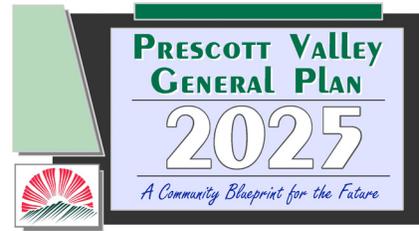


CHAPTER 7

ENVIRONMENTAL PLANNING AND WATER RESOURCES ELEMENT



7.1 INTRODUCTION

The Environmental Planning and Water Resources Element addresses the potential impacts on water resources and water quality, air quality, and natural resources associated with proposed development under the *General Plan 2025*.

7.2 AT THIS POINT IN TIME

The Town of Prescott Valley enjoys excellent air and water quality, vistas that create a feeling of openness, and abundant natural resources. Maintenance and preservation of these environmental components are important aspects that contribute toward Prescott Valley's quality of life.

Adequate long-term water resources are needed for Prescott Valley to grow and develop. The first section of this Element, Water Resources, provides background information on Prescott Valley's water resources and water quality, and discusses what the Town is doing to assure an adequate water supply for the future. The Environmental Planning section of this Element discusses air quality, energy conservation, land resources, and biologic resources.

7.2.1 WATER RESOURCES

7.2.1.1 GROUNDWATER MANAGEMENT ACT

Established in 1980, the Arizona Groundwater Management Act has three primary goals:

- ▶ Reduce groundwater overdraft occurring in specified groundwater basins, including the Prescott Active Management Area groundwater basin.
- ▶ Provide a means to allocate the state's limited groundwater resources to most effectively meet the growth occurring in the state.
- ▶ Augment Arizona's groundwater through development of alternative water resources.

The Act set up a comprehensive management framework and established the Arizona Department of Water Resources (ADWR.) The Groundwater Management Act set sequential time periods for a series of five management plans. Currently, ADWR is developing the Fourth Management Plan, intended to cover the time period of 2010 to 2020. Typically, each management plan develops additional requirements for municipalities, particularly for water conservation.

Environmental Planning Element

3. An environmental planning element that contains analysis, 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 general plan. The policies and strategies to be developed under this element shall be designed to have community-wide applicability and shall not require the production of an additional environmental impact statement or similar analysis beyond the requirements of state and federal law.

Water Resources Element

5. A water resources element that addresses:

- a. The currently available surface water, groundwater and effluent supplies.
- b. An analysis of how the future growth projected in the general plan will be adequately served by the legally and physically available water supply or a plan to obtain additional necessary water supplies.

(Arizona Revised Statutes, Section 9-461.05 D3 and D5)



Management Plans adopted by the Active Management Areas typically establish a water management strategy that employs regulatory control of groundwater resources, data collection, and incentives that cause water users to conserve and augment groundwater supplies to help achieve the safe-yield goal by 2025. In order to achieve safe-yield, all water supplies must be used efficiently and mechanisms need to be developed and employed to replace existing groundwater use with alternative supplies.

In Arizona, the strictest water resource management tools are applied within Active Management Areas (AMAs) where groundwater overdraft is most critical. The boundaries of AMAs are generally defined by groundwater basins and sub-basins rather than by the political lines of cities, towns or counties. The primary management goal of the Prescott AMA is to establish safe-yield by 2025. Safe-yield is defined as a long-term balance between the annual amount of groundwater withdrawn in the AMA and the annual amount of natural and artificial recharge. To help achieve its goals, each AMA implements management plans to establish conservation requirements for municipal, agricultural, and industrial water users, and strictly guards access to groundwater by most water users. The ADWR develops the conservation requirements with assistance from water users in the AMAs.

New development must demonstrate that sufficient water supplies of adequate quantity and quality are available for 100 years.

The Groundwater Management Act also established a framework for developing the Assured Water Supply (AWS) Program. By 1999, ADWR determined that water users in the Prescott AMA were overdrafting (mining) the aquifer, triggering the AWS Program. The AWS rules are one of ADWR's tools to help achieve safe-yield. Under the AWS Rules, new subdivision development within an AMA must demonstrate that water supplies of adequate quantity and quality are available to meet proposed uses for 100 years. The AWS Rules require that use of these supplies be consistent with the safe-yield management goal of the AMA. The water supplies used to demonstrate an assured water supply may include surface water, effluent, imported groundwater, credits from extinguishment of groundwater rights, a quantity of allowable groundwater specified by the AWS Rules, or water stored pursuant to an underground storage permit. The AWS Program plays a key role in achievement of the water management goals, since it ensures that new residential subdivisions will not contribute to additional groundwater mining.

