

aesthetic values, enhancement of recreation opportunities and public access), consolidation of lands for efficient management, implementation or accommodation of existing or planned land uses or plans and fulfillment of public needs.

There are nearly two million acres of USFS land within the eastern third of Yavapai County and large portions of the Central Region. The majority of those USFS properties are contained in Prescott National Forest's approximately 1.2 million acres, which adjoins both the Central Yavapai Region and the Verde Valley area. East of the Verde Valley is the Coconino National Forest. The Verde Valley cities, towns and unincorporated communities are almost entirely surrounded by the two National Forests. The Tonto National Forest (to the south of the Prescott) and the Coconino National Forest are in the southeast corner of Yavapai County. A small portion of the Kaibab National Forest is north of the Prescott National Forest, east of Ash Fork and south of I-40.

The Prescott National Forest consists of three ranger districts (Bradshaw, Chino and Verde) that run diagonally north to south through central Yavapai County. This area includes eight wilderness areas totaling 104,000 acres, eleven campgrounds and about 450 miles of trails.

The Red Rock Ranger District in the Coconino National Forest covers the northeastern portion of the County, adjacent to Coconino County. This area includes six wilderness areas totaling 156,981 acres, six campgrounds, and many miles of trails.

#### **4.5.2 Arizona State Trust Lands**

Although the Arizona State Land Department (ASLD) controls 25% of the County's area, most of it is held in trust for Arizona's educational and other institutions, and is not dedicated or reserved for public open space or recreation. Under State charter, ASLD has the responsibility on behalf of its beneficiaries to assure the highest and best use of these trust lands. The Federal enabling act and the Arizona State constitution mandate that fair market value must be obtained from all trust land transactions, which include both sales and commercial leasing. All revenues derived from the sale of trust lands are placed in a fund that benefits fourteen (14) beneficiaries. Given this well-defined mission, development can and does occur on State-owned trust land.

#### **4.5.3 National Park Service**

The National Park Service (NPS) plans for one purpose - to ensure that the decisions it makes are as effective and efficient as possible in carrying out the NPS mission. Their mission is to preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education and inspiration of this and future generations, and to cooperate with partners to extend the benefits of resource conservation and outdoor recreation throughout the country. The NPS also helps administer dozens of affiliated sites, including the National Register of Historic Places, National Heritage Areas, National Wild and Scenic Rivers, National Historic Landmarks and National Trails.

East Yavapai County enjoys four National Monuments, as shown in Table 5.2. Tuzigoot National Monument, northeast of the Town of Clarkdale contains a 110-room prehistoric site on 42 acres. The Montezuma Castle and the Montezuma Well National Monuments, on 840 acres near Camp Verde, contain 5-story, 20-room prehistoric cliff dwellings. The

Agua Fria National Monument is spread over approximately 71,000 acres, east of I-17 between Cordes Junction and Black Canyon City. It has some 450 prehistoric sites, historic ruins and diverse habitat areas.

**Table 4.2 National Monuments in Yavapai County**

<b>Monument Name</b>	<b>Location</b>	<b>Acres</b>	<b>Amenities</b>
Tuzigoot National Monument	Northeast of Clarkdale, from SR 89A/Main Street, Cottonwood	42	110 room prehistoric site, visitor center/exhibits, restrooms
Montezuma Castle/Montezuma Well National Monuments	Southeast of I-17, north of Camp Verde	840	5-story, 20-room prehistoric cliff dwelling, visitor center/ museum, restrooms
Agua Fria National Monument	East of I-17, Cordes Junction to Black Canyon City	71,000	450 prehistoric sites, historic ruins, diverse habitat
<b>Approximate Total Area of Monuments</b>		<b>71,882</b>	

#### **4.5.4 Bureau of Land Management (BLM)**

The Bureau of Land Management (BLM) preserves open space by managing public lands for multiple uses including recreation, livestock grazing and mining, and by conserving natural, historic, cultural, scenic and other resources found on public lands. The disposal of public lands is authorized through sales and exchanges, as directed by the 1976 Federal Land Policy and Management Act. Pursuant to the Recreation and Public Purposes Act, BLM lands may be titled to a county or to a municipality to operate and manage as parks and recreational open space through a land patent.

The Department of Interior: BLM governs almost one-half million acres of land within Yavapai County. There are five designated wilderness areas and the Agua Fria National Monument on BLM properties in western and central Yavapai County. Recreational uses include camping by permit in designated Long-Term Visitor Areas. The Lake Pleasant/Hieroglyphic Mountains Area in south Yavapai County, from the Prescott National Forest to Lake Pleasant and Wickenburg, contains numerous Off-Highway Vehicle trails on both BLM and State Trust lands. In April of 2010, the BLM approved the Bradshaw-Harquahala Record of Decision and Approved Resource Management Plan. This plan provides guidance for future land use decisions, and management of the mineral estate within the management area.

#### **4.5.5 Arizona State Parks**

Four Arizona State Parks totaling more than 600 acres are located in close proximity to the Verde Valley communities. Dead Horse Ranch State Park is a large park of 897 acres, with hiking and equestrian trails, ramadas, picnicking areas, fishing, canoeing, 45 full-service campsites and other amenities. Red Rock State Park, located 5 miles west of the City of Sedona, is a sizeable park of 286 acres known for its beautiful red rock outcroppings and educational facilities, as well as for hiking and picnicking. Jerome State Historic Park

within the Town of Jerome, and Ft. Verde State Historic Park in the Town of Camp Verde, each contain historic buildings relating to Arizona’s Territorial and early Statehood days.

The Granite Mountain Hotshots Memorial State Park was dedicated in 2016 as a place to remember the 19 Granite Mountain Hotshot Firefighters who were lost on June 30, 2013, while fighting the Yarnell Hill Fire. You can hike the trail to better understand the experience of these men, as well as to appreciate the beauty of the town of Yarnell and the surrounding areas. The trail extends from the parking lot trailhead up to the overlook where you'll see sweeping views in every direction, it then continues down to the Memorial Trail, where you can pay your respects at the site where the Hotshots were recovered. The hike is approximately 3.5 miles long from the trailhead to the Fatality Site, for a full length of about 7 miles.

#### **4.6 Yavapai County Parks**

In addition to the thousands of acres of Federal and State recreation lands, Yavapai County provides parks throughout the County - mostly in the unincorporated areas. There are twelve County parks, mostly scattered throughout the Central Region. Most County parks have been developed cooperatively with community and city/town residents. Some park properties are provided by subdivision developers or by the BLM. Partial funding of park construction often comes from Arizona State Parks Department grants.

The largest County Park is Pioneer Park (shown in Figure 5.1). It is almost 300 acres and is located central to the Central Yavapai Region. This park land was acquired from the BLM, and has been partially developed through a partnering with the City of Prescott, recreation organizations and citizen volunteers. Pioneer Park’s facilities support various recreational activities with 4 baseball/softball fields, two soccer fields, hiking/equestrian trails and picnicking areas.

**Figure 4.1: Park in Yavapai County**



Three other County parks, Quail Ridge in Chino Valley, Tenderfoot Hills in Congress and High Desert Park in Black Canyon City, have ball fields, playgrounds and picnic equipment. The remaining County parks primarily contain picnic and playground facilities.

In the eastern parts of Yavapai County, there are County parks in the communities of Cordes Junction, Mayer, Spring Valley and Black Canyon City. Windmill Park and five other County parks have been partially funded through grants received from the Arizona State Parks Department. Table 5.3 summarizes the Yavapai County Park locations, sizes and amenities.

**Table 4.3: Yavapai County Park Locations, Sizes and Amenities**

<b>Park name</b>	<b>Location</b>	<b>Acres</b>	<b>Amenities &amp; Development status</b>
Castle Court Park	Prescott Valley	5.16	Playground equipment, ramada with picnic tables, restroom, barbeque grill
Flora Mae Ludden Park	Yarnell	2.98	Playground equipment, picnic tables, trail, restrooms, basketball court
Henry Cordes Park	Cordes Junction	59.89	Playground equipment, large ramada with three picnic tables, three small ramadas/picnic tables, trails, restrooms, basketball court
High Desert Park	Black Canyon City	89.71	Community meeting building, playground equipment, one baseball field, trails, sand volleyball court, ramadas, restrooms
Kyllo Park	Spring Valley	3.85	Playground equipment, ramadas/picnic tables, barbeques, 1/2 basketball court, nature/fitness trail, restrooms
Mayer Centennial Park	Mayer	4.25	Playground equipment, restrooms, ramadas with picnic tables, basketball court
Morgan Ranch Nature Park	Prescott	14	One-mile trail, picnic table, benches
Pioneer Park	Prescott	280	Baseball/softball fields, soccer fields, trails, food service, ramadas with tables, restrooms, in-line hockey court
Prescott Country Club Park	Prescott Valley	7	Undeveloped
Sycamore Community Park	Lake Montezuma	3	Two picnic tables, benches, walking trails, restrooms, next to Beaver Creek
Tenderfoot Hills Park	Congress	19.07	Two softball fields, playground equipment, four ramadas with picnic tables, restrooms, basketball court
Windmill Park	Cornville	4.59	Playground equipment, multipurpose playfield, horseshoe & volleyball pits,

			ramadas with picnic tables, pond, restrooms, trail, next to Oak Creek
	<b>Parks Total:</b>	<b>493.5</b>	
Courthouse Plaza	Prescott	4.5	Historic Gazebo, picnic tables, cultural activities
	<b>Grand Total</b>	<b>498</b>	

#### 4.7 County and Regional Trail Networks

With the abundance of natural environmental beauty in Yavapai County, there has been much desire expressed by residents for trails, especially for hiking and equestrian purposes. The hard work of numerous volunteers, supported by governmental officials has resulted in both county-wide and regional planning efforts for a future interconnected trail system. Many trails have been adopted and developed by various agencies in the on-going implementation of the County goal.

It is a goal of the County to detail an inventory of existing trails that transverse the County and are recognized or maintained by a land management agency, such as the U.S. Forest Service. Many primitive trails (hiking or equestrian) lie within designated wilderness areas that are closed to bicycles and other forms of wheeled transportation. The County may analyze connections to trails and trailheads to be closer to where people live during a development review process.

Yavapai County will discuss access to regional trails during project reviews. Developers submitting proposals should work with the County to coordinate with federal agencies, sovereign tribal nations and other appropriate agencies to address these needs. In many cases, access can be provided through trail easements that connect new developments to adjacent open space, natural areas and parks.

**Figure 4.2: A Trail Easement That Connects to Adjacent Open Space**



### **4.7.1 Regional Trail Networks**

The Towns of Chino Valley, Prescott and Prescott Valley, as well as volunteer groups, are working together to create a regional trail and pathways system.

One of the tri-city regional trail networks is a rail-to-trails project, known as the Peavine Trail. Currently, this is an 11.9-mile trail system that runs along the former Santa Fe Railroad bed originally built in 1893 along Watson Lake and through the Granite Dells area. Extensions of the Peavine Trail on other former rail beds extend to the Iron King Mine trail in the Town of Prescott Valley, and there are plans to connect to Chino Valley. Portions of the completed Peavine Trail will run through areas of unincorporated Yavapai County as well as the three municipalities in the region.

Additionally, provisions for alternative transportation have been adopted in municipal areas, such as bicycle, horse, and multi-purpose lane installations on major streets or in separated pathways, to provide interconnected travel routes within regions. Some examples of municipal/regional trail systems are Prescott's Parks/Trails, Prescott Valley's Pedestrian/Bicycle System and Sedona's Trails/Urban Pathways. The Town of Chino Valley is currently working on a Master Trails Plan, which will link up to the surrounding communities' trail systems, including to the Verde Valley. Details are in each municipality's General Plan.

### **4.7.2 Regional Trail Partnerships**

Other regional trail systems involve partnerships of Federal, State, County and municipalities. Three regional trail systems that exemplify these partnerships are the Prescott Circle Trail, the Dead Horse Trail System and the Black Canyon Trail.

#### **4.7.2.1 The Prescott Circle Trail**

The Prescott Circle Trail is a network of non-motorized public trail systems that creates a 56-mile loop around the Prescott basin. Segments are administered by the Prescott National Forest, Yavapai County, the City of Prescott and Embry Riddle Aeronautical University. The Prescott Circle Trail includes and connects to many trail networks throughout the Central Yavapai Region, with 15 trailheads along its length.

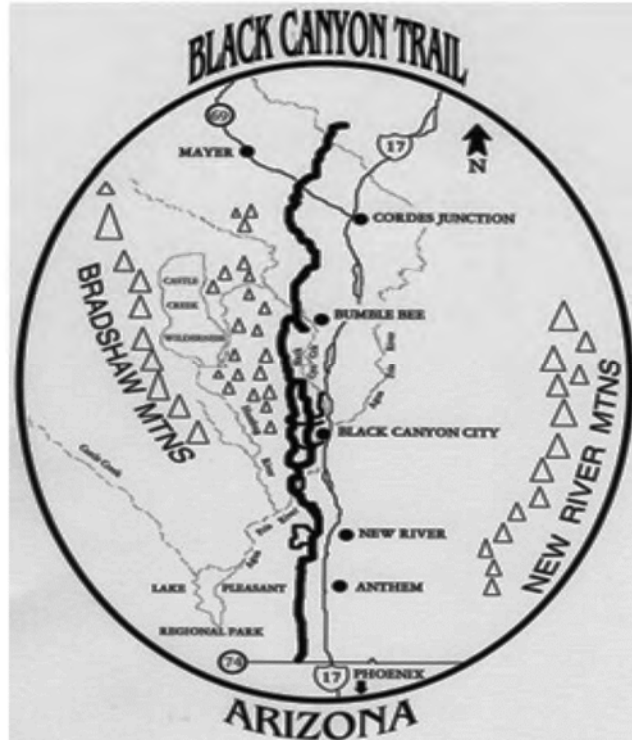
#### **4.7.2.2 The Dead Horse Trail System**

The Dead Horse Trail System, in the Verde Valley, is administered by the Arizona State Parks Department and Coconino National Forest. The trail system begins along the Verde River Greenway in Dead Horse State Park, a scenic, water-based park which offers access to the Verde River. The Park provides picnicking, full-service camping, canoeing, fishing, hiking and equestrian trails. The State Park trails connect to the Dead Horse Trail System in a 7.2-mile loop around Raptor Hill, Thumper and Lime Kiln Trails, as well as to other trails in the Coconino National Forest, providing a regional trails network. Currently, there are proposals with the Coconino National Forest to expand this trail system.

#### **4.7.2.3 The Black Canyon Trail**

The Black Canyon Trail is a non-motorized trail approximately 78 miles long, stretching from the Carefree Highway (AZ SR 74), northward along the base of the Bradshaw Mountains, beyond SR 69 near the Town of Mayer to the Prescott National Forest. The development and maintenance of this trail system is organized by the Black Canyon Trail Coalition in cooperation with the BLM, NPS and the USFS.

**Figure 4.3: The Black Canyon Trail**



#### **4.7.2.4 Greenways**

Dedicated public parks, trails, greenways and other conservation areas are primarily maintained by the Arizona State Parks Department, Yavapai County, cities and towns. Private individuals, organizations and homeowner associations also provide open spaces, trails and parks. Participation by private property owners in trail networks is an important part of several municipal greenway programs. Greenway projects aim at preserving and enhancing areas along creeks and river beds, while providing trail connections to parks, schools and other community facilities.

The Prescott Greenways project encompasses approximately 10 acres which extends from the Downtown area to Yavapai College, following Miller and Granite Creeks. Currently, there is a 2.5-mile multi-use trail with plans to extend it up to 3 miles.

The Verde River Greenway State Natural Area encompasses nearly 480 acres along 6 miles of the Verde River between the Tuzigoot and Bridgeport bridges. This is a natural area adjacent to Dead Horse State Park that has been created to preserve the river in its natural state. There have been other land acquisitions along the Verde River to extend the Verde Greenway, with the goal of preserving the Verde River and creating an interconnected trail system along the river.

#### **4.7.2.5 Collaborative Management**

In September of 2009, in a collaborative effort, Tom Vilsack, the Secretary of Agriculture, Prescott National Forest, local to national professionals, different landowner types and jurisdictions, and All-lands Management initiated a sustainable recreation planning process to serve as a catalyst for a landscape scale “all lands, all hands” approach. The

goals is to address common recreation challenges and enhance the joint capacity of land managers, communities and recreationalists to implement shared recreation goals. Goals and Strategies were developed through the collaborative process, with input from a wide cross section of community members, recreation interests, as well as local government and State and Federal agencies.

Since 2015 federal funds in the amount of \$2.2M have been set aside to complete this work. Private, local and State resources will provide nearly \$1.5M in matching funds in the form of treatments of dense forests, woodlands and grasslands. Work across ownership boundaries will include prescribed burning, mastication, hand thinning, and tree shearing over many hundreds of acres in the Prescott Basin.

### **4.7.3 Other Regional/State-Wide Trails**

In addition to the rapidly expanding network of nonmotorized trails throughout Yavapai County, there is a growing interest in Off-Highway Motorized Vehicle (OHV) trails. As noted previously, there are OHV designated trails in the County on State Lands maintained by the Arizona State Parks Department. Many of these trails also run through BLM and USFS properties, due to the checkerboard pattern of ownerships. An OHV trail network has been created in the “Great Western Trail”, (not to be confused with “The Arizona Trail”, a non-motorized trail network located in eastern Arizona, outside of Yavapai County). The Great Western Trail’s alignment covers five western States, including Arizona, from Mexico to Canada. It is a corridor consisting of a series of existing back roads, for motorized and non-motorized leisure touring.

Three segments of the Great Western Trail have been dedicated within Arizona, comprising a total of 800 miles. This includes 80 miles through the Prescott National Forest in Yavapai County. The Great Western Trail enters the County at its south boundary, east of Black Canyon City and I-17 in the Tonto National Forest. It then meanders northerly through the Prescott National Forest, crossing I-17 at its junction with SR 169. The Trail then meanders northwesterly, around Mingus Mountain; then northerly through Perkinsville to the Kaibab National Forest at the Coconino County boundary. Segments of the Trail use existing Yavapai County and USFS primitive roads. A goal of the volunteer organization, the Arizona Great Western Trail Association, Inc., is to have all segments of the trail “adopted” by clubs, organizations and individuals for stewardship.

A publication of leisure tours for conventional motorized vehicles in the Central Yavapai Region was recently prepared by the Yavapai Heritage Foundation, Prescott. *Forest & Grasslands: A History of Living with the Land* describes four road trips designed for the average motor vehicle with some conditions requiring 4-wheel drive, using existing State, County, municipal and USFS roads. The Forest and Grasslands Tours allow for appreciation of Yavapai County’s history, as well as its grasslands and forests.

## **4.8 Regional Open Space Preservation and Acquisition**

### **5.8.1 The Arizona Preserve Initiative**

The Arizona Preserve Initiative legislation and amendments were passed by the State legislature and approved by voters during the late 1990’s. The Preserve Initiative provides a process for the conservation of State Trust Lands within cities and towns, or within one



mile of cities under 10,000 population, or within three miles of cities over 10,000 population which are nominated and reclassified for conservation.

Two State Trust areas in Yavapai County have been petitioned and reclassified as suitable for conservation. The 1,830 acres on Glassford Hill was considered eligible for conservation based on its role in early Arizona military history, its grassland habitat for Pronghorn and other wildlife, and its scenic vistas located between two fast growing urban areas. Petitions for Glassford Hill Preserve were jointly filed by the City of Prescott and the Town of Prescott Valley. The 1,560 acres of the Badger Mountain area, located immediately southeast of the City of Prescott, is abutting the Prescott National Forest. Petitions for Badger Mountain Preserve - based on eligibilities similar to those of Glassford Hill - were filed by the Open Space Alliance of Central Yavapai County.

In May 2022, the Prescott City Council approved an intergovernmental agreement (IGA) with Yavapai County. The purpose of the IGA was to create a regional park for outdoor recreation. This includes hiking trails that link to various trails in Prescott and Prescott Valley. The acquired land is approximately 3,300 acres of Arizona State Trust Land on and around Glassford Hill.

#### **4.8.2 Other Preservation/Acquisition Methods**

For the past several years, regional open space efforts in the Verde Valley have been ongoing. Through the efforts of community leaders and planners, studies and forums have been conducted. In November of 2006, the Yavapai County Board of Supervisors adopted the Verde Valley Regional Land Use Plan, which expressed the desire for protection of open spaces. This Plan referred to the Sedona Academy's *Implementing a Verde Valley Open Space Plan, 2002 Forum* document which discussed potential methods for acquiring regional Open Space with representatives of the Prescott and Coconino National Forests, Yavapai County and Verde Valley area community leaders. Strategies included partnering with State and Federal agencies or non-profit organizations such as the Nature Conservancy, Heritage Fund and the Arizona Land Trust.

The use of conservation easements which prohibit development of private properties through the purchase of development rights is another implementation tactic. Other methods include grass roots and governmental leadership, volunteer organization efforts, citizen participation and voter approvals of special taxes, among others. Intense grass roots efforts by volunteers and strong citizen participation is a method that has accomplished the creation of the Watson Woods Riparian Preserve and the acquisition of Watson and Willow Lakes in Prescott. These open space acquisition areas were the result of Prescott voters approving financing through bonds and sales taxes. Other open space parcels in the Granite Dells and Thumb Butte areas have also been procured similarly.

