and planned development of the community is not increasing the hazard vulnerability.

Sedona –Community growth remains stable and slow with little increase over the 2010 census; the city experienced a 4% growth. The City issued an average of 63 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. There are minimal changes in the hazard area with a small increase in population and building inventory. The current and planned development of the community is not increasing the hazard vulnerability.

Yavapai-Prescott Indian Tribe – The Yavapai Prescott Indian Tribe has experienced significant growth since 2010. The community has grown by 19.2%; however, it is still a small community with less than 230 residents. Despite the addition of approximately 46 community members, there are no changes in this development area from

residential or commercial growth. The Tribe has not issued any building permits over the past five years. Current and future development is limited. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

4.4.6 Winter Storm

Description

Severe snowstorms affect many aspects of life in the County, including transportation, emergency services, utilities, agriculture, and the supply of basic subsistence to isolated communities. Interstates 40 and 17 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 snowstorms 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 snowstorms 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 snowstorms.

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 meets 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 a 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 do not 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 like 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 power lines.

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 excessively ice-loads on power lines; telecommunication lines and other communication towers; tree limbs; and buildings causing power outages, communication disruptions, and other structural damage to under-designed facilities.

History

Winter snows are the lifeblood of water supplies for most of Yavapai County and the Tribal Areas. However, winter storms are also one of the deadliest hazards to affect the area. During the period of Dec 2018 – Dec 2022, NOAA recorded 22 winter storm events; Table 4-12 displays the storm information.[1] In additional, Yavapai County received record snowfall on Jan 26, 2021, receiving 36 inches of snow over 24 hours.[2]

[1] NOAA. Storm Events Database. Retrieved 26 March 2023 from https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Heavy+Snow&beginDate_mm=12&beginDate_dd=01&beginDate_yyyy=2018&endDate_mm=12&endDate_dd=31&endDate_yyyy=2022&county=YAVAPAI%3A25&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=4%2CARIZONA.

[2] NOAA. Storm Events Database. Retrieved 26 March 2023 from https://www.ncei.noaa.gov/access/homr/#ncdcstnid=30108594&tab=MSHR.

Winter Storms in Yavapai County 2018-2022 (Heavy Snow, Sleet, & Winter weather)	
Number of County/Zone areas affected:	4
Number of Days with Event	22
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	2

Figure 75 Table 4-13: Winter Storms in Yavapai County 2018-2022

The following are highlights of some prominent snowstorm events affecting Yavapai County:

- Feb 2, 2022, A large trough of low pressure brought increasing moisture off from off the eastern Pacific marine layer over central Arizona. This brought extensive upslope snow shower activity coverage, especially along and White Mountains. The trough brought very cold air across Arizona (down to -12C at 700 mb) with saturation to at least 500 mb. This made for a very efficient snow process with significant, widespread accumulations. Heavy snow fell across Yavapai County including 8.5 inches in Ash Fork, 8 inches in Ponderosa Park, and 4.0-6 inches across the Prescott and YPIT area.
- Dec 21, 2022, A winter storm moved across northern Arizona from December 11 to December 13. The snow caused traffic problems on I-17 between the Verde Valley and Flagstaff. The Arizona Department of Transportation reported several vehicles that were stuck, slid off the road, or crashed on I-17 on the uphill portion leaving the Verde Valley near Stoneman Lake Road. One of the vehicles was a fire truck.
- Nov 11, 2019, A very large area of low pressure brought wind, rain, and snow to northern Arizona Thanksgiving Day and Black Friday. Strong southerly winds brought very moist air over Arizona with rising snow levels. Heavy rain fell below around 7500 through much of Thanksgiving Day with increasing snow levels the night of November 29th into the 30th with the passage of a cold front. Snowfall was eventually reported at the bottom of The Grand Canyon. Significant snow was reported as well as increased flows in lower elevations creeks and rivers. Seven inches of snow fell in Skull Valley by 8:42 AM at an elevation of about 4500 feet. Wilhoit received 6 inches of snow by 9:44 AM at an elevation of 4800 feet. State Route 260 from Camp Verde to Cottonwood was closed during this storm...at an elevation of around 3,200 feet above sea level.
- Dec 31, 2018, A third storm system in a week crossed northern Arizona with very low elevation snow. This storm lasted into New Year's Day. The system dropped between 3 and 4.5 inches of snow fell in the Verde Valley between 3,300 and 4,000 feet. There was one 5 inch report a mile south of Middle Verde slightly lower than 3,200 feet. Four inches of snow fell about 1 mile southeast of Chino Valley about 4,750 feet elevation. Five inches of snow fell at Lake Montezuma at an elevation of around 3,600 feet. Prescott Valley received 4.8 inches right at 5,000 feet elevation.

Extent

The extent of a winter storm event on Yavapai County and its jurisdictions are high. A majority of the County is located above 6,000 feet, which is conducive to snow. The Yavapai-Prescott Indian Tribal areas have a somewhat lower elevation ranging from 5,210 feet to a high of 5,900 feet. Although the elevation is relatively high throughout the County, the average snowfall is not more than two feet annually. Scientific quantification of snow

can be difficult due to the factors that influence the extent a storm affects the jurisdiction. Amount of snow is the only quantifiable measurement, but there is also the rate at which snow melts, the density of the snowflake, hail, sleet, and slush which can also create different hazards associated to a winter storm.

Probability of Future Hazard Events

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. (FEMA, 1997) However, snowfall extremes can occur in Yavapai County and can have serious effects to the population and critical infrastructure. In the Yavapai-Prescott Indian Tribal areas it is possible they will be impacted winter storms, but the severity and probability are low. Changes in the in climate and built environment will potentially change the probability of winter storm damage and even the rate of occurrence.

Climate Change

The influence of climate change on winter storms is complex. Climate change can influence the severity of winter storms by modifying the atmospheric conditions that fuel them. Warmer temperatures can lead to increased moisture availability, which can contribute to more intense precipitation events and heavier snowfall in regions that still experience freezing temperatures. This can result in higher snow accumulation rates, increased snowmelt, and potential risks of winter flooding. Climate change can alter precipitation patterns. The altered precipitation patterns may lead to an increase in snowfall, rainfall, or freezing rain. In addition, climate change can influence atmospheric circulation patterns, potentially altering storm tracks during winter. While the specific effects are still subject to ongoing research, some studies suggest that climate change may lead to changes in the paths and intensity of winter storms. This can result in shifts in the areas affected by heavy snowfall, strong winds, and other winter storm characteristics.

Overall, the climate is warming with recorded winter temperatures averaging between 3-5 degree warmer. A warmer winter season does not lessen the effects of heavy snowstorms and in fact just as thunderstorms, tornadoes, and hurricanes are increasing in number so too is the winter equivalent. Warmer temperatures felt year-round increases the amount of moisture in the air, and in the winter months, this equals increased amounts of snowfall, sleet, or freezing rain. Climate Change is a factor that will influence the probability of winter storms in Yavapai County, Yavapai-Prescott Indian Tribal areas, Jerome, Prescott, and Camp Verde.

Vulnerability

Participating Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Score
Camp Verde	Likely	Critical	12-24 hours	< 1 week	2.85
Chino Valley	Likely	Limited	12-24 hours	< 24 hours	2.15
Clarkdale	Possible	Limited	12-24 hours	< 24 hours	2.00
Cottonwood	Possible	Negligible	> 24 hours	< 1 week	1.65
Dewey-Humboldt	Likely	Limited	6–12 hours	< 1 week	2.70
Jerome	Highly Likely	Critical	6-12 hours	< 1 week	3.45
Prescott	Likely	Critical	12–24 hours	< 1 week	2.85
Prescott Valley	Likely	Limited	12-24 hours	< 1 week	2.55
Sedona	Likely	Limited	12–24 hours	< 1 week	2.55
Unincorporated Yavapai County	Likely	Critical	12-24 hours	> 1 week	2.95
Yavapai-Prescott Indian Tribe	Possible	Negligible	> 24 hours	< 1 week	1.65

Figure 76 Table 4-14: Winter storm CPRI Rating

The entire region's population and assets are exposed to winter storm conditions to a varying degree, depending on the location within the county or tribal areas and the elevation. Estimation of losses due to winter storm is difficult

but given the historic record and losses of both life and property makes this likely.

Unincorporated County – Vertical elevation in Yavapai County extends from 1,000 above sea level (ASL) in the southern regions to nearly 8,000 feet ASL in the Central Highlands (Mt Union). Winter storms regularly affect up to 85% of the 8,126 square miles of Yavapai County. I-17 and I-40 are frequently impacted due to heavy snow closing these major commercial transportation routes. Impacts to rural Yavapai County are more severe with the potential of limiting access to emergency services. Utility power is often vulnerable with costly repairs and extended outage.

Camp Verde – With an elevation of 3160 ft, Camp Verde's vulnerability to actual snow loss is relatively small. Homes are designed for adequate snow loads and other normal protections related to freezing at this elevation of exposure. Increased exposure to flooding happens with more than normal snow accumulations at higher elevations followed either by additional precipitation in the form of warm rains, or by warmer than normal weather accelerating the melting of the snowfall. There has been some loss recorded to older buildings, which were primarily flat roof sheds, or outbuildings, which were not designed with snow load provisions. Longer termed presence of snow accumulation provides some disruption with travel on lesser-used roads and without municipal snow removal resources, which is usually supplied by local heavy equipment contractors or as in most cases, the weather changes in time for most roads to be passable in 2 to 3 days.

Overall vulnerability in Camp Verde consists of over 8,000 buildings. Essential facilities include eleven (11) schools, four (4) fire stations, and three (3) police stations. Vulnerabilities also include 75.81 miles of highway, 69 bridges, and 1,294.32 miles of pipe.

Chino Valley – Historically Chino Valley has received heavy snow. The community is along State Route 89, which is the primary route for commercial traffic to I-40. Heavy snow has the potential to close this arterial route. The impacts are otherwise minimal.

Overall vulnerability in Chino Valley consists of over 12,000 buildings. Essential facilities include nine (9) schools, three (3) fire stations, and one (1) police station. Critical infrastructure includes 44.74 miles of highway, 15 bridges, and 1,393.11 miles of pipes.

Clarkdale – The elevation of Clarkdale normally sets the risk for winter storms as a possibility, with a limited impact. Normally, if the Town does receive snow, freezing rain, etc. it is only for a short time and has relatively minor impacts, except for travel during the event, which clears quickly. When the snow does not melt quickly, travel is impeded due to lack of snow removal equipment and the steep terrain of the community. Freezing temperatures over long periods will cause municipal water pipes and meters to freeze along with residential homes and businesses.

Overall vulnerability in Clarkdale consists of 3,000 buildings. Essential facilities include one (1) school, three (3) fire stations, and two (2) police stations. Critical infrastructure includes 128.62 miles of highway, 23 bridges, and 767.39 miles of pipes.

Cottonwood – While the City of Cottonwood has the potential for winter storm events, our lower elevation makes major snow events very rare. Historically, there has been limited property loss from winter storms.

Overall vulnerability in Cottonwood consists of 11,000 buildings. Essential facilities include two (2) hospitals, fourteen (14) schools, three (3) fire stations, and three (3) police stations. Critical infrastructure includes 54.68 miles of highways, 38 bridges, and 429.37 miles of pipes.

Dewey-Humboldt – The community experiences little to no winter storm and currently has requisite equipment and personnel to address the needs associated with the hazard. Additionally, mutual aid, emergency contracts, and intergovernmental agreements fill the gap where needed.

Overall vulnerability in Dewey-Humboldt consists of 4,000 buildings. Essential facilities include two (2) schools and three (3) fire stations. Critical infrastructure includes 161.56 miles of highway, 27 bridges, and 1,256.41 miles of pipes.

Jerome – Recent climatological conditions have blessed Jerome with mild conditions. The not-so-distant past paints another picture as snowfall statistics in Jerome have exceeded 20" in a day. Such occurrences with that kind of heavy snow can happen on any given year between the months of November and March. Jerome is ill equipped to handle

such storms. Minimal equipment is available and would not be able to support these kinds of storms. This exposes the town's population and visitors to an immediate emergency scenario. Any snow sleet or even rain that freezes overnight generates additional risk in Jerome that would be routine elsewhere. The steep grade of many of Jerome's streets would make vehicular travel over them impossible. Attempting access to some areas would be dangerous and cause possible crashes into other vehicles and into residences all too easily. The equipment necessary to effect mitigation in this area is impossible for the town to purchase. As many measures as possible have been adopted; however, none of these would help in a major winter storm. There is only one road in and out of Jerome. State Route 89A over Mingus Mountain is one access point and the same road leading down the mountain to Clarkdale is the other. Other roads such as FR 318, otherwise known as Perkinsville Road would be impassible in these situations. This puts Jerome in an immediate isolation configuration and those risks would put Jerome in a perilous state.

Overall vulnerability in Jerome consists of 2,000 buildings. Essential facilities include two (2) fire stations and one (1) police station. Critical infrastructure includes 128.62 miles of highway, 18 bridges, and 728.87 miles of pipes.

Prescott – Winter storms routinely have an annual impact within the city. Although the most devastating of these storms seem to be on a decade cycle, they can occur many times in succession. Qualification of storms is very dependent upon time of day, day of week, and advance awareness. Primary loss associated directly to catastrophic storm events are routinely related to commerce, the communities' economic vitality, and loss of essential utility services. On occasion, there are secondary and tertiary issues to structures caused by weight of snow and falling limbs from trees, but these are rare.

Overall vulnerability in Prescott consists of 26,000 buildings. Essential facilities include four (4) hospitals, twenty five (25) schools, seven (7) fire stations, four (4) police stations, and one (1) emergency operations center. Critical infrastructure includes 105.01 miles of highway, 47 bridges, and 1,111.63 miles of pipes.

Prescott Valley – This community sits at approximately 5,000 feet and historically has had significant snowfall. The community now has a population of nearly 65,000 and sits along the Highway 69 corridor, which connects central Yavapai County with I-17. Vulnerable populations include many retirement-aged people, a regional hospital, as well as, assisted living housing. The town can clear major roads, however, copious amounts of snow in a single or series of storms would adversely affect the town, as well as delivered emergency services.

Overall vulnerability in Prescott Valley consists of 18,000 buildings. Essential facilities include three (3) hospitals, twenty-one (21) schools, four (4) fire stations and one (1) police station. Critical infrastructure includes 75.81 miles of highway,18 bridges, and 489.64 miles of pipes.

Sedona – The City of Sedona generally receives no more than 12" of snow in a severe snowstorm event. While this is inconvenient in the short term, property damage is minimal. The biggest issue is weather related car accidents and post melt flooding.

Overall vulnerability in Sedona consists of 5,000 buildings. Essential facilities include one (1) hospital, six (6) schools, one (1) fire station, and one (1) police station. Critical infrastructure includes 17.4 miles of highway, 13 bridges, and 587.82 miles of pipes.

Yavapai-Prescott Indian Tribe - If the Prescott basin were to get substantial snowfall affecting the entire area, the Reservation would as well be heavily impacted. On the Reservation for our residential area, there is only one ingress/egress if this is impacted by snowfall our residents cannot get off the Reservation for supplies. A lack of supplies has the potential for severe and even cascading consequences. A lack of supplies can lead to shortages of food and clean water. A lack of medical supplies, including medications, equipment, and emergency supplies, can hamper the ability to provide proper healthcare services to those in need. A lack of adequate infrastructure and emergency supplies will limit our ability to handle the impact of a winter storm resulting in a shortage of shelters, blankets, clothing, and other essential items needed for protection and comfort during and after the event. A lack of supplies can further increase the vulnerability of the community to these hazards, as they may lack the necessary equipment, tools, and resources to mitigate the impact or respond effectively to the storm and the events that follow. The lack of essential supplies and the challenges faced during a storm that creates extensive isolation can have a significant psychological and emotional toll on the community. Stress, anxiety, and trauma can be heightened when there are limited resources available to meet basic needs, leading to long-lasting effects on mental well-being.

Overall vulnerability to the Yavapai-Prescott Indian Tribe consists of 4,000 buildings. Essential facilities include one (1) school, one (1) fire station and one (1) police station. Critical infrastructure includes 68.97 miles of highway, seven (7) bridges, and 204.43 miles of pipes.

Changes in Development in the Hazard Area

Yavapai County – Growth in Yavapai County increased by 12% over the last ten years, and by over 40% in the last twenty years. The increasing population size has resulted in steady urban development and home growth. This growth is expanding the burden on livable area, the road system, public utilities, and critical infrastructure. It is also encroaching on previously undeveloped areas and straining water resources. An increase in the population density and development heightens the County's risk exposure and vulnerability to multiple hazard types.

Camp Verde –The town boasts a population of 12,261 which is an increase of 12% over the 2010 Census data. Camp Verde issued 184 commercial and residential building permits from 2019-2021. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 60-70 permits per year. Camp Verde has taken measures to bolster the infrastructure to support a larger population which include improvements in building codes and building materials. The community follows and enforces the 2018 International Building Codes. These improvements mitigate some aspects of risk, but increased population density, increases the overall exposure and potential vulnerability to winter storm damage.

Chino Valley – The community has experienced a residential growth of 12.6% since the 2010 Census. Chino Valley issued 611 commercial and residential building permits from 2019-2023. The development of new residential buildings and commercial establishments is expected to continue at an estimated rate of 80-90 permits per year. The area will experience winter storm events in the future, but the increased development will contribute to increases in vulnerability and severity for this community.

Clarkdale – The town of Clarkdale has grown by 4.8% since the 2010 census and has averaged a steady growth of 61 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. The town's growth is a measure of increased exposure as are the increased number of commercial buildings and private residences. This growth is increasing the impacts of a winter storm event, but the vulnerability is not affected by new developments.

Cottonwood –Since 2010, the population has grown by 9% and the community has issued over 500 commercial and residential building permits from 2018-2022. The town is continuing to grow at an estimated rate 150 to 180 permits per year. There is an increase in exposure with new buildings in the hazard area, but the vulnerability is not affected by new developments.

Dewey-Humboldt – Growing at a rate of 5% since the 2010 census, Dewey-Humboldt issued 210 commercial and residential building permits from 2018-2022. The current and planned development of the community is not increasing the hazard vulnerability—it does increase the potential severity.

Jerome – Jerome is a community built on a steep hillside with limited transportation routes. Because of this, the community has experienced limited growth in population and there are no changes in this development area. Current and future development is limited to actions which decrease vulnerability and improve the town's infrastructure.

Prescott – The City of Prescott is one of the largest communities in the Plan's coverage area. The community has grown by 7% since the 2010 census. Prescott averaged a steady growth of 193 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. New developments and population growth are contributing to increases in vulnerability.

Prescott Valley – Prescott Valley has seen vast changes in development and an 18.4% growth in population since 2010. The city is projected to continue growing at a rate of 2.4% per year. To support a growing population, the city has averaged a steady growth of 558 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. This has resulted in massive growth in commercial and residential homes throughout the community. New developments and population growth are contributing to increases in vulnerability.

Sedona – Community growth remains stable and slow with little increase over the 2010 census; the city experienced a 4% growth. The City issued an average of 63 commercial and residential building permits per year from 2019-2023. The growth of the community is expected to continue at the same rate for the foreseeable future. There are minimal changes in the hazard area with a small increase in population and building inventory. There are no appreciable changes in vulnerability.

Yavapai-Prescott Indian Tribe – The Yavapai Prescott Indian Tribe has experienced significant growth since 2010. The community has grown by 19.2%; however, it is still a small community with less than 230 residents. Despite the addition of approximately 46 community members, there are no changes in this development area. The Tribe has not issued any building permits over the past five years. Current and future development is limited. They have increased the volume of commercial traffic and visitors to tribal owned/leased facilities, but overall vulnerability has not increased or decreased.

4.5 Risk Assessment Summary

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

	Earthquake	Flood	Landslide / Mudslide	Severe Wind	Wildfire	Winter Storm
Yavapai County		X	X		X	
Camp Verde	X	X	X	X	X	X
Chino Valley	X	X	X	X	X	X
Clarkdale	X	X	X	X	X	X
Cottonwood		X			X	
Dewey-Humboldt	X	X	X		X	X
Jerome	X	X	X	X	X	X
Prescott	X	X	X	X	X	X
Prescott Valley	X	X	X	X	X	X
Sedona		X		X	X	X
YPIT	X	X	X	X	X	X

Figure 77 Table 4-15: Hazards Mitigated by Jurisdiction

Unique Considerations

Clarkdale

Drought-- The town of Clarkdale is keenly aware of the value of water. Clarkdale relies on groundwater sources specifically from the Haskell Springs and Mountain Gate wells to provide water for its 4,224 residents. During droughts, these sources can become depleted, leading to water scarcity. This can affect both residential and agricultural water needs, potentially leading to water restrictions and conservation measures. To mitigate the effects of drought, Clarkdale proactively implements water conservation measures, and on November 14, 2006, the Clarkdale Town Council adopted a Drought and Water Shortage Preparedness Plan (DWSPP). The purpose of the Plan is to provide strategies and procedures for periods of time when the Town's normal and customary water supplies may not be able to meet the Town's needs due to below normal rainfall, or other issues that have affected the water supply.

The Town of Clarkdale is engaged in developing additional water sources to support the growth of the community and to mitigate against the effects of drought. The Mescal Well Project will add capacity to the community's water resources and allow them to meet the demand of the continued population growth in the area.