7.2.1.2 PRESCOTT ACTIVE MANAGEMENT AREAS (AMA)

The Prescott AMA covers 485 square miles in Central Yavapai County, including all of Prescott Valley. Water supplied to Prescott Valley water users originates from Prescott AMA water resources, primarily the Prescott AMA groundwater basin. The Prescott AMA groundwater basin consists of two sub-basins, the Little Chino and the Upper Agua Fria, which are defined by a surface drainage divide that roughly follows State Highway 89A. Granite Creek and Willow Creek comprise the major tributaries that drain the Little Chino subbasin into the Verde River. Lynx Creek and Yeager Canyon drain the Upper Agua Fria subbasin into the Agua Fria River. With the exception of small perennial stretches of the Agua Fria River in the vicinity of Dewey-Humboldt, Granite Creek near the Verde River and Del Rio Springs, surface drainages in the Prescott AMA tend to be either ephemeral (i.e., flowing only after major rainstorms) or intermittent (i.e., flowing only during particular seasons), such as when the water table is high or during periods of snow melt.

Over the last decade (2000-2010) the use of groundwater by agriculture has declined significantly and the use of groundwater by the municipal and industrial sectors has increased significantly. Groundwater use for irrigation peaked in the mid-1970s at nearly 25,000 acre-feet per year, then declined considerably to its present use of approximately 3,000 acre-feet per year.

Prescott AMA has a goal of achieving safe-yield by 2025.

Municipal and industrial use has increased during the 1990s and reached approximately 18,000 acre-feet per year by 2006 before experiencing notable declines in recent times due to water conservation programs and economic downturn. Groundwater use by the municipal and industrial sector now comprises the majority of groundwater use in

the AMA. Approximately 80 percent of the demand for groundwater in the AMA is now dedicated to municipal and industrial uses, compared to 20 to 25 percent of the demand for that sector in the 1970s. In addition, significant amounts of groundwater have been allocated to approved, but not yet constructed, subdivisions.

7.2.1.3 WATER Supply

There are four separate legal definitions that define water sources in Arizona: surface water, Colorado River water (including the Central Arizona Project (CAP)), groundwater, and effluent. The Town of Prescott Valley depends largely on groundwater from within the Prescott AMA groundwater basin but has also developed additional water resources by recharging effluent and is working to develop a project to import water from the neighboring Big Chino subbasin with the City of Prescott.

The depth to groundwater in Town varies from 100 to 800 feet. The Town has the legal authority to pump enough groundwater to supply the current water users within the Town's service area along with the subdivision lots that were approved prior to the 1999 Declaration of Groundwater Mining. Although the exact amount of this withdrawal authority is not quantified (except to specify which lots can receive groundwater), the Town's groundwater withdrawals must meet the strict requirements of the Groundwater Management Act. In 2010, the Town pumped approximately 4,960 acre-feet of groundwater and delivered water to 18,420 customers through the Town of Prescott Valley Water System. This amount of groundwater pumping represents a 20% reduction in groundwater demand from the peak demand year in 2007. The estimated volume of the Town's groundwater withdrawal authority is approximately 8,000 acre-feet per year. The Town has the legal right and the physical supply of water available to deliver water to existing customers and to all of the currently approved lots if they were developed.

As discussed in Section 6.3 on page EPW-17, with future water resources and groundwater allocations, a population of between 75,000 to 80,000 could be adequately supported.

ADWR has approved water availability for the existing lots in Prescott Valley, in addition to the issued Certificates of Assured Water Supply for the residential subdivisions of Mingus West, Pronghorn Ranch, Granville, Stoneridge, Viewpoint, and an expansion of Quailwood. These certificates equal approximately 14,300 lots, in addition to the existing 11,000 lots in the Town that were platted prior to enactment of the 1980 Groundwater Management Act. Currently (2011), the number of platted vacant lots that have an Assured Water Supply within Prescott Valley is 3037.