The Nature Conservancy and its partners have conserved nearly 6,000 acres along the Verde River's headwaters and the Verde River Greenway Natural Area in the Verde Valley. This has been a collaborative effort to conserve the Verde River; one of the Southwest's few remaining free-flowing rivers. The Verde River is an important water source for people and wildlife along its 189-mile course, including communities in the Verde Valley and in the Phoenix metro area. Three of the most recent purchases are the Verde Springs property, in conjunction with Arizona Game and Fish (consisting of 293 acres) which was then combined with the Upper Verde River Wildlife Area, the Shield Ranch (consisting of 306 acres at the confluence of the Verde and West Clear Creek) which will possibly be

transferred to the U.S. Forest Service, and the Rockin' River Ranch (consisting of 209 acres across from the Shield Ranch along the Verde River) which was transferred to State Parks.

Government leadership for open space and recreation acquisition is exemplified by the Yavapai County Board of Supervisors' role enabling the use of almost 1000 acres for Pioneer Park from undeveloped property of the Bureau of Land Management. Commitment to recreational development for County residents has been ongoing, in keeping with BLM guidelines at Pioneer Park.

Another method of preserving properties for open space is through the use of the Yavapai County's Planned Area Development (PAD) Overlay Zoning District. PADs encourage developers to set aside and dedicate a minimum of 25% of the development property for open space. The PAD Ordinance offers the incentive of allowing smaller homesites than would be permitted by the existing zoning classification in return for permanently dedicating open space areas. Many master planned communities have been approved throughout the County as PAD's, providing reserved open space and recreation areas.

### **4.8.3 Arizona State Parks Heritage Fund**

The Arizona Heritage Fund was created in 1990 as a voter-initiative which passed with over 62% majority. It directed \$10 million annually from the state lottery to the State Parks Heritage Fund, to be used for local, regional, and state parks, trails and open spaces and cultural heritage sites.

In 2010, the state legislative majority decided (as part of their plan to address severe budget shortfalls during the Great Recession) to repeal the State Parks Heritage Fund. In the 2021 session, a bill to finance the fund received strong public support. Through the final budget negotiation process between the House, Senate, and the Governor in June of 2021, the outcome was a one-time appropriation of \$5 million for Fiscal Year 2022. On June 28, 2022, the Governor signed the 2022/2023 budget which included a one-time appropriation of \$2.5 million to fund the Arizona State Parks Heritage Fund.

## **4.9 Open Space Goals and Policies**

### **Goal 1: Preserve and protect natural open space**

- **Policy 1a:** Collaborate with Prescott National Forest and Coconino National Forest toward Sustainable Recreation Planning to reserve desirable public lands for recreation, open space protection of wildlife habitats and buffering of residential areas.
- **Policy 1b:** Work to preserve wildlife corridor connectivity between open spaces within new and existing developments, in support of the 2011 Yavapai County Wildlife Connectivity Assessment and the 2006 Arizona Wildlife Linkages Assessment.
- **Policy 1c:** Employ Transfer of Development Rights to preserve open space, ranching and agricultural resources in underdeveloped rural "sending" areas, in exchange for development rights within designated "receiving" Growth Areas, which are more suitable for dense development when available.
- **Policy 1d:** Encourage conservation easements on both public and private lands to protect farmland, rangeland, wildlife habitat, watershed areas, riparian corridors, water quality, flood control, and habitat for sensitive plant and animal species.

- **Policy 1e:** Encourage land owners to use Conservation Easements to preserve watershed areas, riparian corridors, wildlife corridors, habitat for sensitive plant and animal species and farmland.
- **Policy 1f:** Encourage the continuation of agricultural operations, such as ranches, farms, vineyards and wineries.
- **Policy 1g:** Discourage development in environmentally sensitive locations such as floodplains, view sheds and wildlife corridors.
- **Policy 1h:** Work with the 1996 Arizona Preserve Initiative toward conservation reclassification of State Trust Lands near incorporated areas.
- **Policy 1i:** Collaborate with Federal and State officials to curb illegal occupancy of public land.
- **Policy 1j:** Protect critical environmental and culturally important areas on public land.

## **Goal 2: Preserve open space within developments**

- **Policy 2a:** Request new developments to preserve scenic views and mountain vistas, wildlife corridors, riparian areas, watercourses and associated floodplains.
- **Policy 2b:** Encourage property owners to preserve historic access to public lands through their property.
- **Policy 2c:** Encourage the use of clustered development or conservation subdivisions to preserve open space.
- **Policy 2d:** Request that a minimum percentage of the property within a subdivision be maintained as open space, or as a conservation area.
- **Policy 2e:** Request developers to designate their open space as a contiguous tract, rather than as unconnected small parcels.
- **Policy 2f:** Encourage developments to provide more open space for recreational opportunities and preservation of the site's natural features.
- **Policy 2g:** Encourage new developments to use conservation easements to preserve open space within the development in its naturally landscaped state.
- **Policy 2h:** Encourage the preservation of wildlife corridor connectivity between open spaces in new and existing developments, in support of the 2011 Yavapai County Wildlife Connectivity Assessment and 2006 Arizona Wildlife Linkages Assessment.

## **Goal 3: Preserve and enhance recreational, cultural, historic and educational opportunities**

- **Policy 3a:** Prioritize the preservation of streamside recreational opportunities, such as swimming, kayaking, canoeing, rafting, and fishing.
- **Policy 3b:** Collaborate with rural communities who are creating local community parks to ensure that those parks meet standards that will allow them to eventually be maintained as county parks.
- **Policy 3c:** Work with communities to maintain and improve county parks and trails throughout the county.
- **Policy 3d:** Promote and support non-profit volunteer groups that work on conservation, parks and open-space projects.

## **Goal 4: Create regional networks of trails to interconnect open spaces and recreational areas.**

- **Policy 4a:** Collaborate with other jurisdictions, communities, local citizen groups, tribal nations, the Prescott National Forest and the Coconino National Forest to

improve, extend and interconnect existing equestrian, hiking, and biking trails across the county to provide regional trail systems, and to employ those trail systems to interconnect community parks and county parks.

- **Policy 4b:** Request new developments to provide trail access to the existing and proposed regional trail system.

#### **4.10 Open Space Recommendations**

- Update zoning and development code standards to favor developments with more open space, recreation opportunities and preservation of the site's natural features.
- Update subdivision codes to maintain a minimum percentage of a property as open space or conservation area. That recognizes agricultural lands, open space, and scenic view sheds which provide economic, social and environmental benefits.
- Employ methods (such as transfer of development rights and conservation easements) to preserve natural open space on private land, including farmland, riparian areas and wildlife corridors in perpetuity.
- Discourage development in environmentally sensitive areas such as floodplains, view sheds and wildlife corridors.
- Encourage large residential projects to use cluster development or the conservation subdivision alternative to preserve open space.
- Coordinate with the Arizona State Land Department, the Arizona Department of Transportation and tribal nations for the acquisition of easements to provide and enhance regional trail connectivity.

#### **4.11 Resources**

- <https://modernconservationist.com/sustainable-vs-social-trails-why-you-should-ignore-psychology-and-take-the-road-most-traveled/>
- <https://www.azwatchwildlife.com/>
- <https://www.fs.usda.gov/recarea/kaibab/recarea/?recid=80400>
- <https://www.prescott-az.gov/prescott-city-council-approves-intergovernmental-agreement-for-glassford-hill-open-space/>
- <https://www.prescott-az.gov/recreation-area/prescott-peavine-national-recreation-trail-2/>
- <https://www.prescott-az.gov/recreation-area/prescott-circle-trail/>
- <https://digitalcommons.humboldt.edu/cgi/viewcontent.cgi?article=1086&context=etd>
- <https://azstateparks.com/hotshots/>

## **5.0 Water Resources**

### **5.1 Introduction**

This Water Resources Element is intended to comply with Arizona Revised Statutes (ARS) §11-804(B)(3) by addressing; (a) known water supplies, (b) current and future water demands, and (c) an analysis of how future demands will be served by existing or additional water supplies. Yavapai County is not a water service provider and is not providing new hydrogeological studies for the purpose of this element. This element includes a summary of existing water supplies, with descriptions of the relevant hydrogeologic and regulatory/management context, current water use information with a projection of future water demands and Goals, Policies and Recommendations developed through a public participation process.

Yavapai County is known worldwide as a recreational destination, with beautiful red rocks, forests, flowing rivers, and a thriving rural community. However, uncontrolled growth, with its demands on our finite water supplies, threatens the future of our natural open spaces as well as community sustainability.

An adequate supply of clean water is one of the most serious issues Yavapai County faces in planning for the future. Climate change, increased development, and the needs of a growing population all factor heavily into determinations of water adequacy. The County must ensure that the quality and quantity of its water supplies meet future demands. To move toward a more water-secure future, the County must further its efforts toward long-range planning, promoting water conservation and reuse, fostering of cross-jurisdictional partnerships, and amending water policies where practical.

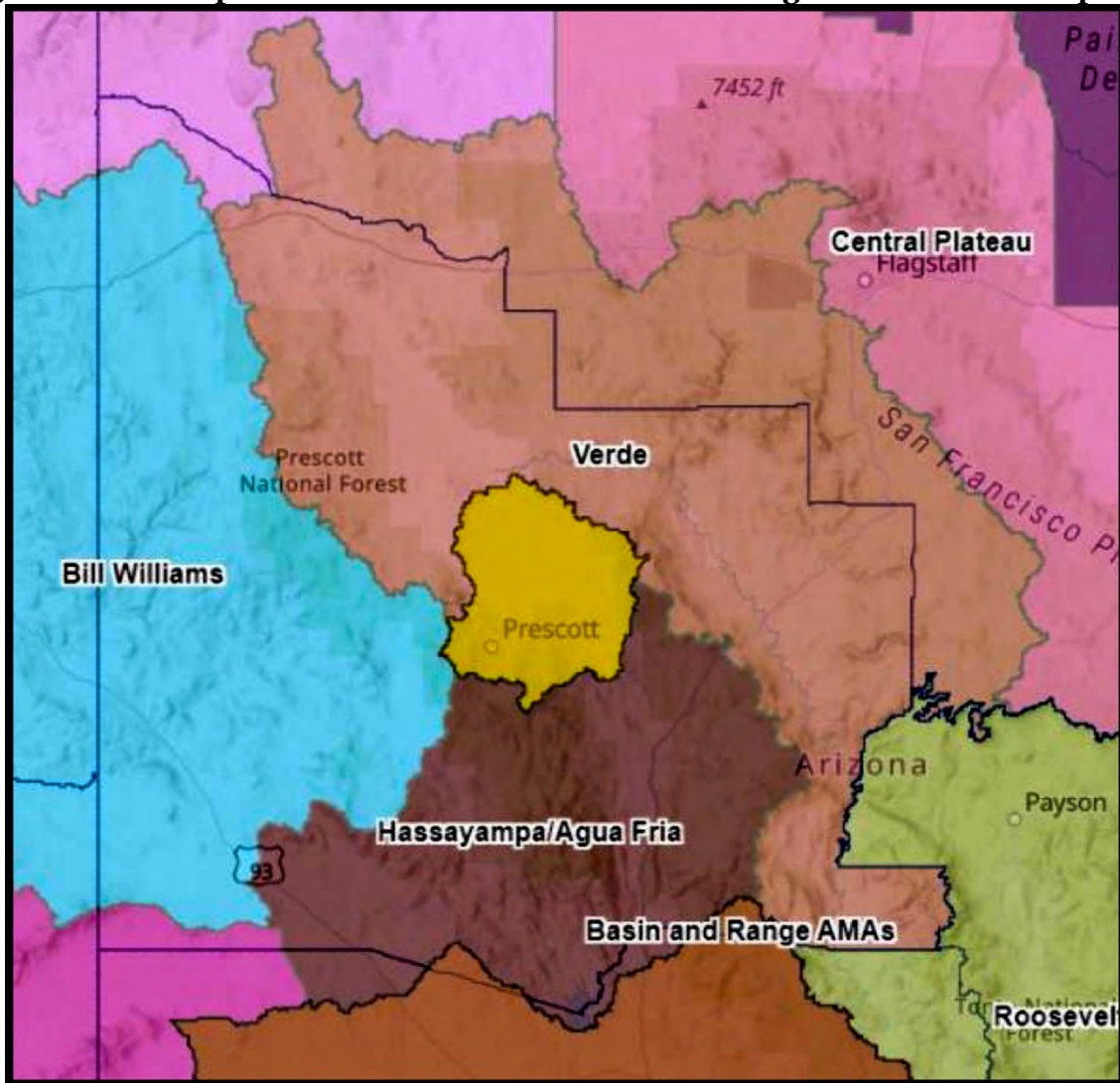
### **5.2 Overview of Water Supplies**

Yavapai County includes portions of many important watersheds and groundwater basins within Arizona. The County's water supply comes from three sources: surface water, groundwater, and effluent/reclaimed water. The following is an overview of each source by watershed/planning area within Yavapai County, and is based largely on the Arizona Department of Water Resources (ADWR)'s 2014 report: *Arizona's Next Century: A Strategic Vision for Water Supply Sustainability*, which provides the most recent comprehensive summary of water resources available within Yavapai County. The ADWR Planning areas were used to organize the following sections.

#### **5.2.1 Surface Water**

The western portion of Yavapai County is within the Bill Williams Watershed (see Figure below) Perennial streams within the watershed area include the Bill Williams River, Santa Maria River, Big Sandy River, and Burro Creek. Surface water from springs near the Town of Bagdad provide municipal and industrial supplies for the town of Bagdad and the Bagdad mine. (ADWR, 2014).

**Figure 5.1: Arizona Department of Water Resources Planning Areas within Yavapai County.**



The central/southern portion of Yavapai County is within the **Hassayampa/Agua Fria Watershed**. The two primary surface water features in the watershed are the Agua Fria and Hassayampa Rivers. A main tributary of the Agua Fria is Lynx Creek. The Agua Fria River is perennial along several reaches and flows south into Lake Pleasant. Lake Pleasant stores water from the Agua Fria River and from the Central Arizona Project canal. (ADWR, 2014).

The northern/eastern portion of Yavapai County is within the **Verde River Watershed**. The major surface water feature in the watershed is the Verde River. Major tributaries include Big Chino Wash, Granite Creek, Sycamore Creek, and Oak Creek. Springs feed the Verde headwaters near Paulden, below Sullivan Lake Dam. Flows from Granite Creek, Willow Creek, and Del Rio Springs contribute significantly to the flow of the Verde River. Much of the Verde's base flow is dependent on these creeks and springs. The Verde River is perennial throughout its length to where it flows into Horseshoe and Bartlett Lakes. (ADWR, 2014). Horseshoe Lake is located in both Yavapai and Maricopa counties, and Bartlett Lake is located entirely in Maricopa County. Both reservoirs are important flood control and water supply structures for the Phoenix metropolitan area. Surface water resources from the Verde River and Oak Creek are critical for

agriculture in the Verde Valley. Approximately 6,000 acres of land are irrigated with surface water for pasture, landscaping and crop production.

### **5.2.2 Groundwater**

Groundwater is the main source of water within the Bill Williams area. Primary groundwater storage areas include the Big Sandy Basin and the Bill Williams Basin. In the Big Sandy Basin, groundwater levels have generally remained steady or have seen rises from 1992 to 2012 in the Yavapai County portions of the basin. (In the Bill Williams area, but outside of Yavapai County, Valentine and Wikieup have experienced declines over the same period.) In the Bill Williams Basin, groundwater levels in wells in the central and eastern part of the basin, including Skull Valley, Kirkland, Peoples Valley, and Yarnell, have declined up to 1.4 feet per year, with the largest declines in Peoples Valley and Kirkland. (ADWR, 2014). Groundwater quality varies greatly within the area, and might exceed limits established for drinking water standards. However, this is often a result of naturally occurring conditions in the aquifer. Frequently equaled or exceeded parameters include fluoride and arsenic. (ADWR, 2014).

In the **Hassayampa/Agua Fria area**, there have been minor water level fluctuations observed in wells. Groundwater in the northern part of the area is found primarily in volcanic rocks that yield small volumes of water. One water level hydrograph in the area near Mayer has shown steady water levels in several years prior to 2014. (ADWR, 2014). In the southern portion of the area, groundwater occurs in basin-fill deposits that have relatively high-water yields. Hydrographs of water level measurements in wells near Black Canyon City have remained relatively constant over the 30 years prior to 2014. (ADWR, 2014). There have been multiple locations within the area with groundwater quality issues related to naturally occurring arsenic and fluoride.

Groundwater conditions in the **Verde River area** have been variable. In the northern portion of the area (Big Chin Sub-basin), groundwater conditions have historically been variable, with rises in the central portion along the Big Chino Wash, and minor declines in some wells near Paulden. Water levels have been stable in the Williamson Valley portion of the Sub-basin.

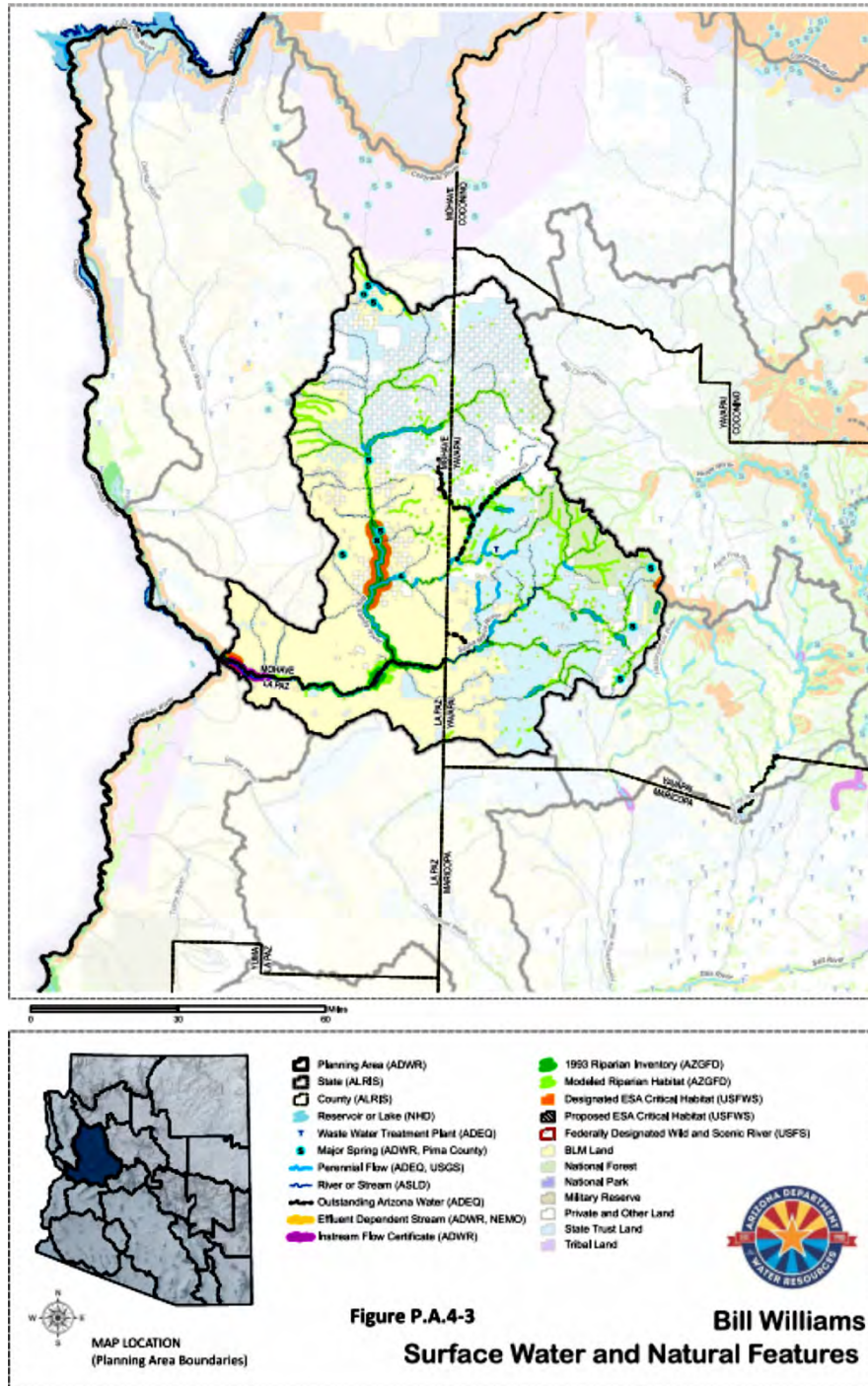
Most of the Prescott area (Little Chino Sub-basin) has experienced significantly declining water levels, resulting in designation of the Prescott Active Management Area as one of the state's four original Active Management Areas, which were established upon enactment of the Groundwater Code in 1980. (Further details are provided below.) Water levels have declined from about 20 feet in some areas to up to 60 or more in other areas. Water levels have recovered in one area (Upper Agua Fria Sub-basin) due to the moving of pumping from one Prescott Valley well field to another.

In the central portion of the area (Verde Valley Sub-basin), water levels have declined in many areas. Water levels declined by 20 to 40 feet or more in many wells near Cottonwood and Clarkdale, generally due to increased municipal and industrial pumping. Water levels also generally declined from 1994 to 2009 near Lake Montezuma, Rimrock, Red Rock, Sedona, and Oak Creek. Downstream of Camp Verde, water levels have remained stable, or showed only minor overall fluctuations. (ADWR, 2014)

Water quality in the Prescott area is generally good. However, arsenic levels exceeding water quality standards have been found in several locations. One NPL Superfund site, the Iron King Mine and Humboldt Smelter, near Dewey-Humboldt, has arsenic and lead contaminated soil and groundwater. There is also one Resource Recovery and Conservation Act site within the area, Camp Navajo, near Bellemont, with both soil and groundwater contamination. (ADWR, 2014).