Dewey-Humboldt

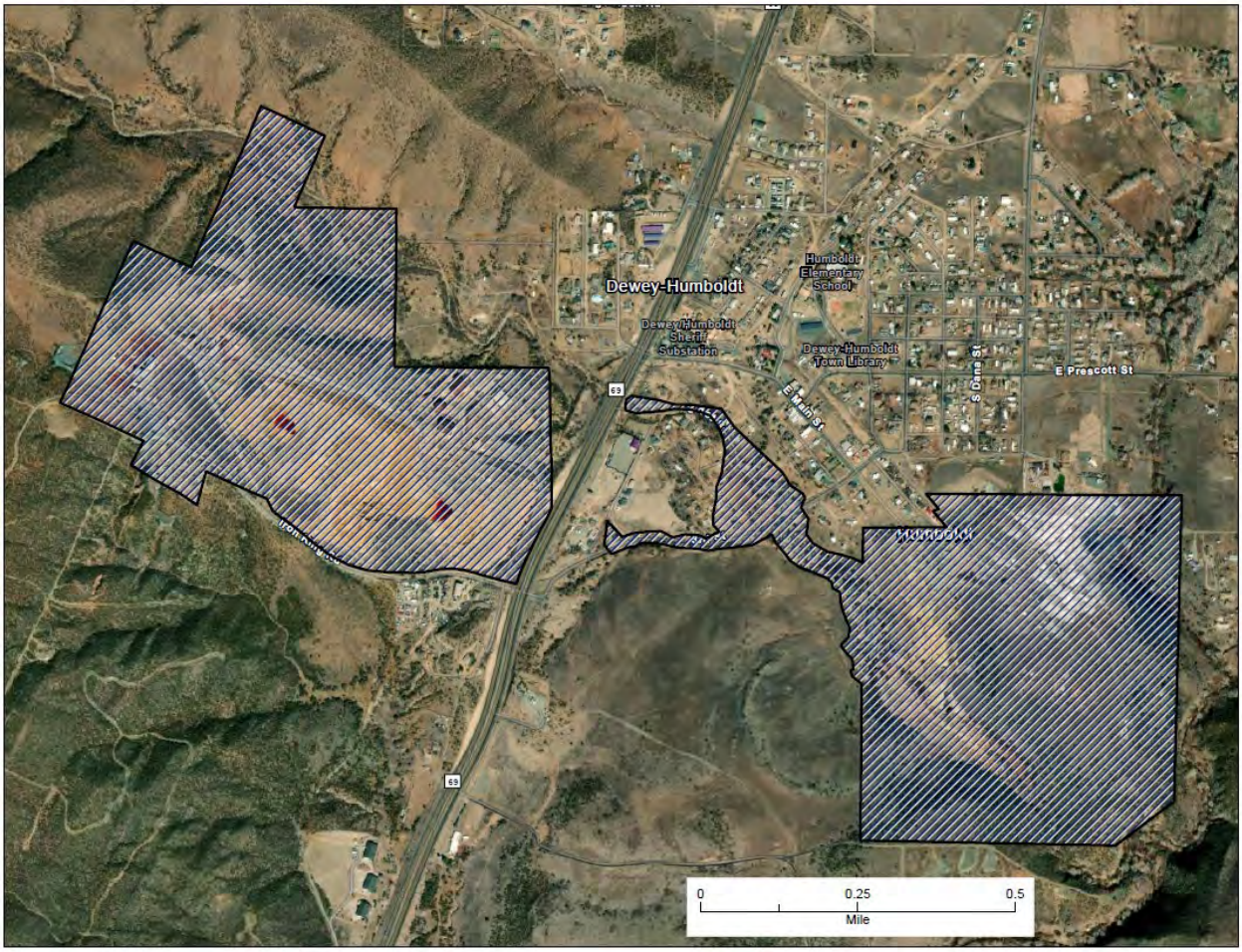
Drought- The town of Dewey-Humboldt is a growing community of 4,123 people. The community is situated at an elevation of 4,800 feet within the high desert region of Yavapai County. Like many communities in Arizona, the town is concerned and protective of its limited water resources. Dewey-Humboldt relies on water sources such as rivers, reservoirs, and groundwater for its water supply. Many residents source water directly from private wells. During droughts, these sources can become depleted, causing water scarcity. This can impact both residential water supplies and agricultural water needs, potentially leading to water restrictions and conservation measures. To mitigate the effects of drought, the community is engaged in a public awareness campaign.

EPA Designated Super Fund Site

The citizens within the community of Dewey-Humboldt have the distinct misfortune of living in close proximity to one of the Nation's Superfund sites. Superfund Sites pose the greatest potential threat to public health and the environment. They are found on the National Priorities List (NPL). Sites on the National Priorities List are governed and funded for cleanup by the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The Iron King Mine and Humboldt Smelter is one of nine NPL sites in Arizona. The Iron King Mine and the Humboldt Smelter operated from the late 1800s until the early 1960s and was a periodically active mine for gold, silver, copper, lead, and zinc.[1] The former mine and smelter occupy over 300 acres of land along State Route 69. The soils within this area (see Figure 78 Map 4-25) are heavily polluted with arsenic, lead, and other heavy metals. Water runoff and water wells located in or near the contaminated area must be tested to ensure consumer safety; any contaminated water or standing water must be isolated, protected, and treated to protect public health and the environment. The community of Dewey-Humboldt, like many other mining communities, is dealing with the aftermath of uncontrolled Hazardous Materials usage. The ADEQ and EPA are involved in cleaning the community with actions beginning in 2008 beginning with testing and remediation of soil and the removal of the mine tailing piles. The former smelter site was dismantled, and the soils were sealed to prevent further contamination. Additional actions are pending to continue reducing the contamination levels associated with the mine and the smelter. The community has a legacy of environmental pollution which impacts the soil, water, and air placing additional considerations on mitigation actions in this area.

[1] Arizona Department of Environmental Quality. *Iron King Mine-Humboldt Smelter*. Retrieved 22 May 2023 from https://azdeq.gov/IronKingMine/SiteHistory?page=0%2C1

Figure 78-Map 4-25: The Iron King Mine and Humboldt Smelter



Jerome

Although the hazards and risks experienced by each jurisdiction vary, it is essential to note the unique characteristics of Jerome. Jerome, unlike any other jurisdiction in this planning area has the highest risk associated with landslides. Jerome is a community with one transportation route that winds up the mountain from Clarkdale and through a high-elevation mountain pass towards Prescott; it is easily isolated by winter storms or any incident that damages or obstructs the roadway. The effects of climate change with regards to increased precipitation, and increased drought leading to soil destabilization could dramatically alter Jerome's precarious perch on Cleopatra Hill. Improperly engineered structures is an issue, but damage to the roadways can isolate the community.

Yavapai County

Within the Unincorporated areas of the County, there are additional areas of concern with regards to impacted soils and waterways. Located approximately 12 miles southeast of Prescott, near Breezy Pine community is the Poland Mine and Poland Walker Tunnel. This site was an active mine from the late 1800s until approximately 1930. Water runoff from the mine is depositing excess metals (arsenic, lead, cadmium, and zinc) into Big Bug Creek. A

site assessment was completed in 2019, and a remediation of the waste rock and tailings was completed in 2021. Site characterization and sampling of the runoff continues.
The Eugene Mine is a former gold mine and mill site located approximately 3.3 miles west of Highway 69 at Poland Junction and 1.3 miles west on Eugene Gulch Road. The mine was a former gold mine and like the Poland Mine, it is also impacting the Big Bug Creek Watershed with heavy metals. Yavapai County has a long mining history. In addition to the Poland Mine and Eugene Mine, ADEQ is actively remediating the negative effects of the Cash Mine, Jersey Seep, and McCleur Mine. Each mine actively deposits heavy metals in the surrounding soils and waterways after rain events. The United States Geological Survey (USGS) possess the records of 1,270 mines, and the Bureau of Land Management has 74,829 records of mining claims on public land within Yavapai County. Mining is largely responsible for the founding of the towns within this jurisdiction, and the legacy of the mines and their runoff are a major consideration in mitigating runoff and protecting the people and environment of the of the community.

Populations At-Risk

Populations at-risk are referred to as access and functional needs. FEMA defines access and functional needs populations using the “C-MIST” acronym. This stands for Communication, Mobility, Independence, Support and Safety, and Transportation. These five pillars encompass both persons permanently and temporarily categorized as access and functional needs. The American Consumer Survey and Justice40 estimates the Population At-Risk for Yavapai County as 81,234 individuals. These individuals fall under the C-MIST acronym and are further categorized as "At-Risk Individuals’ and "Vulnerable Population." “At-risk individuals” is defined in PAHPA 42 § U.S.C. 300hh-16. “Vulnerable population” is defined in CFR Title 45, Part 46 to include children, prisoners, pregnant women, mentally disabled persons, economically or educationally disadvantaged persons. This plan encompasses these demographics and embraces the Whole Community Approach in preparedness and mitigation. It is vitally important to recognize the challenges that confront members of our community as impacts our resilience and vulnerability to hazards.

Effects on Vulnerability

Populations at risk can significantly affect vulnerability in various ways. When we refer to populations at risk, we usually mean groups of people who are more likely to experience negative impacts from a particular hazard or stressor. These populations can include marginalized communities, low-income groups, the elderly, children, people with disabilities, ethnic and racial minorities, and other socially disadvantaged groups. Populations at risk can influence vulnerability in following ways:

- Socioeconomic factors: Populations at risk often face higher levels of poverty, limited access to resources, and inadequate infrastructure. These socioeconomic factors can exacerbate vulnerability by restricting their ability to prepare for, cope with, and recover from hazards. Limited financial resources may hinder access to healthcare, safe housing, education, and other essential services, making it harder to mitigate risks and respond effectively.
- Access to information and resources: Populations at risk may face barriers in accessing timely and accurate information about potential hazards, preventive measures, and emergency response procedures. Language barriers, low literacy levels, or limited access to technology can hinder their ability to stay informed and make informed decisions. Lack of access to resources such as transportation, communication networks, and emergency services can further increase vulnerability during emergencies.
- Health disparities: Certain populations at risk may already face underlying health conditions, limited access to healthcare facilities, or inadequate healthcare services. These factors can increase their susceptibility to the impacts of hazards and make recovery more challenging. For example, individuals with pre-existing respiratory conditions may be more vulnerable to air pollution or poor air quality resulting from a disaster.

- Social networks and support systems: Strong social networks and support systems are crucial for effective disaster response and recovery. Populations at risk may experience social isolation, limited community cohesion, or strained social ties, making it harder to access support during emergencies. Social networks and community organizations can play a vital role in providing assistance, disseminating information, and facilitating collective action.
- Discrimination and inequalities: Populations at risk often face systemic discrimination and inequalities, which can further amplify vulnerability. Pre-existing disparities, including racial, ethnic, gender, or socioeconomic inequities, can result in unequal distribution of resources, differential exposure to hazards, and disparate impacts during and after disasters. These factors contribute to increased vulnerability and hinder effective resilience-building efforts.

It's important to recognize the specific needs and challenges faced by populations at risk in order to develop inclusive and equitable strategies for disaster preparedness, response, and recovery. Addressing these vulnerabilities requires a comprehensive approach that focuses on reducing systemic inequalities, enhancing social cohesion, promoting access to resources and information, and fostering community engagement and empowerment. Yavapai County, its jurisdictions, and Yavapai Prescott Indian Tribe strive to build and design inclusive communities with consideration for all citizens.

SECTION 5: MITIGATION STRATEGY

5.1 Section Changes

The mitigation strategy provides the "what, when, and how" of actions that will reduce or remove the community's exposure to hazard risks. This information is presented in the following areas:

Goals and Objectives

Capability Assessment

Mitigation Actions

5.2 Goals and Objectives

The Planning Team assessed the goals and objectives contained within the previous Plan; and a comparison was made to the Plan goals and objectives to the 2018 State Plan, it was decided to include a statement about critical infrastructure, The following is the resulting updated goal and objectives for this Plan.

Goal

Reduce the potential level of loss of life, and damage to structures, existing and future critical infrastructure, cultural / historic assets, and other community assets due to hazards.

Objectives

- Maintain and support general plans, ordinances, and codes in accordance with state/federal regulations, to limit development in hazard areas and to build to standards that will prevent or reduce damage.
- Educate the public to increase awareness of hazards, build resilience through preparedness, and develop opportunities for mitigation actions.
- Promote hazard mitigation and resilience in the business, residential, and agricultural communities.
- Maintain compliance with the National Flood Insurance Program (NFIP) requirements.
- Monitor and publicize the effectiveness of mitigation activities implemented.
- Establish/maintain intergovernmental agreements with neighboring communities and tribal governments.
- Promote changes in current regulations to facilitate hazard mitigation.
- Reduce the vulnerability of critical infrastructure from natural and human caused hazards.

5.3 Capability Assessment

A vital component of the Mitigation Strategy is a review of each participating jurisdiction's resources to identify, evaluate, and enhance the capacity of local resources to mitigate the effects of hazards. The capability assessment is comprised of several components: Legal and Regulatory, Technical Staff and Personnel, Fiscal Resources, and NFIP participation information. The County, tribe and local jurisdictions strive to develop and maintain comprehensive plans in all aspects of their government and emergency services. Many of the plans listed below are current however some of the smaller communities such as Cottonwood, Dewey-Humboldt, Jerome, and Sedona have less need and resources for a wide array of plans and capabilities.

Table 5-3-1: Yavapai County Capability Assessment		
Programs, Plans & Policies		
Emergency Operations Plan	Purpose	EOP provides the structure and processes for Yavapai County to utilize to respond and recover from an event.
	Responsible Agency	Emergency Management - PW
	Hazards	All
	Effect on Mitigation Efforts	EOP provides the structure and processes for Yavapai County to utilize to respond and recover from an event.
	Opportunities for Enhancement	The county will improve the Plan by incorporating policy changes and other improvements during the revision process scheduled to begin in 2024.
Recovery Plan	Purpose	Provides framework on how OEM and County partners will handle the recovery following an incident.
	Responsible Agency	Emergency Management - PW
	Hazards	All
	Effect on Mitigation Efforts	Plan manages the recovery of an incident
	Opportunities for Enhancement	The county will improve the Plan by incorporating policy updates and a Community Assistance Center.
Community Wildfire Protection Plan	Purpose	A guide for wildfire mitigation
	Responsible Agency	Emergency Management
	Hazards	Wildfire
	Effect on Mitigation Efforts	It identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community.
	Opportunities for Enhancement	The county is actively improving the CWPP to incorporate new technologies and increased partner involvement.

Emergency Response Plan for Hazardous Materials	**Purpose**	**County wide collaboration for safe and efficient responses to hazardous materials incidences**
	Responsible Agency	Office of Emergency Management Coordinates Local Emergency Planning members from numerous agencies and groups throughout County to have annual updates.
	Hazards	Hazardous Material releases from businesses or transportation incidents, affecting general safety, environmental and health concerns.
	Effect on Mitigation Efforts	Assists with identifying possible locations of hazardous material incidences and capabilities of community responses.
	Opportunities for Enhancement	The county will improve the ERP through partnership with the Local Emergency Planning Committee (LEPC) and engagement of best practices & standards of private industry.
Yavapai County Drainage Design Manual (July 2015)	Purpose	Provide more comprehensive guidance for the engineering and building community and the citizens of Yavapai County to help ensure that design and construction of drainage infrastructure and development in and around flood hazard areas are completed to required minimum standards.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	The purpose is to set regulations to new construction to prevent flooding from the standard flood event.
	Opportunities for Enhancement	The county will improve the Manual and Ordinance by developing written clarification on the authority of the county to regulate certain types of construction and violations procedures.
Area Drainage Master Plans	Purpose	Provide a more detailed look at existing flooding areas on a neighborhood level and identify potential mitigation activities, usually construction projects.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	The program provides the district with a list and priority ranking of projects in known flood problem areas that the district can choose from when planning projects during the budget and for applying for grants.
	Opportunities for Enhancement	The county will improve the Plans by incorporating consolidating individual plans and studies into the Master planning document.
National Flood Insurance Program	Purpose	To identify flood risks for regulating purposes.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	The program sets the standard for identifying and regulating potential risk to new development.
	Opportunities for Enhancement	The County does not have the ability to improve on the NFIP, but it will use new and emerging technology to map flood areas, limit construction in flood zones, and provide information to the

		residents on enrollment and their local flood hazards.
Flood Warning Program	Purpose	To measure in real time precipitation amounts and activity in running streams.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	Having our rain gauge network live in real time allows the District, the National Weather Service, and First Responders to monitor real time ground truth rainfall and runoff activity to prioritize warnings and flood activity monitoring.
	Opportunities for Enhancement	The county will improve the Program by adding gauges and maintaining/upgrading the entire network.
Figure 79 Table 5-3-1: Yavapai County Capability Assessment		
Codes & Regulations		
International Building Code; Ordinate 2012-1	Purpose	Building codes for the unincorporated areas of Yavapai County and the administrative code for the management, control, and enforcement of technical building and other codes and ordinances pertinent to all aspects of construction within unincorporated Yavapai County.
	Responsible Agency	Development Services
	Hazards	All
	Effect on Mitigation Efforts	Building/structure resiliency
	Opportunities for Enhancement	The county cannot improve the IBC, but it can incorporate local codes to establish and enforce fire codes.
Planning & Zoning Ordinance for Unincorporated areas of Yavapai County	Purpose	Provides minimum requirements designed to govern the division and use of land to: secure safety from fire, panic and other dangers; provide adequate light and air; prevent overcrowding of land and avoid undue concentration of population in certain areas; facilitate adequate provision of transportation, water, sewerage, schools, parks and other public requirements; maintain and promote stable values of land and structures.
	Responsible Agency	Development Services
	Hazards	All
	Effect on Mitigation Efforts	Building/structure resiliency
	Opportunities for Enhancement	The county will improve the Plan by incorporating revisions to land use mapping adding infrastructure development and hazard modelling.

Road Ordinance 2020-4	Purpose	To establish a uniform County Road System including acquisition, construction and maintenance for all public roadways under the jurisdiction of the Yavapai County
	Responsible Agency	Public Works
	Hazards	All
	Effect on Mitigation Efforts	Procedures for overall acquisition, construction, and maintenance for public roadways in YC jurisdiction; impacts response to events and takes into consideration drainage, etc. This ordinance is supported by the Roadway Design Standards.
	Opportunities for Enhancement	The county will improve the Ordinance by monitoring current and future weather patterns to ensure drainage and material is adequate to support the community.
Yavapai Subdivision Regulations (adopted 08/06, 2012)	Purpose	1. To implement the Yavapai County General Plan and Zoning Ordinance. 2. To provide lots and parcels of sufficient size and appropriate design for the purposes for which they are to be used. 3. To provide streets of adequate capacity for the anticipated traffic, which would utilize them and to ensure that they are designed to promote a safe traffic circulation system. 4. To accommodate new development in a manner which will preserve and enhance the County's environment and create new beauty through skilled subdivision designs. 5. To provide for water supply, sewage disposal, storm drainage and other utilities and facilities to address the long-term sustainability of the development. 6. To ensure that the costs of providing rights-of-way, street improvements, utilities and public areas and facilities needed to serve new developments are borne fairly and equitably by the subdivider rather than by property owners of the County at large. 7. To protect and enhance real property values. 8. To coordinate subdivision policies and regulations with those of the municipalities to facilitate transition from County to municipal jurisdiction that land which is first developed in unincorporated territory and is subsequently annexed, and to ensure unimpeded development of such new urban expansion that is logical, desirable and in accordance with goals, objectives, and policies of the General Plan. 9. To facilitate the transfer of lands having accurate legal descriptions and to establish and ensure the rights, duties and responsibilities of subdividers and developers with respect to land development. 10. To ensure conformance with the Arizona Pollutant Discharge Elimination System Program as set forth in A.R.S. Title 49 Chapter 2 Article 3.1.
	Responsible Agency	Development Services
	Hazards	All
	Effect on Mitigation Efforts	Community Resilience

	Opportunities for Enhancement	The county will improve the Regulations by incorporating the development of new construction standards and ensuring communities established under this plan have adequate planning and protection and sufficient mitigation measures for these areas to safeguard these areas.
Flood Damage Prevention Ordinance 2018-1	Purpose	Flood Damage Prevention Ordinance
	Responsible Agency	Flood Control
	Hazards	Flooding
	Effect on Mitigation Efforts	The Ordinance and associated regulations require structures to be built in a way to prevent flooding from the standard flooding event.
	Opportunities for Enhancement	The county will improve the Ordinance by clarifying the roles and authorities associated with the enforcement of this policy.
Outdoor Fire Ordinance 2020-2	Purpose	Establishes procedures for enactment and enforcement of emergency prohibitions and staged restrictions of combustion, open fires, campfires, and fireworks and establishing penalties for violation of such.
	Responsible Agency	Emergency Management
	Hazards	Fire
	Effect on Mitigation Efforts	Helps lessen fires during high-risk times within Yavapai County
	Opportunities for Enhancement	The county will improve the Ordinance by clarifying the roles and authorities associated with the enforcement of this policy.

Financial Resources		
Hazard Mitigation Grant Program	Purpose	Rebuilding a community after a major disaster in a way that reduces future disaster losses.
	Responsible Agency	Flood Control
	Hazards	Natural
	Effect on Mitigation Efforts	Provides funding for Planning & Enforcement, Flood Protection, Retrofitting and Construction.
Pre-Disaster Mitigation Grant Program	Purpose	This program makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.
	Responsible Agency	Flood Control / Emergency Management
	Hazards	Natural
	Effect on Mitigation Efforts	Provides funding to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.
Flood Mitigation Assistance Grant Program	Purpose	Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program.
	Responsible Agency	Flood Control
	Hazards	Flooding
	Effect on Mitigation Efforts	Provides funding to help reduce or eliminate the risk of repetitive flood damage.
Capital Improvements Project Funding	Purpose	Provides funding to hazard mitigation efforts
	Responsible Agency	BOS
	Hazards	All hazards
	Effect on Mitigation Efforts	Provides a mechanism to fund various hazard mitigation projects, such as building modernization and infrastructure improvement

Community Development Block Grant	Purpose	The Community Development Block Grant (CDBG) Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.
	Responsible Agency	Yavapai County
	Hazards	All hazards
	Effect on Mitigation Efforts	These grants assist in the development of more resilient communities decreasing the felt effects of all hazards.
Authority to Levy Taxes for Specific Purposes	Purpose	To raise funds to support specific, approved actions, and mitigation efforts of the County
	Responsible Agency	BOS – requires voter approval
	Hazards	All hazards
	Effect on Mitigation Efforts	Project specific hazard mitigation and threat reduction
Impact Fees for New Development	Purpose	To fund the costs associated with the increased demand for public services and infrastructure created by the development.
	Responsible Agency	BOS – requires voter approval
	Hazards	All hazards
	Effect on Mitigation Efforts	Impact fees are charged to offset the development of new building areas and support the development of supporting infrastructure. New infrastructure most meet current building codes and standards lessening the risk to the built environment from all hazards.
Incur Debt through Special Tax Bond	Purpose	
	Responsible Agency	BOS – requires voter approval
	Hazards	All hazards
	Effect on Mitigation Efforts	Provides funding for hazard mitigation projects
Incur Debt through General Obligation Bonds	Purpose	Provides funding for specific projects
	Responsible Agency	BOS
	Hazards	All hazards
	Effect on	Provides funding for hazard mitigation projects

	Mitigation Efforts	
HMGP Post-Fire Assistance	Purpose	Help communities implement hazard mitigation measures after wildfire disasters.
	Responsible Agency	Emergency Management
	Hazards	Wildfire
	Effect on Mitigation Efforts	Provides assistance to help communities implement hazard mitigation measures after wildfire disasters as wildfires can not only destroy homes, businesses, infrastructure, natural resources and agriculture – it can increase secondary hazards such as floods, erosion and mudflows for years to come.
Building Resilient Infrastructure and Communities (BRIC)	Purpose	Helping communities reduce risks from future disasters and natural hazards.
	Responsible Agency	Emergency Management / Flood Control
	Hazards	All
	Effect on Mitigation Efforts	Provides funding to allow communities to undertake mitigation projects to reduce the risks from disasters and natural hazards we face.
NRCS Emergency Watershed Protection Grants	Purpose	To provide financial assistance immediately after a disaster to prevent additional flood damage – usually after large storm events or wildfires.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding/Post-fire flooding
	Effect on Mitigation Efforts	Provides funding to secure areas at risk of flooding after initial disaster event.
Other grant programs	Purpose	The Flood Control District is constantly reviewing other grant programs and applying for additional funding for flood mitigation and drought resiliency projects.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding and possibly droughts
	Effect on Mitigation Efforts	Provides additional funding to allow the district to manage more projects than we could on our own.
Improving Financial Funding		
Although Yavapai County has a number of grants and funding sources, Yavapai County will continue to explore federal and state grants, programs, and funding resources. Some avenues that will be explored include FEMA, DEMA, and DHS.		