**Figure 5.2: Bill Williams Surface Water and Natural Features**





**Figure 5.3: Hassayampa/Agua Fria Land Ownership**

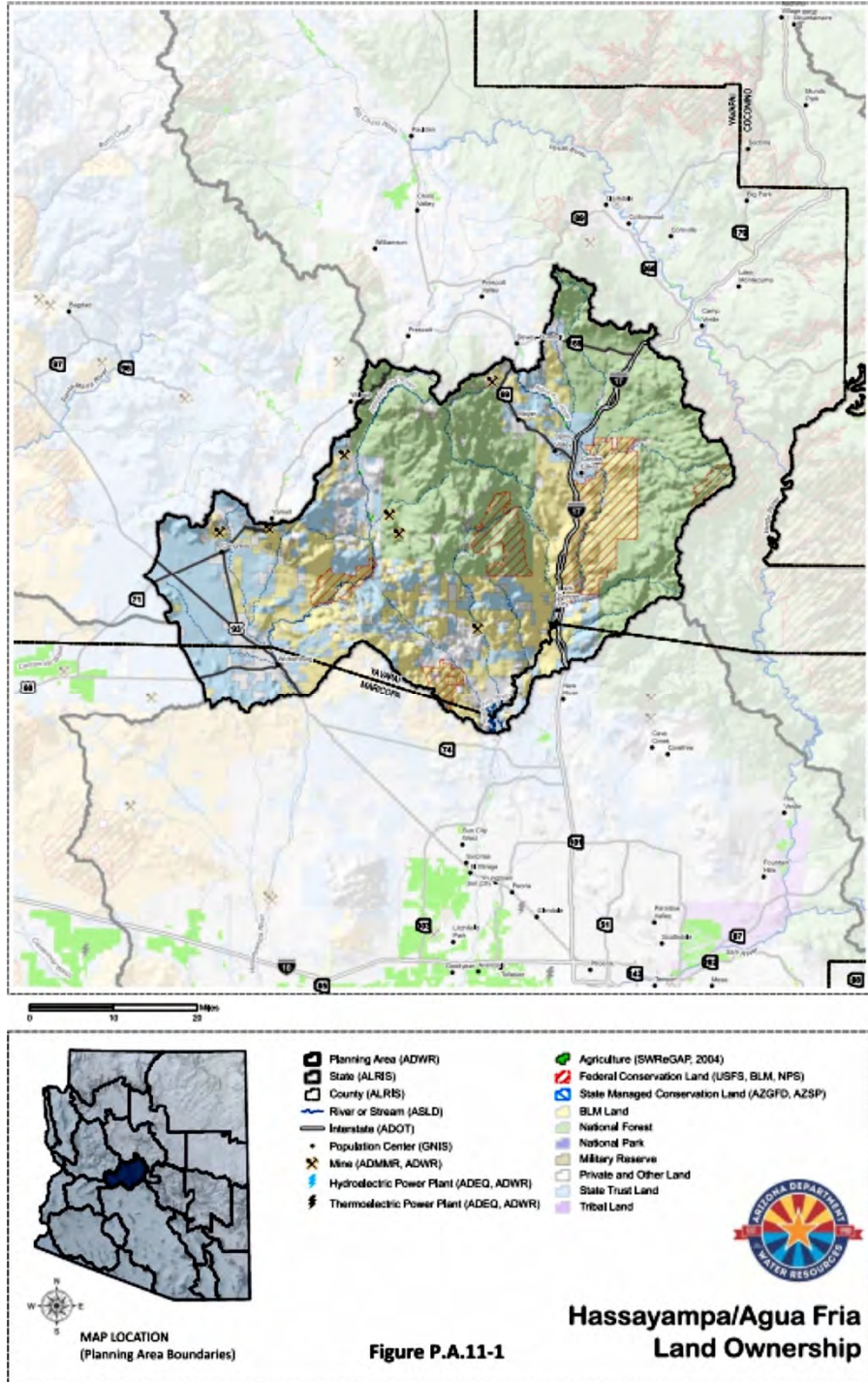
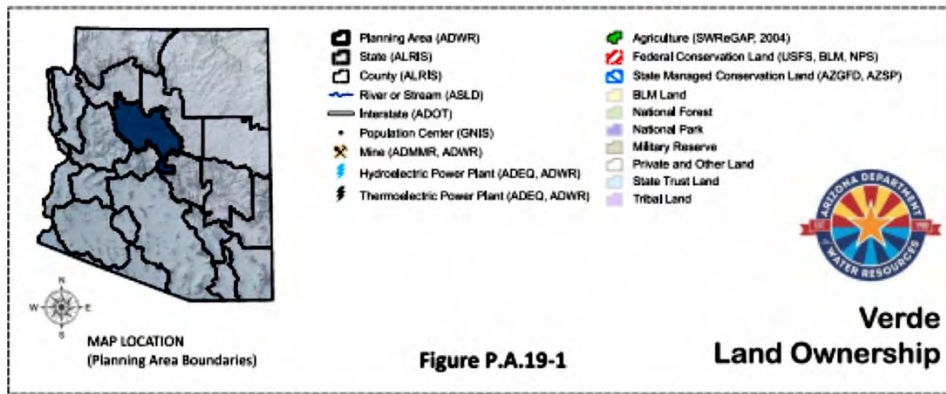
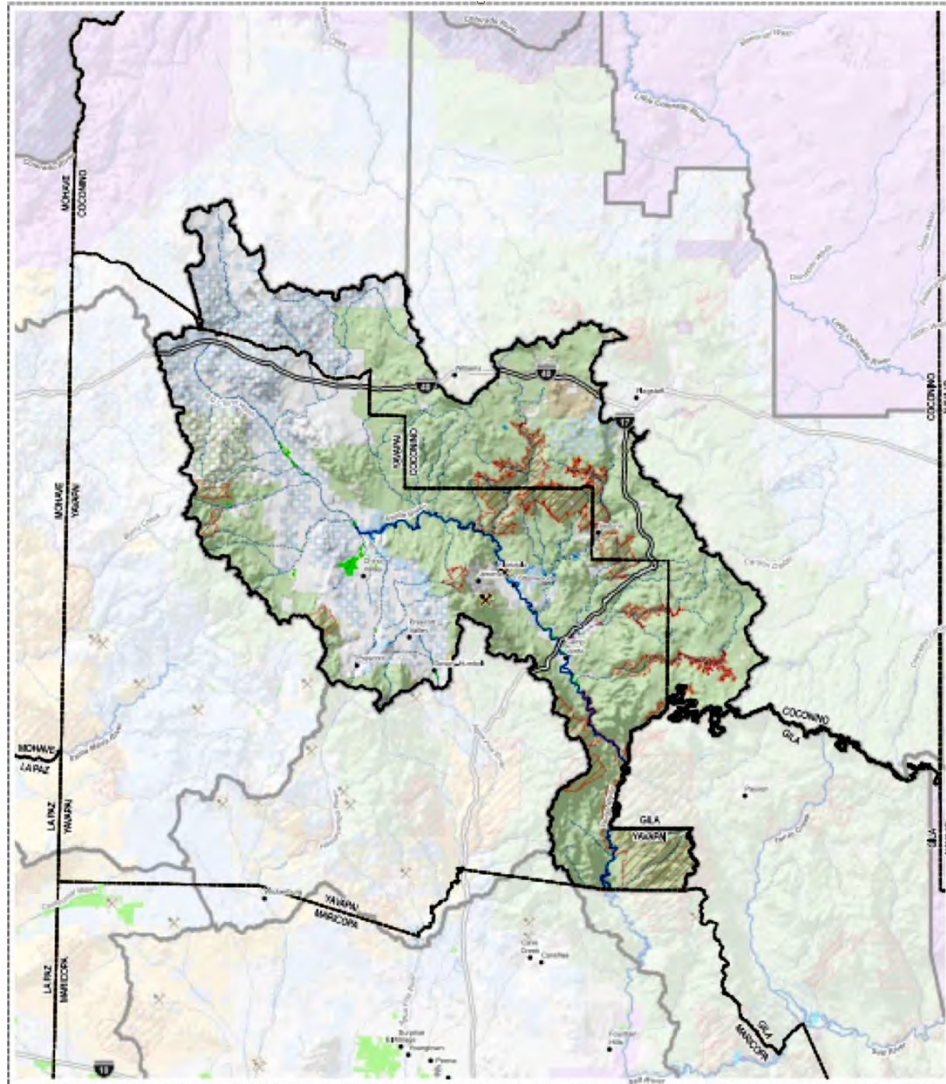


Figure 5.4: Verde Land Ownership



### **5.2.3 Effluent/Reclaimed Water**

Effluent is the water collected in a sanitary sewer for treatment at a sewage treatment facility. Use of reclaimed water is minimal in the Bill Williams area because population centers are small and widely dispersed, and there are no significant wastewater treatment facilities. Freeport McMoRan Copper and Gold, Inc. reports that reclaimed water is used at the Bagdad Mine. (ADWR, 2014)

Similarly, there is limited reclaimed water production within the **Hassayampa/Agua Fria area**. The wastewater treatment plant producing the largest volume of reclaimed water in the area is located outside of Yavapai County (Wickenburg WWTP).

In the **Verde River area**, the majority of reclaimed water produced is generated at several municipal and privately-owned wastewater treatment facilities. The communities of Prescott, Prescott Valley, and Chino Valley have permitted reclaimed water recharge facilities within the Prescott Active Management Area. Reclaimed water is also used directly and indirectly (through recharge and recovery) for multiple golf courses, a park, and a sand and gravel operation. In other locations within the area, reclaimed water is disposed of via irrigation, discharge to a watercourse, evaporation ponds, and used for golf course irrigation. Greater use of reclaimed water is increasingly being evaluated and implemented in the Verde Valley. Efforts there might be adversely impacted by the lack of legal incentives, high financial costs and uncertainty in permit requirements.

## **5.3 Current & Future Water Demands**

The quantity of water needed in the future, and the ability to meet that demand depends on several factors including the amount of growth, the location of the growth and the water requirements of the growth. Water use is often expressed as a per capita amount, and is typically estimated and projected based on current use. In Yavapai County, the most detailed projections have been made for the planning areas in the Central Yavapai Highlands Water Resource Management Study (CYHWRMS) (Phase 1).

The following subsections provide an overview of current regional water use and projected future demands within Yavapai County. This is based on information in the 2012 Yavapai County Comprehensive Plan (which relied on the Central Yavapai Highlands Water Resources Management or 'CYHWRMS' study for central portions of the County and ADWR's Arizona Water Atlas and other resources for other portions of the County) and ADWR's 2014 report: "Arizona's Next Century: A Strategic Vision for Water Supply Sustainability" (which was also informed by the CYHWRMS study and the Arizona Water Atlas).

### **5.3.1 Bill Williams Planning Area**

Water use is primarily groundwater with a small amount of surface water used in the town of Bagdad. Groundwater use has increased in the Big Sandy Basin, but has decreased in the Bill Williams Basin. A significant portion of the land in the area contains federal designations, which limit the potential for increased water supply development. Accordingly, no increases are projected for agricultural water uses, and minimal increases are projected for municipal demands. There is significant industrial groundwater demand in the Big Sandy Basin, with projected increases in mining operations at the Freeport McMoRan Bagdad Mine site. Groundwater is pumped and transported via pipeline from the Big Sandy Basin to the mine site in the Bill Williams Basin. (ADWR, 2014).

Except for the community water systems in the Bill Williams Planning Area, no water users have an obligation to meter or report their water use. Information regarding water demands and



sustainable groundwater development is thus insufficient for the area, which makes it difficult to estimate the impacts of current or projected water demands. (ADWR, 2014).

### **5.2.2 Hassayampa/Agua Fria Planning Area**

Municipal use constitutes the largest water demand sector. Municipal use volume is projected to double by 2060, and is anticipated to represent approximately 75% of total water use in the area. (ADWR, 2014). Other demand sectors have minimal current or projected use. Much of this projected increase in demand would be likely to occur in communities such as Wickenburg, which are outside of Yavapai County. Within the Yavapai County portions of this Planning Area, there might be increases in demand, as State Trust Lands are sold and developed.

A draft report on the demand in the Upper Agua Fria highlights the demands within the Upper Agua Fria Watershed, just south of the study area covered in CYHWRMS. The Upper Agua Fria report outlines the supply and demand in the region, and indicates that the study area's predicted supply is greater than demand in 2057. However, it also indicates that the study area is somewhat smaller than the overall basin in which it is contained, and that many areas within the study area have had to resort to occasional pumping to satisfy demands.

### **5.2.3 The Need for Data Collection and Modeling**

In both the **Bill Williams Planning area** and **Hassayampa/Agua Fria Planning Area** projected water demand is increasing relatively slowly, and demand is expected to be adequately served with existing supplies. However, increased monitoring of aquifer conditions, water use, and/or stream flows within these areas are needed to provide data needed to develop models that provide a better understanding of the long-term sustainability of water supplies in these areas.

### **5.2.4 Verde Planning Area**

Total water demand is projected to increase by approximately 35% from 2010 to 2060. Municipal use is the largest demand sector and is expected to almost double by 2060. Industrial uses related to turf irrigation for golf courses is expected to increase by up to 25%. Uses related to sand and gravel operations are also expected to significantly increase. (ADWR, 2014).

### **5.2.5 Prescott Active Management Area (PrAMA)**

This is within the Verde Planning Area. The PrAMA has a statutory management goal to achieve safe-yield by 2025. Current state law requires new growth in the PrAMA to be consistent with the management goal. However, groundwater demands existing when the PrAMA was formed have allowable groundwater pumping volumes in excess of the safe yield volume. Added to this, the use of domestic/exempt wells is not subject to the PrAMA management requirements, and represent a significant percentage of water demand in the PrAMA. This means that groundwater overdraft may continue and could increase. (ADWR, 2014). Prescott, Prescott Valley, and Salt River Project are partnering on monitoring and modeling efforts, which will inform mitigation strategies to ensure withdrawals do not negatively impact Upper Verde River stream flows.

## **5.3 Water Conservation, Reuse, and Supply/Demand Management**

Many alternatives are being developed in the effort to meet future demands within Yavapai County. Although some alternatives are in appraisal stages, various water supplies and strategies are being used to provide for rapidly growing demand. These include, but are not limited to, groundwater, surface water, effluent, water harvesting, and conservation. Phase III of CYHWRMS is currently identifying alternatives for the management of water resources in Yavapai County,

and the Water Resources Development Commission at the State level also provides alternatives for Water Resources Management.

Water conservation and related supply/demand management strategies can play an important role in supporting continued community and economic development within existing water supplies. The following describes some of the strategies that are currently being implemented and/or being considered for implementation in Yavapai County to manage and balance existing water supplies with future demands.

#### **5.4 Effluent and Reclaimed Water Reuse**

Arizona has long been and remains a leader in the reuse of effluent. Water management strategies have increasingly moved to a “one water” approach, in which all supplies of water – including effluent – are seen as equally valuable components of a water portfolio. Water quality regulation and management plans have encouraged and incentivized massive investment in advanced sewage treatment and the infrastructure to constructively exploit this resource. Rather than simply dispose of effluent, policies, agreements, infrastructure, and facilities were designed for the purpose of putting the supply to good use through aquifer recharge and reuse.

Reclaimed water has been an important source of supply within the Verde Planning Area in Yavapai County. However, many areas are still reliant on septic systems, which reduce the amount of water that can potentially be reclaimed and reused. Efforts to maximize the production and use of reclaimed water could help meet the long-term water needs in the areas of Yavapai County where water demands are approaching or exceeding available local supplies. Where practical, supporting conversions from septic systems to centralized reclaimed water systems, converting lagoon-based mechanical treatment, and using reclaimed water for direct or indirect uses can help address future water needs, as well as address some water quality issues.

#### **5.5 Enhanced Stormwater Recharge**

Efforts are underway to evaluate the feasibility of increasing/improving reliability of local supplies through modification of stormwater management systems to increase aquifer replenishment. If successful, these efforts may increase the efficiency of local groundwater recharge by capturing flows that would otherwise leave the area as flood flows. Demonstrations are underway in other places around Arizona that could answer technical design questions, legal concerns, and expected outcomes of these projects.

#### **5.6 Low Impact Development and Stormwater Capture**

Green spaces, pervious surfaces, and green infrastructure all help manage stormwater for flood control. The county would benefit in creating a water management agency staff, who have a close understanding of the community’s hydrology, and are able to advise where infrastructure for flood control would be most beneficial for recharging key aquifers. Land use planners should follow these recommendations to designate open space zoning and certain building types, and to plan densities accordingly.

Low Impact Development (LID) has several identifiable environmental benefits. Utilizing LID practices can reduce the amount of runoff and stormwater conveyed through existing conveyance systems, which will directly translate to reductions in the amount of pollutants that are discharged into Yavapai County watersheds. Pollutants can be filtered naturally by increasing runoff infiltration into soils through LID installations. Additionally, implementation of LID practices can result in the beneficial use of stormwater as a supplemental source for landscape irrigation. Community and secondary benefits include overall water conservation, urban heat reduction, improvements in population health, and the aesthetic benefits of additional green spaces.

When introduced in 1999, LID was a radically different approach to stormwater management. It was developed to address issues related to new residential, commercial, and industrial development through environmental design and implementation practices. As originally conceived, the LID approach combined a hydrologically effective and integrated design that incorporated site-scale pollution prevention measures to compensate for land development impacts on hydrology and water quality. LID was intended to recreate natural (pre-construction) hydrologic patterns by using landscaping and collection techniques that store, absorb, infiltrate, evaporate, and detain runoff throughout a site, to keep as much rainwater as possible onsite near the location where it fell. This differed from the prevailing approach at that time, in which stormwater was shed from a site as efficiently as possible through structural methods.

The objectives of the LID approach are accomplished by:

- Minimizing stormwater impacts to the extent practicable. Techniques include reducing imperviousness, conserving natural resources and ecosystems, maintaining natural drainage courses, reducing the use of pipes and structural collection systems, and minimizing clearing and grading.
- Providing dispersed runoff storage measures throughout a site using a variety of detention, retention, and runoff practices.
- Maintaining predevelopment times of concentration by strategically routing flows to maintain travel times and to control the discharge.
- Implementing an effective public education program to encourage property owners to use pollution prevention measures and to maintain LID management practices on their sites.

Since its introduction, LID has gained wide acceptance and has been extensively practiced in portions of the United States. It is integral to land planning and development criteria in various parts of the country because of rainfall variability, greater potential for pollution via runoff, and an obvious need for a higher level of stormwater management. There is newfound interest in LID practices in central Arizona for a variety of reasons. These include greater visibility of the concept through outreach efforts by a variety of organizations and entities, rising infrastructure and water costs, and higher public consciousness about the scarcity of water in the Southwest. There is also a recognition by local design and planning professionals and community leaders that LID is a sustainable approach that can continue to work in Arizona through thoughtful design consideration, site analysis, engineering, and planning.

The basic concepts of working with natural patterns, reducing impervious surfaces, capturing stormwater and pollutants, reliance on vegetation to absorb stormwater, dispersed on-site capture locations to keep rainwater near where it falls on the ground, and minimizing pipes are all valid and implementable in Yavapai County.

Some examples of LID structures are: 1) Permeable Pavements, 2) Curb Openings, 3) Sediment Traps, 4) Stormwater Harvesting Basins, 5) Vegetated or Rock Bioswales, 6) Bioretention Systems, 7) Curb Extensions, 8) Bioretention Planters, 9) Domed Overflow Structures, 10) Low or No Water Use Landscaping.

## **5.7 Water Resource Planning Considerations**

### **5.7.1 Water Quality**

The Arizona Department of Environmental Quality (ADEQ) issues permits to protect groundwater and surface water quality, and monitors and assesses surface water quality using its

own staff resources in addition to a network of volunteer “Citizen Scientists” and fixed stations. Surface water quality standards protect water quality for beneficial designated uses of water, including drinking, swimming, and aquatic life.

Avoiding both point-source and non-point-source pollution helps protect our aquatic ecosystems and our surface and groundwater quality. Point sources of pollution typically originate from industrial discharges (atmospheric, solid, or liquid waste). This type of pollution is regulated by the U.S. Environmental Protection Agency and ADEQ. Non-point-source pollution can be a problem in areas of high development, recreational use, or livestock use. The most common non-point-source pollutants are sediment, animal waste, fertilizer, and motor oil, which wash into waterways during storm events. Non-point-source pollution is not regulated in Arizona.

Yavapai County’s Stormwater Ordinance is designed to minimize stormwater pollution into our waterways and our drinking water. The intent behind this ordinance is to slow stormwater flows, enable infiltration into the ground, and protect riparian areas and floodplains from pollution. Low Impact Development structures, such as swales, detention basins, and pervious pavement may be used to retain stormwater on site. The County employs an MS4 (municipal separate storm sewer system) that operates under an ADEQ permit.

Another important factor contributing to water quality is watershed health. Forest restoration and the prevention of high-severity wildfires are vital to our watersheds. The best way to protect watershed health is to minimize disturbance to native vegetation and soils. Land use activities should minimize soil disturbance. Likewise, riparian areas and floodplains should be protected because they provide important buffers between upland uses and instream water quality.

Concerns are often raised about the impact of septic systems on groundwater. Nitrates from fertilizer are potentially of higher concern because heavy rains could leach them into aquifers, particularly in areas containing faults, and surface water bodies. ADEQ regulates nitrate levels in groundwater to protect it for drinking water use. In addition to potential nitrate contamination from septic, sewage treatment, and agricultural runoff, recent studies (both national and local) have shown that discharging highly treated reclaimed water may still allow some organic and pharmaceutical compounds to pass into our waterways and percolate down to groundwater.

Groundwater occurs close to the surface in perched water-bearing zones. Because this shallow water is more susceptible to impacts from septic systems and other surface contamination, pumped water in these zones should be tested or treated periodically to ensure safety. Also, perched water tables are closely tied to annual precipitation. As a result, long-term supplies from them may be less secure during extended periods of drought.

### **5.7.2 General Stream Adjudication**

The general stream adjudication is a judicial proceeding to determine or establish the extent and priority of water rights in the Gila and Little Colorado River systems. The Verde River is a tributary to the Gila River and, therefore, is part of the Gila River adjudication proceedings. Over 84,000 claimants and water users are joined in the Gila River Adjudication that will result in the Superior Court issuing a comprehensive final decree of water rights. Until that process is complete, uncertainty regarding the extent and priority of water rights in Yavapai County will make it difficult to identify and execute strategies for meeting the projected water demands. The stream adjudication process is active and therefore needs to be monitored. The reader should refer to current information available from Arizona Department of Water Resources website on Adjudication (<https://new.azwater.gov/adjudications>).

### **5.7.3 Unresolved Indian Water Rights Claims**

Efforts to complete tribal water claims are essential to not only provide a secure water supply for tribal nations, but also to provide long-term certainty for non-tribal water users in Yavapai County. The Yavapai-Apache Nation and Hualapai Tribe have lands within the area, and have currently engaged in settlement discussions with the State of Arizona and other water users.

### **5.7.4 Unregulated Groundwater Pumping**

The risks associated with the overuse of groundwater have been long recognized in Arizona. There were multiple efforts prior to the 1980 Groundwater Management Act to regulate groundwater. The risks of overdraft were well-accepted enough that they were written into the “Declaration of Policy” in the Groundwater Code: *...(overdraft) is threatening to do substantial injury to the general economy and welfare of this state and its citizens...* (A.R.S. § 45-401(A)). To address this threat, the Act set forth what was then seen as a comprehensive and proactive set of regulations with the goal of shifting water users to alternate supplies to preserve groundwater. Certain regulations apply within the state’s Active Management Areas, including the PrAMA. However, groundwater use outside of Active Management Areas (including all areas in Yavapai County outside of the PrAMA) is largely unregulated. This creates significant challenges in managing water resources within the County.

### **5.7.5 Private Domestic and Exempt Wells**

Private domestic wells are not monitored or regulated unless they are within the boundaries of the PrAMA. Private domestic wells in Yavapai County outside of PrAMA do not have a capacity restriction. Wells within the PrAMA that pump 35 gallons per minute or less are called “exempt wells”. Non-exempt wells, which may pump more than 35 gallons per minute, are required to file more stringent water reports with regulatory agencies. From the period of 1985 to 2005 there has been a 267% increase in the number of exempt wells. In 1985 there were 4,200 exempt wells in the PrAMA. In 1997, the number had more than doubled to 8,700, and in 2005, over 11,200 had been registered in the PrAMA.

Yavapai County Development Services is responsible for reviewing all well permit applications for referral to the Arizona Department of Water Resources on parcels 5 acres and smaller.

### **5.7.6 Watershed Management**

A watershed is the land that water flows across (or under) on its way to a stream, river, or lake. The movement of water is greatly influenced by the contour of land and geologic features such as mountains, valleys and hills. A watershed consists of uplands, floodplains, and a stream channel. A watershed affects the water quality in the water bodies that it surrounds. All land drains into a lake, river, stream or other water body and directly affects water quality. Because we all live on the land, we all live within a watershed, thus watershed conditions are important to everyone.

A healthy watershed is one:

- in which natural land cover supports dynamic hydrologic and geomorphologic processes within their natural range of variation
- that contains habitat of sufficient size and connectivity to support native aquatic and riparian species
- that has physical and chemical water quality conditions that can support healthy biological communities.

Watershed management practices aimed at increasing watershed health are being explored and evaluated around Arizona. Due to the significant acreage of forested and rangeland areas,



exploring safe and effective strategies for maintaining and restoring watershed health (particularly if combined with other management initiatives such as the Four Forest Restoration Initiative) may be a cost-effective way to provide multiple watershed benefits within Yavapai County.

Wildfire risk is increasing across the West. The Cave Creek Complex Fire (2005) burned 243,800 acres in the Verde River Basin and adjacent areas in the east-central part of the Agua Fria Basin and the Basin & Range AMAs Planning Area. In the Southwest, fire can be among the most significant watershed disturbance agents, particularly influencing peak stream flows. (ADWR, 2014). Wildfire and drought can result in adverse vegetative changes across watersheds in Yavapai County, with implications for runoff, infiltration and the quantity and quality of downstream water supplies.

Integrated land use and water management planning is a crucial step that the County should take to address the interrelated challenges of climate change, ongoing population growth, water quality, and increasingly limited water supplies within a watershed. However, integrated land use and water management planning cannot occur without collaboration. Local planning departments and water management agencies are the leading actors. Additional local decision makers such as city councils and governing boards can offer valuable leadership and support that is necessary for success. Planners should incorporate meaningful public participation into planning efforts and bring all major stakeholders to the table, including the public, developers, businesses, and nongovernmental organizations.

The County should incorporate water management agencies into all stages of the development approval process so that those agencies can help ensure adequate water supplies and provide developers with information on how a project might be made more water-efficient, stormwater friendly, and low-impact, while protecting water quality.

### **5.7.7 Environmentally Sensitive Lands**

Environmentally sensitive lands include areas with critical resources such as floodplains, riparian zones, rivers and streams, wetlands, springs and seeps, and steep slopes. Within Yavapai County, grasslands and similar upland habitats support rare or endangered plant and animal species. In addition, they are critical for the recharge of aquifers. These environmentally sensitive lands require special consideration during the development/design process.

Through integrated conservation design we can maintain or increase land values by retaining as much of their natural characteristics as possible. Preserving private land for habitat, open space, or other nondevelopment purposes may require compensating the owner with a method that reflects the fair-market value of the property. Such methods include purchasing the property outright, exchanging it for other lands, transferring easements or development rights, or offering property-tax breaks.

Early settlement tended to occur along drainageways and floodplains for practical reasons. These areas provided tillable land for farming, shelter, shade, and a source of water in the arid climate. Today's private land ownership patterns reflect this. Floodplains also provide a great deal of habitat for native flora and fauna, create wildlife movement areas, serve as important repositories of biological diversity and are important natural recharge zones.

The Federal Emergency Management Agency (FEMA) has defined floodplains for most watercourses (whether perennial, intermittent, or ephemeral) on maps showing the surface-water elevations during 100-year floods. Reducing construction and development in 100-year

floodplains helps protect riparian vegetation and wildlife communities. Regardless of whether the drainage contains permanently flowing water, soils in riparian areas are generally deeper and moister than they are in adjacent uplands. Riparian areas facilitate movement and provide food, water, and cover for many species of wildlife. Many land uses compete for riparian resources, challenging conservation efforts. Furthermore, because water is scarce, management decisions often favor human uses (recreation, drinking water, irrigation, and livestock use) over conservation. Success in conservation is contingent on our ability to influence public land-management practices, and to provide motivations to private landowners to restore their degraded riparian habitats.

### **5.7.8 Water Education and Outreach**

The County can continue to promote water conservation and alternative water sources in a variety of ways. Educating the public, developers, and County staff is important. It is also important to incorporate conservation elements into development projects and encourage the use of reclaimed water, gray water, and rainwater systems wherever possible. Technologies and methods are constantly emerging that can help us reduce our consumption of this precious resource.

## **5.8 Water Resource Goals and Policies**

These Goals and Policies are derived from comments and feedback from residents from across the county and from other stakeholders, and are meant to meet the requirements of ARS §11-804(B)(3). All official actions taken by Yavapai County regarding water resources should be in harmony with these Goals and Policies. Further, when other agencies request Yavapai County's comments or recommendations on any water-related policy or project, Yavapai County's response should reflect as much as possible these Goals and Policies. Yavapai County will support applications for grants and projects that will advance these Goals and Policies.

### **Goal 1: Support wastewater treatment systems that utilize water reclamation and reuse**

- **Policy 1a:** Require all new major developments to provide wastewater treatment systems to prevent the pollution of groundwater resources.
- **Policy 1b:** Encourage and facilitate the formation of districts within the county to provide centralized wastewater treatment facilities.
- **Policy 1c:** Require, as a condition of approval for new wastewater treatment facilities that the applicant show a plan for the acceptable direct reuse of the reclaimed water.

### **Goal 2: Increase public awareness about the importance, methods, and benefits of water conservation.**

- **Policy 2a:** Collaborate with local water conservation groups to educate the public about the county's limited groundwater resources, and the resulting importance of water conservation.
- **Policy 2b:** Encourage residents to conserve water through the use of low-water-use fixtures, toilets and appliances.
- **Policy 2c:** Encourage residents to use environmentally sound water harvesting systems to collect water for irrigating their landscaping.
- **Policy 2d:** Employ water wise landscaping in all county facilities.

### **Goal 3: Protect the water quality in aquifers and promote aquifer recharge**

- **Policy 3a:** Evaluate the potentially adverse impact of any proposed water-intensive development on the underlying aquifer.
- **Policy 3b:** Protect environmentally sensitive corridors that are critical to aquifer recharge sites.
- **Policy 3c:** Request that new developments use pervious paving to reduce runoff and promote aquifer recharge.
- **Policy 3d:** Request that new developments enhance aquifer recharge by providing detention basins, by protecting open space, and by minimizing the disturbance of soils.
- **Policy 3e:** Require that major developments minimize run-off from impervious surfaces or construction activities.
- **Policy 3f:** Verify that new developments have obtained any necessary permits from the ADEQ Aquifer Protection Program.

### **Goal 4: Protect surface water and groundwater quality in the county.**

- **Policy 4a:** Require that all wastewater treatment facilities comply with ADEQ *Water Quality Standards* for effluent treatment and reuse.
- **Policy 4b:** Reduce surface water pollution by employing federal and state laws, regulations, guidelines and standards.
- **Policy 4c:** Protect and preserve the water quality of all State-designated *Outstanding AZ Waters* within Yavapai County, including Oak Creek, West Fork of Oak Creek, People's Canyon Creek, and Fossil Creek.
- **Policy 4d:** Preserve and enhance riparian buffers, and protect floodplains from development.
- **Policy 4e:** Request that new developments preserve natural watercourses and riparian and aquatic habitats.
- **Policy 4f:** Adopt a Wellhead Protection Program, to protect groundwater aquifers from contaminants that might adversely affect human health.
- **Policy 4g:** Provide free testing of residential drinking water from wells, to detect unhealthy levels of arsenic and other harmful contaminants.
- **Policy 4h:** Require all new developments to capture stormwater on site.
- **Policy 4i:** Require development proposals that might affect drainage into adjacent properties, roads, or watercourses to include a drainage mitigation plan that addresses water quality and potential flooding.
- **Policy 4j:** Protect the health and quality of the Verde River and all other perennial surface waterways within Yavapai County.
- **Policy 4k:** Monitor the surface water levels in lakes and recreational areas.
- **Policy 4l:** Request new developments to maintain existing perennial surface water flows, ecosystems, and wildlife corridors along existing natural waterways.
- **Policy 4m:** Develop data sets and groundwater models to provide realistic projections of the impacts of future groundwater pumping on surface water ecosystems, such as creeks, streams, and springs, as well as recreation areas, and use those projections to support informed decision making.

### **Goal 5: Maintain and improve watershed health and effectiveness.**

- **Policy 5a:** Reduce stormwater runoff to improve water quality across the County.
- **Policy 5b:** Encourage land use practices that will improve watershed health.
- **Policy 5c:** Request new development applicants to use pervious pavements, and other Low Impact Development techniques where appropriate to reduce runoff.

- **Policy 5d:** Support forest restoration projects aimed at the protection of watershed health.
- **Policy 5e:** Request new developments to preserve natural riparian areas, protect floodplains and provide for stormwater capture.

### **Goal 6: Reduce the use of potable water for irrigation**

- **Policy 6a:** Require new developments with golf courses or community parks to use only reclaimed wastewater for irrigation.
- **Policy 6b:** Request new developments to employ low-water-use landscaping.
- **Policy 6c:** Encourage residents to employ graywater harvesting and re-use, rainwater barrels and catchment basins for residential irrigation.

### **Goal 7: Maintain groundwater levels to prevent private and municipal wells from going dry due to falling water tables.**

- **Policy 7a:** Require new developments to use only reclaimed water to irrigate landscapes, parks, and common areas.
- **Policy 7b:** Request new developments to use drip irrigation to make optimal use of water.
- **Policy 7c:** Require new developments to use only reclaimed water for artificial lakes and outdoor water features.
- **Policy 7d:** Request new developments to use reclaimed wastewater, instead of potable water, during construction.

### **Goal 8: New development will use water conservation technologies to reduce water use**

- **Policy 8a:** Request that new developments use low-water-use fixtures, toilets and appliances.
- **Policy 8b:** Request that new developments use drought tolerant landscaping, and irrigate with reclaimed wastewater, gray water, and/or water harvested from runoff or rain water collection.

### **Goal 9: More water districts to centralize water supplies**

- **Policy 9a:** Provide guidance and assistance to communities who want to establish water districts.

### **Goal 10: Minimal water usage by utility-scale energy generating facilities**

- **Policy 10a:** Request that any new utility-scale energy generating facility use technologies that minimize consumption of water.

### **Goal 11: Create a process for collecting data on groundwater levels across the county**

- **Policy 11a:** Request that major new developments that will rely on groundwater include the following publicly available information in their application. (See the Arizona Department of Water Resources (ADWR) and/or Arizona Geological Survey.)
  - Depth to bedrock
  - Depth to groundwater
  - Known fissures or land subsidence in the area
  - Known wells in the area, available information on status, water levels, etc
  - Summary of data-gathering efforts and sources of information

## **Goal 12: Collaborate on a regional water management plan for the Prescott AMA**

- **Policy 13a:** Collaborate with jurisdictions within the Prescott AMA to collect data on available groundwater reserves, current water usage rates and projected growth rates.
- **Policy 13b:** Collaborate with other jurisdictions within the Prescott AMA to develop a regional water conservation strategy, and a strategy to increase the use of reclaimed water.
- **Policy 13c:** Make use of drought monitoring data and predictive models to project future water availability, and develop a plan for adaptation and mitigation in the case of ongoing drought.
- **Policy 13d:** Establish good cross-jurisdictional communication to provide sources of hauled water for residents during drought crises.

## **Goal 13: Create water management plans for regions outside the Prescott AMA**

- **Policy 14a:** Support the creation of Rural Management Areas (RMAs) to better manage water resources in rural areas.
- **Policy 14b:** Develop a long-term regional water management plan to implement water conservation, the development of regional water infrastructures, and how the county will provide for vested surface water rights.
- **Policy 14c:** Address how future water demands will be met without compromising the ecological integrity of the natural systems and wildlife habitat that rely on surface and groundwater.

## **5.9 Water Resources Recommendations**

- Use reclaimed wastewater to irrigate public parks and public areas under county jurisdiction to grow trees for shade and promote community health and well-being.
- Create and publicize a native plant pallet and instructional materials, based on each ecological zone within Yavapai County, and encourage landscapers to use low-water-use native plants.
- Coordinate with Friends of the Verde River on their “River Friendly Living” program.
- Assess soil and groundwater quality in the vicinity of all county-owned waste transfer stations and tire yards, and clean-up areas where soil or groundwater have been adversely affected.
- Improve interagency coordination for flood and drought planning.
- Establish good interagency communication to better plan for watershed management and flood control.
- Lobby the State Legislature, in partnership with other regional and local governments, for more local authority to use local historic groundwater data during the review process for all major new developments.
- Request the county Board of Supervisors to require that all major new developments across the county obtain an Assured and Adequate Water Supply (AAWS) determination from ADWR, including those outside Active Management Areas. (Note: This requires a unanimous vote of the Board of Supervisors.)
- Pursue State legislative change that would allow the county to monitor groundwater conditions in the basins within the County when the ADWR is not able to provide such monitoring. Such data would provide a vital baseline for future management of groundwater supplies within these areas.
- Institute a county Water Advisory Committee that is broadly representative of the regional jurisdictions and land managers as well as professional hydrologists and water managers.

- Collaborate with the Arizona Department of Water Resources to monitor changes in water table depth, and periodically report the results to the public.
- Inventory all known water resources within the planning region
- Develop a process for gathering data to monitor groundwater levels within the planning region.
- Collect data on regional groundwater reserves, current water usage rates and projected growth rates.
- Collaborate with jurisdictions across the planning region to collect ongoing data on current water usage rates and projected growth rates.
- Request the Yavapai County Board of Supervisors to adopt a provision (as provided for under Title 11 of the Arizona Revised Statutes (A.R.S. § 11-806.01.F), and requiring a unanimous vote) that requires all new subdivisions outside the AMA to show an adequate water supply as defined by A.R.S. § 45-108.I before that new subdivision can be approved by the county.
- Suggest various methods of crop irrigation (such as vertical farming or drip irrigation) as the basis for offering agricultural irrigation efficiency incentives.
- Research how Transfer of Development Rights (TDR) has been used in other jurisdictions to preserve sensitive ecological areas.
- Create a map of environmentally sensitive areas across the entire county as a layer within the County Geographical Information System (GIS).
- Identify areas within Yavapai County that are critical for natural groundwater recharge, and document those areas on the Land Use Map.
- Propose to the Board of Supervisors a new full-time employee who would be hired as a long-range planner for water management, creating a public process and coordinating closely with the Flood Control Department as funding permits.
- Develop a Watershed Management Plan, beginning with the most critical areas of the County and eventually including the entire County, contingent on available funding.
- Form a regional water management planning group that includes stakeholders such as municipal water providers and other water providers, plus water experts from cities such as Prescott or Cottonwood.
- Collaborate with other jurisdictions to develop a Clean Water Act Section 208 compliant regional wastewater management plan.

## 5.10 Definitions:

- **ADEQ:** Arizona Department of Environmental Quality
- **ADWR:** Arizona Department of Water Resources
- **PrAMA:** Prescott Active Management Area
- **Surface Water:** Surface water is legally defined in Arizona as *the water of all sources, flowing in streams, canyons, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, floodwater, wastewater or surplus water, and of lakes, ponds and springs on the surface.* (ARS § 45-101)
- **Groundwater:** Groundwater is legally defined in Arizona as *water under the surface of the earth regardless of the geologic structure in which it is standing or moving. Groundwater does not include water flowing in underground streams with ascertainable beds and banks.* (ARS § 45-101). In general, groundwater refers to any water under the land surface. It is water that is underground filling in the tiny spaces in underground materials such as sand, gravel, and other rock, similar to how water fills a sponge. Arizona law distinguishes between two types of water that come from the ground: groundwater and subflow. Under Arizona's water laws, the term groundwater is used to describe a specific category of water that comes from the ground, which excludes subflow. Groundwater within the PrAMA is

subject to its regulations however groundwater withdrawn outside the PrAMA is generally subject only to the requirement “for reasonable and beneficial use.” A.R.S. § 45-453.

- **Subflow:** Under Arizona law, subflow is underground water, usually found bordering a stream, that is considered to be part of the surface stream and subject to the same laws and rules as other types of surface water. Arizona Department of Water Resources (ADWR) has issued the subflow zone report which proposes a subflow zone for the Verde River mainstem and the Sycamore Canyon Subwatershed, for the purpose of assisting the Court in distinguishing between subflow and other underground water. A second report addressing the Subflow Zone for the remainder of the Verde River Watershed will be prepared by ADWR and submitted to the Court by April 30, 2023.
- **Effluent:** Effluent is water that has been collected in a sanitary sewer for subsequent treatment in a facility. (ARS §45-101). Most sanitary sewer systems are managed by a city, town or district. The producer of the effluent owns the right to use it, and is responsible for ensuring that it is managed in accordance with state and federal requirements. Treated effluent can be re-used in accordance with ADEQ Recycled Water rules, recharged in accordance with ADEQ and ADWR requirements, or discharged under an ADEQ permit.
- **Stormwater:** Stormwater is not a legal class of water but a general term to describe water that has fallen as rain or other forms of precipitation. Some portion of that precipitation infiltrates (sinks) into the ground surface immediately, or as it moves down gradients toward artificial or natural channels. As the water moves across different surfaces, it can pick up various types of pollutants including sediment from exposed soil, oil and grease from driveways and roads, leaves and animal droppings. Water quality and quantity regulations may apply to stormwater.