Staff/Personnel Resources Department/Agency	Involvement
Development Services: Planners Flood Control District: Engineers Public Works: Engineers	Planner(s) or engineer(s) with knowledge of land development and land management practices.
D.S: Professionals F.C: Engineers P.W: Engineers, Inspectors	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both.
D.S: Planners & Professionals F.C: Engineers & Professionals P.W: Emergency Managers, Engineers & Professionals	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both.
D.S: Professionals & Planners F.C: Engineers & Professionals P.W: Engineers, Inspectors, Emergency Managers	Staff with education or expertise to assess the community's vulnerability to hazards.
GIS: Professionals F.C: Engineers & Professionals P.W: Engineers	Personnel skilled in GIS, HAZUS, or both.
D.S: Professionals F.C: Engineers P.W: Engineers, Inspectors, Emergency Manager	Individuals familiar with the hazards of the community.
Engineers	The department engineers are responsible for reviewing and managing mitigation projects, as well as mapping updates. The manager of the Flood Warning program is also an engineer responsible for gauge maintenance and translation of data into usable information.
Hydrologist III	The Hydrologist III positions are responsible for managing the regulations side of the department, both in terms of everyday permitting and in managing other FEMA programs, such as the Community Rating System and the
Project Manager	The project manager is responsible for maintaining District-owned properties and for managing construction of mitigation projects.
Planner	The district planner monitors grant activities and applies for and manages grants.
Emergency Management Staff	Manager, Deputy EM, EM Planner, EM Specialist – OEM personnel are responsible for developing and maintaining a variety of Yavapai County plans including the EOP, MJHMP, Recovery Plan, THIRA/SPR (forthcoming), CWPP. Additionally, OEM coordinates YC LEPC activities and oversee EOC operations. We deal with grant administration and the reimbursement of money related to disasters and emergency response.

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 80 List of Professional Roles & Requirements of Roles

Table 5-3-2: Town of Camp Verde Capability Assessment		
Programs, Plans & Policies		
2016 General Plan	Purpose	The Town Council and Planning and Zoning Commission use the General Plan to evaluate land use changes. It is used by Town Staff in reviewing building and development regulations and preparing recommendations on projects. It is used by citizens and neighborhood groups to understand the Town's long-range plans and proposals for different areas. The General Plan also provides the basis for the Town's development regulations and its Capital Improvement Plan
	Responsible Agency	Community Development Services
	Hazards	All
	Effect on Mitigation Efforts	To assess the needs of the community and provide a long-term vision of the Town of Camp Verde
	Opportunities for Enhancement	The Town will improve the Plan by adopting and incorporating new building codes and standards and through modification of zoning areas to ensure flood controls and flood zones are adequately addressed.
Codes & Regulations		
Town of Camp Verde Administrative Code	Purpose	Establishes the minimum requirements designed to govern the division and use of land to secure public safety; provide adequate light and air; prevent overcrowding of land; facilitate adequate provision of transportation, water, drainage, sewage, schools, parks, and other public facilities; maintain and promote stable values of land and structures.
	Responsible Agency	Town Manager and Community Development Services
	Hazards	All
	Effect on Mitigation Efforts	Camp Verde's Planning & Zoning Ordinance is the Town's principal land use implementation tool. Its provisions support the future development goals established by the Town of Camp Verde General Plan which is informed by risk management processes and hazard mitigation.
	Opportunities for Enhancement	The Town will incorporate revisions to land use mapping, infrastructure development, and hazard modelling to improve future land use decisions.
2018-International Fire Code	Purpose	The International Fire Code (IFC) is a model code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage, and processes.
	Responsible Agency	Community Development Services
	Hazards	Fire
	Effect on Mitigation Efforts	The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities, and processes.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting current standards. The IFC undergoes constant review and is updated as needed to ensure fire safety and storage of hazardous materials.

2018-International Building Code	Purpose	The International Building Code (IBC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants of new and existing buildings and structures.
	Responsible Agency	Community Development Services
	Hazards	The IBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting current standards. The IBC codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-Existing Building Code	Purpose	The International Existing Building Code (IEBC) Encourages the use and reuse of existing buildings. This code covers repair, alteration, addition and change of occupancy for existing buildings and historic buildings, while achieving appropriate levels of safety without requiring full compliance with the new construction requirements contained in the other I-Codes.
	Responsible Agency	Community Development Services
	Hazards	The IEBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting current standards. The IBC codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-International Fuel Gas Code	Purpose	The International Fuel Gas Code (IFGC) is a model code that addresses the design and installation of fuel gas systems and gas fired appliances through prescriptive and performance requirements.
	Responsible Agency	Community Development Services
	Hazards	The IFGC addresses design requirements of fuel gas systems within residential and community properties to meet minimum safety standards in All-Hazards conditions
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting current standards. The IFGC codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.

2018- International Mechanical Code	Purpose	The International Mechanical Code (IMC) establishes minimum regulations for mechanical systems using prescriptive and performance-related provisions. The IMC was developed with broad-based principles that make possible the use of new materials, methods, and design.
	Responsible Agency	Community Development Services
	Hazards	The IMC addresses design requirements of mechanical systems within residential and community properties to meet minimum safety standards in All-Hazards conditions
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting current standards. The IMC codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-International Residential Code	Purpose	The International Residential Code (IRC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants for one- and two-family dwellings and townhouses up to three stories.
	Responsible Agency	Community Development Services
	Hazards	The IRC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting current standards. The IRC codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-International Plumbing Code	Purpose	The International Plumbing Code (IPC) provides minimum regulations for plumbing facilities in terms of both performance and prescriptive objectives and provides for the acceptance of new and innovative products, materials, and systems.
	Responsible Agency	Community Development Services
	Hazards	The IPC addresses sanitation for new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2017 NEC	Purpose	National Electrical Code (NEC) is the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards
	Responsible Agency	Community Development Services
	Hazards	Electrical fires and electrocution

	Effect on Mitigation Efforts	The NEC standardizes the practices of electrical installation and design for commercial and residential structures.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting and enforcing current standards. The NEC undergoes constant review and is updated as needed for safe electrical practices.
Financial Resources		
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Camp Verde
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Camp Verde
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	Town of Camp Verde
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.
Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	Town of Camp Verde
	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Incur debt through general obligation bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Camp Verde
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through special tax bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Camp Verde
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
	Effect on Mitigation	Provide additional funding as needed for specific projects as needed.

	Efforts	
Improving Financial Funding		
Camp Verde will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		
Staff/Personnel Resources Department/Agency	**Involvement**	
John Knight - Community Development Director	Planner(s) or engineer(s) with knowledge of land development and land management practices	
Cory Mulcaire - Planner	Planner(s) or engineer(s) with knowledge of land development and land management practices	
BJ Ratlief - Planner	Planner(s) or engineer(s) with knowledge of land development and land management practices	
Chris Biggs – Plans Examiner	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Robert Wheeler – Zoning Inspector	Planner(s) or engineer(s) with knowledge of land development and land management practices	
Ken Krebbs - Public Works Director	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Bruce Connelly – Civil Engineer	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Roxanne Jasman - Certified Building Official	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Gayle Mabery - Town Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both	
Corey L. Rowley – Town Marshal	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both	
Heather Vinson – Risk Management Director	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both	

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 81 Table 5-3-2: Camp Verde Capability Assessment

Table 5-3-3: Chino Valley Capability Assessment		
Programs, Plans & Policies		
The Unified Development Ordinance of the Town of Chino Valley	Purpose	To secure safety from fire, panic, and other dangers; to provide adequate light and air; to lessen congestion in the streets; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewage disposal; schools, parks, and other public requirements; to provide for the social, physical, and economic advantages resulting from comprehensive and orderly planned use of land resources; to allow for the orderly implementation of the General Plan; and to otherwise promote the health, safety, convenience, and general welfare of the citizens of Chino Valley, Arizona
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	All
	Effect on Mitigation Efforts	Provides a standard for zoning regulations and other public requirements as outlined in the General Plan.
	Opportunities for Enhancement	The Town will improve the Plan by incorporating revisions to land use mapping adding infrastructure development and hazard modelling.
2014 General Plan	Purpose	The General Plan is a community's long-range vision for the next 20+ years. It is designed to serve as the jurisdiction's blueprint for future development, informing future social, economic, and physical development decisions. The plan includes the community vision, goals, and policies, with maps and an implementation plan.
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	All
	Effect on Mitigation Efforts	To assess the needs of the community and provide a long-term vision of the Town of Chino Valley
	Opportunities for Enhancement	The Town will improve on Plan by incorporating new standards and policies. The next revision will start in 2023 and be finalized in 2024.
2011 Town of Chino Valley Area Drainage Master Study	Purpose	To mitigate potential flooding areas throughout the jurisdiction
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	Flooding
	Effect on Mitigation Efforts	To properly assess the potential areas of flooding and mitigate damages to properties and life safety
	Opportunities for Enhancement	The Town will incorporate hazard modelling to ensure sufficient drainage exists and that sufficient mitigation measures are in place for the community.

Great Western and Chino Valley Extension Corridor	Purpose	To enhance the current access to and from the Town of Chino Valley by creating an additional route which will improve the traffic flow to and from the town.
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	All
	Effect on Mitigation Efforts	To enhance traffic flow and emergency access.
	Opportunities for Enhancement	The Town will perform a study of the road system to relieve congestion and create additional access in case of emergency situations.
Central Yavapai Metropolitan Planning Organization	Purpose	To cooperatively plan the transportation future of the Central Yavapai region that falls within the 401.46 square miles of the MPO Planning Boundary Through this cooperative effort, the participating agencies have made a commitment to their citizens that as the region grows, their multi-modal transportation system will grow with it to accommodate all needs, including roads and highways for cars and trucks, public transit, and pathways for bicycles and pedestrians.
	Responsible Agency	A partnership of Town of Chino Valley, City of Prescott, Dewey-Humboldt, Prescott Valley, Yavapai County, and the Arizona Department of Transportation
	Hazards	Transportation
	Effect on Mitigation Efforts	To enhance local street and road networks for current and future use.
	Opportunities for Enhancement	The Town will perform engineering studies to identify the most viable traffic corridor alignments and or desirable locations
Small Area Transportation Plan	Purpose	To develop a comprehensive range of alternative corridors to consider and identify the challenges and opportunities for the least damaging and most advantageous corridor's location.
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	Transportation
	Effect on Mitigation Efforts	To enhance local street and road networks for current and future use.
	Opportunities for Enhancement	The Town will perform engineering studies to confirm the feasibility of the most viable corridor alignments and identify feasible or desirable locations for project termini at State Route 89 and the Road 5 South / Great Western corridor.
Integrated Water Master Plan and Capital Improvement Plan for Old Home Manor	Purpose	Providing professional services to create an integrated water resources, water, wastewater, and reclaimed water master plan ("IWMP") and capital improvement plan ("CIP") for the Town-owned property known as Old Home Manor.
	Responsible Agency	Town of Chino Valley Development Services and Public Works
	Hazards	Water Supply

	Effect on Mitigation Efforts	Providing safe drinking water to citizens and livestock; processing of wastewater and reclaimed water.
	Opportunities for Enhancement	The Town will seek opportunities to improve the current infrastructure by exploring additional sources of water.
Codes & Regulations		
2018-International Fire Code	Purpose	The International Fire Code (IFC) is a model code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage, and processes.
	Responsible Agency	Town of Chino Valley Public Works and Development Services
	Hazards	Fire
	Effect on Mitigation Efforts	The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities and processes.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-IBC, IRC, IFGC, IMC, IPC	Purpose	The International Building Code (IBC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants of new and existing buildings and structures.
	Responsible Agency	Town of Chino Valley Public Works and Development Services
	Hazards	The IBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety in regard to new and existing buildings, facilities and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2017 NEC	Purpose	National Electrical Code (NEC) is the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards
	Responsible Agency	Town of Chino Valley Public Works and Development Services
	Hazards	Electrical fires and electrocution
	Effect on Mitigation Efforts	The NEC standardizes the practices of electrical installation and design for commercial and residential structures.

	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting and enforcing current standards. The NEC undergoes constant review and is updated as needed for safe electrical practices.
Financial Resources		
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Chino Valley
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Chino Valley
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	Town of Chino Valley
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.
Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	Town of Chino Valley
	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Impact fees for homebuyers or new developments/homes	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Chino Valley
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through general obligation bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible	Town of Chino Valley

	Agency	
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through special tax bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Chino Valley
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Improving Financial Funding		
Chino Valley will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		

Staff/Personnel Resources Department/Agency	Involvement
Laurie Lineberry-Development Services Director	Planner(s) or engineer(s) with knowledge of land development and land management practices
Frank Marbury, P.E.-Town Engineer/Public Works Director	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Steven Sullivan, P.E. -Assistant Town Engineer	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Kurt Morrill-Public Works Inspector	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Dan Trout-Chief Building Official	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Frank Marbury, P.E.-Town Engineer/Public Works Director	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
Cindy Blackmore-Town Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
Chuck Wynn-Chief of Police	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
Frank Marbury, P.E.-Town Engineer/Public Works Director	Floodplain Manager
Tracey Dashiell-Code Enforcement Officer	Staff with education or expertise to assess the community's vulnerability to hazards
Will Dingee-Assistant Director - Development Services	Personnel skilled in GIS, HAZUS, or both
Frank Marbury, P.E.-Town Engineer/Public Works Director	Emergency Manager

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	City Code 152
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	City Code 152
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	City Code 152
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	City Code 152
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Chino Valley has no repetitive loss properties. As such, after an event, public outreach and information on NFIP enrollment is increased. Building code and land use restrictions are also revised to reflect improvement.

Figure 82 Table 5-3-3: Chino Valley Capability Assessment

Table 5-3-4: Clarkdale Capability Assessment		
Programs, Plans & Policies		
SR89A Focus Area Plan	Purpose	To increase interest in the commercial development along SR89A corridor while creating sustainable infrastructure and minimizing environmental impact.
	Responsible Agency	Community development
	Hazards	Severe Wind Flooding Landslide Mudslide
	Effect on Mitigation Efforts	Development of commercial and residential properties along 89A
	Opportunities for Enhancement	The Town will improve the Plan by developing mitigation activities and measures to lessen effects of hazards in the area.
2021 General Plan	Purpose	The General Plan is a community's long-range vision for the next 20+ years. It is designed to serve as the jurisdiction's blueprint for future development, informing future social, economic, and physical development decisions. The plan includes the community vision, goals, and policies, with maps and an implementation plan.
	Responsible Agency	Town Clarkdale Development Services
	Hazards	All
	Effect on Mitigation Efforts	To assess the needs of the community and provide a long-term vision of the Town of Clarkdale
	Opportunities for Enhancement	The county will improve the Plan by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling. Additional policy changes and new standards will also be developed.
Codes & Regulations		
Town Code for Clarkdale (2022)	Purpose	Codifies General Ordinances of the Town of Clarkdale
	Responsible Agency	Clarkdale City Council, maintained by Town Clerk
	Hazards	Earthquakes, Drought, Fire, Flood, Storms
	Effect on Mitigation Efforts	Establishes the use and enforcement of the 2018 ICC Building Codes, 2017 National Electric Code, 2018 International Fire Codes, Flood Damage Prevention measures, codifies the Drought and Water Shortage Preparedness Plan
	Opportunities for Enhancement	The Town will adopt and enforce new international codes and standard to protect commercial and residential structures.

2018-International Fire Code	Purpose	The International Fire Code (IFC) is a model code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage, and processes.
	Responsible Agency	Town of Clarkdale Public Works and Development Services
	Hazards	Fire
	Effect on Mitigation Efforts	The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities, and processes.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-IBC, IRC, IFGC, IMC, IPC	Purpose	The International Building Code (IBC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants of new and existing buildings and structures.
	Responsible Agency	Town of Clarkdale Public Works and Development Services
	Hazards	The IBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2017 NEC	Purpose	National Electrical Code (NEC) is the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards
	Responsible Agency	Town of Clarkdale Public Works and Development Services
	Hazards	Electrical fires and electrocution
	Effect on Mitigation Efforts	The NEC standardizes the practices of electrical installation and design for commercial and residential structures.
	Opportunities for Enhancement	The town does not have ability to improve on the codes outside of adopting and enforcing current standards. The NEC undergoes constant review and is updated as needed for safe electrical practices.

Financial Resources		
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Clarkdale
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Clarkdale
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	Town of Clarkdale
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.
Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	Town of Clarkdale
	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Incur debt through general obligation bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Clarkdale
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through special tax bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Clarkdale
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Improving Financial Funding		
Clarkdale will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		

Staff/Personnel Resources Department/Agency	Involvement
Planning Commission & Design Review Board	A town Council appointed position to review building and sign designs, site plans, subdivisions, zone change requests and conditional use permits.
Ruth Mayday - Community Development Director	Planner(s) or engineer(s) with knowledge of land development and land management practices
Tom Blanchard - Senior Planner	Planner(s) or engineer(s) with knowledge of land development and land management practices
Cory Franek - Public Works Director	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Bob Pipkin - Chief Building Official	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Susie Guthrie - Town Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
Chuck Wynn-Chief of Police	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
LT Joe Candelaria, Clarkdale Police Department	Emergency Manager

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 83 Table 5-3-4: Clarkdale Capability Assessment

Table 5-3-5: Cottonwood Capability Assessment		
Programs, Plans & Policies		
Firewise Communities	Purpose	Community education and best practices for mitigation through Firewise Communities.
	Responsible Agency	Shared program between Cottonwood Fire Department and individual community groups.
	Hazards	Impacts of wildfire on communities.
	Effect on Mitigation Efforts	Coordinated mitigation on fuels management between the City of Cottonwood and individual communities seeking grant opportunities, low-cost individual contributions to mitigation projects, coordinated defensible space, coordination with federal, state, and local partners.
	Opportunities for Enhancement	The city will seek opportunities to involve additional communities, research and request additional grants for education and promotion of the program, and identify opportunities to build county-wide support.
City of Cottonwood Wildland Fuels Mitigation Program	Purpose	To promote and protect the health, peace, safety, comfort, convenience, and general welfare of the residents within the jurisdictional area of Cottonwood, Arizona; to minimize public and private losses due to wildfires, and associated flooding; and to enable its residents to participate in the National Firewise Program, receive disaster assistance, grant funding, obtain/maintain appropriate insurance coverage, and reduce the cost of insurance.
	Responsible Agency	City of Cottonwood Fire Department
	Hazards	Wildfire fuels
	Effect on Mitigation Efforts	High, this program was recently brought forward to reflect the changes of development within the city and associated annexations. It has assisted in educating, developing codes within wildfire prone areas. Additionally, it has created opportunity for the Fire Department to directly provide this service and opportunities for expansion in the future.
	Opportunities for Enhancement	The city will develop the ordinance to identify and provide modern technologies and tools to mitigate the community's exposure to the impacts of future wildfire events with development of existing areas and future areas.
Law Enforcement Training to address threats	Purpose	Law enforcement lead safety and security training for public and business partners
	Responsible Agency	City of Cottonwood Police Department
	Hazards	Acts of Violence, Terrorism (foreign and domestic)
	Effect on Mitigation Efforts	High, this program has been in place within the city for a period of time. It has assisted in educating, developing best practices within the city at large and individual businesses. Additionally, it has created opportunity for the Police Department to directly provide this service and opportunities for expansion in the future.
	Opportunities for Enhancement	The city will develop the ordinance to identify and provide modern technologies and tools to mitigate the community's exposure to the impacts of active violence and the myriad of the terrorism nexus with

		development of existing areas and future areas.
K-12 Education Programs	Purpose	In-school education programs for the youth
	Responsible Agency	Cottonwood Fire Department
	Hazards	Juvenile Fire Setter concerns, Cultural evolution of youth in the community
	Effect on Mitigation Efforts	Improved understanding of the youth about the dangers associated with fire, continuing education of youth throughout total educational time affords opportunities for children to be better prepared as adults in the community.
	Opportunities for Enhancement	The city will develop programs and awareness training about local hazards for all levels of education. The City will explore grant opportunities to fund the development and delivery of the training.
Codes & Regulations		
City of Cottonwood Codes and Ordinances: Title 8 Health and Safety	Purpose	Defines the associated sections and subcategories, to include A.R.S. information on general health and safety for the City of Cottonwood
	Responsible Agency	City of Cottonwood
	Hazards	Brush, Appliance, Vehicles, Building materials, Hazardous products, and Public Nuisance: Rubbish, trash, brush, grass, weeds, and debris
	Effect on Mitigation Efforts	High, these codes support fire mitigation efforts by enforcing and guiding acceptable practices for cleanliness, and hazard abatement throughout the city
	Opportunities for Enhancement	The City will establish, adopt, and enforce mitigation policies to reduce the risks associated with local hazards.

City of Cottonwood Codes and Ordinances: Title 15 Buildings and Construction	Purpose	Defines the associated sections and subcategories, to include A.R.S. information on general Building and Construction for the City of Cottonwood
	Responsible Agency	City of Cottonwood
	Hazards	Chapter 15.08 - BUILDING CODE Chapter 15.10 - ENERGY CODE Chapter 15.12 - PLUMBING CODE Chapter 15.16 - ELECTRICAL CODE Chapter 15.20 - MECHANICAL CODE Chapter 15.24 - FIRE CODE Chapter 15.28 - INTERNATIONAL PROPERTY MAINTENANCE CODE Chapter 15.33 - UNIFORM CODE FOR BUILDING CONSERVATION Chapter 15.36 - MANUFACTURED HOUSING Chapter 15.40 - STORMWATER DETENTION Chapter 15.44 - OFF-SITE IMPROVEMENTS
	Effect on Mitigation Efforts	Building codes establish minimum standards for construction practices and materials, aiming to ensure the safety and resilience of structures.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The NEC undergoes constant review and is updated as needed for safe electrical practices.
City of Cottonwood Codes and Ordinances: Title 18 Zoning and Land Use	Purpose	Defines the associated sections and subcategories, to include A.R.S. information on general Building and Construction for the City of Cottonwood
	Responsible Agency	City of Cottonwood
	Hazards	Chapter 18.04 - ZONING ORDINANCE Chapter 18.08 - FLOODPLAIN MANAGEMENT
	Effect on Mitigation Efforts	Effective zoning can help steer development away from high-risk areas prone to natural hazards, such as floodplains or landslide zones, reducing vulnerability and potential losses.
	Opportunities for Enhancement	The city will improve the Ordinance by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.
Financial Resources		
Grant Funding	Purpose	Support wildfire mitigation projects
	Responsible Agency	City of Cottonwood; Cottonwood Fire Department
	Hazards	Wildland fuels, cascade impacts from wildfire threat, to include, debris management, flooding conditions, and infrastructure protection
	Effect on Mitigation Efforts	Without this funding source the city has no capability to address these potential hazards financially.

Improving Financial Resources
Cottonwood will increase mitigation by exploring different hazard-specific funding opportunities including county-level programs and levees.

Staff/Personnel Resources Department/Agency	Involvement
Planners	The City of Cottonwood maintains planners in the Public Works Department, Wastewater Department, and the Community Development Department. Each is charged with monitoring and maintaining all codes and ordinances pertaining to the specific discipline and the coordination with all local, regional, state, and federal partner/stakeholders.
Engineers	The City of Cottonwood maintains engineers in the Public Works Department, Wastewater Department, and the Community Development Department. Each is charged with monitoring and maintaining all codes and ordinances pertaining to the specific discipline and the coordination with all local, regional, state, and federal partner/stakeholders.
Emergency manager	The City of Cottonwood maintains an emergency manager in the Fire Department, (Fire Chief). The EM is charged with monitoring and maintaining all industry standards, best practices, codes, and ordinances pertaining to the specific discipline and the coordination with all local, regional, state, and federal partner/stakeholders.
Inspectors	The City of Cottonwood maintains inspectors in the Public Works Department, Fire Department, and the Community Development Department. Each is charged with monitoring and maintaining all codes and ordinances pertaining to the specific discipline and the coordination with all local, regional, state, and federal partner/stakeholders.
Planning and Zoning Commission	The City of Cottonwood maintains a Planning and Zoning commission that is coordinated with the City Council. This group is charged with monitoring and maintaining all codes and ordinances pertaining to the specific discipline and the coordination with all local, regional, state, and federal partner/stakeholders.