## 5.11 Additional References

<https://yavapaiaz.gov/Portals/36/County-Watersheds.pdf>

<https://www.usbr.gov/lc/phoenix/programs/CYHWRMS/CYHWRMSRepwApp.pdf>

[https://www.coconino.az.gov/DocumentCenter/View/10608/Coconino-County-](https://www.coconino.az.gov/DocumentCenter/View/10608/Coconino-County-Comprehensive-Plan---2017-Approval?bidId=)

[Comprehensive-Plan---2017-Approval?bidId=](https://www.coconino.az.gov/DocumentCenter/View/10608/Coconino-County-Comprehensive-Plan---2017-Approval?bidId=)

<https://yavapaiaz.gov/devserv/Divisions/Planning-Division/Comprehensive-Plan>

[https://yavapaiaz.gov/Portals/34/Reference%20Materials/YavapaiCountyComprehensivePlan.](https://yavapaiaz.gov/Portals/34/Reference%20Materials/YavapaiCountyComprehensivePlan.PrAMA5MPDraft_Jan2022_0.pdf)

[PrAMA5MPDraft\\_Jan2022\\_0.pdf \(az.gov\)](https://yavapaiaz.gov/Portals/34/Reference%20Materials/YavapaiCountyComprehensivePlan.PrAMA5MPDraft_Jan2022_0.pdf)

[Home | Arizona Water Blueprint | Arizona Water Blueprint \(asu.edu\)](#)

[Integrating Land Use and Water Management: Planning and Practice \(lincolnst.edu\)](#)

[LID2018-Book-04-11-19.pdf](#)

## **6.0 Growth Areas**

### **6.1 Introduction**

Arizona's Growing Smarter legislation, which was adopted in 1998, requires policies for targeted land uses for mixed-use planning to increase the efficiency of the circulation systems, to make infrastructure expansion more economical, and to conserve natural resources and open areas. The Growth Area Element should be used in tandem with all other elements of the Comprehensive Plan, but particularly with the Circulation and Land Use Elements to guide sound planning and growth policies.

### **6.2 Purpose**

The Growth Area Element outlines areas of the County that are best suited for strategic growth. These growth areas are most appropriate for infrastructure expansion and or improvements, as well as expansion of higher intensity land uses to help meet the County's needs, and to provide smart growth possibilities.

While Growth Areas outline specific areas for growth and redevelopment, a growth area designation should not be the sole determinant in land use decision making. The Growth Area Element should be used in tandem with all the other elements, to inform and balance environmental, economic and infrastructure factors. The Transportation and the Land Use Elements also provide important guidance for the types of land use that are most appropriate within each growth area, to ensure that growth is strategically planned, responsible and appropriate. Growth Areas are not intended to be restrictive. Development may be proposed and approved regardless of whether it is inside a designated growth area.

### **6.3 Current Conditions**

#### **6.3.1 Population Trends**

While the population in Yavapai County increased by more than 400% during the past three decades, its rate of change has incrementally decreased from approximately 84% (1970-1980), to 58% (1980-1990) to 56% (1990-2000) to 26% (2000-2010) and to 12% (2010-2020). This declining rate of change is common as the base population enlarges. The population of the County was only at 36,733 in 1970 and rose to 107,714 by 1990. Current demographic data reveal aspects of the current population that will likely affect future growth trends. For example, the 2020 Census showed that the majority of areas in Yavapai County have populations with median ages above the child-bearing years. Average household sizes also correspond to this statistic.

#### **6.3.2 Incorporated Areas**

Yavapai County has fourteen local jurisdictions: eleven incorporated cities and towns and three Tribal Reservations. The Towns of Chino Valley, Prescott Valley and Dewey-Humboldt, the City of Prescott and the Yavapai-Prescott Indian Reservation are in the Central Yavapai Region. The Towns of Camp Verde, Clarkdale, and Jerome, and the Cities of Cottonwood and Sedona, and the Yavapai-Apache Indian Reservation are all in the Verde Valley Area. A portion of the City of Peoria is located in the southern-most tip of the County, a small portion of the Town of Wickenburg is located in the southwestern elbow of the County, and a portion of the Hualapai Indian Reservation is at the extreme northwest corner.



With few exceptions, all of the referenced incorporated communities have annexed (and most likely will continue to annex) properties that are currently within the county's jurisdiction. Once areas have been annexed, they fall under the General Plan of their respective incorporated community. The goal of the County is to work with these communities to properly plan and prepare for areas where growth may occur and be incorporated, avoiding piecemeal development.

### **6.3.3 Property Ownership**

The majority of Yavapai County's 8,123 square miles is owned and managed by Federal and State agencies. The United States Forest Service (USFS) maintains 38%, the Bureau of Land Management (BLM) controls 11% and Arizona State Trust Lands (ASTL) manages 25% of the County's land area. The remaining 26% of Yavapai County is privately owned property. Although the most likely candidates for development are privately owned properties, the possibility of development through land exchanges or sales of State Trust Land is also possible.

Efficient planning incorporates many factors, including the economy, the environment, culture and transportation. Growth planning should include efficient transportation systems, healthcare, the urban/rural interface and sustainable development. Careful planning for growth helps reduce negative impacts to an existing environment and economy, and its citizens.

### **6.3.4 Environmental and Wildlife Factors**

Yavapai County features multiple wildlife habitat areas as well as wildlife corridors. Federally designated critical habitats are important components of our landscape and ecosystems because they protect Threatened and Endangered Species (TES). The locations of these habitats and corridors can be a significant factor in considering future growth areas, and the character of same. These areas should be looked at on an individual basis, and Yavapai County designated growth areas shall not overlap TES areas.

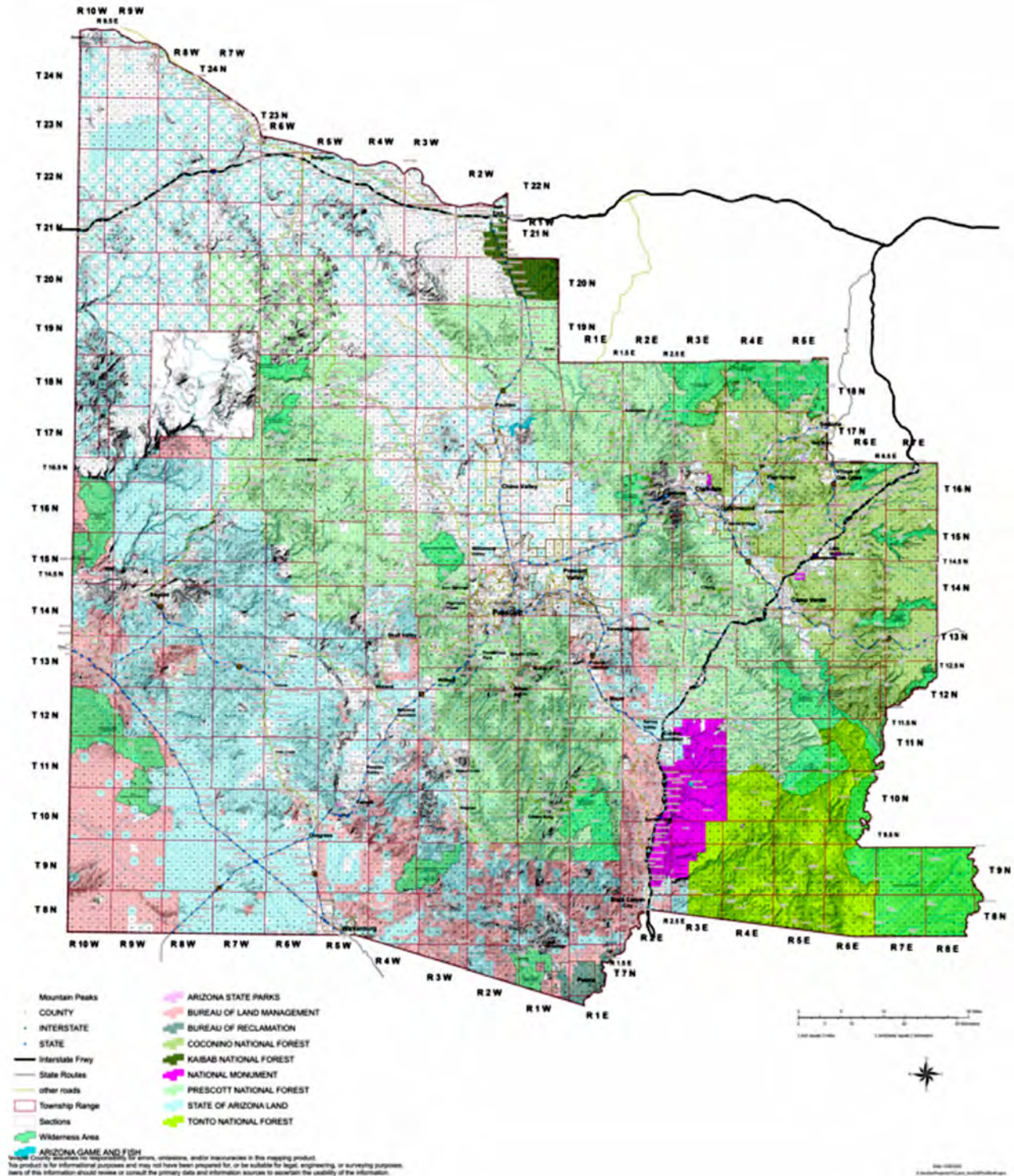
Yavapai County planning is also impacted by approximately 212 square miles of regulated watercourses or floodplains. Currently large areas of the County remain unstudied by the Federal Emergency Management Agency, and development within those areas might require additional studies to be performed, potentially adding to the regulated floodplain area. The location of floodplains can have a significant impact on the costs of development. Although location within a regulated area does not preclude development, it might influence how that area is developed, or what densities might be allowed. Refer to the Environmental Planning Element of this Comprehensive Plan for a more detailed discussion.

### **6.3.5 Water Availability**

Water is the most critical aspect of growth management in Yavapai County. While this element outlines specific areas that have existing infrastructure, it does not guarantee an adequate water supply within these growth areas. While this Comprehensive Plan provides high-level guidance of future growth within the County, each new development project must demonstrate on its own the ability to provide adequate water to the site.

The Water Element of this Comprehensive Plan provides some information about existing conditions, and lists Goals and Policies aimed at ensuring that Yavapai County water supplies will be adequate for its residents and businesses for many years to come. Refer to the Water Element for a full discussion of the issues related to water availability and quality.

Figure 6.1: Yavapai County Land Ownership  
**Yavapai County Land Ownership**



## 6.4 Long Range Population Projections

Throughout most of Arizona, and especially in Yavapai County, population has been continually growing for many decades. Yavapai County experienced 12% population growth from 2010 to 2020, on par with the state rate of 11.9%.

Table 6.1 shows the population projections in the major growth regions of Yavapai County. The same 2.25% growth rates have been applied to each region, although it is important to acknowledge that some areas have grown more quickly than others, and some have more potential for growth than others.

**Table 6.1: State, County and Area Population Projections**

	US Census			Population Projections		
	2000	2010	2020	2025	2030	2035
Arizona State	5,130,632	6,392,017	7,151,502	7,959,488	8,603,582	9,272,674
Yavapai County	167,574	211,033	236,209	245,868	256,446	267,484
City of Cottonwood	9,179	11,197	12,029	12,599	12,857	13,302
Verde Village/ Bridgeport	10,610	11,605	12,019	11,697	11,819	12,166
Town of Clarkdale	3,422	4,110	4,544	4,549	4,669	4,855
Page Springs/ Cornville Area	3,335	3,433	3,811	3,852	3,893	3,922
Town of Camp Verde	9,451	10,873	12,147	12,192	12,331	12,334
Lake Montezuma Area	3,344	4,775	5,111	6,670	7,139	7,576
City of Prescott	33,938	39,843	45,827	42,063	41,690	42,211
City of Sedona	10,192	10,031	9,684	10,396	11,160	11,980
Village of Oak Creek Area	5,245	6,335	6,128	6,134	6,139	6,153
Town of Jerome	329	444	453	433	418	410
Town of Paulden	5,003	5,231	5,567	7,413	7,935	8,421
Town of Wickenburg	5,082	6,363	7,474	7,646	7,646	7,663
Chino Valley	7,835	10,817	13,020	13,492	13,210	13,364
Town of Dewey-Humbolt	3,556	3,894	4,326	4,208	4,295	4,445
Mayer Area	1,408	1,386	1,930	1,840	1,929	2,026
Black Canyon City Area	2,697	2,878	2,825	3,488	3,657	3,840
Cordes Lakes Area	2,058	2,770	2,586	3,732	3,995	4,238
Bagdad Area	1,578	2,016	1,774	1,563	1,494	1,467
Yarnell Area	645	654	739	541	517	507
Congress Area	1,717	2,037	1,632	2,428	2,546	2,673
Wilhoit Area	664	879	1,009	1,068	1,119	1,175
Spring Valley Area	1,019	1,122	1,596	1,627	1,742	1,848

Rural Unincorporated	82,168	71,460	79,978	89,100	97,755	104,964
*Population projections (tables by county) data: <a href="https://www.azcommerce.com/oeo/population/population-projections/">https://www.azcommerce.com/oeo/population/population-projections/</a>						
*Dewey-Humboldt 2020 data: <a href="https://www.arizona-demographics.com/dewey-humboldt-demographics">https://www.arizona-demographics.com/dewey-humboldt-demographics</a>						
*Mayer, Spring Valley, Black Canyon City Area 2020 data: <a href="https://worldpopulationreview.com/us-cities/mayer-az-population">https://worldpopulationreview.com/us-cities/mayer-az-population</a>						

## 6.5 Growth Areas

As Yavapai County continues to grow, the need to plan and focus on the development of growth areas is crucial. Within Yavapai County (with the exception of incorporated towns and cities) there are currently fifteen (15) growth areas that have been recognized as important for directing the County’s growth in a thoughtful, comprehensive and fiscally responsible manner. These growth areas are shown in Table 6.2, along with their respective acreages.

**Table 6.2: The 15 recognized growth areas**

Growth Area	Acres
Ashfork	31,017
Beaver Creek	4,400
Chino Valley	17,988
Clarkdale	1,116
Congress	1,875
Cordes Junction	6,720
Cornville Rd - Page Springs	8,048
Fain	19,190
Paulden	40,676
Prescott Valley/ Prescott	11,078
Seligman	32,907
Spring Valley-Mayer	10,130
Village of Oak Creek	4,004
Wickenburg	5,394
Yarnell	3,540

### Ashfork

This growth area focuses along Highway 89 and Interstate 40 in the northern portion of Yavapai County. There are several commercial areas focused around the northside of Interstate 40 and the area is prime for commercial and industrial growth with the nearby railroad. However, this area is underserved in water, and needs utility and infrastructure improvements to sustain future growth as well. Future Commercial and Industrial development is encouraged along the existing Interstate 40, Highway 89 and the Railroad line.

## **Beaver Creek**

This smaller growth area is located in northeastern Yavapai County and is focused along Interstate 17. Acceptable future growth will require improving the utilities and infrastructure to maintain and improve the quality of life. This area is primarily single-family residential with local commercial to serve the residents of Rim Rock and Beaver Creek. This growth area is appropriate for development similar to the existing community, with detached housing and local commercial and employment opportunities. Emphasis should be placed on upgrading the area's existing infrastructure as new developments occur. This community wants to improve the overall transportation to the area to provide proper access within the residential neighborhoods. Beaver Creek will continue to follow neighborhood changes that are based on their needs now, and in the future.

## **Chino Valley**

This growth area focuses on the unincorporated areas on the southwest side of Chino Valley between Highway 89 and Williamson Valley Road. This area is prime for residential development, particularly master planned communities that will provide comprehensive utilities and other infrastructure to the area. This community values subdivision neighborhoods that offer options of walking, biking or short-distance driving that will create a sense of "Community Care".

## **Clarkdale**

This is the smallest growth area, and is located in northeastern Yavapai County. This area has ample growth opportunities with its proximity to Yavapai College, the Cottonwood Airport and tourist attractions in Cottonwood and the surrounding areas, such as the Verde Canyon Railroad. Mixed-use development is encouraged to create a balance of quality residential neighborhoods and commercial development, as the area continues to grow. This area is like the Cornville Road and the Page Springs growth area, with an increasing number of wineries, vineyards and tasting rooms. Agricultural Hospitality land use is encouraged in this area, along with supporting uses for the nearby college, which might include office and medium density residential.

## **Congress**

This growth area along Highways 71 and 89 is slowly growing in commercial and more intense uses. At the same time, the residential community maintains a small-town rural appeal. Any new commercial or uses along the main highway corridors are encouraged to maintain a large landscape buffer from the roadway, to maintain the rural feel and character and to mitigate impacts onto the community. Local community services are encouraged, such as restaurants, medical and emergency services. The proximity to Yarnell and Wickenburg make this an appealing growth area along the highways.

## **Cordes Junction**

This growth area in the southeastern part of Yavapai County is located around the Interstate 17 and Highway 69 interchange. Currently this area is growing in travel centers and commercial activities for those traveling along Interstate 17 on their way to Flagstaff, Prescott, and further north. The community first developed with several single-family homes just south and east of the junction, which have been planned as part of a smaller community plan. There are several vacant parcels within the community that will likely be developed in the near future. This is a heavily traveled area of the County, and increased commercial and light industrial activity is expected to develop here.



## **Cornville Rd – Page Springs**

This growth area is located in northeastern Yavapai County, and is focused around the intersection of Cornville Road and Page Springs Road. This area of the County is prime for Agricultural Hospitality land use such as vineyards, wineries, breweries, tap houses and similar businesses. Lower density single-family residential uses are also encouraged in this growth area. There is also a desire to establish a multi-use community center that will focus the community development within the core area.

## **Fain**

This growth area is located south of Highway 89A and east of Fain Road on the way to Jerome and Prescott Valley. This growth area has significant untapped land potential and state trust land availability for master planned and large-scale development. This area should encourage a comprehensive mix of land uses including high density residential, employment, office and commercial uses in order to provide a sustainable community. Additionally, this area will require utilities to be extended and additional roadway infrastructure, including an extension of Lakeshore Drive and improved connections for Old Fain Road.

## **Paulden**

This large growth area is located north of Chino Valley in northern Yavapai County. It is focused along Highway 89, including a mile out on either side of the Highway, and then following east along Big Chino Road. This area is scattered with state trust land which is prime for development. It also includes the outlying rural areas between Chino Valley and Big Chino. It is characterized by rural unimproved roads with low density and large tracts of undeveloped private and public lands. Low density residential is encouraged in this growth area, with some commercial and employment focus along Highway 89. Public community facilities and recreational opportunities for the local community are also encouraged.

## **Prescott Valley/Prescott**

This smaller growth area is focused on the unincorporated areas around Prescott and Prescott Valley that are just south of Chino Valley. The vision for this area is to promote new and re-development growth that will be complementary to the surrounding areas. This area has potential employment and industrial opportunities around the Prescott Regional Airport, and potential associated commercial and employment uses, with additional housing being necessary to support such growth.

## **Seligman**

This large area comprises parts of Big Chino and encompasses large amounts of BLM land, Arizona State Trust Lands and US Forest Service land. This area is focused on keeping the rural feel of the area, with large residential lots, small amounts of commercial and employment uses and a slow pace of growth and services.

## **Spring Valley-Mayer**

This linear growth area is located in the southwest portion of Yavapai County along Highway 69, just north of Cordes Junction. It has ample highway frontage, and is primarily residential in

nature. This growth area is focused on residential growth, with scatterings of higher density residential.

### **Village of Oak Creek**

This growth area is focused on supporting the growth of low-density, low-rise residential. It will also focus on making the community more walkable and embracing development that is compatible with the rural and natural open spaces and views. Commercial uses are encouraged to remain away from the residential areas along the main highway corridors.

### **Wickenburg**

This growth area along Highway 60 and 93 is prime for tourism and commercial expansion near its central core, while the perimeter areas preserve their rural and equestrian lifestyle. Low density, open spaces and trails are encouraged outside the town core, while commercial and tourism is encouraged in the denser core area. Recent master planned communities that have come into the fringes of the area have been encouraged to provide comprehensive planning and infrastructure while also maintaining the rural landscape and design, as seen throughout the rest of the community.

### **Yarnell**

This growth area focuses along Highway 89 for commercial opportunities with low density residential areas just east and west of the highway. Improved connections and infrastructure should be planned to provide more facilities for residents and visitors. The community welcomes services for the local community such as restaurants, medical facilities and other services.

## **6.6 Growth Areas Goals and Policies**

### **Goal 1: Identify potential Growth Areas as targets for future development**

- **Policy 1a:** Identify areas that are suitable for planned multimodal transportation and infrastructure expansion to support residential, office, commercial, tourism and industrial uses.
- **Policy 1b:** Review existing zoning, land use, topography, and transportation studies of potential growth areas to verify that they are suitable for growth.
- **Policy 1c:** Give preference to development within areas that already have water systems, wastewater management systems, and electrical distribution systems.
- **Policy 1d:** Develop Growth Area maps to designate specific geographic areas that are good candidates for growth.
- **Policy 1e:** Show areas that are not good areas for growth (such as wetlands, areas of historic or archeological significance, scenic areas, habitats of endangered species, and floodplains) on the growth area maps, and strongly discourage development in those areas.

### **Goal 2: Use Growth Area maps to direct future development**

- **Policy 2a:** Discourage high-density developments outside of designated Growth Areas.

- **Policy 2b:** Approve major new developments only in Growth Areas where there is adequate infrastructure, including roads, water, wastewater management, fire protection and utilities.
- **Policy 2c:** Update Growth Area maps annually to reflect recent trends in growth.

### **Goal 3: Direct appropriate development into the designated Growth Areas.**

- **Policy 3a:** Ensure that new development is consistent with the Goals and Policies of the Transportation and Land Use Elements.
- **Policy 3b:** Encourage and invite municipalities to participate in the review process where designated Growth Areas are near municipal planning areas.
- **Policy 3c:** Strongly discourage new development that is incompatible with surrounding development, given the anticipated higher density within Growth Areas.
- **Policy 3d:** Build economic vitality within Growth Areas by balancing living wage employment opportunities with reasonably priced multifamily housing.
- **Policy 3e:** Support a variety of land uses appropriate to each Growth Area, which include diverse housing types and densities, employment opportunities and access to retail and the commercial centers.
- **Policy 3f:** Encourage the location of public facilities and civic facilities within Growth Areas.
- **Policy 3g:** Preserve existing stable and distinct neighborhoods within Growth Areas by providing buffering and transitioning land uses.
- **Policy 3h:** Encourage the development of reasonably priced housing near hotels, subdivisions, PADs and commercial developments to locate workers near their place of work by offering incentives such as reduced development fees or reduced taxes for a specified duration.
- **Policy 3i:** Encourage improvements to developed properties where the surrounding infrastructure, including multimodal transportation, will increase the utility and value of existing development.
- **Policy 3j:** Offer tax incentives within Growth Areas to encourage rehabilitation or redevelopment of derelict properties that are compatible with surrounding communities.
- **Policy 3k:** Encourage the construction of new public facilities and civic uses within the Growth Areas.

### **Goal 4: Preserve significant natural resources and open areas within Growth Areas.**

- **Policy 4a:** Ensure that new development within Growth Areas is consistent with the Goals and Policies of the Open Space Element.
- **Policy 4b:** Request the preservation of open space and walking/cycling trails in new developments within Growth Areas, and encourage Open Space stake holders to participate in the review process for new development
- **Policy 4c:** Encourage the creation of buffers around new development to better preserve the surrounding open space and wildlife areas.

### **Goal 5: Provide for efficient transportation with minimal congestion**

- **Policy 5a:** Encourage the locating of new high-intensity employment along major highway corridors that are able to support additional traffic



- **Policy 5b:** Encourage the development of a balanced multimodal transportation system that is not exclusively dependent on private automobiles, with jobs, housing and commercial activity in close proximity.
- **Policy 5c:** Encourage growth along multimodal transportation corridors to facilitate employee-to-employment connections.

## **Goal 6: Provide public infrastructure funding and timely public infrastructure expansion.**

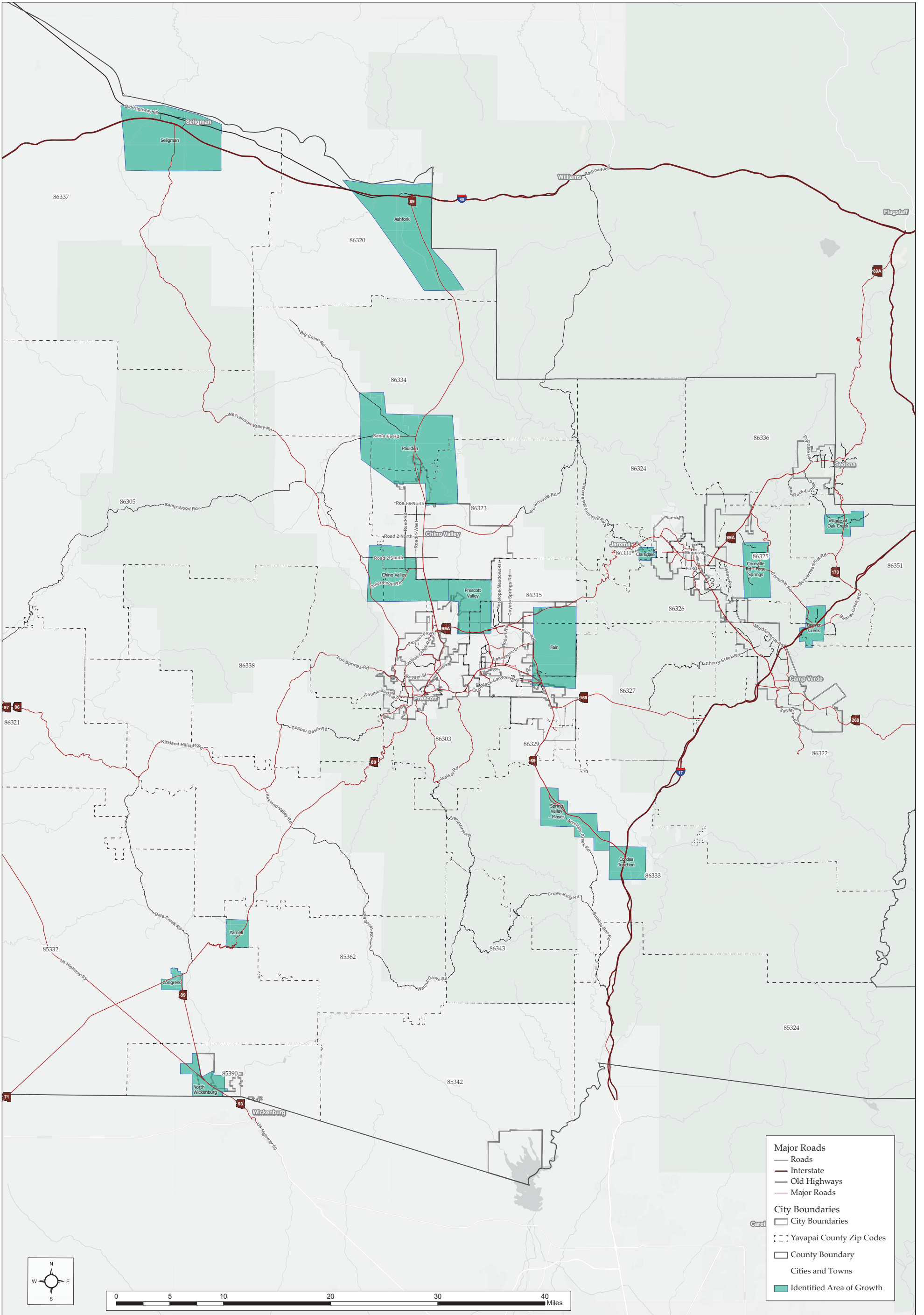
- **Policy 6a:** Ensure that the public funding of new development is consistent with the Goals and Policies of the Cost of Development Element
- **Policy 6b:** Coordinate infrastructure improvements with managed growth to achieve efficient and orderly growth.
- **Policy 6c:** Plan for increased circulation due to future growth when doing transportation planning for the designated Growth Areas.
- **Policy 6d:** Encourage development within Growth Areas, where resources and infrastructure are already in place, or can be reasonably extended.
- **Policy 6e:** Coordinate with developers to determine the necessary public and private infrastructure requirements.
- **Policy 6f:** Require developers to either fully develop adequate infrastructure to support their development or to deposit cash-in-lieu into the Town's infrastructure Capital Improvement Program (CIP) fund.
- **Policy 6g:** Provide discounted development fees for new development proposals within designated Growth Areas that already have adequate existing infrastructure.
- **Policy 6h:** Coordinate public and private investments within Growth Areas through the establishment of public/private partnerships and/or development agreements.
- **Policy 6i:** Periodically review and update Growth Area maps based on development trends to proactively identify areas with the greatest potential for growth and economic development.
- **Policy 6j:** Periodically review and update plans for new infrastructure and infrastructure improvements within Growth Areas, based on ongoing development patterns.
- **Policy 6k:** Coordinate Growth Area designations with Economic Development for Improvement and Opportunity areas, for which Federal or State funding might be available to encourage further development.

### **6.7 Growth Areas Recommendations**

- Continue to proactively identify those areas with the greatest potential for growth.
- Review market conditions indicative of development trends to determine best growth practices and economic development.
- Consider code and policy updates regarding short term rentals to better help the communities in Yavapai County in compliance with Senate Bill 1168 to ensure compatibility with the surrounding communities.
- Review new development proposals in the context of all of the elements, to ensure that they are compatible with the overall Goals of the Comprehensive Plan
- Ensure that planned infrastructure improvements are well coordinated with the needs of new development.
- Align Growth Areas with Economic Development for Improvement and Opportunity areas for which federal or state funding might be applied to promote development.
- Ensure that Community Vision Statements and Community Plans are reviewed by applicants and developers, and considered during the entitlement hearing process.



# Comprehensive Plan Growth Area



## **7. Environmental Planning**

### **7.1 Introduction**

Arizona Revised Statutes (A.R.S.), 11-804 Comprehensive plan; contents – states the following as it relates to the importance of natural resources: *The comprehensive plan shall be developed so as to conserve the natural resources of the county, to ensure efficient expenditure of public monies and to promote the health, safety, convenience, and general welfare of the public. The environmental planning element shall contain analyses, policies and strategies to address anticipated effects, if any, of plan elements on air quality, water quality and natural resources associated with proposed development under the comprehensive plan*

Based on the above state requirements, the Yavapai County Comprehensive Plan includes an Environmental Planning Element with sections on analyses, policies, and strategies to uphold the environmental integrity of Yavapai County in a sustainable way. This will address anticipated effects on air quality, water quality, natural resources and healthy communities associated with existing and future developments. The policies and strategies in this element are designed to have countywide applicability and to be consistent with County's Values and Vision.

Outreach meetings and survey results have demonstrated that Yavapai County residents take pride in the natural environment. Although our environmental quality is generally excellent, development pressures and human activities continually pose threats. Maintaining healthy natural systems is considered to be an investment in our future that supports our quality of life, helps maintain property values, promotes economic development and encourages growth in tourism.

Residents have indicated a desire to protect the environment, but acknowledged the need to balance that against competing interests. Approaches to large-scale planning and community development will need to consider limited public agency budgets, private property rights, market demand for certain types of development and State Statutes. Balancing these issues with conservation is a primary planning objective.

### **7.2 Environmentally Sensitive Lands**

Environmentally sensitive lands include areas with critical resources. These include floodplains, riparian zones, rivers and streams, wetlands, springs/seeps and steep slopes. These areas provide habitat for rare or endangered plant and animal species. In addition, some are important for groundwater recharge. Environmentally sensitive lands require special consideration during the development/design process. Through integrated conservation design or similar measures, we can maintain or increase land values by retaining as much of their natural characteristics as possible.

Early settlement tended to occur along drainage ways and floodplains for practical reasons. These areas provided tillable land for farming and shelter, shade, and a source of water in the arid climate. Today's private land ownership patterns reflect this pattern. Floodplains also provide habitat for a large percentage of the native flora and fauna, create a wildlife movement area and serve as important repositories of biological diversity. The Federal Emergency Management Agency (FEMA) has designated floodplains for most watercourses (both year-round and ephemeral) on maps showing surface water elevations during 100-year floods. Although Yavapai

County allows development within the 100-year floodplain, minimizing construction in these areas helps protect riparian vegetation and wildlife communities.

Riparian areas facilitate movement and provide water, food, and cover for many species of wildlife. Many land uses compete for riparian resources, challenging conservation efforts. Furthermore, because water is scarce, management decisions must often balance human uses (recreation, drinking water, irrigation and livestock use) with conservation issues.

Wetlands are formally delineated by the U.S. Army Corps of Engineers, as specified in the Clean Water Act, based not just on the presence of water but also of saturated soils and certain vegetation types. Wetland habitat in Arizona is rare because of the State's aridity, high evaporation rates, rapid saturation rates, and steep topography. Consequently, it is highly valuable to wildlife. Wetlands typically contain shallow depths of permanent or semi-permanent fresh water, along with an abundance of plants such as duckweed, cattail, rushes, sedges, and certain types of trees, such as cottonwoods. These areas are used for recreation (fishing, canoeing/kayaking, hunting, bird watching), wildlife habitat, water protection, flood retention, groundwater recharge and a variety of municipal water needs.

Perennial streams and rivers in Yavapai County include the Verde River, Oak Creek, Wet Beaver Creek, West Clear Creek, and the Agua Fria River and tributaries. Although highly valued for human uses, areas bordering surface water not only provide habitat, but they also perform important hydrologic functions such as discharging floodwaters, filtering storm water runoff and recharging groundwater.

Steep slopes and ridgelines can also be environmentally sensitive for many of the same reasons mentioned previously. Property owners often desire steep slopes for residential construction because they can offer spectacular views. However, these slopes might contain a wide range of vegetation types, and provide valuable habitat for a diversity of bird and wildlife species. Slopes can also often have unstable, highly erodible soils.

### **7.3 Wildlife**

Yavapai County features impressive, grand landscapes, valued not only for their scenic qualities, but also for their wildlife corridors, and the wildlife that inhabits them. Many factors impact wildlife survival, including changes in the available habitat, vegetation and water, as well as species competition, predators, disease and parasites. Federally designated critical habitats are important components of our landscape and ecosystems, because they protect Threatened and Endangered Species (TES).

The health of any wildlife species is strongly related to the quality of its habitat. Contiguous areas of habitat can be critical to species that migrate seasonally. These contiguous areas can be fragmented, altered or destroyed by development, wildfires, roadways or concentrated human activity. Fragmentation of wildlife habitat can threaten a species long-term survival, isolating wildlife populations and disrupting ecological functions. The *Arizona Wildlife Linkages Workgroup* (AWLW), a partnership of public and non-governmental agencies, is currently working on completing their *Arizona's Wildlife Linkages Assessment*. This assessment documents and maps initial efforts to identify habitat blocks, fracture zones and potential linkage zones in an effort to promote wildlife habitat connectivity for Arizona's wildlife. The Assessment

is intended to provide a framework for land managers and planners to assess strategies for facilitating mitigation, such as wildlife crossings, land protection measures and community planning.

## **7.4 Vegetation**

Within Yavapai County there are seven distinct biotic communities, which support a diversity of vegetative communities. Additionally, riparian areas support different and diverse plant communities growing around springs and along perennial (usually running) and ephemeral (flows in response to storm events) waterways.

These Seven Biotic Communities are:

- Sonoran Desert scrub
- Mojave Desert scrub
- Chaparral
- Plains and Great Basin Grasslands
- Semi-desert Grasslands
- Pinon Pine-Juniper Woodland
- Montane Ponderosa Pine Forest

### **7.4.1 Sonoran Desert scrub**

Located below about 3500 feet, these communities are characterized by large cacti and tall tree-like shrubs consisting of Saguaro, Teddy-Bear Cholla, Chain Fruit Cholla, Organ Pipe Cactus and Barrel Cactus. Mesquite, Ironwood, and Palo Verde are common “trees” found in this desert.

### **7.4.2 Mojave Desert scrub**

Located between 3,000 and 5,000 feet on gravelly slopes that are characterized by very hot, dry summers and cold winters, these communities are quite barren and desolate in appearance, with low, scattered shrubs such as Creosote Bush or Shadscale.

### **7.4.3 Chaparral**

Located at elevations from 4,000 to about 6,000 feet, these communities consist largely of dense scrub thickets that are a mix of several species of shrubs such as Mountain Mahogany, Shrub Live Oak, Manzanita and Silk Tassel. Succulent plants, including Prickly Pear Cactus, Agave and Yucca, commonly grow alongside the scrubs.

### **7.4.4 Plains and Great Basin Grasslands**

Located at elevations above 3,500 feet, these communities are southwestern extensions of the prairies found in the Great Basin and High Plains, with small shrubs or desert “trees” such as Mesquite

### **7.4.5 Semi-desert Grasslands**

Located above 3,500 feet, these communities consist of grasses that are often mixed with succulent plants, such as Prickly-Pear Cactus, Yucca or Century Plant.

### **7.4.6 Pinon Pine-Juniper Woodland**

Located at elevations from 5,000 to about 7,000 feet, this type of woodland grows where annual precipitation ranges from 12 to nearly 20 inches. The open nature of the woodland allows for many kinds of shrubs, grasses and wildflowers among the small trees. The tree species of this community have inherited drought resistance from southern areas and cold resistance from northern areas. Juniper tends to grow in the more arid areas, as its scaled foliage allows it to conserve water more effectively than pinon pine, which grows in slightly wetter areas.

#### **7.4.7 Montane Ponderosa Pine Forest**

Located at elevations from 6,000 to about 8,000 feet, these forests often form essentially pure strands of trees covering thousands of acres. They are characteristically open and park-like, with large trees scattered about, with grasses and shrubs beneath. Gamble oak is the most important associate of Ponderosa Pine in these forests. Other plant species include Cliffrose, Currant and Apache Plume.

#### **7.4.8 Invasive Plants**

Our ecosystems have been impacted by the intentional or accidental introduction of invasive, non-native species. These plants tend to initially occupy disturbed sites, and then invade adjacent natural areas, spreading rapidly and displacing native species. Their colonization and spread can seriously threaten ecosystems. If these plants are not aggressively controlled, many ecosystems risk significant adverse impacts to their biological integrity.

Invasive, non-native species can disrupt complex ecosystems and their processes, reduce biodiversity, degrade wildlife habitat, jeopardize endangered species and alter genetic diversity. Such species can also harm to horses, livestock, and wildlife and can decrease the quality of life for residents. They can also damage meadows and riparian areas, increase fire frequency and increase the rates at which fire spreads. They tend to occupy severely burned areas, damaged riparian areas, roads and utility corridors, heavily used recreation areas and other disturbed sites.

### **7.5 Forest Ecosystem Health**

The United States Forest Service (USFS) manages about 38% of the land in Yavapai County. Most of that land lies within the Prescott National Forest and the Coconino National Forest. The rest lies within the Kaibab National Forest and the Tonto National Forest. To guide their activities on these lands, the USFS relies on management plans, which were adopted mostly in the late 1980's, and have been amended numerous times since. Federal management policies support multiple uses, such as logging, grazing, mining and recreation.

Recent years have brought increasing attention to forest health, fire hazards, the Wildland/Urban Interface, conflicting uses, access and road issues, and the tremendous increase in recreational use. Increased public awareness and concern has led to an open process for developing new wildland management plans. Cooperation between the USFS and local communities are essential for improving forest health and ensuring that future development in forested areas meets criteria for property protection and environmental conservation.

### **7.6 Air Quality**

Yavapai County has exceptional air quality, and that is considered to be one of our most important assets. Maintaining this air quality is deemed important - not only for public health but also for

protecting our scenic views. Our air quality is high due to the lack of heavy industry. Attracting new, non-polluting industries will help us maintain this high standard. Arizona Department of Environmental Quality (ADEQ) is responsible for issuing air quality permits, monitoring air quality and enforcing regulations. All areas in Northern Arizona meet the Federal standards set by the United States Environmental Protection Agency (U.S. EPA).

Air pollution in Yavapai County comes from three sources: (1) dust and other particulates, (2) prescribed and unprescribed burns and (3) regional haze. Occasionally, high particulate problems originate locally from wind-blown fugitive dust, dust from traffic on unpaved roads, construction activity and wood stove and fireplace smoke. Dust from dirt roads generates most of the local residents' concerns. We have little local control over the other sources. Prescribed burns are necessary to reduce fire risks, to improve forest health, to maintain wildlife habitat and to improve grazing resources. ADEQ permits prescribed burns and fire managers use models to predict smoke dispersion characteristics and to determine the best timing for these burns.

## 7.7 Healthy Communities

Healthy Communities in Yavapai County is not solely based on the environment around us but also is based on getting residents access to widespread access to nutritious and affordable food through regional agricultural growers, food processors, distributors, that contribute to economic prosperity, a sustainable natural environment, and community health.

Yavapai County recognizes that a healthy food system is also a key component in the future of our communities. Fresh food should be available to all and ensuring that it is needs to come through ensuring there are enough water resources, transportation system to distribute that food and land to properly provide the food. Creating safe environments to grow, distribute and nurture those food resources is a vital component of a sustainable environment for our entire community.



Yavapai County has opportunities to ensure through proper planning and land development to ensure fresh farm products are available to those in a close proximity given all the available open land and resources the County offers, but thoughtful discussion must be taken during the planning process to ensure that space is allocated to serve those existing and new residents as more and more development comes into the County to not remove land which could be useable for such food production and therefore serve the surrounding communities most effectively.

## 7.8 Environmental Goals and Policies

### Goal 1: Maintain a high level of water conservation.

- **Policy 1a:** Encourage developers to incorporate native landscaping, reclaimed water irrigation systems, and drip irrigation.
- **Policy 1b:** Provide developers with design guidelines and landscaping standards that provide for water harvesting through stormwater management and watercourse design.

- **Policy 1c:** Encourage water conservation on residential properties through water harvesting, low-water-use fixtures, toilets and appliances, efficient drip irrigation and low-water-use landscaping.

## **Goal 2: Maintain and improve air quality**

- **Policy 2a:** Promote the creation of road improvement districts, dust control districts and road maintenance districts to help mitigate dust problems on unimproved roads, and to allocate the costs to those who directly benefit.
- **Policy 2b:** Promote the use of environmentally sound low-dust road surfaces, and promote dust control measures on unpaved maintained roadways
- **Policy 2c:** Promote the use of permeable paving of road surfaces where appropriate.
- **Policy 2d:** Employ improved road design standards to reduce dust.
- **Policy 2e:** Support alternative modes of transportation to reduce vehicle traffic levels on unpaved roads.
- **Policy 2f:** Regulate open burning.
- **Policy 2g:** Implement appropriate dust-control measures during the construction and maintenance of county facilities.
- **Policy 2h:** Deploy air quality monitoring systems to gather data in areas where residents have reported excessive dust or wood fire particulates to be a problem.

## **Goal 3: Preserve cultural and archaeological sites**

- **Policy 3a:** Engage with and invite representatives of local Native American Communities, where appropriate, to voice their concerns during the design and review of proposed developments, to ensure that their concerns about potential adverse impacts on tribal lands are addressed.
- **Policy 3b:** Encourage developers to provide archaeological studies or letters with their development plans to address potential issues of concern ahead of time.