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	City Ordinance 615
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	City Ordinance 615
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	City Ordinance 615
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	City Ordinance 615
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Cottonwood has no repetitive loss properties. As such, after an event, public outreach, and information on NFIP enrollment is increased. Building code and land use restrictions are also revised to reflect improvement

Figure 84 Table 5-3-5: Cottonwood Capability Assessment

Table 5-3-6: Dewey-Humboldt Capability Assessment		
Programs, Plans & Policies		
Yavapai County Drainage Design Manual (July 2015)	Purpose	Provide more comprehensive guidance for the engineering and building community and the citizens of Dewey-Humboldt to help ensure that design and construction of drainage infrastructure and development in and around flood hazard areas are completed to required minimum standards.
	Responsible Agency	Dewey-Humboldt
	Hazards	Flooding
	Effect on Mitigation Efforts	The purpose is to set regulations to new construction to prevent flooding from the standard flood event.
	Opportunities for Enhancement	The county will improve the Manual and Ordinance by developing written clarification on the authority of the county to regulate certain types of construction and violations procedures
Area Drainage Master Plans	Purpose	Provide a more detailed look at existing flooding areas on a neighborhood level and identify potential mitigation activities, usually construction projects.
	Responsible Agency	Dewey-Humboldt
	Hazards	Flooding
	Effect on Mitigation Efforts	The program will provide the Town with a list and priority ranking of projects in known flood problem areas that the Town can choose from when planning projects during the budget and for applying for grants.
	Opportunities for Enhancement	The Town will develop a Plan to identify problem areas and future projects to mitigate flood potential by ensuring sufficient drainage and adequate zoning is applied to current and future development.
National Flood Insurance Program	Purpose	To identify flood risks for regulating purposes.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	The program sets the standard for identifying and regulating potential risk to new development.
	Opportunities for Enhancement	The town does not have the ability to improve on the NFIP, but it will use new and emerging technology to map flood areas, limit construction in flood zones, and provide information to the residents on enrollment and their local flood hazards.
Flood Warning Program	Purpose	To measure in real time precipitation amounts and activity in running streams.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	Having our rain gauge network live in real time allows the District, the National Weather Service, and First Responders to monitor real time ground truth rainfall and runoff activity to prioritize warnings and flood

		activity monitoring.
	Opportunities for Enhancement	The district will improve the Program by adding gauges and maintaining/upgrading the entire network to display real, relevant data for the community. Additional improvements will be made to ensure the community is aware of the program.
Financial Resources		
YCFCD IGA	Purpose	The Flood Control District collects a secondary property tax and gives a portion of the taxes collected from incorporated communities back for drainage projects.
	Responsible Agency	Dewey-Humboldt
	Hazards	Flooding and potentially drought in partnership with other agencies.
	Effect on Mitigation Efforts	The funding provides the Town with an opportunity to do more maintenance of drainage infrastructure.
Improving Financial Resources		
Dewey-Humboldt will increase mitigation funding by exploring different hazard-specific funding, county-level programs, and levees.		
Codes & Regulations		
Yavapai County Flood Damage Prevention Ordinance 2018-1	Purpose	Meet the NFIP requirements and beyond for flood regulation to protect new construction from the 1% Chance Storm Event.
	Responsible Agency	Yavapai County Flood Control District
	Hazards	Flooding
	Effect on Mitigation Efforts	The Ordinance and associated regulations require structures to be built in a way to prevent flooding from the standard flooding event.
	Opportunities for Enhancement	Our violations policy recently came into question and some potential improvements were identified in clarifying our authority and policy for enforcing certain parts of the Ordinance.

Staff/Personnel Resources Department/Agency	Involvement
County Hydrologists	The Hydrologists are responsible for managing the regulations side of the department, both in terms of everyday permitting and in managing other FEMA programs, such as the Community Rating System.
Town Engineer	The Town Engineer is responsible for drainage regulations and project management outside of the FEMA Flood Hazard Areas.

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 85 Table 5-3-6: Dewey-Humboldt Capability Assessment

Table 5-3-7: Jerome Capability Assessment		
Programs, Plans & Policies		
Jerome Town Code	Purpose	Provide comprehensive guidance for the town direction. Includes by reference: 2012 International Building Code, 2018 Uniform Code for the Abatement of Dangerous Buildings, 2012 International Residential, Plumbing, Mechanical, Fuel Gas, Property Maintenance, and One- and Two-Family International Dwelling Codes, 2018 International Fire Code, 2002 National Electrical Code, 2003 Town of Jerome Grading Ordinance, 2009 Town of Jerome Administrative Code
	Responsible Agency	Chief Building Official, Zoning Administrator
	Hazards	All
	Effect on Mitigation Efforts	The purpose is to set regulations to new construction and updates to reduce the effect a hazard has on the town
	Opportunities for Enhancement	The Town does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
Financial Resources		
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Jerome
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Jerome
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	Town of Jerome
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.
Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	Town of Jerome

	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Impact fees for homebuyers or new developments/homes	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Jerome
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through general obligation bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	Town of Jerome
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Increase Financial Resources		
Camp Verde will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		
Staff/Personnel Resources Department/Agency	Involvement	
Planning Commission & Design Review Board	A town Council appointed position to review building and sign designs, site plans, subdivisions, zone change requests and conditional use permits.	
Marty Boland - Public Works Director	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Barry Wolstencroft- Building Inspector	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Brett Klein - Town Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both	
Allen Muma - Chief of Police	Emergency Manager / Public Safety Officer with an understanding of natural, human-caused hazards, or both	

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 86 Table 5-3-7: Jerome Capability Assessment

Table 5-3-8: Prescott Capability Assessment		
Programs, Plans, & Policies		
2015 General Plan	Purpose	The City Council and Planning and Zoning Commission use the General Plan to evaluate land use changes. It is used by City Staff in reviewing building and development regulations and preparing recommendations on projects. It is used by citizens and neighborhood groups to understand the City's long-range plans and proposals for different areas. The General Plan also provides the basis for the City's development regulations and its Capital Improvement Plan
	Responsible Agency	Development Services
	Hazards	Earthquake, Fire, Strong Wind, Flood
	Effect on Mitigation Efforts	Long range planning for area development
	Opportunities for Enhancement	The city will improve the Plan by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.
Codes & Regulations		
Floodplain Management	Purpose	To protect citizens and maintain Flood Insurance and disaster relief
	Responsible Agency	Public Works
	Hazards	Flood
	Effect on Mitigation Efforts	Protect life & health, minimize expenditures, minimize rescue/relief efforts, minimize business interruption, minimize damage, participate in flood insurance and disaster relief
	Opportunities for Enhancement	The city will revise the Plan to include new and additional codes, policies, and other requirements from FEMA and the State to ensure the plan is in compliance and sufficient enforcement and zoning is conducted.

2018-International Fire Code	Purpose	The International Fire Code (IFC) is a model code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage, and processes.
	Responsible Agency	Community Development Services
	Hazards	Fire
	Effect on Mitigation Efforts	The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities, and processes.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-International Building Code	Purpose	The International Building Code (IBC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants of new and existing buildings and structures.
	Responsible Agency	Community Development Services
	Hazards	The IBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-Existing Building Code	Purpose	The International Existing Building Code (IEBC) Encourages the use and reuse of existing buildings. This code covers repair, alteration, addition and change of occupancy for existing buildings and historic buildings, while achieving appropriate levels of safety without requiring full compliance with the new construction requirements contained in the other I-Codes.
	Responsible Agency	Community Development Services
	Hazards	The IEBC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.

2018-International Fuel Gas Code	Purpose	The International Fuel Gas Code (IFGC) is a model code that addresses the design and installation of fuel gas systems and gas fired appliances through prescriptive and performance requirements.
	Responsible Agency	Community Development Services
	Hazards	The IFGC addresses design requirements of fuel gas systems within residential and community properties to meet minimum safety standards in All-Hazards conditions
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018- International Mechanical Code	Purpose	The International Mechanical Code (IMC) establishes minimum regulations for mechanical systems using prescriptive and performance-related provisions. The IMC was developed with broad-based principles that make possible the use of new materials, methods, and design.
	Responsible Agency	Community Development Services
	Hazards	The IMC addresses design requirements of mechanical systems within residential and community properties to meet minimum safety standards in All-Hazards conditions
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.

2018-International Residential Code	Purpose	The International Residential Code (IRC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants for one- and two-family dwellings and townhouses up to three stories.
	Responsible Agency	Community Development Services
	Hazards	The IRC addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety regarding new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2018-International Plumbing Code	Purpose	The International Plumbing Code (IPC) provides minimum regulations for plumbing facilities in terms of both performance and prescriptive objectives and provides for the acceptance of new and innovative products, materials, and systems.
	Responsible Agency	Community Development Services
	Hazards	The IPC addresses sanitation for new and existing buildings, facilities, and systems.
	Effect on Mitigation Efforts	This code was recently updated to reflect the changes of development within the county and building standards and building materials. It has assisted in regulating building safety within the town limits.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
2017 NEC	Purpose	National Electrical Code (NEC) is the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards
	Responsible Agency	Community Development Services
	Hazards	Electrical fires and electrocution
	Effect on Mitigation Efforts	The NEC standardizes the practices of electrical installation and design for commercial and residential structures.
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The NEC undergoes constant review and is updated as needed for safe electrical practices.

Financial Resources		
General Fund	Purpose	Budget General Fund monies for continued maintenance of existing programs
	Responsible Agency	City Management, PW, Development Services
	Hazards	All
	Effect on Mitigation Efforts	Maintaining existing Firewise programs in conjunction with CAFMA, weed abatement, ROW & Town lot mowing.
YC Flood Control	Purpose	Receive flood dollars from Yavapai County for drainage improvements within the Town
	Responsible Agency	Public Works
	Hazards	Flood
	Effect on Mitigation Efforts	Reduce flooding and damage to homes & businesses near floodways and channels.
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	City of Prescott
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	City Management
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	City Management
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.

Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	City Management
	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Impact fees for homebuyers or new developments/homes	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	City Management
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Incur debt through general obligation bonds	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	City Management
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Increasing Financial Resources		
Prescott will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		
Staff/Personnel Resources Department/Agency	**Involvement**	
George Worley- Planning Manager	Planner(s) or engineer(s) with knowledge of land development and land management practices	
Construction Services Manager	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Public Works Director	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Ryan Greene- Certified Building Official	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both	
Michael Lamar- City Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both	
Michelle Chavez - CDBG Grants Administrator	Planner(s) or professional(s) with knowledge of Grants submittal and proposal process	

Matthew Killeen – Environmental Specialist	Planner(s) or engineer(s) with knowledge of land development and land management practices
Ian Mattingly – Traffic Engineer	Engineer(s) or professional(s) trained in construction practices related to buildings, infrastructure, or both
Marvin Lovlein – Registered Land Surveyor	Planner(s) or engineer(s) with knowledge of land development and land management practices
Marsha Collier -Fuels Management Coordinator	Planner(s) or engineer(s) with knowledge of land development and land management practices
Holger Durre – Fire Chief & Emergency Manager	Planner(s) or engineer(s) with an understanding of natural, human-caused hazards, or both
Thomas Knapp – Fire Marshall	Planner(s) or professional(s) trained in construction codes related to buildings, infrastructure, or both
Amy Bonney – Chief of Police & Emergency Manager	Planner(s) or professional r(s) with an understanding of natural, human-caused hazards, or both

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	City Code 13-1: Floodplain Management
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	City Code 13-1: Floodplain Management
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	City Code 13-1: Floodplain Management
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	City Code 13-1: Floodplain Management
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Prescott has no repetitive loss properties. As such, after an event, public outreach, and information on NFIP enrollment is increased. Building code and land use restrictions are also revised to reflect improvement

Figure 76 Table 5-3-8: Prescott Capability Assessment

Table 5-3-9: Prescott Valley Capability Assessment		
Programs, Plans & Policies		
Codes & Ordinances	Purpose	Maintain and update the Town Code regarding policies and approved ordinances
	Responsible Agency	Development Services
	Hazards	Earthquake, Fire, Strong Wind, Flood
	Effect on Mitigation Efforts	Continual to keep current on international codes and Town Code
	Opportunities for Enhancement	The city will improve the codes and ordinances by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.
Prescott Valley Parks & Recreation Master Plan 2020	Purpose	Enhance the park environments and usage within the Town.
	Responsible Agency	Community Services
	Hazards	Earthquake, Fire, Strong Wind, Flood
	Effect on Mitigation Efforts	Adopt standards, identify needs, preserve open space and trails
	Opportunities for Enhancement	The city will seek additional funding streams to identify and create defensible in the local areas. Opportunities for enhancement rely on continued funding and study to ensure that newly developed areas have “green” spaces incorporated in their design to provide mitigation measures.
Codes & Regulations		
IBC (2018)	Purpose	The International Building Code (IBC) is a model code that provides minimum requirements to safeguard the public health, safety, and general welfare of the occupants of new and existing buildings and structures.
	Responsible Agency	Development Services
	Hazards	Earthquake, Fire, Strong Wind, Flood
	Effect on Mitigation Efforts	Protect life & health, minimize expenditures
	Opportunities for Enhancement	The city does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
Town General Plan	Purpose	Maintain Code requirements and update regularly for all facets of the Town
	Responsible Agency	Development Services, Legal, Town Management
	Hazards	Earthquake, Fire, Strong Wind, Flood
	Effect on Mitigation Efforts	Protect life & health, minimize expenditures, maintain growth plan for the Town
	Opportunities for Enhancement	The city will improve the Plan by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.

Floodplain Management	**Purpose**	**To protect citizens and maintain Flood Insurance and disaster relief**
	Responsible Agency	Public Works
	Hazards	Flood
	Effect on Mitigation Efforts	Protect life & health, minimize expenditures, minimize rescue/relief efforts, minimize business interruption, minimize damage, participate in flood insurance and disaster relief
	Opportunities for Enhancement	The city will revise the Plan to include new and additional codes, policies, and other requirements from FEMA and the State to ensure the plan is in compliance and sufficient enforcement and zoning is conducted.
Financial Resources		
General Fund	Purpose	Budget General Fund monies for continued maintenance of existing programs
	Responsible Agency	Town Management, PW, Development Services
	Hazards	All
	Effect on Mitigation Efforts	Maintaining existing Firewise programs in conjunction with CAFMA, weed abatement, ROW & Town lot mowing.
Grants	Purpose	Apply for Grants relating to maintenance of programs and education
	Responsible Agency	Town Management
	Hazards	All
	Effect on Mitigation Efforts	Provides targeted funding for specific mitigation projects
Impact Fees	Purpose	Fees for new development to maintain existing programs
	Responsible Agency	Development Services
	Hazards	All
	Effect on Mitigation Efforts	Impact fees are charged to offset the development of new building areas and support the development of supporting infrastructure. New infrastructure must meet current building codes and standards lessening the risk to the built environment from all hazards.
YC Flood Control	Purpose	Receive flood dollars from Yavapai County for drainage improvements within the Town
	Responsible Agency	Public Works
	Hazards	Flood
	Effect on Mitigation Efforts	Reduce flooding and damage to homes & businesses near floodways and channels.
Improving Financial Resources		
Prescott Valley will increase funding by exploring more hazard-specific funding and the county-level options available to decrease levies and incurring debt.		

Staff/Personnel Resources Department/Agency	Involvement
Mayor & Town Council	All funding or grant applications are approved through the approval of Council.
Town Management	Funding, grant writing, emergency management
Police	Emergency management, grants, safety during hazard events
Public Works	Floodplain management, safety during hazard events, emergency management relating to roads, ingress/egress
Development Services	Planning, emergency management, inspections

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	City Code 12-1: Floodplain Management
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	City Code 12-1: Floodplain Management
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	City Code 12-1: Floodplain Management
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	City Code 12-1: Floodplain Management
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Prescott Valley has no repetitive loss properties. As such, after an event, public outreach, and information on NFIP enrollment is increased. Building code and land use restrictions are also revised to reflect improvement

Figure 77 Table 5-3-9: Prescott Valley Capability Assessment

Table 5-3-10: Sedona Capability Assessment		
Programs, Plans & Policies		
Sedona Community Plan	Purpose	Long-range planning document that sets guidelines and standards for which all new construction development and plans must follow. Supports sustainability, circulation, and evacuation plans.
	Responsible Agency	Community Development
	Hazards	Traffic and development impacts. environmental
	Effect on Mitigation Efforts	Sets the policy for circulation (traffic/transportation) and environment (sustainability)
	Opportunities for Enhancement	The city will develop a new Community Plan and incorporate updates in circulation, sustainability, housing, and environment.
Emergency Operations Plan **City of Sedona EOP 2016**	Purpose	A community risk assessment has identified all hazards that may impact the community. The threats range from "All Hazards", manmade and natural disaster.
	Responsible Agency	City of Sedona/Sedona Fire District
	Hazards	All Hazards
	Effect on Mitigation Efforts	Medium, Sedona is a popular tourist destination and as the population increases and tourist numbers continue to climb, we are faced with an increasing number of emergency responses of all types. Planning for a multitude of hazards based upon a risk assessment is paramount to success.
	Opportunities for Enhancement	The city will develop and implement a training plan to conduct and coordinate exercises with community stakeholders. The city will use AAR/IPs to identify gaps in policy and coordination and outline a corrective action plan to build capacity, capability, and coordination.
Codes & Regulations		
2018 ICC Building Codes (IBC, IRC, IECC, IEBC, IMC, and IFGC)	Purpose	Regulates safe construction practices in new construction, alterations, additions and repairs for buildings and structures.
	Responsible Agency	Building Safety Division
	Hazards	Fire, Flood, Earthquake
	Effect on Mitigation Efforts	Makes buildings. structures and their occupants safe and able to withstand hazards
	Opportunities for Enhancement	The city does not have ability to improve on the codes, but it will update/adopt the current 2024 I-Codes in late 2024. Once the codes are adopted, they will conduct enforcement accordingly.

2017 National Electric Code	Purpose	Regulates safe electrical installation practices in new construction, alterations, additions and repairs for buildings and structures.
	Responsible Agency	Building Safety Division
	Hazards	Fires, electrocution. emergency egress from buildings
	Effect on Mitigation Efforts	Makes buildings, structures, and their occupants safe and minimizes damage to electrical components of emergency systems.
	Opportunities for Enhancement	The city does not have ability to improve on the codes, but it will update/adopt the current 2023 National Electrical Code in late 2024. Once the codes are adopted, they will conduct enforcement accordingly.
Sedona City Code	Purpose	It is the Code that allows the adoption of the Building Codes and sets additional requirements on property, rights-of-way, civil obedience. etc.
	Responsible Agency	Police Department. Community Development. Public Works
	Hazards	Wildfire, Fire, Flood, Earthquake
	Effect on Mitigation Efforts	The City Code is where the Building Codes and Electrical Code are adopted and amended. It also has city-wide requirements for everything from parking and outdoor storage to weed control and control of wood fireplaces.
	Opportunities for Enhancement	The city will improve on the Code by adopting policies to increase property maintenance measures, flood control measures and fire mitigation measures.
Sedona Land Development Code	Purpose	It is the zoning ordinance for the city that sets land use and design standards.
	Responsible Agency	Planning and Zoning Division of Community Development, Engineering Division of Public Works
	Hazards	Wildfire
	Effect on Mitigation Efforts	The Land Development Code sets standards for building heights and setbacks, circulation and street connectivity, landscape type, and other areas that can help stop or mitigate conflagration, control density, and to help in evacuation plans.
	Opportunities for Enhancement	The city will improve the Plan by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.

Community Wildfire Protection Plan (CWPP) **WUI Fire Code 2018**	Purpose	The International Wildland-Urban Interface Code (IWUIC) is a model code that is intended to be adopted and used supplemental to the adopted building and fire codes of a jurisdiction. The unrestricted use of property in wildland-urban interface areas is a potential threat to life and property from fire and resulting erosion
	Responsible Agency	Sedona Fire District
	Hazards	Wildfire
	Effect on Mitigation Efforts	Medium, this code was recently updated to reflect the changes of development within the county. It has assisted in regulating wildfire codes within the district.
	Opportunities for Enhancement	The city will develop the ordinance to identify and provide modern technologies and tools to mitigate the community's exposure to the impacts of future wildfire events with development of existing areas and future areas.
Community Development Checklist	Purpose	Provide for proper planning of future growth, emergency response to assure a mitigation plan in conjunction with new growth of the community.
	Responsible Agency	Sedona Fire District-Community Risk Reduction (CRR)
	Hazards	All Hazards
	Effect on Mitigation Efforts	Medium, identifies growth and assists in plan development for future community response needs.
	Opportunities for Enhancement	The city will prepare a comprehensive checklist that developers will complete to outline the possible effects the development will have on the district mitigation plan and its impacts to the community.

Financial Resources		
Community Wildfire Defense Grants	Purpose	The Community Wildfire Defense Grants are intended to help at-risk local communities plan and reduce the risk against wildfire. The Act prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster.
	Responsible Agency	Sedona Fire District
	Hazards	All
	Effect on Mitigation Efforts	The program prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster.
Assistance to Firefighter Grants	Purpose	Enhance public safety and firefighter safety with respect to fire and fire-related hazards
	Responsible Agency	Sedona Fire District
	Hazards	All
	Effect on Mitigation Efforts	The Assistance to Firefighters Grants Program (AFGP) funds critically needed resources to equip and train emergency personnel, enhance efficiencies, and support community resilience.
Improving Financial Resources		
Sedona will increase mitigation by exploring different hazard-specific funding, county-level programs, and levees.		

Staff/Personnel Resources Department/Agency	Involvement
City Planning Commission	Amongst other things, the Planning and Zoning Commission is the approval or recommending body for the Land Development Code, Land Use and Master Plans, Community Focus Areas and Community Plan as well as subdivision plats.
Planners	Enforce and govern the Land Development Code (Zoning Ordinance)
Building Inspectors	Enforce and govern the Building and Electrical Codes
Plans Examiners	Enforce and govern the Building and Electrical Codes
Code Enforcement Officers	Have a hand in enforcing the Land Development, Building and Electrical, and City Codes
Planners with understanding of natural and human-caused	SFD executive team, CRR and managers are responsible for implementing policies, plans, and codes to provide for the safety of the residents and visitors of the SFD.

hazards	
Geographic Information Systems (GIS)	GIS personnel maintain various software to create maps and analyze data. This helps identify travel for evacuations, flood patterns, and wildfire potential.
Grant Writers	Grant writers support critical recovery initiatives, innovative research, and many other programs

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	YAVAPAI COUNTY FLOOD CONTROL DISTRICT ORDINANCE 2018-1
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	Unincorporated Yavapai County has fewer than 50 identified repetitive loss structures and is a Category B community. As such, we send annual letters to areas identified near the structures to make sure residents know they are in an area identified as a repetitive loss area and encouraging them to buy flood insurance and contact the District with questions.