## **Goal 4: Ensure environmentally conscious development.**

- **Policy 4a:** Discourage development on floodplains to protect riparian areas and to facilitate water infiltration into the ground.
- **Policy 4b:** Provide map overlays showing floodplains and riparian areas for use by the Planning and Zoning Commission, to review and evaluate development proposals.
- **Policy 4c:** Encourage major developments to use Transfer of Development Rights (TDRs) to preserve areas of their property with steep slopes, floodplains, watersheds and wildlife habitat areas, in exchange for the right to higher density development on areas that are more appropriate.
- **Policy 4d:** Encourage major developments to use efficient technologies for wastewater treatment and effluent re-use.
- **Policy 4e:** Encourage water harvesting for landscape watering on residential and commercial properties.
- **Policy 4f:** Encourage the inclusion of community gardens and open space within major developments.
- **Policy 4g:** Consider the impact on scenic vistas and wildlife corridors when evaluating the development of utility-scale photovoltaic or wind turbine systems.



- **Policy 4h:** Favor the installation of renewable energy systems on already developed areas (such as rooftops) rather than undisturbed vacant land.
- **Policy 4i:** Encourage the use of utility-scale energy production technologies that require less water use for their production and maintenance.
- **Policy 4j:** Encourage developers to provide environmental studies or letters with their development plans to address potential issues of environmental concern ahead of time.
- **Policy 4k:** Consider potentially positive as well as adverse regional impacts as part of the project review process, including how it will impact the County as a whole.

### **Goal 5: Preserve wildlife and wildlife corridors.**

- **Policy 5a:** Post signs along roadways to alert motorists to the likely presence of crossing wildlife.
- **Policy 5b:** Encourage development projects to preserve wildlife corridors, avoid habitat fragmentation, and install wildlife crossings or tunnels to allow for safe animal migration through the project area, and to avoid traffic conflicts and accidents.
- **Policy 5c:** Encourage development projects to preserve important wildlife habitat and environmentally sensitive land.
- **Policy 5d:** Encourage land owners and developers to use the Open Space or the Sustainable Development Option to preserve open spaces and wildlife corridors.
- **Policy 5e:** Encourage land owners to use conservation easements where appropriate to protect wildlife corridors and important open space areas.

### **Goal 6: Preserve and restore native vegetation.**

- **Policy 6a:** Collaborate with government, tribal, business and volunteer groups to procure funding to mitigate degradation of riparian and forested areas through reduction of invasive species, planting native plants, tree thinning and the use of downed timber.
- **Policy 6b:** Encourage developers to revegetate disturbed areas, and to landscape shared public areas with native plants and drought-tolerant species that are appropriate to the area.
- **Policy 6c:** Require major construction projects involving ground disturbance or road construction to submit a weed management plan.

### **Goal 7: Reduce waste and litter within the county**

- **Policy 7a:** Encourage recycling programs and on-going education programs through schools and other local resident programs.
- **Policy 7b:** Provide opportunities for residents, Homeowner's Association (HOAs), and businesses to rent roll off dumpsters at a discounted rate when clearing out derelict properties.
- **Policy 7c:** Encourage the installation and maintenance of trash receptacles every 1/4 mile along highly-traveled pedestrian paths and trails.
- **Policy 7d:** Have landfills and transfer stations publicize monthly discount days (or free days) to reduce illegal dumping.
- **Policy 7e:** Publicize recycling programs at all County waste transfer stations.
- **Policy 7f:** Provide for hazardous waste disposal at all County waste transfer stations.
- **Policy 7g:** Partner with public land agencies to prevent excessive trash accumulation from off-road camping.

## **Goal 8: Preserve natural landscapes and wildlife.**

- **Policy 8a:** Protect ecosystems in riparian areas around perennial and intermittent streams, springs, rivers and lakes.
- **Policy 8b:** Protect Fossil Creek and the Verde River as the only remaining Wild and Scenic Rivers inside the state of Arizona.
- **Policy 8c:** Encourage land owners and developers to use conservation easements to preserve riparian areas on their land.
- **Policy 8d:** Enhance wildlife corridors that cross public open spaces by removing fences that serve no purpose.
- **Policy 8e:** Encourage property owners within wildlife corridors to use wildlife-friendly fencing.
- **Policy 8f:** Preserve native plant life, ecosystems, habitats, wildlife watering areas and wildlife corridors on natural-landscaped public land.
- **Policy 8g:** Prohibit the use Off-Highway Vehicles (OHVs) within riparian areas, except at designated crossing points.
- **Policy 8h:** Minimize disturbance or damage to wetlands and riparian areas during Yavapai County construction projects.
- **Policy 8i:** Encourage major developments to leave any open space in its naturally landscaped state.
- **Policy 8j:** Consult maps of wildlife corridors when designating Growth Areas, and when approving new developments and new road alignments.
- **Policy 8k:** Consider sensitive riparian areas, scenic areas, habitats of endangered species, floodplains, flood hazard areas, and areas of historic or archeological significance during the review of new development proposals.
- **Policy 8l:** Ensure that OHV operators obey posted speed limits, stay on established roads and drive in a manner that avoids damaging the environment.

## **Goal 9: Conserve and protect the quality of surface water and groundwater reserves**

- **Policy 9a:** Employ native or low-water-use, non-invasive plants for new landscaping on county properties.
- **Policy 9b:** Encourage the use of native and low-water-use plants for landscaping in new development, to reduce water use and to reduce the spread of invasive plants on public lands and natural areas.
- **Policy 9c:** Require developers of major projects to provide a centralized wastewater treatment system, to eliminate the need for septic systems.
- **Policy 9d:** Encourage homeowners to upgrade outdated septic systems by waiving any permit fees for their replacement.
- **Policy 9e:** Inform residents with private septic systems about the importance of having their septic tanks serviced at least once every 5 years, to protect ground water quality.
- **Policy 9f:** Enforce laws prohibiting the disposal of hazardous materials, especially in the vicinity of riparian areas.
- **Policy 9g:** Provide County facilities that accept hazardous waste.
- **Policy 9h:** Discourage high-density residential development near rivers, streams, springs, seeps and marshes.

- **Policy 9i:** Employ permeable paving of roads where appropriate and beneficial.
- **Policy 9j:** Make provisions for sanitary disposal of domestic animal waste on heavily-used trails and in public areas, particularly near streams and rivers.

### **Goal 10: Maintain Dark Skies across the county**

- **Policy 10a:** Ensure that outdoor lighting complies with the county’s Dark Sky ordinance.

### **Goal 11: Maintain scenic views**

- **Policy 11a:** Discourage high profile structures that obstruct viewsheds in scenic areas.
- **Policy 11b:** Discourage developments on ridge tops.
- **Policy 11c:** Encourage deeper setbacks along scenic roadways to avoid obstruction of viewsheds.

### **Goal 11: Prevent and effectively respond to wildfires**

- **Policy 11a:** Encourage rural residents to conduct fuel reductions on their properties and publicize events and locations where those residents can dispose of landscaping, yard wastes and tree trimmings.
- **Policy 11b:** Educate and encourage rural property owners to implement Firewise measures to reduce their vulnerability to wildfires.
- **Policy 11c:** Require new developments within forested areas to implement necessary Firewise measures.

## **7.8 Environmental Recommendations**

- Coordinate with Resource Management Agencies to document criteria to maintain wildlife integrity and trail corridors.
- Partner with public land agencies to create standards to protect Wildland/Urban Interfaces.
- Create designated wildlife protection corridors to ensure that developments do not impede wildlife from migrating or passing through their natural territories.
- Create a marketing campaign to market Yavapai County as wildlife friendly, with preserved corridors, open spaces and wildlife connections with wildlife bridges and tunnels to bring in ecotourism from wildlife and nature enthusiasts.
- Adopt native plant palettes based on the various ecological zones within Yavapai County to encourage landscaping with native plants and to help wildlife to thrive in their native ecosystems.
- Create native or recommended plant lists, to guide homeowners in their creation of low-water-use residential landscaping, and the planting of non-invasive wildflowers for meadows.
- Create a county-wide action plan that addresses future County mitigation efforts to prepare for drought, floods, and wildfires.
- Create a county guide including instructional materials for the use of low water landscaping and include the native plants suggested for various zones in the County.
- Continue to refine the development code to incorporate evolving standards on water and wastewater requirements.
- Partner with local jurisdictions about Off Highway Vehicle (OHV) use, trails and preferred locations to develop a regional OHV Plan.

- Encourage and assist Road Improvement Districts to maintain dirt roads to a standard that minimizes dust issues.
- Create a Transfer of Development Rights (TDRs) code to help for the preservation of sought after open space and mitigating development in environmentally sensitive areas.
- Educate residents and businesses on the Dark Sky Ordinance and Light Ordinance to provide safety, visibility and limited glare and light spillage.
- Update the Lighting Ordinance based on the latest lighting technology, including lumen levels and requirements to support a dark sky community.
- Invite local Native American Community leaders and planners to engage in discussions about sensitive land issues and future development plans, for better coordination as a partnership.
- Apply air quality control measures, such as restrictions on fires and wood burning when adverse air quality measures indicate a need.
- Have the County Geographical Information System (GIS) create map overlays showing floodplains and riparian areas for use by the Planning and Zoning Commission to review and evaluate development proposals.
- Partner with public land agencies and other jurisdictions to create development guidelines for management of Wildland/Urban Interfaces.
- Create a Transfer of Development Rights code to clarify how the county will work with private landowners to grant development concessions in exchange for TDRs.
- Collaborate with State and Federal land agencies, and with local jurisdictions, to develop a regional Off-Highway Vehicle (OHV) management plan that includes posted speed limits, signage that clearly indicates appropriate areas for vehicles, plans for necessary trail maintenance, and noise limits in residential areas.
- Consult with Resource Management Agencies to document best practices for maintaining wildlife integrity and wildlife trail corridors.
- Create maps that show existing wildlife migration corridors through their natural territories, and use those maps to guide developers in avoiding the destruction or blocking of those corridors.
- Encourage farms, ranches and agricultural operations to use regenerative practices to replenish soil and water resources.
- Create comprehensive guidance for invasive weed management and a weed ordinance.
- Implement an ordinance requiring the covering of loads within the County.
- Create a Natural Resource Inventory Database and GIS maps of riparian areas, areas of historic or archeological significance, scenic areas, habitats of endangered species, floodplains and flood hazard areas, for use during the review of new development proposals.
- Continuously update development codes to incorporate evolving wastewater standards.
- Develop educational materials for maintaining septic systems effectively.
- Create a guide for developers and residents, to clarify the requirements for compliance with the county Dark Sky ordinance.
- Submit an application to the become the first Dark Sky County in the nation. <https://www.darksky.org>
- Create regional emergency plans, including evacuation routes, for dealing with potential wildfires.
- Create and enforce a County noise ordinance with upper limits set for all vehicles, including Off-Highway Vehicles.

## **8.0 Energy**

### **8.1 Introduction**

The Energy Element of the Comprehensive Plan addresses the need and opportunity for energy-efficient technologies and behaviors. It also promotes the use of clean energy sources, such as solar, wind, geothermal, and biofuels. This element places the County in a stronger economic, environmental, and social position for development in the future.

The Energy Element of a County Comprehensive Plan is required in Arizona Revised Statute (ARS) §11-804. The Statute calls for a plan to reference policies that advocate and provide incentives for the efficient use of energy, and an assessment to identify policies and practices that increase the use of renewable energy sources. The Energy Element is also required for jurisdictions with populations between 125,000 and 200,000 by the Growing Smarter Plus Legislation that went into effect in May of 2000.

### **8.2 Purpose**

The Yavapai County Energy Element is an important component of the Comprehensive Plan. By developing a comprehensive energy strategy now, the County can be prepared to shape sustainable growth over the next ten years. Through the Energy Element, the County can encourage the efficient use of energy and promote clean, renewable energy production. The regional environment could be adversely affected by the methods used for energy generation and distribution. Yavapai County needs to promote conservation to protect sensitive areas within the regional environment. To minimize the adverse impacts and issues of siting large-scale facilities, key items will need to be addressed such as noise, visual aesthetics, water usage, protection of sensitive areas, and energy storage.

The County can also encourage responsible energy use by supporting enhanced building construction design to provide additional energy efficiencies, as well as by encouraging mixed sustainable land uses. Good energy policies can also provide economic and environmental benefits for County residents. There is a growing societal awareness of the need to use renewable energy resources and technologies, as a departure from reliance on non-renewable energy resources. This increased awareness is due in part to local, State, and Federal incentive programs, along with the requirements and guidelines of various agencies outside of Yavapai County.

### **8.3 Background**

In 2020, the US Congress built upon the Energy Policy Act of 2005 to incorporate new energy-related tax provisions. Its updated energy efficiency provisions included authorization of funding for energy efficiency programs such as weatherization and energy efficiency improvements in federal buildings, public schools, and data centers. It also provides incentives for combined heat and power systems. A new Smart Energy and Water Efficiency Pilot Program was also created, which offered grants to water authorities that provide water, wastewater treatment, or water reuse services. The bill also reauthorized the existing Weatherization Assistance Program (WAP) through fiscal year 2025.

The bill also focused on several areas of Energy production and distribution, which included Nuclear Energy, Renewable Energy and Storage, Carbon Management & Removal, Industrial and Manufacturing Technologies, Critical Minerals, Grid Modernization, Department of Energy Innovation, Hydrofluorocarbons, and Energy Tax Credits

The bill also reauthorized the Department of Energy’s wind energy research program, including, onshore, offshore, and distributed systems, as well as creating a wind technician training grant program. The department’s solar energy research program was also reauthorized, and includes a directive for research on solar photovoltaic heating and cooling, grid integration, while also creating a manufacturing initiative to enhance domestic capabilities.

The bill directed the DOE to create an Energy Storage System Research, Development, and Deployment Program to improve technologies ranging from distributed batteries and control systems for grid integration to long-duration storage technologies such as pumped hydro and compressed-air energy storage. A new grant program was also created to assist rural electric cooperatives and public utilities in the design and demonstration of energy storage and microgrid projects that use energy from renewable sources.

The Department of the Interior is also directed to establish at least 25 gigawatts of solar, wind, and geothermal production on public lands by 2025, providing flexibility to the Secretary to ensure that those projects are cost competitive.

The bill also included several provisions intended to encourage the development and evaluation of technologies that would *serve to increase the technological and economic competitiveness of U.S. industry and manufacturing*, while decreasing non-power sector industry emissions. To accomplish this, the bill establishes a research and development program focusing on decarbonization strategies for various industrial sectors, including steel, aluminum, and chemical manufacturing, in addition to emission reductions from shipping, aviation, and other long-distance transportation.

The original Energy Policy Act, which passed in 2005, was seen as an attempt to address the country’s growing energy concerns. It allowed for “net metering”, which is defined as follows: *Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term “net metering service” means service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period.*

## **8.4 Current Conditions**

In 2010, the Board of Supervisors adopted definitions for solar and wind energy development into the Planning and Zoning Ordinance for both small scale (residential on-site use) and large scale (commercial production for off-site use) power generating facilities. The adopted rules allow for net metering to be allowed, as a matter-of-right, as long as specific criteria are met. Further, to expedite and remove regulatory impediments for solar developments in Yavapai County, since 2018 no building permits have been required for the installation of solar panels. Several studies have been done about the viability of renewable energy sources in the State of Arizona by the National Renewable Energy Laboratories, the U.S. Department of Energy, and non-governmental agencies. There have been no specific studies produced in Yavapai County for solar, wind, or other renewable energy sources.

The Arizona State Legislature passed ARS §11-254.07 which established the concept of a Renewable Energy Incentive Districts (REID) patterned loosely after the Growing Smarter Act’s existing infill incentive districts, which was adopted under House Bill (HB) 2336 in 2009. This enables County Supervisors to establish a REID district, provided the proposed area meets specific criteria.

The County Development Services Department adopted the 2006 International Energy Conservation Code (IECC) standards for new residential construction. Construction of *Leadership in Energy and Environmental Design* (LEED) certified commercial buildings, and *Energy Star* homes are on the rise in Arizona. To earn the Energy Star rating, a home must meet strict guidelines for energy efficiency set by the U.S. Environmental Protection Agency. These homes include additional energy-saving features that typically make them at least 20–30% more efficient than traditional homes. The trend towards greater energy efficiency will only increase as sustainable, renewable energy solutions remain at the forefront of the nation’s building agenda.

On December 6, 2020, the Board of Supervisors approved a Use Permit for the *1874 Solar & Storage Project*. The application was approved as a permanent and transferrable Use Permit for a solar facility. The proposed 1874 Solar and Storage Project (the Project), is a renewable energy power plant to be situated on approximately 1,116 acres of private property east of Prescott Valley in Yavapai County. The Project will consist of an approximately 95-megawatt ground-mounted, single-axis tracking solar photovoltaic energy generation facility, with an integrated battery energy storage system that includes supporting structures and associated electrical equipment. The Project will deliver renewable solar electricity into the Arizona Public Service grid via a new utility-owned substation near the Project, and connecting to the existing APS-owned Lonesome Valley-Yavapai 69 kilovolt transmission line.

#### **8.4.1 Solar Conditions**

Currently in Yavapai County there are two large-scale solar power generation facilities (each over 100 acres) that have been approved by the Board of Supervisors. Since the last update of the Comprehensive Plan in 2012, there have been about 513 on-site residential solar permits issued by Yavapai County. These permits include solar water heating units and both roof-mounted and ground-mounted solar photovoltaic systems. As mentioned earlier, to expedite and remove regulatory impediments for solar development in Yavapai County, as of December 2017 a Building Safety Permit is no longer required for residential grid-tied solar photovoltaic systems and solar water heating systems, including systems with generators, as long as they are installed by an Arizona Licensed Contractor. Solar development will only increase as time goes on, as technology becomes more efficient and as the benefits of solar technology increase. These benefits include rebates and tax credits, lower energy costs, and less expensive technology.

#### **8.4.2 Wind Conditions**

There have been studies done to analyze the wind energy potential in Arizona. However, there have not been studies that have focused on Yavapai County in particular. A possible reason for the lack of specific information on Yavapai County wind possibilities is that there are very few meteorological towers (MET) that have been erected in the County. MET towers are generally 60 meters tall and are constructed for the purpose of collecting meteorological data. The data collected from these towers can be used to determine whether an area is suitable for harvesting wind energy. Recently, several MET towers have been constructed in Yavapai County, and the Yavapai County Board of Supervisors has approved one wind power generating facility. County staff continues to receive many inquiries regarding the potential for future wind projects. Regarding on-site (typically residential) wind power generation, Yavapai County issued 10 permits between the years 2008-2010.

#### **8.4.3 Geothermal Conditions**

There are a variety of geothermal resources that can be used on both large and small scales. A utility company can use the hot water and steam from underground reservoirs to drive generators



and produce electricity for its customers. Other applications use the heat directly from the ground to provide heating and cooling in homes and other buildings. Still others apply geothermal heat directly to uses in buildings, roads, agriculture, and industrial plants.

Some geothermal resources exist miles beneath the earth's surface in the hot rock and magma. In the future, these resources might also be useful as sources of heat and energy. The National Renewable Energy Laboratory (NREL), which is a division of the U.S. Department of Energy, predicts that up to 20 geothermal power generating facilities could be built in Arizona within the next 10 years. Yavapai County has permitted 8 residential geothermal systems. These systems can provide heating, cooling, and hot water to a home.

#### **8.4.4 Hydroelectric Conditions**

Hydropower has been used for millennia in most countries of the world. Within the last 100 years, hydropower has been applied on a large scale to the conversion of its kinetic energy to electrical energy. Today, hydropower produces 24% of the world's electricity, and supplies more than one billion people with power.

The obvious advantage of generating electricity in this manner is the very high (around 90%) conversion efficiency (compared to a typical conversion efficiency for a fossil fuel power plant of about 35%.) Additionally, there are no emissions to the atmosphere associated with this type of power generation. The most controversial drawback is that flooding is produced behind the storage dams.

Well-known examples of hydroelectric facilities in Arizona include Hoover Dam (on the border with Nevada) and Glen Canyon Dam (near the border with Utah). Together these dams can generate about 3,000 MW megawatts of electrical power. The reservoirs that each dam creates (Lake Mead and Lake Powell) are also heavily used for recreation. Other hydroelectric dams include those on the Salt River and the Colorado River below Hoover Dam. Several sites have been suggested over the years for additional large projects. These have been successfully resisted because they would have an adverse impact on scenic areas, such as the Grand Canyon.

At least 22 sites have been identified in Arizona as potential pumped storage facilities. These facilities would use off-peak power to pump water back up behind storage dams, and then use that dammed water to generate electricity during periods of peak demand. At least 37,000 MW megawatts of potential installed capacity has been identified within the state. To date, only a few have been built - all of which are associated with existing dams.

### **8.5 Energy Use Goals and Policies**

#### **Goal 1: Create an efficient process for handling applications for new utility-scale renewable energy projects.**

- **Policy 1a:** Provide potential developers of utility-scale renewable energy facilities with design criteria aimed at minimizing potentially adverse issues/impacts of concern, including conservation of water resources, air pollution, land disturbance, dark skies, protection of viewsheds, potential noise disturbances to nearby residential areas, protection of species and their habitats, preservation of wildlife corridors, preserving prehistoric, historic and cultural sites, and preserving the character of public lands.

- **Policy 1b:** Request a review of plans submitted to the county for utility-scale renewable energy projects by an appointed volunteer Renewable Energy Advisory Committee of specialists in the field of electrical power generation.
- **Policy 1c:** Require that utility-scale renewable energy generation systems and short-term power storage systems be located near existing substations and transmission lines, to minimize the amount of infrastructure and land disturbance required for energy distribution.
- **Policy 1d:** Request that construction of utility-scale energy projects be done in a way that allows for continuation of current ranching and hunting activities on that land.
- **Policy 1e:** Discourage the siting of utility-scale energy projects where they will conflict with critical wildlife habitat, sensitive species, migration corridors, riparian areas and areas of significant topographic relief, such as canyons and cliffs.
- **Policy 1f:** Request that utility-scale renewable energy projects conduct ongoing wildlife study designs with off-project comparison sites, and to employ best practices to minimize ongoing damage to wildlife, such as wind turbine curtailment during migratory periods.
- **Policy 1g:** Request that utility scale renewable energy projects consult early with the Arizona Fish and Game Department and US Fish and Wildlife Services to avoid adverse impacts on natural resources.
- **Policy 1h:** Request the use of radar-activated systems for projects requiring aviation safety lighting, where permitted by the Federal Aviation Administration, to preserve dark skies.
- **Policy 1j:** Request that utility-scale energy projects employ less water intensive systems, and use reclaimed water wherever possible.
- **Policy 1k:** Give preference to utility-scale energy projects that can demonstrate significant local and regional benefits.
- **Policy 1l:** Give preference to utility-scale solar photovoltaic systems over utility-scale wind turbine farms.

## **Goal 2: Increase the number of renewable energy generation systems in residences and businesses.**

- **Policy 2a:** Request the incorporation of renewable energy facilities into new and existing construction projects, both residential and commercial, to promote local and on-site energy production.
- **Policy 2b:** Facilitate the installation of up-to-date on-site renewable energy systems for homes and businesses by periodically updating development codes to allow new technologies, as they emerge.
- **Policy 2c:** Encourage the addition of solar photovoltaic systems onto existing residential units, both single family and multifamily.
- **Policy 2d:** Educate residents about the types of renewable energy options available to them, and the potential benefits of each of those options.

## **Goal 3: Reduce energy use in residences, businesses and large developments**

- **Policy 3a:** Request developers of new facilities and buildings to use sustainable and low-energy building practices similar to Leadership in Energy and Environmental Design (LEED) and development practices, without requiring them to be certified as LEED buildings.
- **Policy 3b:** Publicly recognize buildings and construction projects that are certified by green building standards such as LEED, BREEAM, Passive House, The Living Building Challenge and WELL.
- **Policy 3c:** Allow for reduced County fees, where applicable, for major remodeling projects that replace old appliances with newer more energy-efficient appliances.

- **Policy 3d:** Educate residents about strategies to reduce their energy consumption.

**Goal 4: Develop a local workforce that is qualified to install and maintain solar photovoltaic systems.**

- **Policy 4a:** Raise public awareness about job training programs and other educational opportunities aimed at creating a local workforce of experts in distributed energy systems.
- **Policy 4b:** Raise public awareness about on-the-job training programs by local businesses that install and maintain renewable energy systems and that provide employment opportunities related to green energy jobs.
- **Policy 4c:** Collaborate with agencies, residents, businesses and communities to facilitate the installation of and maintenance of renewable energy systems.

**Goal 5: Simplify the process of deploying community-based microgrids**

- **Policy 5a:** Provide building code and permit accommodations allowing for the installation of on-site community micro-grids in multifamily housing units and in subdivisions.

**Goal 6: Prepare for the future use of electric vehicles.**

- **Policy 6a:** Require that all new residential buildings with garages or carports be equipped with electric vehicle charging outlets.
- **Policy 6b:** Allow reduced parking requirements for businesses that provide on-site electric vehicle charging stations for public use.

**Goal 7: Update county buildings and facilities.**

- **Policy 7a:** Use energy-saving techniques and technologies in the construction of all new county buildings and facilities, and in all renovations of existing county buildings and facilities.
- **Policy 7b:** Incorporate solar photovoltaic systems into new and remodeled county facilities when economically justifiable.

**Goal 8: Increase the number of renewable energy generation systems in major development projects.**

- **Policy 8a:** Request major developments to incorporate solar photovoltaic systems into their projects.
- **Policy 8b:** Request clean energy resources in new development for farms, ranches and agricultural operations in all areas of the County.

**8.6 Energy Use Recommendations**

- Advocate for the use of up-to-date renewable energy technologies on homes and businesses by providing flexible development code language that can adapt quickly to new technology.
- Participate in dialogue with internal and external agencies, both State and Federal, as well as potential utility-scale energy providers, to identify sites within the county that would be most appropriate for utility-scale renewable energy production or storage, with proximity to substations and transmission lines to minimize the amount of infrastructure and land disturbance required for energy distribution.

- Continue to advocate for the preservation of wildlife corridors in the siting of large-scale renewable energy facilities by providing potential applicants with various agency guidelines during the planning process.
- Advocate for the development of renewable energy sources that are not water intensive.
- Advocate for on-site renewable energy infrastructure as part of the technological design for public and private facilities.
- Establish an appointed volunteer *Renewable Energy Advisory Committee*, with specialists in the field of electrical power generation to review plans submitted to the county for utility-scale renewable energy projects.
- Create a zoning ordinance process that allows acceptable utility-scale renewable energy production facilities to move through the approval process within 12 months.
- Collaborate with educational institutions and community partners to promote energy conservation and efficiency across the county.
- Streamline the permitting process for renewable energy projects in residences and businesses with pre-engineered plans.
- Host a booth at the County Fair to distribute information to encourage residents to install renewable energy systems.
- Update building codes to promote energy conservation in new construction and remodel/retrofits.
- Pursue grants and other funding sources for weatherization programs.
- Work with Yavapai College to create and promote a solar technician training program.

## **9. Cost of Development**

### **9.1 Introduction**

As Yavapai County continues to grow, it is important to provide adequate infrastructure for the general public. The costs and impacts of development associated with a property go beyond the materials and labor used for construction. There are roadway improvements, bridges, sidewalks, street lighting, power lines, broadband, parks and trails. The purpose of this element is to provide background information showing the direct link between the development of land and the costs of providing infrastructure to the new development.

ARS §11-804.C.4 requires that the Comprehensive Plan contain a Cost of Development Element that identifies policies and strategies that the County will use to require development to pay its fair share toward the cost of the additional public infrastructure that is needed to support the new development, with appropriate exceptions when in the public interest.

This element includes:

- A component that identifies various mechanisms that are allowed by law, and that can be used to fund the cost of the additional public services needed to serve a new development, including bonding, special taxing districts, development fees, in lieu fees and facility construction, dedications and privatization.
- A component that identifies policies to ensure that any mechanisms that are adopted by the county under this element result in a beneficial use to the development, bear a reasonable relationship to the burden imposed on the county to provide the additional needed public facilities to the development, and otherwise is imposed pursuant to law.

### **9.2 Funding Sources**

The following is a list of funding options referenced in the statute to pay for growth:

- Bonding
- Special Taxing Districts
- Development/Impact Fees
- In Lieu Fees
- Facility Construction
- Dedications
- Privatization

A brief description of each funding option is provided below. It is important to note that when the word “developer” is utilized, it is applicable not only to large-scale developers but may, also be applicable to the individual builder or lot owner.

#### **9.2.1 Bonding**

Bonds can be issued by a state, city, or local government. Municipalities issue bonds to raise capital for their day-to-day activities, and for specific projects that they might be undertaking. Usually bonding pertains to development of local infrastructure such as roads, water lines, sewer lines, hospitals, etc.

#### **9.2.2 Special Taxing Districts**

Special taxing districts are generally created through the County legislative authority to meet specific needs of a local community. That need may be a new service, or a higher level of an existing service. Special taxing districts are political subdivisions within the State, and come into

existence, acquire legal rights and duties, and are dissolved in accordance with statutory procedures. The enabling legislation sets forth the purpose of the district, procedures for formation, its powers, functions and duties, the composition of its governing body, methods of finance and other provisions. Examples include waste-water districts, water districts and road improvement or maintenance districts. With improvement districts the cost of these services is paid solely by the property owners within the district, and not by County general service funds.

### **9.2.3 Development Impact Fees**

Jurisdictions may impose a development impact fee on property developers to cover the cost of any new infrastructure that must be built (or enhanced) to support the new property development. These fees are designed to offset additional costs for County infrastructure and services, which might include roads, the water and sewer network, police and fire protection services, schools and libraries. Impact fees can be paid by the original developer, or by subsequent landowners when construction is permitted.

### **9.2.4 In Lieu Fees**

The developer can dedicate a needed service or improvement to public use, in lieu of fees. The value of that service or improvement reduces the County's cost. For example, as a condition of approval a developer might offer to build and dedicate new roads, or to improve existing roads that will be impacted by the proposed development.

### **9.2.5 Facility Construction**

A developer might offer to construct certain types of facilities as part of a defined development agreement, to defray or offset public facility costs that would otherwise be paid by the County. Examples include construction of schools, fire stations, law enforcement facilities, parks, trails and wastewater treatment plants.

### **9.2.6 Dedications**

A developer may agree to dedicate tracts of land for specific uses that benefit the public. Examples include those in the Facility Construction definition with the caveat that the developer is not responsible for the construction of the facility. Dedications could also include rights-of-way, parks, trails or open space.

### **9.2.7 Privatization**

Privatization is the process of providing services from a private entity that would normally be provided by a governmental agency. Examples include fire protection or water distribution. A developer might choose to cause these services to be available at a cost to the end user. This eliminates future service costs that would otherwise be incurred by the County. For example, many incorporated jurisdictions have privatized trash collection.

## **9.3 Cost of Development Goals and Policies**

### **Goal 1: Ensure that new developments pay their fair share of the costs associated with that development.**

- **Policy 1a:** Development projects should pay their fair share of the costs of necessary off-site improvements in infrastructure and public facilities, such as the roads and utilities needed to support the development.

- **Policy 1b:** Applicants for all new development projects should ensure that there will be an adequate level of infrastructure, including roads, water, wastewater treatment, utilities and fire protection.

**Goal 2: Ensure that new development does not adversely impact existing development, infrastructure, and the community.**

- **Policy 2a:** Require that major new developments (in cooperation with exiting utility providers) provide for the construction or upgrade of public utilities, to ensure that there will be no reduction in the level of service to existing residents and subdivisions.
- **Policy 2b:** Encourage cost-beneficial infill development that uses existing infrastructure and facilities already in place.
- **Policy 2c:** Review and update application, development impact and user fees on a regular basis.

## **9.4 Cost of Development Recommendations**

- Support multiple secure mechanisms to fund and finance public services necessary to serve the development.
- Support efforts to form special districts.
- Support legislation that streamlines the special district process.
- Ensure policies/programs imposed are pursuant to law.



## **10. Administration and Implementation**

### **10.1 Introduction**

The 2032 Yavapai County Comprehensive Plan is a policy document that reflects a vision for the future of Yavapai County, and provides policies and expectations for new and infill developments. This document is intended to guide decision-making in the County over the next ten years, as it continues to grow and develop. This Comprehensive Plan replaces the County's previous 2012 Yavapai County General Plan.

For this Plan to stay relevant, it will need to be reviewed and amended periodically, on an as-needed basis, to respond to changes in economic, physical, environmental, and social conditions. It can be amended in accordance with the terms defined below.

### **10.2 Plan Amendments**

Comprehensive Plan Amendments provide a mechanism for addressing changing trends, new development styles, inconsistencies in the Plan, or land use-related adjustments that might become necessary. Plan amendments also allow for an opportunity to review and adjust how the implementation of the Land Use Plan, the Growth Area Plan and the other Comprehensive Plan Elements work together as they are used to review new development proposals.

Amendments to the Comprehensive Plan may be initiated:

- by the Board of Supervisors in the form of a comprehensive update, a re-adoption of the existing Comprehensive Plan, or by amendments to portions of the Comprehensive Plan
- by a third party, who files for a specific Comprehensive Plan Amendment.

Anyone can request an amendment to the Yavapai County Comprehensive Plan. Proposed Comprehensive Plan amendments will be reviewed and processed in accordance with State law, County ordinances and administrative procedures. Such proposals will take effect only after careful staff review, and adoption by the Board of Supervisors will occur if the findings of fact support the proposed amendments. The burden of proof to demonstrate that the proposed amendment helps implement the Yavapai County Comprehensive Plan's Vision, Goals and Policies lies with the party requesting the amendment

There are three types of proposed amendments to the Comprehensive Plan:

- Major Amendments, which will be heard once a year.
- Minor Amendments, which will be considered at any time of the year.
- Administrative Technical Revisions.

#### **10.2.1 Major Amendments**

Major Amendments are changes to the Yavapai County Comprehensive Plan that meet any of the following criteria:

- Land Use changes from one residential land use classification to another residential classification of 100 or more contiguous acres, or that increase the land use category density by more than 2 land use categories.
- Land Use changes from one residential land use classification to a non-residential land use classification of 100 or more contiguous acres.

- Land Use changes from a non-residential land use classification to a residential land use classification of 100 or more contiguous acres.
- Land Use changes in an industrial/employment land use classification of 80 or more contiguous acres to another land use classification.
- Proposed realignments or deletions of an Arterial or Principal roadway.
- Comprehensive Plan text changes that change the plan's Goals or Policies.
- Text changes that add a new Comprehensive Plan Element.
- Revisions to the boundaries shown in the Growth Area map.
- Land Use changes in an industrial/employment land use classification of 40 or more contiguous acres to another land use classification, when located within a Growth Area.
- Land Use changes from a residential land use classification to a non-residential land use classification of 40 or more contiguous acres, when located within a Growth Area.
- Land Use changes from a non-residential land use classification to a residential land use classification of 40 or more contiguous acres, when located within a Growth Area.

Major amendments and rezoning cases can also be reviewed together. However, the rezoning case will not be heard by the Planning and Zoning Commission until the referendum period for the Major Comprehensive Plan amendment is completed.

### **10.2.2 Minor Amendments**

Minor Amendments are changes to the Yavapai County Comprehensive Plan that meet the following criteria:

- Land Use changes from one residential land use classification to another residential classification of 40 or more contiguous acres, or that increase the land use category density by more than 2 land use categories.
- Land Use changes from one residential land use classification to a non-residential land use classification of 40 or more contiguous acres.
- Land Use changes from a non-residential land use classification to a residential land use classification of 40 or more contiguous acres.
- Land Use changes from a residential land use classification to a non-residential land use classification of 20 or more contiguous acres when located within a growth area.
- Land Use changes from a non-residential land use classification to a residential land use classification of 20 or more contiguous acres when located within a growth area.
- Land Use changes in industrial/ employment land use classification of 40 or more contiguous acres to another land use classification.
- Land Use changes in industrial/ employment land use classification of 20 or more contiguous acres to another land use classification when located within a growth area.
- Proposed changes to the Comprehensive Plan mandated by any new state laws.
- Text changes, additions or deletions which are more than corrections/clarifications and less than adding a new element chapter.

Minor amendments and rezoning cases may be reviewed together and heard sequentially at the same hearing.

### **10.2.3 Major and Minor Amendments must address the following amendment approval criteria:**

- The identified site is appropriate for the proposed land use.

- The amendment must be in line with the overall vision of the Yavapai County Goals and Policies.
- The amendment will not adversely impact a portion of, or the entire County by:
  - Reducing the jobs per capita in the County.
  - Overtaxing existing infrastructure systems and public services.
  - Negatively impacting the existing community character of the immediate area.
  - Increasing the exposure of residents to aviation generated noise, and/or flight operations.
  - Diminishing the quality of the air, water or cultural resources.
  - Significantly decreasing the quantity or quality of public recreational amenities such as open space, parks and trails.

#### **10.2.4 Administrative Technical Revisions**

Administrative Technical Revisions may be made where they are not considered amendments to the Comprehensive Plan. These revisions may include map changes to reflect developments permitted by Comprehensive Plan Policy, factual changes to the databases/statistics used in preparation of the Comprehensive Plan and corrections that do not change the meaning of Policies and Actions as adopted by the Board of Supervisors, such as text clarifications or corrections to match the existing Comprehensive Plan or Zoning Ordinance. These revisions will be processed on an ongoing basis, as needed.

### **10.3 Adoption**

The Comprehensive Plan is effective for up to 10 years from the date the plan is initially adopted, until it is readopted or until a new plan is adopted and becomes effective. The following is the process for adoption:

#### **10.3.1 Public Distribution**

Prior to the public hearing conducted by the Planning and Zoning Commission, the Comprehensive Plan will be distributed for the formal 60-day agency review process. According to A.R.S. §11-805, the Comprehensive Plan amendment is noticed, as required by law, and a copy submitted for review and further comment to:

- Each municipality in the county.
- Each other county that is contiguous to the county.
- The regional planning agency in the county.
- The Arizona commerce authority, or any other state agency that is subsequently designated as the general planning agency for this state.
- The department of water resources for review and comment on the water resources element, if a water resources element is required.
- If the Comprehensive Plan or an element or amendment of the Comprehensive Plan is applicable to territory in the vicinity of a military airport or ancillary military facility as defined in section 28-8461, the military airport.
- If the comprehensive plan or an element or major amendment of the comprehensive plan is applicable to property in the high noise or accident potential zone of a military airport or ancillary military facility as defined in section 28-8461, the attorney general. For the purposes of this paragraph, "major amendment" means a substantial alteration of the county's land use mixture or balance as established in the county's existing comprehensive plan land use element for that area of the county.
- Any person or entity that requests in writing to receive a review copy of the proposal.

### **10.3.2 Review and Submission of Comments**

- State, regional and local agencies as well as stakeholders, landowners, and the general public have the opportunity to review and submit comments.
- Yavapai County staff then reviews all comments and makes recommendations for changes to the draft plan prior to the commencement of the formal review process.
- The Director and the appointed Advisory Committee review the draft plan before submitting a recommendation to the Planning and Zoning Commission for the first public hearing.
- Commission conducts the public hearing and forwards a recommended plan to the Board of Supervisors.
- The Board of Supervisors conducts another public hearing prior to acting on the Comprehensive Plan. The Board of Supervisors can adopt the Comprehensive Plan and subsequently amend or extend the adopted plan.
- Prior to the adoption of the Comprehensive Plan, the Board of Supervisors may change or alter any portion of the Plan, but that portion shall be re-referred to the Commission for recommendation.
- The Board of Supervisors may accept or reject that recommendation.

### **10.3.3 Collaboration and Facilitation**

Although the Comprehensive Plan is organized into separate elements, no one element stands alone. The document works to interlace chapter elements and tie them together to provide a more cohesive and collaborative document for all County departments to use in determining the County's direction. The County Development Services Director should periodically review the County Planning & Zoning Code and other regulations and recommend amendments that implement these strategies.

Implementing the Comprehensive Plan requires a balance between competing goals and there are often trade-offs, as not all goals can be attained concurrently. Where competition between element goals may result in seemingly incompatible policy direction, County decision-makers shall determine the priorities of competing needs and act based on that determination.

Zoning Code and Subdivision regulations should be updated to further engage the Comprehensive Plan implementation strategies and coordinate the compatibility of land uses with each other and available public facilities and services.

Rezoning and development should be compatible with the intended future land use pattern shown in the Comprehensive Plan, should be consistent with the vision, goals and policies, and should help implementation strategies wherever possible.

It is important to note that the Yavapai County Comprehensive Plan does not change existing zoning or regulations, and only serves as a policy guiding document that the County shall use as a resource for guiding development and land use decisions.

### **10.3.4 Existing Plans and Studies**

Over the last ten years there have been updates to existing studies, plans and ordinances which impact Yavapai County. The new 2032 Yavapai County Comprehensive Plan has used the following planning documents to guide this 10-year Plan update:

- Yavapai County Zoning Ordinance Update January 2021
- Yavapai County Subdivision Code Update August 2012
- Yavapai County International Energy Conservation Code October 2008
- Yavapai County Outdoor Fire Ordinance 2020
- Yavapai County Maintenance and Construction of Roadways Ordinance December 2020

### **10.3.5 Community Vision Statements and Community Plans**

Community Vision Statements and Community Plans are documents created by the residents of unincorporated communities to be used as a tool to help guide the County’s review of proposed land use projects. These documents are not adopted by Yavapai County, and are therefore not binding. These statements and studies are used while reviewing projects within each community area, along with other community comments.

Existing and Future Community Vision Statements and Studies submitted to the County are available within the Appendix of this Comprehensive Plan as they are not formally reviewed or approved by the County for adoption. They are documents which are prepared by the residents and may change with community direction and therefore shall not require adoption or formal County approvals.

Community Vision Statements and Community Plans are vital for preserving community character and way of life within rural Yavapai County. Over the last decade, many of the communities throughout the County have experienced rapid growth and development. Community Vision Statements and Plans have been used by communities to show support or opposition for projects, as they are proposed.

These documents can be very informative to developers and County staff, to assist in the review of projects, and to guide future development. Yavapai County encourages all unincorporated communities within the County to communicate their local development needs and concerns to the County through collaborative Community Vision Statements or Community Plans, for use during development review processes.

All Community Vision Statements and Community Plans submitted to the County will be added as Appendices of this Comprehensive Plan, as they are received. The County shall do its best to provide the relevant Community Vision Statements and Community Plans to applicants who are proposing new developments within or near existing communities. However, because these documents are not formally reviewed or approved by the County for adoption, they are not legally binding.

### **10.3.6 Monitoring the Comprehensive Plan and its Implementation**

The Yavapai County Development Services Director is responsible for monitoring the effectiveness of the Comprehensive Plan and its Implementation, and for providing an annual report to the Board of Supervisors, along with any recommended changes needed to improve its effectiveness in the upcoming year.

A complete Comprehensive Plan update should occur at a minimum every 10 years, per state statutes. The update process should re-evaluate the Goals, Policies, and Implementation measures, considering any Community Vision Statements or Community Plans.