Figure 78 Table 5-3-10: Sedona Capability Assessment

Table 5-3-11: Yavapai County Indian Tribe Capability Assessment		
Programs, Plans & Policies		
Emergency Operation Plan for the Yavapai-Prescott Indian Tribe (2015)	Purpose	The YPIT-EOP has been developed to minimize the impacts of any adverse consequences of accidents and to establish policies and procedures for emergency response.
	Responsible Agency	YPIT Emergency Management
	Hazards	All
	Effect on Mitigation Efforts	This plan has not been updated since 2015. Due to Covid-19 and personnel changes it was put on hold and is scheduled for 2023-24
	Opportunities for Enhancement	The Tribe will enhance the current Plan by incorporating revisions to account for changes in technology, procedures/policies, and status of the Tribe.
Land Use Master Plan (1999)	Purpose	Directs the usage of different areas of the Reservation and identifies areas for development versus housing or areas to remain native.
	Responsible Agency	Planning
	Hazards	All
	Effect on Mitigation Efforts	The Land Use Master Plan evaluates current land use and projects areas for future development. In doing so, it examines hazards to the environment and limits the development in areas that are prone to hazard effects.
	Opportunities for Enhancement	The Tribe will prepare and adopt a new Plan incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling. The Plan is scheduled for a complete revision in 2024.
Water Management Plan (1999)	Purpose	To identify water resources and uses of these resources by the Tribe
	Responsible Agency	Environmental Protection
	Hazards	Fire, Drought
	Effect on Mitigation Efforts	Serves as a strategic framework for managing water supply, allocation, conservation, and quality to meet current and future needs while considering environmental, social, and economic factors.
	Opportunities for Enhancement	The Tribe will develop a new plan with additional engineering studies to capture improvements in technology and to identify other areas of improvement to safeguard this resource and to meet current and future needs.

Fire Management Plan (2002)	Purpose	The plan is intended to outline the kinds of fire management activities that occur on the YPIT Reservation, and they integrate with the overall land management of the Reservation.
	Responsible Agency	Environmental Protection
	Hazards	Wildfire
	Effect on Mitigation Efforts	Under this plan wildfire danger should be reduced on the Reservation. Grant money will be used to lessen the fuels load. The goal is the prevention of human caused fires and reducing the fuel load.
	Opportunities for Enhancement	The Tribe will enhance the plan by incorporating revisions which identify and provide modern technologies and tools to mitigate the Tribe's exposure to the impacts of future wildfire events with development of existing areas and future areas.
Yavapai-Indian Tribe Multi-Hazard Mitigation Plan (2018)	Purpose	The purpose was to establish a program for pre-disaster mitigation, streamline administration of disaster relief and control costs.
	Responsible Agency	Emergency Management
	Hazards	All
	Effect on Mitigation Efforts	Medium. With the plan in place many of the things were done although not necessarily as part of the plan and they are continued to this day in how we operate. We do coordinate with local agencies in various committees and groups and share information of an emergency and planning nature.
	Opportunities for Enhancement	The Tribe will enhance the Plan by partnering with Yavapai County in the development of a 2023 and 2028 MJHMP. The Tribe will seek adoption by the Board in lieu of writing a separate plan.
Codes & Regulations		
International Building Code 2018	Purpose	Building codes establish minimum standards for construction practices and materials, aiming to ensure the safety and resilience of structures. Codes include provisions related to structural integrity, fire safety, wind resistance, seismic resistance, flood mitigation, and other hazards.
	Responsible Agency	Planning
	Hazards	All hazard
	Effect on Mitigation Efforts	Provides a minimum building standard to ensure the safety and resilience of the structure.
	Opportunities for Enhancement	The Tribe does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
International Fire Code 2018	Purpose	Building codes establish minimum standards for construction practices and materials, aiming to ensure the safety and resilience of structures. Codes include provisions related to structural integrity, fire safety, wind resistance, seismic resistance, flood mitigation, and other hazards.

	Responsible Agency	Planning
	Hazards	This addresses minimum fire safety requirements. The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities, and processes.
	Effect on Mitigation Efforts	Provides a minimum building standard to ensure the safety and resilience of the structure.
	Opportunities for Enhancement	The Tribe does not have ability to improve on the codes outside of adopting and enforcing current standards. The International codes are promulgated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes.
Law and Order Code Chapter 25 Zoning for Economic Development	Purpose	The Law-and-Order Code contains Chapter 25 Zoning for Economic Development
	Responsible Agency	Planning
	Hazards	This code promotes orderly economic development within the Reservation in conformance with the adopted comprehensive Land Use Master Plan.
	Effect on Mitigation Efforts	The code establishes standards for the development of the reservation property. It outlines zoning designations, and land use classifications. This information serves to protect the growth of the community and to minimize risk to identified hazards in the natural and built environment.
	Opportunities for Enhancement	The Tribe will improve the Code by incorporating revisions to land use mapping, adding infrastructure development, and hazard modelling.
Staff/Personnel Resources Department/Agency	**Involvement**	
Planner	The Planner is the head of the Planning Department where Environmental Protection and Emergency Management reside. He is involved in the planning, mitigation, and response aspects of Emergency Management. Understands construction, building activities and infrastructure.	
Environmental Protection Specialist (EPS)	The EPS is responsible for managing the EPA grants where some activities for emergency management originate.	
Emergency Manager (EM) / Environmental Technician (ET)	The EM at the present time is the ET. They are directly responsible for all activities with emergency management under the direction and supervision of the Planner and the EPS.	
Police Chief	The Police Chief plays a large role in our emergency management activities and is a trusted source of information and knowledge with a wealth of experience.	
Environmental Health Specialist (EHS)	The EHS is responsible for inspections, Safety Data Sheets reviews, and hazardous materials storage.	

Financial Resources		
Community Development Block Grants	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	YPIT
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Capital Improvements Project Funding	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	YPIT
	Hazards	All
	Effect on Mitigation Efforts	Provide funds necessary for hazard mitigation efforts
Levy Taxes for Specific Purposes	Purpose	Provide funding for specific purposes
	Responsible Agency	YPIT
	Hazards	Specific with voter approval required
	Effect on Mitigation Efforts	With voter approval, funds can be applied to specific projects to aid with hazard mitigation.
Fees for water, sewer, gas, or electric service	Purpose	Provide additional funding for water and sewer purposes only
	Responsible Agency	YPIT
	Hazards	Specific to water or sewer needs only
	Effect on Mitigation Efforts	Provide additional funding for water and sewer purposes only to aid with hazard mitigation
Impact fees for homebuyers or new developments/homes	Purpose	Provide funds necessary for hazard mitigation efforts
	Responsible Agency	YPIT
	Hazards	All
	Effect on Mitigation Efforts	Provide additional funding as needed for specific projects as needed.
Improving Financial Resources		
YPIT will increase mitigation by exploring different hazard-specific funding, county-level programs, tribal-specific resources, and levees.		

FEMA Grant Funding Opportunities	
Building Resilient Infrastructure and Communities (BRIC)	YPIT has not utilized this grant program.
Hazard Mitigation Grant Program	YPIT has not utilized this grant program.
Flood Mitigation Assistance	YPIT has not utilized this grant program.
Public Assistance	disaster declarations for COVID-19 (#3442 & 4524) with $143k earmarked for Hazard Mitigation Assistance,
Pre-Disaster Mitigation	YPIT has not utilized this grant program.
Disaster Declaration	Open declarations for COVID-19 (#3442 & 4524) with $143k earmarked for Hazard Mitigation Assistance

NFIP Participation	
Adoption of NFIP minimum floodplain management criteria via local regulation	This jurisdiction currently is not a participating member of the NFIP
Adoption of the latest effective Flood Insurance Rate Map (FIRM), if applicable	N/A
Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs	N/A
Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP	N/A
Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event.	N/A

Figure 79 Table 5-3-11: Yavapai County Indian Tribe Capability Assessment

5.4 Mitigation Strategy

The process for defining the list of mitigation measures for this Plan was accomplished by an assessment of the measures specified in the previous Plan. A new list of measures was developed by combining the carry forward results from the assessment with new measures when applicable.

During the assessment of the previous mitigation measures, a classification of "Keep" or "Revise" was carried forward to become part of the mitigation strategy for this Plan. All measures identified for deletion were removed and are not included in this Plan. The results of the assessment can be found in this Plan's Appendices.

Current Mitigation Strategy

Upon completion of the assessment, each jurisdiction developed a mitigation strategy for this Plan. The strategy was based on the goal and objectives, results of the vulnerability analysis and capability assessment, and the planning team's institutional knowledge of hazard mitigation needs in the community. For each A/P, the following elements were identified: Project Name & Description, Hazard(s) Mitigated, Estimated Cost, Anticipated Completion Date, Primary Agency, and Potential Funding Source(s).

Priority Ranking – each measure was assigned a priority ranking of "High", "Medium", or "Low". The assignments were subjectively made using a simple process that assessed how well the measure satisfied the following considerations:

- A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
- A direct beneficial impact on the ability to protect life, property, or both, from hazards.
- A mitigation solution with a long-term effectiveness.

Table 5-4-1: Yavapai County Mitigation Strategy						
Priority Ranking	**Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Flood Hazard Mapping. Identify and map new flood hazard areas and update existing mapping in accordance with NFIP compliant requirements to protect existing and future buildings and infrastructure from flood hazards.	Flood	$1.5M	September 2024	Flood Control District	Flood Control District
M	Flood Warning System. Install additional in stream, weather, and precipitation gauges in watersheds impacting Yavapai Co. To include website development and remote dial-up for public agencies.	Flood	$500K	September 2024	Flood Control District	Flood Control District
H	Flood Damage Prevention, Drainage Criteria Ordinance and Storm water Management Plan. Amend ordinances to prevent flood damage and water quality degradation and to protect existing and future buildings and infrastructure.	Flood	$100K	August 2024	Flood Control District	Flood Control District
H	Neighborhood Wildfire Assessment. Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	$500K	September 2024	Yavapai Co Firewise & Yavapai Co OWM	General Fund
H	Regional Wildland Fuels Crews. Develop and maintain two full-time crews dedicated to hazard fuel reduction in the wildland urban interface, and public education in the Prescott Basin and surrounding areas. The focus of the crew is wildland fire risk reduction in the wildland urban interface.	Wildfire	$3M	September 2024	Prescott Fire & Central Yavapai Fire	USDA/FS Grants
M	Develop and maintain a County Wildland Fuels Mitigation Crew to support reduction in hazardous wildland fire fuels along roadways and riparian areas. Focus is to reduce the probability of roadside ignitions in the wildland urban interface	Wildfire	$300K	September 2024	Public Works	General Fund, and USDA/FS Grants
H	Fire Wise Community Programs. Develop Fire Wise programs for all communities, neighborhoods and homeowners' associations within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies.	Wildfire	$15K	September 2024	HOA's, Community Groups	General Fund, and USDA/FS Grants
H	Wildfire Public Education Activities. Continue and expand Town Hall style meeting to include annual expo and continuation and expansion of the regional alert website to protect existing and future buildings and infrastructure. Over 10 years.	Wildfire	$100k	September 2024	PAWUIC	General Fund USDA/FS Grants
H	County Wildland Mapping for State GIS. Establish and maintain a county component of the state GIS mapping system documenting forest treatments, hazard data, grants, etc.	Wildfire	$25K	September 2024	County GIS	General Fund
	Boundary Project. Develop a 270-degree defensible wildfire boundary around interface immediately to the south of Prescott.	Wildfire	$3M	September 2024	PAWUIC/ USFS	USDA/FS Grants

Table 5-4-1: Yavapai County Mitigation Strategy						
Priority Ranking	Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Project Lead	Potential Funding Source(s)
M	Repetitive Flood Loss Properties. Inform and coordinate property owners to flood mitigation programs such as retrofit and/or property acquisition. Per the requirements of the Community Rating System, the District sends out annual outreach material to residents with similar risks as the repetitive loss property outlining options for mitigation.	Flood	$5M	September 2024	Flood Control District	Flood Control District
M	Purchase and Store Rain Gages for use after a forest fire to assist in mitigating flood and mudslide losses. During the event, the area is surveyed for a gauge location that not only will help with post-fire flooding in the immediate future but will also fit into the district's overall gauging plans.	Flood and Mudslide	$50K	September 2024	Flood Control District	Flood Control District
M	Rimrock Area Drainage Study	Flood	$200K	June 2024	Flood Control District	Flood Control District
M	Village of Oak Creek Area-Wide Construction Projects. Five of eight various flood mitigation projects as determined in the area-wide planning study. The purpose of the project is to identify causes of flooding issues and to identify and prioritize mitigation projects.	Flood	$250K	September 2024	Flood Control District	Flood Control District
M	Ho Kay Gan Subdivision Drainage Improvements. Area-wide construction projects identified in ADMS. The purpose of the project is to identify causes of flooding issues and to identify and prioritize mitigation projects.	Flood	$2.4M	June 2024	Flood Control District	Flood Control District
M	Install Water Quality BMPs and control measures to address contamination and flood mitigation in critical areas.	Flood	$150K	July 2024	Flood Control District	Flood Control District
M	Prescott Country Club Drainage Improvements. Area-wide construction projects identified in ADMS. The purpose of the project is to identify causes of flooding issues and to identify and prioritize mitigation projects.	Flood	$800K	June 2024	Flood Control District	Flood Control District

Figure 80 Table 5-4-1: Yavapai County Mitigation Strategy

Table 5-4-2: Camp Verde Mitigation Strategy						
Priority Ranking	Description	Hazard (s) Mitigated	Estimated Cost	Anticipated Completion Date	Project Lead	Potential Funding Source(s)
L	Enforce Adopted Building & Fire Codes. Continue to enforce Fire Code requirements for Adequate Fire Flow and Fire Access Lanes. Plan reviews, Building Inspections, and Fire Inspections.	Wildfire	$87K	September 2024	Copper Canyon Fire & Medical Authority (Fire Marshal) Camp Verde Building Official	General Fund
H	Create and continue to enforce Nuisance Codes for Abatement of weeds garbage and debris to create defensible spaces around existing homes and buildings.	Wildfire	$84K	September 2024	Community Dev Director	General Fund
H	Continue to implement and enforce Storm Water Master Plan (2017). Storm water and Sewer improvement projects within the Historical Town Site: Including installation of culverts, drainages, culvert extensions and constructing appropriately placed drainages at road crossings. Continue strengthening and maintenance of roadside drainages.	Flooding	$150K	September 2024	Public Works/Utilities Directors.	General Fund
H	Flood Prone Property Acquisition in Verde Lakes area including Verde Lakes Drive/Clear Creek Restoration area, and Ward Ranch Gully Flood plain restoration area. To accommodate Verde Lakes, West Clear Creek and Ward Ranch Gully habitat and Flood Plain restoration/remediation.	Flooding, Fire	$100K	September 2024	Public Works/Utilities Directors	General Fund, County Funds FEMA HMGP
H	Verde Lakes, Ward ranch Gully, and West Clear Creek Habitat, Floodplain Remediation and restoration to include clearing of overgrowth, and removal of deadfall, Channel and bank reconstruction and stabilization, road crossing improvements and cleaning of impingent areas within roadside drainages. Constructing of safety barriers and access restrictions to be utilized during unsafe conditions of other hazards.	Flooding Wildfire	$1.5M	Dec 2024	Public Works/Utilities Directors	General Fund match, FEMA HMGP

Table 5-4-2: Camp Verde Mitigation Strategy						
Priority Ranking	**Description**	**Hazard (s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Sustain IGA with the County as Floodplain Managers to ensure compliance with NFIP regulations for management and review of new developments located in the floodplain regarding issuance of floodplain use permits.	Flooding	$5,000	July 1, 2024	Public Works/Utilities Directors	General Fund
H	Partner with the Forest Service and Hopi Tribe to gain permission and funding to mitigate storm water impact from Forest Service properties surrounding our community in (7) identifiable sites. There are 7 identifiable sites within incorporated Boundaries where the USFS Coconino watershed historical drainages affect residential areas. There are 3 sites located at Verde lakes, one on McCracken Lane, 2 in middle Verdes Overlook areas and Coughlan Ranch. The actions necessary are to clean and rehabilitate existing historical drainages in an ongoing basis and as needed.	Flooding	$4.5M	July 1, 2024	Public Works/Utilities Directors	General Fund match, FEMA HMGP
H	Construct road crossings and drainage channels at Quarterhorse Dr. and Glenrose Dr. areas that drain the Camp Verde School District property, private properties, and Forest Service properties North of Quarterhorse Dr. to the Diamond “S” ditch.	Flooding	$400K	July 1, 2024.	Public Works/Utilities Directors	General Fund match, FEMA HMGP
L	Sustain communication with County and other agencies which are primarily assigned Earthquake Responsibilities and monitoring.	Earthquake	$20K	September 2024	Public Works Director	General Fund match, FEMA
L	Strengthen monitoring of landslide/mudslide areas of which there are few in existence. Salt Mine Road at Windy Point has a significant possibility of mudslide due to composition of soils and excessive moisture during winter/summer rains. There is one area along Hwy I-17 within incorporated boundaries, which if a major slide occurs it could have a major impact on traffic. It is along the southern border of Hwy I-17 and Cliff Castle Casino. ADOT would be primary agency.	Landslide/ Mudslide	$15K	September 2024	Public Works Director	General Fund match, FEMA

Table 5-4-2: Camp Verde Mitigation Strategy						
Priority Ranking	**Description**	**Hazard (s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
M	Sustain communication with the Forestry division of APS to assist in prevention of downed power lines due to severe winds. There are several identified areas where roadways are adjacent to larger trees especially Pecans and Cottonwoods.	Severe Wind	$18K	September 2024	Public Works Director/ Building Official and Copper Canyon Fire & Medical	General Fund/other agencies and FEMA
L	Strengthen enforcement of building codes related to snow loads and continued problems created by lack of drainage on flat rooftops especially for those of commercial buildings.	Winter Storm	$20K	September 2024	Public Works Director	General Fund/FEMA
M	Drainage Improvement Projects	Flood	$1M	September 2024	Public Works Director	Flood Control District

Figure 81 Table 5-4-2: Camp Verde Mitigation Strategy

Table 5-4-3: Chino Valley Mitigation Strategy						
Priority Ranking	**Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Sources**
H	Bridge Structure at Road 5 North. Construct an all-weather crossing at Road 5 North and Reed Road to mitigate road closures due to heavy rains and provide uninterrupted access.	Flood	$750,000	September 2024	Public Works Director	CIP Program
M	Strengthen Building Codes. Adopt and enforce new building codes to protect existing and future buildings and infrastructure from high wind and other natural and human-caused disasters.	All	$75,000 5-year cost	September 2024	Community Development, Legal, and Public Works, CAFMA	General Funds
M	Strengthen compliance with NFIP regulations by enforcement of the FEMA floodplain management through review of new development located in the floodplain and issuance of FEMA floodplain use permits.	Flood	$75,000	September 2024	Community Development, Legal, and Public Works	General Fund
H	Granite Creek Crossing @ Perkinsville Rd	Flood	$450,000	September 2024	Public Works Director	Yavapai County Flood Control Grants, NACOG Grants, CIP, and General Fund
M	Drainage Improvement Projects	Flood	$600k	September 2024	Public Works Director	Flood Control District

Figure 82 Table 5-4-3: Chino Valley Mitigation Strategy

Table 5-4-1: Mitigation Strategy for Clarkdale						
Priority Ranking	Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Project Lead	Potential Funding Source(s)
M	Enforce International Construction Code Standards in order to help maintain building integrity and prevent injury or loss of life and to mitigate damage to existing and future structures resulting from severe winds and flooding.	Severe Wind Flooding Landslide Mudslide	$74,000	September 2024	Ruth Mayday	General fund
M	Second two lane bridge that will span bitter creek and will provide bidirectional access and egress, from the bitter creek industrial area and patio park in case of flood, fire and other emergency.	Flood Fire ingress/egress	$6,000,000	September 2024	Ruth Mayday	NACOG, HURF, and Yavapai County Grants. CIP
M	Education and awareness programs to inform and educate citizens, elected officials and property owners about hazards and potential ways to mitigate them by pre-planning.	Flood Wildfire Wind Mudslide Winter storm	$5,000	September 2024	Clarkdale Emergency Management	General Fund
M	Mescal Well Project. Will provide additional future water supply for the community as shallower wells run dry	Drought	$16,000,000	September 2024	Clarkdale Utility Dept	Water Grants HUD
M	Replacing outdated water meter end points with cellular end points.	Drought	$100,000	September 2024	Clarkdale Utility Dept.	General fund YCFCD Flood Control Grants
M	Increase mitigation level by maintaining IGA with Yavapai County Flood Control District for establishing procedural guidelines for the implementation and enforcement of the NFIP floodplain management Yavapai County Flood Mitigation Projects. Major projects are driven by historical events and minor projects are driven by local issues. Flood mitigation projects approved by Yavapai County after presentation from the Town prioritizing projects	Flood, Landslide, Mudslide	$40,000	September 2024	Clarkdale Public Works Dept	Yavapai Co Grants
M	Annual Drainage Improvement Projects to improve flood resilience	Flood	$400,000	September 2024	Clarkdale Public Works Dept	Flood Control District

Figure 87 Table 5-4-1: Mitigation Strategy for Clarkdale

Table 5-4-5: Cottonwood Mitigation Strategy						
Priority Ranking	Description	Hazard(s) Mitigated	Estimated Cost	Completion	Project Lead	Potential Funding Sources
H	Railroad Wash flood control at Airport. Study alternatives to eliminate overtopping of the runway and flooding in the business park downstream.	Flood	$65,000	July 2024	Public Works	YCFCD Flood Control
L	6th Street Drainage Improvements. Reconstruct 6th Street to eliminate ponding water south of the intersection with Aspen Street. Part of a larger project to rehabilitate pavement on 6th Street.	Flood	$420,000	July 2024	Public Works	YCFCD Flood Control, General Fund
M	Citywide culvert cleanout projects. Ongoing projects to clean sediment out of roadway culverts.	Flood	$50,000	September 2024	Public Works	YCFCD Flood Control
M	Main Street in Old Town Drainage Improvements. Replace catch basins and storm drainpipes to accommodate flow near Old Jail. Part of larger project to rehabilitate pavement on Main Street.	Flood	$120,000	July 2024	Public Works	YCFCD Flood Control, General Fund
H	Projects from 2020 Cottonwood Drainage Master Plan	Flood	$5.2M	Aug 2024	Public Works	YCFCD Flood Control, General Fund
M	Wildfire Fuel Reduction Program	Wildfire	$250,000	September 2024	Fire Dept. Public Works	General Fund
H	Strengthen Current Building Codes. Continue to enforce building codes to protect existing and future buildings and infrastructure from severe wind damage and other natural and human-caused disasters. 5-year cost.	All	$200,000	September 2024	Code Enforcement Officers	General Fund
M	Public Outreach. Educate the public on the risks resulting from fire, severe weather, and associated hazards; including recommendations on how to protect themselves and their property from damages due to natural and man-made hazards events.	All	$5,000	September 2024	Police/Fire/ Developmental Services	General Fund

Figure 83 Table 5-4-5: Cottonwood Mitigation Strategy

Table 5-4 6: Dewey-Humboldt Mitigation Strategy						
Priority Ranking	**Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
L	All Weather Crossing of the Agua Fria River at Prescott Street. An all-weather crossing is recommended at the location of the exiting low-flow at-grade crossing along Prescott Street to improve circulation and emergency vehicle access. In addition to local studies, a 2012 Arizona Dept. of Transportation study identified the need. The Town is considering either a bridge or box culverts.	Fire, Flood	$12,000,000 to $20,000,000 depending on solution (either a bridge or a box culvert)	September 2024	Dewey-Humboldt Public Works Department	IGA/ General Fund/ HURF/ Possible Grants
M	Public Outreach. Educate the public on the risks resulting from fire, severe weather and associated hazards; including recommendations on how to protect themselves and their property from damages due to natural and human-caused hazards events. This is accomplished in the monthly Town Newsletter and through the FireWise group in the Town.	Wildfire, Drought	$5,000	September 2024	Dewey-Humboldt Community Development	General Fund
M	FireWise Community recurring maintenance and program participation.	Wildfire, Flooding, Landslides	$5,000	September 2024	Dewey-Humboldt Community maintains this program	Grant from Prescott Area Wildland Urban Interface Commission PAWUIC
L	Winter Storm Public Outreach. The Town supplies information on the website as well as informational articles in the Town Newsletter during the winter months. The Town has two blades that are used when needed to clear roads. When winter weather is expected staff prepares equipment for use.	Winter Storm	$5,000	September 2024	Dewey-Humboldt	General Fund
M	Bi-Annual Town Cleanup. The bi-annual Town Cleanup enables residents to dispose of excess brush, rubbish, etc. from their properties twice a year. This helps residents get rid of vegetation and rubbish enabling them to create a defensible space and reduce potential fuel for fires.	Fire	$10,000	September 2024	Dewey-Humboldt Public Works Dept	General Fund

Table 5-4 6: Dewey-Humboldt Mitigation Strategy						
Priority Ranking	Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Project Lead	Potential Funding Source(s)
M	Ditch and Channel Cleanup and Repair. Annually clean and repair drainage ditches and channels throughout Town. This helps keep drainage ways open for water drainage and runoff, with annual inspections if any areas are in need of extra erosion protection it can be placed. The mitigation against long- term risk is an annual inspection of the areas, maintaining areas that may have problems arising.	Flooding, Landslide, Erosion Control	$35,000	September 2024	Dewey-Humboldt Public Works Dept	General Fund/ HURF Fund/ Flood Control
M	Implement and Enforce building Codes. Implement and enforce council directed building codes and adopt new international codes as they become available and/or are applicable. Codes will be enforced through building inspections, permits and code enforcement portion of the Planning and Zoning office.	All Hazards	$67,000	September 2024	Dewey-Humboldt Community Develop and Bldg. Dept	General Fund

Figure 83 Table 5-4 6: Dewey-Humboldt Mitigation Strategy

Table 5-4-7: Jerome Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Storm Sewer And Utility Master Plan. Prepare a storm sewer and utility master plan to identify storm drain problems and prioritize infrastructure improvements for implementation. Implementation includes Hull and 1st Ave. – Work is assisted by ADOT - Traced drainage - currently re-routing and installing a catch box.	Flood, Landslide/ Mudslide	$159,000 for Study	September 2024	Town Manager, Public Works Director	Grants (CDBG, FEMA, USDA, others) plus town budget
L	The Cleopatra Hill Flume overflow issues This flume was originally installed for the mining company and is now utilized for overflow from the water tanks. The flume is ineffective in areas and Public Works has installed 400' of piping to assist the flume.	Flood, Landslide/ Mudslide	$1100	September 2024	Town Manager, Public Works Director	Grants (CDBG, FEMA, USDA, others) plus town budget
H	Drainage pipe replacement on Diaz St. Pipe is rotted and will be replaced with new pipe. Replacement will prevent flooding and water loss from a burst pipe.	Flood, Landslide/ Mudslide	$39,000	September 2024	Town Manager, Public Works Director	Grants (CDBG, FEMA, USDA, others) plus town budget
L	Gulch Rd Re-grading Re-grading will control access water flow and prevent flooding.	Flood, Landslide/ Mudslide	$15,000	September 2024	Town Manager, Public Works Director	Grants (CDBG, FEMA, USDA, others) plus town budget
H	Wildfire Fuel Reduction. Perform wildfire hazard fuel reduction for prevention and to protect existing and future buildings and infrastructure. The Town of Jerome has been divided into 7 sections with an audit being done by the Jerome Fire Department of the target hazards in each section – Topography and proximity to neighboring properties and construction type were all taken into consideration. Brush clearing, and prescribed	Wildfire, Landslide/ Mudslide	$25,000 (5 yr. cost)	September 2024	Fire Chief and Chief Building Official.	Wildland fees FireWise Grant

Table 5-4-7: Jerome Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
	burns has been completed in these listed areas, but ongoing efforts will continue throughout town. 80 residents were affected by clearing and prescribed burns.					
H	Winter Storm Mitigation. Jerome's first responders are the Public Works Crew. Due to Jerome's historic cobblestone streets, our snowplow is ineffective. They do use rock salt in the areas where the plow cannot perform properly. The remaining areas get snow plowed. Volunteers help on pedestrian walkways with rock salt applications.	Winter storm	$20,000	September 2024	Public Works	Town budget / general fund
M	Promote awareness on winter storm hazards. Different areas have different risks associated with winter storms in Jerome. Steep slope topography and historic cobblestone streets prevent snowplows from running through those areas. Creating a plan to warn residential areas of incoming storms will help specific at-risk populations throughout town. This will also help with getting residents to park off street, when possible, to help with salt trucks to get through those areas.	Winter storm	$10,000	September 2024	Public Works	General fund / Town Budget
H	Severe Wind mitigation Assess vulnerability to severe wind using GIS to map areas that are at risk to a wind hazard identifying concentrations of at-risk structures throughout town. Jerome is a Historic site. There are many structures that are dilapidated enough that would place them in a hazardous category. The map would allow us to quickly identify structures that are in danger from severe wind.	Severe Wind	$27,000	September 2024	Planning / Zoning	Easement Grants are possible for this project
M	Retrofit buildings. As our buildings get modified, utilize new technology to help create structural stability and prevent collapse	Severe Wind	Average cost $4,051 per project – Suggested	September 2024	Planning / Zoning / building official	Grants / Jerome Historical Society / Volunteer Groups for Labor

Table 5-4-7: Jerome Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
L	Earthquake Education Map and assess Community Vulnerability to Seismic Hazards.	Earthquake	$27,000	September 2024	Planning / Zoning	Town budget
L	Earthquake Education • Increase risk awareness. • Promote workshops. • Informational flyers and website knowledge	Earthquake	$18,000	September 2024	Planning / Zoning	Town budget
M	Strengthen community flood resilience with Annual Drainage Improvement Projects	Flood	$200K	September 2024	Public Works Director	Flood Control District

Figure 84 Table 5-4-7: Jerome Mitigation Strategy

Table 5-4-8: Prescott Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Wildfire Fuel Reduction. Strengthen wildfire fuel reduction on private/public property to protect existing and future buildings and infrastructure. 5-year cost.	Wildfire	$600,000	September 2024	Fire Dept	General Fund
M	First Responder Training and Equipment. Through advanced training and use of equipment, first responders are better able to identify hazards and protect the public.	All	$75,000	September 2024	Fire Dept	Grant, Bond, General Fund
L	Urban Search and Rescue Team Project. Improve urban search and technical rescue capability in the city through training and procurement of specialized equipment.	All	$200,000	September 2024	Fire Dept	Grant, Bond, General Fund
H	Enforce Current Building Codes. Continue to enforce building codes to protect existing and future buildings and infrastructure from sever wind damage and other natural and human-caused disasters. 5-year cost.	All	$75,000	September 2024	Community Develop	General Fund
H	Wildfire Code Enforcement. Strengthen enforcement of wildland urban interface code. 5-year cost.	Wildfire	$75,000	September 2024	Fire Dept	General Fund
H	Improve drainage infrastructure at various channel crossings and off-channel site locations.	Flooding	$2,757,000	March 2024	Public Works	General Fund, CIP, Flood Control District
M	Strengthen community flood resilience by constructing annual Drainage Improvement Projects	Flood	$3.0M	September 2024	Public Works Director	Flood Control District

Figure 85 Table 5-4-8: Prescott Mitigation Strategy

Table 5-4-9: Prescott Valley Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Master Stormwater and Drainage Project (Plan update and identification of areas for improvement)	Flooding	$4M	Dec 2023	Public Works (PW)	Grant, Bond, General Fund
M	Town Fuels Crew. Support and equip part-time road crew to perform roadside wildfire hazard fuel reduction along roads in the interface to protect existing and future buildings and infrastructure.	Wildfire	$150,000	September 2024	Public Works (PW)	General Fund
H	Community Secondary Routes. Plan, design, and construct secondary access routes for emergency vehicles.	All	$5M	September 2024	PD, CYFD	Grants, Bonds & General Fund
L	Strengthen compliance with NFIP regulations by enforcement of the Town's floodplain management ordinance through the review of all new or substantially improved development located within FEMA delineated Special Flood Hazard Areas and the issuance of floodplain use permits.	Flood	$92,000	September 2024	PW / Engineering Division Mgr.	General Fund

Figure 85 Table 5-4-9: Prescott Valley Mitigation Strategy

Table 5-4-10: Sedona Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Flood Response Training Train all Operational Personnel to the Operations level, Technical Rescue Team to Technician Level, and Helicopter Rescue Teams in Water Rescue. This training will position us to minimize loss of life.	Flood	$92,000	September 2024	Sedona Fire District	Sedona Fire District /Sedona Special Operations Budget
H	Provide wildland fire property assessments to home and business owners in the urban wildland interface. Assessments will be based on the currently adopted International Urban-Wildland Interface Code and the latest Sedona Wild-land Interface Map that shows priority threat areas.	Wildfire	$105,000	September 2024	Sedona Fire District	Sedona Fire District/ Wildland Budget
H	Wildland Fuels Reduction Strengthen community resiliency by continuing with the practice of hosting annual fuels reduction events in order to facilitate the removal of flammable vegetation.	Wildfire	$87,000	September 2024	Sedona Fire District	Sedona Fire District/ Wildland Budget
H	Wildland Urban Interface (WUI) Response Training. Training designed to enable Sedona Fire District to take effective actions during initial stages of incidents that increase the likelihood that pre-fire mitigation will be effective. Also, WUI specific training, continue to train and certify all Sedona Fire District firefighters as wildland firefighters and red card them. This includes the pack test, annual refresher, and necessary PPE to integrate effectively with federal resources	Wildfire	$50,000/yr.	September 2024	Sedona Fire District	Sedona Fire Wildland Budget
H	Issue Burn Permits Through the issuance of burn permits, we are able to interact with the public and educate them on safe burning practices while conducting a site assessment.	Wildfire	$67,000	September 2024	Sedona Fire District	Sedona Fire Wildland Budget
H	Adopt Code Amendments - Sedona Fire District will adopt fire code amendments, which require fire sprinklers in all new construction that occurs in the Wildland Urban Interface (WUI). These requirements decrease the possibility that a fire from a structure will spread to the WUI.	Wildfire	$5,600	September 2024	Sedona Fire District	Sedona Fire Wildland Budget

Table 5-4-10: Sedona Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
H	Enforcement of 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	$15,000	September 2024	City Public Works Dept./ Asst Eng.	General Fund
M	Strengthen Current Building Codes. Continue to enforce building codes related to snow loads and continued problems created by lack of drainage on flat rooftops, especially for those of commercial buildings.	Winter Storm	$70,000	September 2024	City Public Works Dept.	General Fund
M	Strengthen community flood resilience with Annual Drainage Improvement Projects	Flood	$1.5M	September 2024	Public Works Director	Flood Control District
M	Keep sand and bags available to the public at the following four locations: 2070 Contractors Road, 431 Forest Road, 120 Indian Cliffs Road, and Red Rock High School. 5-year cost.	Flooding	$35,000	September 2024	City Public Works Dept./ Maintenance Superintendent	City Maintenance Budget
M	Urban Wildland Interface Training for officers, risk assessments. 5-year cost	Wildfire	$87,000	September 2024	Sedona Fire District	Sedona Fire Wildland Budget
M	Civilian Emergency Response Team. Train and educate public on basic first response capabilities. 5-year cost.	All	$56,000	September 2024	Sedona Fire District	Sedona Fire Wildland Budget

Figure 86 Table 5-4-10: Sedona Mitigation Strategy

Table 5-4-11: Yavapai Prescott Indian Tribe Mitigation Strategy						
Priority Ranking	**Project Name Description**	**Hazard(s) Mitigated**	**Estimated Cost / Completion**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source**
M	Keep sand and sandbags available to the tribal community (including the residential area and business sector) at the Tribal maintenance 6 EZ Street. 5-year cost.	Flood	$15,000	September 2024	YPIT Environmental Protection (EP) / Emergency Management (EM)	Tribal Emergency Management
H	Educate tribal community on the hazards of flooding, landslides, severe wind, earthquakes, and winter storm hazards through informational outreach opportunities and via the community newsletter.	All	$2,000	September 2024	YPIT EP / EM	GAP
M	Clearing of overburden, brush, and maintenance of defensible space on tribal properties, specifically the Northern Boundary, Frontier Village, and the Tribal Residential areas.	Wildfire	$5,000	September 2024	YPIT EP / EM	GAP
M	Strengthening Building Codes. Perform inspections of current building stock and new construction projects to ensure they adhere to or exceed the 2018 IBC. Identify building stock that requires retrofit to improve resilience.	All	$70,000	September 2024	YPIT Planning	GAP
M	Identify flood problem areas within Frontier Village and Slaughterhouse Gulch using GIS mapping and develop projects to reduce flooding hazard.	Flood	$24,000	September 2024	YPIT EP / EM	BIA, PDM
M	Purchase and install backup generator to provide power to critical infrastructure in the event of a power outage related to severe wind and winter storm events. Generator location Tribal Administration building and Prescott Resort	Severe Wind Winter Storm	$32,000	September 2024	YPIT Planning	BIA
M	Targeted Storm water Drainage Improvements in Frontier Village and Slaughterhouse Gulch. Identify problem areas within Frontier Village and Slaughterhouse Gulch and develop projects to reduce flooding hazard.	Flood	$100,000	September 2024	YPIT EP / EM	BIA, FMA

Figure 87 Table 5-4-11: Yavapai Prescott Indian Tribe Mitigation Strategy

SECTION 6: PLAN MAINTENANCE PROCEDURES

Elements of this plan maintenance section include:

Monitoring, Evaluating, and Updating the Plan

Monitoring Progress of Mitigation Activities

Incorporation into Other Planning Mechanisms

Continued Stakeholder & Member Outreach/Involvement

Yavapai County and the participating jurisdictions/Tribe recognize that this hazard mitigation plan is a "living" document with regularly scheduled monitoring, evaluation, and updating.

6.1 Monitoring, Evaluating, and Updating the Plan

The Plan should be continuously monitored by the participating jurisdictions to ensure the implementation of the identified mitigation measures. The individual/entity identified as the 'Project Lead' should strive to closely oversee and track the progress of their mitigation measures, reporting those results to their respective jurisdictional representatives and the County OEM. More accountability is likely to increase the probability of implementation.

Few formal annual evaluations occurred over the past five years due to:

- Changes in staff and a lack of effective communication regarding plan maintenance requirements and responsibilities.
- A general lack of priority regarding the importance and requirements of the maintenance element.
- Limited perceived value in performing the maintenance and evaluation and competing interests for many members of the jurisdictional staff.
- A lack of personnel and/or staff resources to take responsibility for the task.

Moving forward, the Planning Team established the following monitoring and evaluation procedures:

- Schedule – This Plan shall be evaluated annually around the anniversary of its FEMA approval or following a major disaster. The Yavapai County Office of Emergency Management will take the lead by arranging the evaluation, the method to be used, the deadline, and the documentation.
- Review Content – The content and scope of the Plan evaluation should address the following questions:
    - Hazard Identification: Have the risks and hazards changed?
    - Goals and objectives: Do the goals and objectives still address current and expected conditions?
    - Mitigation Projects and Actions: What is the project status?
    - Capability Assessment: Capabilities change year after year with shifts in budgets and spending priorities. It is tremendously important to review and revise the Capability Assessment for each jurisdiction.

Each jurisdiction will review the Plan as it relates to their community and document their responses. Final documentation will include a compilation of responses and results from each jurisdiction/Tribe plus any notes on the discussions and/or comments.

This Plan requires updating and approval from FEMA every five years. This plan update will adhere to the following procedure to ensure its continued approval:

- One year prior to the plan expiration date, the Yavapai Co office of EM will reconvene the Planning Team to begin the formal Plan update process.
- Using this Plan's planning process documentation as a guide, the Planning Team will review and update the Plan and produce a new Plan.
- The updated plan will be submitted to DEMA and FEMA for review, comment, and approval.

- The State and FEMA approved Plan will be presented before the respective councils and boards for an official concurrence/adoption.

6.2 Monitoring Progress of Mitigation Activities

This section describes the Yavapai-Prescott Indian Tribe's system for monitoring mitigation measures by reviewing their progress, monitoring progress on achieving goals, and a system for projects closeouts. This section was reviewed by the Planning Team Tribal Representative and found to still be consistent with the processes they would follow. Therefore, the material remains largely unchanged.

Unless otherwise directed or warranted, the goals and objectives' review will coincide with the annual overall Plan review and update schedule. There will be a focus on whether or not the objective and mitigation measures adequately support the goals.

During the Plan's annual reviews and plan updates, the Tribe's Environmental Protection and Emergency Management staffmember will coordinate with the individuals/entities identified as 'Project Lead' to assess the implementation status of the identified measures.

The Tribe will regularly monitor the implementation and progress of the measures to ensure greater success by keeping them a high priority. The implementation of the mitigation measures in the previous Plan were for the most part, education, and awareness. Those activities are in progress and continue as an ongoing effort. For FEMA supported projects, progress reports will be submitted on a quarterly basis, or as required throughout the project. The degree of quarterly reporting will be dependent upon the type of measure, its funding source, and the associated requirements. At a minimum, the quarterly report should address:

- Project Completion Status
- Project Challenges/Issues (If any)
- Budgetary Considerations (Cost Overruns or Underruns)
- Detailed Documentation of Expenditures

Upon completion of projects, the project location will be visited, results viewed, and documented. Closed projects will then be monitored for effectiveness in the intended mitigation. FEMA supported project closeouts will include an audit of the project financials as well as other guidelines/requirements set forth under the funding or grant rules, and any attendant administrative plans developed by the Yavapai-Prescott Indian Tribe.

6.3 Integration into Existing Planning Mechanisms

Integration of this Plan into other planning mechanisms, by either content or reference, enhances a community's ability to perform hazard mitigation by expanding the scope of this Plan's influence. The Planning Team reviewed this section in the previous Plan and found several ways to improve it. The section was lacking specific information therefore the Planning Team restructured this area. Ways in which the 2018 Plan have been integrated into other planning mechanisms are summarized below.

Table 6-1: Past Plan Integration

Yavapai County	• Hazard Gap Analysis • Development of the EOP • Development of the Recovery Plan • Development of Flood Projects • Hazard Identification Risk Vulnerability Analysis
Camp Verde	• Town's General Plan Review • Town's Annual CIP Budgeting process • Town's Flood Control Plan/Projects • All residential & commercial pre plan reviews
Chino Valley	• City General Plan

	• Flood Control Plan/Projects • Capital Improvement Plan/Projects
Clarkdale	• Flood Control Plan/Projects for Yavapai County Flood Grants • Updating Town Code with grading ordinances, FEMA updated flood mapping, International Building/Property updated to 2022 requirements. • Updated mapping for current Verde River property owners subject to flooding. • Update the Town Emergency Response Plan mapping and evacuation routes. • Update Floodplain/storm water management ordinance
Cottonwood	• City General Plan • Flood Control Plan/Projects • Capital Improvement Plan/Projects
Dewey-Humboldt	• Town annual budgets • Town 2009 General Plan
Jerome	• Town of Jerome Drainage Master Plan • Town of Jerome General Plan • Adopted ordinances and Codes
Prescott	• City General Plan • Flood Control Plan/Projects • Capital Improvement Plan/Projects
Prescott Valley	• General emergency management program development • Development of the community Hazard Gap Analysis • Development of the Town EOP • Reference in the Development of Flood Control Projects • Referenced in development of the Hazard Identification Risk Vulnerability Analysis • Referenced in the Prescott Valley General Plan
Sedona	• Sedona Community Plan (2014) • Flood Control Projects • Capital Improvement Projects
YPIT	• Tribal Land Use Master Plan • Tribal CWA grant efforts • Tribal Emergency Operations Plan

Figure 88 Table 6-1: Past Plan Integration

Typical ways the jurisdictions plan to incorporate this Plan over the next five-year planning cycle include:

Table 6-2: Future Plan Integration	
Yavapai County	• Hazard Gap Analysis • Emergency Operations Plan • Recovery Plan • Development of Flood Projects • Yavapai County – Community Wildfire Protection Plan • Hazard Identification Risk Vulnerability Analysis • Community Outreach/Risk Reduction Education Projects
Camp Verde	This plan is better utilized in planning, budgeting and execution while informing council as to its impact on the Town. Our increased utilization is improving priorities and projects that might qualify for grants and or other funding opportunitie**s.**
Chino Valley	• Flood Control Plan/Projects • Capital Improvement Plan/Projects

Clarkdale	• Updating Town Code/ordinances to reflect the most current building/ property and grading standards. • Updating the Town Emergency Response Plan mapping and evacuation routes and areas needing mitigation based upon events. • Updating of the Town Transportation Plan for street and alley projects to prevent run off and flooding issues. • Updating of the Town Area Master Drainage Study to identify additional washes, culverts, low water crossings and curb areas needing future mitigation through annual grant funds.
Cottonwood	• Flood Control Plan/Projects • Capital Improvement Plan/Projects
Dewey-Humboldt	• Town annual budgets • Town 2009 General Plan update and revision
Jerome	• Capital Improvement Plan / Projects • Community Wildfire Protection Plan • Educational Workshops on Severe Wind and Earthquakes • Obtain Grant for continued drainage work
Prescott	• Capital Improvement Plan / Projects • Community Wildfire Protection Plan • Educational Workshops on defensible space • Wildland Urban Interface grants and continued mitigation of hazard fuels
Prescott Valley	• Hazard Gap Analysis • Town Emergency Operations Plan • Development of Flood Projects • Hazard Identification Risk Vulnerability Analysis • Community Outreach/Risk Reduction Education Projects • Development of the Towns Strategic/General Plan
Sedona	• Sedona Community Plan (2014) update and revision • Sedona THIRA • Flood Control Projects • Capital Improvement Projects • 2021 Sustainability Review
YPIT	• Development of a THIRA and annual SPRs • Update of the 1999 Land Use Master Plan • Update of the Range Management Plan • Update of the Tribal CWA grant efforts • Update of the Tribal Water Management Plan • Update of the Fuels Management Plan • Long Range Transportation Plan • Update of the Emergency Operations Plan • Update of the Wildland Fire Management Plan YPI Reservation • Identification of Hazardous Materials Sources on the YPI Reservation • Pursuit of HMA grants to lessen the impacts of flooding along Granite Creek The Tribe strives to align itself with planning efforts, programs, and initiatives with the Tribe and at the local, state, and federal level whenever possible. The tribe recognizes the differences between the tribe and other levels of government that may create challenges to this alignment. However, the Tribe is committed to continuing to work closely with the regional partners in all areas of emergency management.

Figure 89 Table 6-2: Future Plan Integration

6.4 Continued Stakeholder & Member Outreach/Involvement

The emergency management community in Yavapai County is committed to keeping the public aware of and involved in the mitigation planning to the extent practicable and possible. The Planning team reviewed this section of the previous Plan and the processes that were used to keep the public informed and involved. Feeling there is always room for improvement, the Plan participants focused on providing information that was more specific and would pave a path for future activities. The 2018 Plan identified the following potential elements for continued public involvement:

- Provide periodic updates of hazard mitigation measures being implemented using local media.
- Conduct annual presentations of hazard mitigation planning discoveries, progress, or proposed measures at the local board and council meetings.
- Participate in annual events such as the County fair and other public events.
- Perform public outreach and mitigation training meetings for targeted populations known to be in higher risk hazard areas (i.e. – floodplain residents).

Below are some of the ways the participating jurisdictions/Tribe intend to continue involvement and dissemination of information whenever possible and appropriate.

Table 6-3: Future Public Outreach/Involvement

Jurisdiction	Activities
Yavapai County	• Conduct public involvement efforts related to drainage and floodplain delineation studies to keep public aware of flood hazards and mitigation efforts. • Maintain a hazard mitigation webpage presence with a copy of the Plan posted for public review and comment. • Present major mitigation related projects to the Board of Supervisors for approval and funding • Develop Firewise and Defensible Space community education program: Expos, community meetings, education programs for civic groups, and town hall meetings. • Work with all stakeholders from Federal, State, and Local Agencies to develop a comprehensive wildland fuel mitigation program with semiannual coordination workshops. • Social media project engagement.
Camp Verde	• Upon approval, the Town of Camp Verde will post the 2016 Hazard Mitigation Plan on the Town's website with public comment process attached. • Participate in local events such as Fort Verde Days, Festivals, and community nights out to increase awareness about the area's hazards and risks.
Chino Valley	• Conduct public involvement efforts related to drainage and floodplain to keep public aware of flood hazards and mitigation efforts through website, newsletter articles and social media information blasts. • Conduct public involvement efforts related to drainage and floodplain to keep public aware of flood hazards and mitigation efforts.
Clarkdale	• Maintain a website linking the public to the county website location where the Plan was posted. • Educate the public to increase the awareness of hazards and opportunities for mitigation actions with informational hazard mitigation brochures at local events such as National Night Out, July 4th, Halloween. • Inform and encourage residents to join the County Code Red emergency notification system through website, newsletter articles and social media information blasts.

	• Conduct public involvement efforts related to drainage and floodplain to keep public aware of flood hazards and mitigation efforts through website, newsletter articles and social media information blasts. • Conduct public involvement efforts related to drainage and floodplain to keep public aware of flood hazards and mitigation efforts. • Provide hazard mitigation brochures provided by ADEM at Town Hall and other public venues.
Cottonwood	• The city will maintain a website or link to the county website, where the Plan will be posted, and the public will have an opportunity to comment and make recommendations for changes. • PSA announcements in the local newspapers and public notices will be posted with the development of mitigation activities
Dewey-Humboldt	• The city maintains a website link to the county website, where the Plan will be posted, and the public will have an opportunity to comment and make recommendations for changes. • Newsletter articles will be placed as appropriate to announce hazard mitigation activities.
Jerome	• Public input on Capital Improvement Plan • Community Wildfire Outreach – Annual FireWise Day in which there is public outreach through face-to-face, pamphlets, and flyers. Posted on Town Website and Facebook page. • Complete Town of Jerome General Plan by conducting workshops and public meetings • Jerome will present a Volunteer Day to help with Hazard Mitigation activities including assisting homeowners with labor to rehabilitate dilapidated homes and buildings that are in danger of collapse from neglect and threatening hazards like Flood, Wind, and Fire. • Jerome will hold Educational Workshops on Severe Wind and Earthquakes as well as implementing the distribution of Educational Material in relation to Hazard Mitigation • Revise Town website to attract more of the public to get involved.
Prescott	• The City of Prescott has linked with Yavapai County Emergency Management for accepting plan comments via electronic means. • The Fire Department is an active/supporting member of the Prescott Area Wildland Urban Interface Commission (PAWUIC) and utilizes that body for communication of on-going mitigation strategies and undertakings. • The city will continue to remain engaged with the USFS, State Division of Forestry, Bureau of Land Management, and other first responder fire entities to ensure a collaborative effort of all parties. • The City of Prescott will continue to maintain a presence at the Annual Home Show to provide direct input to our citizens and seek their involvement. • Prescott Fire Dept will be conducting a Citizen's Fire Academy in hopes of allowing the public and opportunity to explore what we do and provide input as to means to add efficiencies.
Prescott Valley	• Conduct public involvement efforts related to floodplain delineation studies, as well as all hazards to keep public aware of the various hazards and mitigation efforts. • Maintain a hazard mitigation webpage with a copy of the Plan posted for public review and comment. • Present all major mitigation related projects to the Town Council for approval and funding. • Publish all detailed studies for major floodway channels. • Maintain website link to the county's website where the Plan will be posted.
Sedona	• Yavapai County periodically mails flood awareness information to Sedona residents and other residents of the county. • The City of Sedona has an email address of FloodStatus@SedonaAZ.gov for real estate agents and other members of the community to request Flood Status Reports on any parcel within

	City of Sedona boundaries. This email link is available as a provided service on the City's website. • Residents of Sedona can report drainage issues and other problems to City staff by using Sedona Citizens Connect, a mobile app. • The Sedona Fire District (SFD) continuously conducts outreach on defensible space for wildfire. In May of each year, over a three-day weekend, residents of the SFD take yard brush and tree cuttings to a specific area to mitigate the extent of residential structural damage from a wildfire. • The SFD runs media releases as needed on Fire & EMS related News in the Sedona Red Rock Newspaper. Fire & EMS news topics include Wild-land fire defensible space, rockslides, burn restrictions, fire code, and miscellaneous household safety topics. SFD also has brochures on "Fire-wise Communities" and "Oak Creek Canyon Fire Evacuation for Visitors & Travelers". • In August of each year, the Sedona Police Department hosts its annual "National Night Out" event. This event offers public safety displays and information. Firefighters are also there to display rescue equipment and hand out information. • In May of each year, the SFD tests the emergency siren system that is designed to notify residents of Oak Creek Canyon and Uptown Sedona of severe emergencies that would require evacuation. The test serves two purposes: (1) Assuring that the system is functioning properly; and (2) So that residents, business owners, and visitors become aware of what to expect in an actual emergency. • A.D.O.T. installed two permanent variable message boards north of Sedona on SR 89A. One of the boards was installed near Lomacasi Cottages, and the other one was installed just south of Flagstaff. These message boards are used to warn drivers of unsafe driving conditions. • The SFD has a Life and Fire Safety (LAFS) outreach program that involves going to each school in the Fire District (once per year) and talking on the subject as well as disseminating information. • The SFD conducts annual outreaches at the following events/venues: Moonlight Madness, Halloween, Sedona Marathon, Senior Center, and local churches.
Yavapai-Prescott Indian Tribe	The Tribe will conduct public involvement through the following: • Integration of the Nixle Alert System and E911 for emergency alerts • Admin office reader board for public awareness • MIS cyber security trainings • EM staff will offer and complete training about area hazards. • LEPG for wildfires and other natural disasters • Prescott National Forest planning involvement • THIRA and EOP updates

Figure 90 Table 6-3: Future Public Outreach/Involvement

APPENDIX A: PLAN TOOLS

Acronyms

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

USDA .....United States Department of Agriculture
USFS .....United States Forest Service
USGS .....United States Geological Survey
WUI .....Wildland Urban Interface
YCEM .....Yavapai County Emergency Management
YCFCD.....Yavapai County Flood Control District

APPENDIX B: PREVIOUS MITIGATION STRATEGY ASSESSMENT

Previous Mitigation Strategy Assessment for Yavapai County					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Status**	**Project Lead**	**Potential Funding Source(s)**
Lynx Creek Channelization. Proposed channelization of Lynx Creek downstream of SR 69 through Fain Rd bridge. Channel will contain 100-year flood flows with gabion bank stabilization. Local asset exposure of approximately $5 million.	Flood	$2.2M	Completed	Flood Control District	Flood Control District
Beaver Creek Channel Restoration. Channel bank restoration to prevent ongoing erosion hazard to protect existing and future buildings and infrastructure.	Flood	$100K	Completed	Flood Control District	Flood Control District
Flood Hazard Mapping. Identify and map new flood hazard areas and update existing mapping in accordance with NFIP compliant requirements to protect existing and future buildings and infrastructure from flood hazards.	Flood	$1.5M	Completed on an annual basis	Flood Control District	Flood Control District
Flood Warning System. Install additional in stream, weather, and precipitation gauges in watersheds impacting Yavapai Co. To include website development and remote dial-up for public agencies.	Flood	$500K	Completed on an annual basis	Flood Control District	Flood Control District
Flood Damage Prevention, Drainage Criteria Ordinance and Stormwater Management Plan. Amend ordinances to prevent flood damage and water quality degradation and to protect existing and future buildings and infrastructure.	Flood	$100K	Completed	Flood Control District	Flood Control District
Groundwater Identification and Conservation. Establish the extent of available groundwater and coordinate growth in accordance with defined water resources. Apply water allocation/ budgeting as a growth management tool County wide.	Drought	$40K	Completed on an annual basis	Water Advisory Committee	General Fund
Neighborhood Wildfire Assessment. Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	$500K	Completed on an annual basis	Yavapai Co Firewise and Yavapai Co OEM	Self-Funded
Regional Fuels Crew. Support two full-time crews dedicated to hazard fuel reduction, and public education in the Prescott Basin and surrounding areas.	Wildfire	$3M	Completed on an annual basis	Prescott Fire & Central Yavapai Fire	USDA/FS Grants
County Fuels Crew. Support part-time road crew to perform roadside hazard fuel reduction along County roads in the interface.	Wildfire	$300K	Completed on an annual basis	Public Works	Self -Funding, and USDA/FS Grants
Fire Wise Community Programs. Develop Fire Wise programs for all communities, neighborhoods and homeowners' associations within the wildland fire/urban interface including instruction materials & facilitating partnerships with insurance agencies.	Wildfire	$15K	Completed on an annual basis	HOA's, Community Groups	Self -Funding, and USDA/FS Grants

Previous Mitigation Strategy Assessment for Yavapai County					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Status**	**Project Lead**	**Potential Funding Source(s)**
Wildfire Public Education Activities. Continue and expand Town Hall style meeting to include annual expo and continuation and expansion of the regional alert website to protect existing and future buildings and infrastructure over 10 years.	Wildfire	$100K	Completed on an annual basis	PAWUIC	Self-Funding USDA/FS Grants
Small Diameter Wood Business Recruitment. Partnership between PAWUIC and development agencies to conduct outreach and attract sustainable, small-diameter wood-based businesses into the area.	Wildfire	$1.2M	Completed	PAWUIC/ YCEM	ARRA Grants
County Wildland Mapping for State GIS. Establish and maintain a county component of the state GIS mapping system documenting forest treatments, hazard data, grants, etc.	Wildfire	$25K	Completed on an annual basis	County GIS	General Fund
Boundary Project. Develop a 270-degree defensible wildfire boundary around interface immediately to the south of Prescott.	Wildfire	$3M	Completed on an annual basis	PAWUIC/ USFS	USDA/FS Grants
Urban Search and Rescue Team Project. Develop urban search and technical rescue capability in the County through training and procurement of specialized equipment.	All	$1M	Completed	Participating Fire Depts.	Homeland Security
Ensure Water Quality. Protect water quality from contamination through development of household hazardous waste programs over ten years.	Drought; HAZMAT	$200K	Completed	YCEM	County, city, ADEQ
Personal Protection and Detection Equipment. Identify and purchase first responder advanced technology personal protection and detection equipment for chemical and biological incidents.	Chemical and Biological	$150K	Completed	county-wide Public Safety	Homeland Security
CERT Program. Citizen disaster training to form neighborhood teams as interim first responders in widespread disasters or events where communities and neighborhoods are isolated. Ten-year program.	All	$50K	Completed with annual maintenance	YCEM	FEMA
Repetitive Flood Loss Properties. Inform and coordinate property owners to flood mitigation programs such as retrofit and/or property acquisition.	Flood	$5M	Completed on an annual basis	Flood Control District	Flood Control District
Purchase and Store Rain Gages for use after a forest fire to assist in mitigating flood and mudslide losses.	Flood and Mudslide	$50K	Completed on an annual basis	Flood Control District	Flood Control District

Previous Mitigation Strategy Assessment for Yavapai County					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Status**	**Project Lead**	**Potential Funding Source(s)**
Mayer Local Drainage. Construct various flood mitigation projects to protect structures from flooding.	Flood	$30K	Completed	Flood Control District	Flood Control District
Lake Montezuma Area-Wide Drainage Plan. Area-wide planning project to determine hazard and mitigation projects for construction.	Flood	$300K	Completed	Flood Control District	Flood Control District

Figure 91 Previous Mitigation Strategy Assessment for Yavapai County

Previous Mitigation Strategy Assessment for Camp Verde					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Project Lead**	**Potential Funding Source(s)**
Enforce Adopted Building & Fire Codes. Continue to enforce Fire Code requirements for Adequate Fire Flow and Fire Access Lanes.	Wildfire	$44,000	Completed on an annual basis	Camp Verde Building Official	General Fund
Enforce Nuisance Codes for Abatement of weeds garbage and debris to create defensible spaces around existing homes and buildings.	Wildfire	$43,000	Completed on an annual basis	Community Development Director	General Fund
Implement Stormwater Master Plan. Hire an engineer to devote a portion of their time to overseeing the implementation of the Stormwater Master Plan for mitigation of stormwater and flooding hazards. Management Plan as well.	Flooding	100K	Completed	Public Works/Project Mgr.	General Fund
Uninterrupted Power System for Traffic Signals. Install battery backup power systems at major traffic intersections.	Transportation Accident	$150K	Completed	Public Works Director	General Fund
Flood Prone Property Acquisition. Inform and coordinate property owners to flood mitigation programs such as retrofit and/or property acquisition in Verde Lakes area including Verde Lakes Drive/Clear Creek Restoration.	Flooding, Fire	$100K	Completed on an annual basis	Public Works Director/Deputy Director	General Fund, County Funds FEMA HMGP
Middle Verde Area Drainage Improvements. Channelization of Middle Verde area with box culverts, retention/detention basins to remove several homes from the floodplain as reported in the Middle Verde Area Drainage Evaluation by the USACE.	Flooding	$2M	Completed	Public Works Director	FEMA HMGP / General Fund match
Maintain IGA with the County as Floodplain Managers to ensure compliance with NFIP regulations for management and review of new developments located in the floodplain in regard to issuance of floodplain use permits.	Flooding	$15,000	Completed on an annual basis	Public Works Director	General Fund
Partner with the Forest Service and Hopi Tribe to gain permission and funding to mitigate storm water impact from Forest Service properties surrounding our community in (5) identifiable sites.	Flooding, Mudslides	$4.5M	Completed	Public Works Director	General Fund match, FEMA HMGP
Construct road crossings and drainage channels at Quarterhorse Dr. and Glenrose Drive areas that drain the Camp Verde School District property, private properties and Forest Service properties North of Quarterhorse Dr. to the Diamond “S” ditch.	Flooding	$400K	Completed	Public Works Director	General Fund match, FEMA HMGP
Verde Lakes, Ward ranch Gully, and West Clear Creek Habitat, Floodplain Remediation	Flooding Wildfire	$1.5M	Completed on an annual basis	Public Works Director	General Fund match, FEMA HMGP

Figure 92 Previous Mitigation Strategy Assessment for Camp Verde

Previous Mitigation Strategy Assessment for Chino Valley					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Road 3 North and Voss Drive Drainage. Install box culverts to convey sheet flow across Road 3 North with Retention/Detention basins southwest of Voss Drive.	Flood	$250,000	Completed	Public Works Director	CIP Program
Hazard Public Education Activities. Continue and expand Town Hall style meetings, annual expos, and other public outreach. Expansion of the Town, Police, and Fire website. Distribution of educational materials related to all hazards the Town is susceptible to. 5-year cost.	All	$200,000	Completed	Police and Public Works, Chino Valley Fire District	CIP Program
Bridge on Road 2 North. Reconstruction of Bridge on Road 2 North over Santa Cruz Wash to eliminate frequent overtopping due to sedimentation. Project will prevent road closures due to heavy rains and allow uninterrupted access.	Flood	$600,000	Completed	Public Works Director	CIP Program
Strengthen Building Codes. Adopt and enforce new building codes to protect existing and future buildings and infrastructure from high wind and other natural and human caused disasters. 5-year cost.	All	$75,000	Completed with the adoption of the 2018 IBC	Community Development, Legal, and Public Works, Chino Valley Fire District	General Funds
Maintain compliance with NFIP regulations by enforcement of the FEMA floodplain management through review of new development located in the floodplain and issuance of FEMA floodplain use permits.	Flood	$75,000	Completed on an annual basis	Community Development, Legal, and Public Works	General Fund
Road 4 North Improvements. Construct an all-weather crossing at Road 4 North and Jerome Junction to provide an alternative access across the Santa Cruz Wash. – complete, move to past	Flood	$800,000	Completed	Public Works Director	Federal Grant Funds from US Dept of Comm

Figure 93 Previous Mitigation Strategy Assessment for Chino Valley

Previous Mitigation Strategy Assessment for Clarkdale					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Improve Flood Warning System on Verde River. Install gage and equipment for flood warning system in the Verde River at Tuzigoot Bridge.	Flood	$10,000	Completed	Yavapai Co Flood Control District	Yavapai County
Tuzigoot Bridge. Enlarge or replace Tuzigoot Bridge to alleviate traffic and accommodate emergency response vehicles during flooding events on the Verde River.	Flood	$28,000,000	Completed	ADOT	ADOT
Finalize PARA Study. Work with consultant or finalize the Transportation Master Plan for the Town.	Transportation Accident	$125,000	Completed	ADOT	ADOT
Review and modify International Construction Code Appendix - Property Maintenance Code to help maintain building integrity to prevent injury or loss of life and to mitigate damage to existing and future structures resulting from severe winds.	Severe Wind	$5,000	Completed on a three-year cycle	Clarkdale Community Development Dept	General Fund
Targeted Debris Removal and Wildfire Fuel Reduction. Remove overgrowth and debris around washes in the Town including the Verde River. Project to increase river capacity and reduce wildfire hazard.	Flood; Wildfire	$25,000	Completed	Clarkdale Fire District	Fire District
Enforce recently adopted International Construction Codes to prevent injury or loss of life and to mitigate damage to existing and future structures resulting from severe winds.	Severe Wind	$5,000	Completed on an annual basis	Clarkdale Community Development Dept	General Fund
Wildfire Fuel Reduction. Conduct wildfire hazard fuel reduction within and surrounding Clarkdale to reduce the risk to existing and new structures.	Wildfire	$20,000	Completed	Clarkdale Fire District	Fire District
Purchase and install backup generators to provide power in the event of a power outage related to severe wind and winter storm events. Install back up power systems for critical public services and disaster shelters in the Town.	Severe Wind; Winter Storm	$300,000	Completed	Clarkdale	General Fund Grants
Develop IGA with Yavapai County Flood Control District for establishing procedural guidelines for the implementation and enforcement of the NFIP floodplain management.	Flood	$15,000	Completed on an annual basis	Clarkdale Community Development Dept	General Fund
Yavapai County Flood Mitigation Projects. Major projects are driven by historical events and minor projects are driven by local issues	Flood	$150,000	Completed on an annual basis	Clarkdale Public Works Dept	Yavapai Co Grants

Previous Mitigation Strategy Assessment for Clarkdale					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Twin 5 Water Main Location. Replace/relocate vulnerable existing exposed above ground dual 5" water main pipelines with a minimum 12" ductile iron pipe to enhance system security and improve operating capability.	Flood, Wildfire, Terrorism, Vandalism	3,500,000	Completed	Clarkdale Utility Dept	Water Fund HUD Homeland Security Grant
89A Reservoir Site Protection. Install traffic control barricades to protect vulnerable existing reservoir tanks.	Transport Accident	30,000	Completed	Clarkdale Utility Dept	Water Fund HUD
Mescal Well Project. Additional future water supply	Water	1,200,000	Feasibility study completed. Drilling in progress with expectation to bring the well online in 2024	Clarkdale Utility Dept	Water Fund HUD
Improve Flood Warning System on Verde River by installing additional gage and equipment for flood warning system on the Verde River prior to waters reaching Clarkdale in order to have better water level and flood information for evacuations for personal and property safety.	Flood	$10,000	Completed	Yavapai County	Yavapai Co Flood Control District
Targeted Debris Removal and Wildfire Fuel Reduction. Remove overgrowth and debris around washes in the Town including the Verde River. Project to increase river capacity and reduce wildfire hazard.	Flood; Wildfire	$25,000	Completed	Verde Valley Fire District	Fire District, County, State/ Federal Grants
Wildfire Fuel Reduction. Conduct wildfire hazard fuel reduction within and surrounding Clarkdale to reduce the risk to existing and new structures.	Wildfire	$20,000	Completed	Verde Valley Fire District	Fire District, County, State/ Federal Grants
Education and awareness programs to inform and educate citizens, elected officials and property owners about hazards and potential ways to mitigate them by pre-planning.	Flood Wildfire Severe Wind Landslide Mudslide Winter Storm	$10,000	Completed	Town of Clarkdale Employees	General Fund

Previous Mitigation Strategy Assessment for Clarkdale					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Blacktopping of Sycamore Canyon Road	Flood Landslide Mudslide Winter Storm	$775,000	Completed	Yavapai County	County
Develop IGA with Yavapai County Flood Control District for establishing procedural guidelines for the implementation and enforcement of the NFIP floodplain management Yavapai County Flood Mitigation Projects. Major projects are driven by historical events and minor projects are driven by local issues. Flood mitigation projects approved by Yavapai County after presentation from the Town prioritizing projects	Flood Landslide Mudslide	$40K	Completed on an annual basis	Clarkdale Public Works Dept	Yavapai Co Grants
Annual Drainage Improvement Projects	Flood	$400K	Completed on an annual basis	Public Works Director	Flood Control District

Figure 94 Previous Mitigation Strategy Assessment for Clarkdale

Previous Mitigation Strategy Assessment for Cottonwood						
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Priority Ranking**	**Current Status**	**Project lead**	**Potential Funding Sources**
Enforce Current Building Codes. Continue to enforce building codes to protect existing and future buildings and infrastructure from severe wind damage and other natural and human-caused disasters. 5-year cost.	All	$200,000	High	Completed on an annual basis	Code Enforcement Officers	General Fund
Complete Railroad Wash Channelization Project. Complete channelization of Railroad Wash between State Route 89A to Beach Street to remove residential properties from the floodplain.	Flood	$1,000,000	Med	Complete	Public Works Utilities	Grants and General Funding
Public Education Activities. Initiate public outreach for hazard mitigation utilizing City information systems, distribution of educational materials, and neighborhood watch meetings related to all hazards. 5-year cost.	All	$5,000	Low	Complete	Police/Fire/ Developmental Services	General Fund
HazMat Transportation Enforcement. Initiating interaction with commercial vehicle safety specialists to promote the continued enforcement of rules and regulations of HazMat transport. Through spot inspections of commercial vehicles with the aid of surrounding law enforcement agencies and Motor Vehicle Division.	HazMat	$2,500	Med	Completed on an annual basis	Police Dept	General and RICCO Funds
Hazmat First Responder Training and Resource Development. Through advanced training and use of equipment first responders are better able to identify hazardous materials and protect the public.	HazMat	$1,000	Low	Completed on an annual basis	Fire Dept	General Fund or Grant funding
HazMat Code Enforcement. Ensure code compliance related to hazardous materials use, storage, and disposal in the community.	HazMat	$10,000	Med	Completed on an annual basis	Fire Dept	Grants and General Fund
Accident Reduction Details. Continuation of traffic accident mitigation by selective enforcement in high-risk areas. 5-year cost.	Traffic Accident	$35,000	High	Complete	Police Dept	General Fund
Early Warning System. Active early warning system for inclement weather and flooding conditions. Cooperative with Yavapai Co and NOAA.	All	$30,000	Med	Complete	Public Works And Police Dept	Grant Funds
Backup Power Supply for Water Distribution Systems. Obtain backup electrical generation systems for emergency operation for the water distribution system during power outages caused by severe wind or another hazard event.	Severe Wind Winter Storm	$750,000	High	Complete	Utilities	General Fund and Grant Funds
Public Safety Communication Improvements. Upgrade public safety communication systems to handle storm related operational disruptions during severe weather.	All – Response Oriented	$1,000,000	High	Complete	Public Safety (Fire Dept and Police Dept)	Grant Funds General Funds

Previous Mitigation Strategy Assessment for Cottonwood						
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Priority Ranking**	**Current Status**	**Project lead**	**Potential Funding Sources**
Eliminate Wet Crossings on Collector Streets Within the City. Replace wet crossings with structures to allow uninterrupted traffic access during flood events on 6th Street and Camino Real crossing of Silver Springs Gulch.	Flood	$20,000	High	Complete	Public Works	Capital Purchase
Targeted Stormwater Drainage Improvements. Identify repetitive flooding problems within the community and develop projects to reduce the flooding hazard. — Complete Old Town District/Del Monte Wash Channelization/Re-delineation Project. Complete channelization of Del Monte Wash between Balboa Street and 5th Street to remove residential and commercial properties from the floodplain	Flood	$50,000	High	Complete	Public Works	General Fund
Wildfire Fuel Reduction Program. Identify and remove excess wildfire fuels from targeted wildland/urban interface areas to protect existing and future buildings and infrastructure.	Wildfire	$160,000	High	Completed on an annual basis	Fire Dept and Street Dept	General Fund

Figure 95 Previous Mitigation Strategy Assessment for Cottonwood

Previous Mitigation Strategy Assessment for Dewey-Humboldt					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Antelope Meadows Commercial Center. Remove flooding risk to the residents downstream of the Antelope Industrial Park (1 mi east of SR69, on SR169) by diverting flow to the Agua Fria River. This will include constructing to capture and convey drainage in a controlled manner.	Flood	$100,000	Project terminated prior to initiation.	Dewey-Humboldt Engineering and Public Works Dept	IGA, General Fund, or HURF
Implement and Enforce building Codes. Implement and enforce council directed building codes and adopt new international codes as they become available and/or are applicable.	All	$70,000	Completed on an annual basis	Dewey-Humboldt Community Development and Bldg. Dept	N/A
Public Outreach. Educate the public on the risks resulting from fire, severe weather, and associated hazards; including recommendations on how to protect themselves and their property from damages due to natural and man-made hazards events.	Drought, Severe Wind, Fire	$5,000	Completed biennially	Dewey-Humboldt Community Development	General Fund
NFIP Compliance. Maintain compliance with NFIP regulations by enforcement of the county floodplain management ordinance through review of new development located in the floodplain and issuance of floodplain use permits.	Flood	$47,000	Complete	Yavapai County Flood Control District (through an agreement with Dewey-Humboldt)	N/A
All Weather Crossing at Prescott Street. All weather crossing of the Agua Fria River is recommended at the location of the exiting low-flow at-grade crossing along Prescott St. to improve circulation and emergency vehicle access. In addition to local studies, a 2012 Arizona Dept. of Transportation study identified the need. The Town is considering either a Bridge or Box Culverts.	Fire, Flood	$3,500,000 to $900,000 depending on solution (either a bridge or a box culvert)	Transportation study completed with 3 potential solutions to pursue.	Dewey-Humboldt Public Works Dept.	IGA, General Fund, or HURF, Possible Grants
Create multiple access points with all-weather roads on the west side of Highway 69. A 2012 ADOT study identified that Dewey Road, Prescott Dells Road, Powerline Rd, and Rocky Hill Road as good alternatives for additional routes in portion of the Town for circulation consideration.	Fire, Flood	$3,500,000 to $7,200,000	Annual review	Dewey-Humboldt Community Development and Engineering and Public Works Dept.	General Fund, or HURF, Possible Grants, Flood Control Funds
Fire Wise Community Certification. In 2016/2017 two areas of the Town became Fire wise community certified. In these areas the residents are now working to maintain defensible space for fire hazards.	Fire. Flooding, landslides	$4,000	Certification completed. Maintenance completed by residents.	Dewey-Humboldt Community Development with resident's participation.	Grant from Prescott area wildland urban interface commission

Previous Mitigation Strategy Assessment for Dewey-Humboldt					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Sources**
Installation of headwalls and spillways on Foothills Road Headwalls and spillways at two major drainage areas on a local main collector road. Installed to prevent further erosion of roadbed and to prevent damage on adjacent properties.	Flooding/ erosion	$160,000	Complete	Dewey-Humboldt Public Works Department and Yavapai County Flood Control District	Yavapai County Flood Control District
Annual Cleanup Program. This Program enables residents to dispose of excess brush, rubbish, etc. from their properties twice a year service provided by the town.	Fire	$10,000.00	Completed on an annual basis	Dewey-Humboldt Public Works Department	General Funds
Ditch and Channel Cleanup and Repair. Annually clean and repair drainage ditches and channels throughout Town.	Flooding/ Landslides/ Erosion Control	$35,000.00	Completed on an annual basis	Dewey-Humboldt Public Works Department	General Funds/ Hurf Funds/ Flood Control
Implement and Enforce building Codes. Implement and enforce council directed building codes and adopt new international codes as they become available and/or are applicable. Codes will be enforced through building inspections, permits and code enforcement portion of the Planning and Zoning office.	All Hazards	$70,000	Enforcement completed annually. Code revisions completed every3 years	Dewey-Humboldt Community Develop and Bldg. Dept	N/A
FireWise Community Certification. In 2016/2017 two areas of the Town became FireWise community certified. In these areas, the residents are now working to maintain defensible space for fire hazards.	Wildfire, Flooding, landslides	$12,000	Complete	Dewey-Humboldt Community Develop with resident's participation and then taking over the lead after starting up	Grant from Prescott area wildland urban interface commission
Annual Drainage Improvement Projects	Flood	$40,000	Completed on an annual basis	Public Works Director	Flood Control District

Figure 96 Previous Mitigation Strategy Assessment for Dewey Humboldt

Previous Mitigation Strategy Assessment for Jerome					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Source(s)**
Town Fuels Crew. Support and equip part-time wildland fire crew to perform wildfire hazard fuel reduction for prevention and suppression in cooperation with the Forest Service, mining companies and private property owners to protect existing and future buildings and infrastructure. 5-year cost.	Wildfire, Landslide/ Mudslide	$25,000	Completed on an annual basis	Fire Chief and Chief Building Official.	Wildlands fees
HAZMAT Public Outreach. Educate the public about hazardous materials safety by including information in Town newsletter and distributing flyers at Town events.	HAZMAT	$500	Completed on an annual basis	Town Manager and Fire Chief.	Town budget – general fund.
Adopt and enforce new building codes to protect existing and future buildings and infrastructure from severe wind damage and other natural and human caused disasters. 5-year cost.	All	$3,000	Completed on an annual basis	Fire Chief, Chief Building Official, Police Chief	Town budget
Repair and potential replacement of storm drain on 89A. A plugged and damaged storm drain on 1st and 89A in front of Bobby D's Restaurant – Working with ADOT.	Flood, Landslide/ Mudslide	$15,000	Complete	Town Manager, Fire Chief, Public Works Director	Grants (CDBG, FEMA, USDA, others) plus town budget
Adopt and enforce new building codes. To protect existing and future buildings and infrastructure from hazards, adoption of new building codes and enforcement will include compliance with regular annual inspections performed on existing buildings as well as initial inspections and follow up annual inspections for new construction.	All	$3,000	Completed with the adoption of the 2018 IBC.	Fire Chief, Chief Building Official, Police Chief	Town Budget

Figure 97 Previous Mitigation Strategy Assessment for Jerome

Previous Mitigation Strategy Assessment for Prescott					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Source(s)**
Improve Communications Infrastructure. Finalize construction of seven communication sites to improve emergency response communication capabilities.	All – Response Oriented	$500,000	Complete	Police Dept	GF/Grants
Wildfire Fuel Reduction. Continue wildfire fuel reduction on private/public property to protect existing and future buildings and infrastructure. 5-year cost.	Wildfire	$600,000 Annually	Completed on an annual basis	Fire Dept	GF/Grants
Improve Response Capability. Purchase additional hazardous materials mitigation equipment.	HazMat	$300,000	Complete	Fire Dept	Grants
Improve Emergency Operations Center. Purchase and install computer, audio/visual, communications, and reverse 911 equipment.	All – Response Oriented	$200,000	Complete	Fire Dept	Grants
First Responder Training and Equipment. Through advanced training and use of equipment first responders are better able to identify hazards and protect the public.	All – Response Oriented	$75,000	Completed on an annual basis	Fire Dept	Grants
Improve Low Water Crossings. Install gates, signs, and gages to prevent vehicle travel in 28 low water crossings during flooding events.	Flood	$383,731	Complete	Public Works	GF/Grants
City Hall Building Security Project. Provide security to City Hall against civil disturbance and terrorism. To include badging-entry system, and hardening glass around front office employees.	Civil Disturbance, Terrorism	$100,000	Complete	Administrative Services	Grants
Urban Search and Rescue Team Project. Improve urban search and technical rescue capability in the city through training and procurement of specialized equipment.	All – Response Oriented	$200,000	Completed on an annual basis	Fire Dept	Grants
Enforce Current Building Codes. Continue to enforce building codes to protect existing and future buildings and infrastructure from sever wind damage and other natural and human caused disasters. 5-year cost.	All	$75,000 Annually	Completed on an annual basis	Community Development	GF/Grants
Uninterrupted Power System for Traffic Signals. Install battery backup power systems at major traffic intersections to mitigate potential accidents due to power outages associated with severe weather.	Traffic Accident, Severe Wind, Winter Storm	$300,000	Complete	Public Works	GF/Grants
Wildfire Code Enforcement. Continue enforcement of wildland urban interface code. 5-year cost.	Wildfire	$75,000 annually	Completed on an annual basis	Fire Dept	GF/Grants

Previous Mitigation Strategy Assessment for Prescott					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Potential Funding Source(s)**
Replacement and protecting of existing sewer and water mains within FEMA Floodplains, which are subject to runoff.	Flooding	$9,772,611	Complete	Public Works	GF/Grants
Enforcement of 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	$75,000	Complete	Public Works	GF/Grants

Figure 98 Previous Mitigation Strategy Assessment for Prescott

Previous Mitigation Strategy Assessment for Prescott Valley					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Funding Sources**
Neighborhood Wildfire Assessment. Develop neighborhood wildfire assessment and rank at-risk neighborhoods with the goal to provide accurate wildfire information to residents and motivate them to implement personal and neighborhood mitigation measures.	Wildfire	$50,000	Completed on an annual basis	Central Yavapai Fire District (CYFD)	Grant
Wildfire Defensible Space Program. Provide funding for residents in at-risk subdivisions to create defensible space around their homes in designated high risk urban interface areas to protect existing and future buildings and infrastructure. 5-year program.	Wildfire	$500,000	Completed on an annual basis	CYFD	Grant
Town Fuels Crew. Support and equip part-time road crew to perform roadside wildfire hazard fuel reduction along roads in the interface to protect existing and future buildings and infrastructure.	Wildfire	$150,000	Completed on an annual basis	Public Works (PW)	General Fund
Emergency Vehicle Pre-Emption System. Install a traffic signal priority system for police and fire emergency response vehicles.	Response	$500,000	Complete	Police Department (PD) & CYFD	Grant
Traffic Control Devices. Obtain 2 lighted sign boards and trailer for use in providing location specific traffic control during hazard events.	Traffic Accident	$50,000	Complete	PW	Grant
Construct Agua Fria Channel flood control facilities to protect residential areas from flood damages.	Flooding	$10,000,000	Complete	PW	Flood Control District
Complete Phase 2 of the Western Drainage flood control project to protect residential areas from flood damages.	Flooding	$1,000,000	Complete	PW	Flood Control District
Construct Spouse Drainage flood control facilities to protect residential areas from flood damages.	Flooding	$1,800,000	Complete	PW	Flood Control District
Secondary Well Site Power Systems. Obtain backup electrical generation systems for emergency operation at all well sites.	Severe Wind, Power Outage	$500,000	Complete	Utilities	Impact Fees
Source Water Assessment Program for the North Well Field, Big Chino Water System and the Agua Fria Recharge Facilities.	Drought	$100,000	Complete	Utilities & Water Resources	Impact Fees

Previous Mitigation Strategy Assessment for Prescott Valley					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Funding Sources**
Uninterrupted Power System for Traffic Signals. Install battery backup power systems at 10 major traffic intersections.	Traffic Accident, Severe Wind	$300,000	Complete	PD, CYFD, PW	Grant
Town Building Security Project. Provide security to Town of Prescott Valley Complex Buildings against civil disturbances and terrorism. 2nd exit from PD Enclosed parking, bullet proof glass @ PD lobby, upgrade to larger generator at PD, bullet proof panels at Council desks and "safe haven" area, cameras @ Library & Civic Center, additional cameras at PD.	Terrorism, Civil Disturbance	$230,000	Complete	PD, PW	Grant, Bond, General Fund
Joint Police and Fire Training Center. Complete the construction of a training facility to meet the changing needs and requirements of the emergency response personnel.	Response	$7,500,000	Complete	PD, CYFD	Grants & Bond
Community Secondary Routes. Plan, design, construct secondary access routes for emergency vehicles.	All	$5,000,000	Complete	PD, CYFD	Grants, Bonds & General Fund
Maintain compliance with NFIP regulations by enforcement of the Town's floodplain management ordinance through the review of all new or substantially improved development located within FEMA delineated Special Flood Hazard Areas and the issuance of floodplain use permits.	Flood	$15,000	Completed on an annual basis.	PW / Engineering Division Mgr.	General Fund
Severe weather education. Development of severe weather education with the National Weather Service.	Wind	$1,500	Complete	Emergency Management	General Fund
Earthquake education. Development of earthquake education with the United States Geological Survey.	Earthquake	$1,500	Complete	Emergency Management	General Fund
Construct Spouse Drainage flood control facilities to protect residential areas from flood damages.	Flood	$1,800,000	Complete	PW	Flood Control District
Construct Agua Fria Channel flood control facilities to protect residential areas from flood damages.	Flooding	$10,000,000	Complete	PW	Flood Control District
Severe weather education. Development of severe weather education with the National Weather Service.	Wind	$1,500	Complete	Emergency Management	General Fund

Previous Mitigation Strategy Assessment for Prescott Valley					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Project Lead**	**Funding Sources**
Source Water Assessment Program for the North Well Field, Big Chino Water System, and the Agua Fria Recharge Facilities.	Drought	$100,000	Complete	Utilities and Water Resources	Impact Fees
Town Building Security Project. Provide security to Town of Prescott Valley Complex Buildings against civil disturbances and terrorism. 2nd exit from PD Enclosed parking, bullet proof glass @ PD lobby, upgrade to larger generator at PD, bullet proof panels at Council desks and "safe haven" area, cameras @ Library & Civic Center, additional cameras at PD.	Terrorism, Civil Disturbance	$230,000	Complete	PD, PW	Grant, Bond, General Fund

Figure 99 Previous Mitigation Strategy Assessment for Prescott Valley

Previous Mitigation Strategy Assessment for Sedona					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Primary Agency**	**Potential Funding Source(s)**
Civilian Emergency Response Team. Train and educate public on basic first response capabilities. 5-year cost.	All – Response Oriented	$84,000	Completed on an annual basis.	Sedona Fire District	General Fund
Urban Wildland Interface Training for officers, risk assessments. 5-year cost.	Wildfire	$56,000	Completed on an annual basis.	Sedona Fire District	General Fund
Provide wildland fire property assessments to homeowners and business owners to identify urban wildland interface. Assessments will be based on the currently adopted International Urban-Wildland Interface Code and the latest Sedona Wild-land Interface Map that shows priority threat areas. 5-year cost.	Wildfire	$74,000	Completed on an annual basis.	Sedona Fire District	General Fund
Keep sand and bags available to the public at the following four locations: 2070 Contractors Road, 431 Forest Road, 120 Indian Cliffs Road, and Red Rock High School. 5-year cost.	Flooding/ Flash Flooding	$35,000	Completed on an annual basis.	City Public Works Dept./ Maintenance Superintendent	City Maintenance Budget
2065 Sanborn Drive: Headwall and bank protection work at existing drainage crossing to protect the integrity of Sanborn Drive.	Flooding/ Flash Flooding	$30,000	Complete	City Public Works Dept./ Assistant City Engineer	Yavapai Co Flood Hazard Mitigation Grant Funding
Phase 2 of the Harmony/Windsong Drainage Project: Increase capacity to convey the 25-year storm under SR 89A at 2970 W. SR 89A. Capacity will increase from 400 CFS to 900 CFS.	Flooding/ Flash Flooding	$400,000	Complete	City Public Works Dept./ Assistant City Engineer	Yavapai Co Flood Hazard Mitigation Grant & City Development Impact Fees
Phase 3 of the Harmony/Windsong Drainage Project: Increase capacity and culvert the existing drainage channel between Navajo Drive and Lyric Drive.	Flooding/ Flash Flooding	$1.1M	Complete	City Public Works Dept./ Assistant City Engineer	Yavapai Co Flood Haz Mitigation Grant Funding and City Development Impact Fees
Phase 4 of the Harmony/Windsong Drainage Project: Increase capacity and culvert the existing drainage channel between Lyric Drive and Thunder Mountain Road.	Flooding/ Flash Flooding	$1.4M	Complete	City Public Works Dept./ Assistant City Engineer	Yavapai Co Flood Hazard Mitigation Grant Funding and City Development Impact Fees

Previous Mitigation Strategy Assessment for Sedona					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Primary Agency**	**Potential Funding Source(s)**
Enforcement of 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/ Flash Flooding	$76,000	Completed on an annual basis.	City Public Works Dept./ Assistant Engineer	General Fund
Improve floodplain administration under the NFIP program by using best available community information to provide base flood elevations for unnumbered "A Zones" in order to provide more detailed information on the DFIRM maps.	Flooding/ Flash Flooding	$10,000	Complete	City Public Works Dept./ Assistant Engineer	City General Fund
Improve Emergency Operations Center. Purchase and install computer, audio/visual, communications, and reverse 911 equipment.	All	$200,000	Complete	Fire Department	Grants
Replacement and protecting of existing sewer and water mains within FEMA Floodplains, which are subject to runoff. See above.	Flooding	$9,772,611	Complete	Public Works	GF/Grants
Coffee Pot Drainage Basin Improvements Project. Design and construction of 3,300 lineal feet of 72” diameter storm drain from the NW corner of the Bashas’ Shopping Center to the north end of Little Elf Drive.	Flood	$4,699,441	Complete	City Public Works Dept.	Coconino Co Flood Control Dist.
Brewer Road/Tlaquepaque Drainage Improvements Project. Design and construction of 1,400 lineal feet of 22’ wide by 8.5’ deep Redi-Rock lined channel within Soldier Wash. Includes replacement of the Portal Lane bridge and a pedestrian bridge.	Flood	$3,623,896	Complete	City Public Works Department	70% City Capital Reserves and 30% Yavapai Co Flood Control Dist.
Brewer Road Crossing Project. Design and construction of the replacement of the existing Brewer Road Crossing of Soldier Wash.	Flood	$951,850	Complete	City Public Works Department	77% Coconino Co Flood Control Dist. and 23% private partnership
Juniper Hills Area Drainage Project. Design and installation of storm drainage improvements in the Juniper Lane area.	Flood	$701,000	Complete	City Public Works Department	Coconino County Flood Control District
Mystic Hills Sewer Lift Station Access Improvement Project. Design and construction of a new drainage crossing that provides access to a few homes and a city sewer lift station.	Flood	$240,000	Complete	City Public Works Department	85% Coconino Co Flood Control Dist. and 15% City Capital Reserves

Previous Mitigation Strategy Assessment for Sedona					
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Current Status**	**Primary Agency**	**Potential Funding Source(s)**
Back O' Beyond Low Water Crossing Improvement Project. Design and construction of a culvert structure to replace the existing low water crossing.	Flood	$720,000	Complete	City Public Works Department	Yavapai County Flood Control District
Oak Creek and Tributary Restudy. The Oak Creek Floodplain was originally mapped in the late 1970s. Since then, small reaches have been reviewed, but there has been no study of the entire floodplain. Modeling software has improved and better methods for developing more accurate topography have been developed. This restudy will improve floodplain administration under the NFIP by providing best available community information and will establish base flood elevations for some unnumbered "A Zones" in order to provide more detailed information on the DFIRMs.	Flood	$1,199,990	Complete	Yavapai County Flood Control District	FEMA CTP Grant

Figure 100 Previous Mitigation Strategy Assessment for Sedona

Previous Mitigation Strategy Assessment for Yavapai-Prescott Indian Tribe					
Description	**Hazard(s) Mitigated**	**Est Cost**	**Current Status**	**Project Lead**	**Funding Sources**
Educate tribal community on the hazards of flooding/flash flooding through an informational / outreach meeting to be conducted at least once in the next year	Flooding/ Flash Flooding	$500	Completed on an annual basis.	YPIT Environmental Protection/ Emergency Management	GAP
Educate tribal community on severe wind through an informational / outreach meeting to be conducted at least once in the next year.	Severe Wind	$500	Completed on an annual basis.	YPIT Environmental Protection/ Emergency Management	GAP
Clearing of overburden and brush and establishing defensible space on tribal properties.	Wildfire	$12,000	Completed on an annual basis.	YPIT Environmental Protection/ Emergency Management	BIA
Educate tribal community on winter storm hazards and how to deal with them through an informational / outreach meeting to be conducted at least once in the next year.	Winter Storm	$500	Completed on an annual basis.	YPIT Environmental Protection/ Emergency Management	GAP

Figure 101 Previous Mitigation Strategy Assessment for Yavapai-Prescott Indian Tribe

APPENDIX C: JURISDICTION ADOPTION LETTERS