Growth beyond these developments will have to rely on water obtained from a source other than groundwater, such as purchase through the retirement of agricultural rights, surface water rights, recharge credits, or groundwater from outside the Prescott AMA. Presently, the Town collects \$1,526.00¹ for each new home that is built, for the purpose of acquiring future water rights.

The Town has also made use of a water supply that was formerly considered a waste product. Some of the effluent generated at the Town's Advanced Treatment Facility (ATF) is used to fill the lakes at Mountain Valley Park and supply the irrigation needs at the Stoneridge Golf Course. The remaining effluent supplies are used to recharge the aquifer at settling basins near the ATF. The Upper Aqua Recharge Facility is a state-permitted recharge project that accumulates long-term storage credits. The credits can be used to meet water demands within the Town without impacting groundwater supplies. In 2007, the Town conducted a public auction to allocate the excess recharge credits to the highest bidder and obtain the best value for the community. This process resulted in 2,724 acre-feet of effluent credits made available for future development within Town limits. The recovered effluent is chemically identical to groundwater since it is pumped from water system wells; only the legal "makeup" of the water supply is effluent.

¹ The Town of Prescott Valley collects fees for water capacity and water resource acquisition. As of November 2001, the Town had just completed a water and wastewater study to determine the actual costs of these services to Town residents.

Although the effluent credits represent an improvement to the Town's water portfolio, this water supply is not enough to both meet water needs for growth and water needs for balancing the aquifer. Additional supplies from outside of the Prescott AMA groundwater basin are necessary to complete this goal. In 2004, the Town entered into an Intergovernmental Agreement with the City of Prescott (City) to obtain a portion of the City's water right to the Big Chino Subbasin. Subsequent to this agreement, the City purchased the 4,500-acre Big Chino Water Ranch from the Kieckhefer Foundation, located approximately 18 miles northwest of Paulden. The Town is a 46% cost-share partner in the Big Chino Water Ranch project, and will receive 46% of the project water in consideration of the costs. The City obtained the right to import water from the Big Chino Subbasin through a complicated exchange that resulted in Scottsdale acquiring the City's and Yavapai-Prescott Indian Tribe's allocation to Central Arizona Project water and Prescott receiving recognition of its importation right in legislation (A.R.S. §45-555(E)). In 2009 and 2010, a series of legal challenges, administrative hearings, settlement discussions and legislative actions resulted in the City receiving a right to 8,067 acre-feet of water from the Big Chino. In addition, the City and Town will be responsible for mitigating potential impacts to the Upper Verde River that may result from their pumping. The physical infrastructure required to move water to the Town will be a well field at the Big Chino Water Ranch, pumping plants and a thirty-mile pipeline to Prescott's Chino Valley Water Production Facility, and an additional 10 to 15-mile pipeline to Prescott Valley. Construction is anticipated to begin prior to 2019. The Town will receive approximately 3,700 acre-feet of water from this project which will allow the community to meet Prescott AMA goals by supplying economic development with a non-AMA groundwater source. Effluent generated from the use of this water can be recharged to meet safe-yield requirements.

PRESCOTT VALLEY WATER SYSTEM

The Prescott Valley Water System provides water to citizens within the incorporated Town boundaries and to adjacent unincorporated areas, including the Prescott Country Club, Castle Canyon Mesa, and by agreement to the Diamond Valley Water System and Bradshaw Water System.

The System produces an average of 4.5 million gallons of water daily. During hot summer days that quantity may double. The System utilizes approximately 25 wells for a maximum production capacity of about 15 million gallons per day, and can store about 13.6 million gallons in its 13 storage tanks. Maintenance of the system is contracted out to the private sector.

7.2.1.4 WASTEWATER SYSTEM

The Town of Prescott Valley operates centralized wastewater services for the community. In 1993, a state of the art treatment plant was constructed that uses ultra-violet disinfection to ensure a very high quality effluent. In 2007 the plants' capacity was expanded from 2.5 million gallons per day (mgd) to 3.75 mgd, and the biological process was changed from extended aeration (oxidation ditch) to Conventional Activated Sludge. Based on current per capita wastewater generation rates, the plant now has the capacity to serve a population of approximately 50,000 people. Currently, about 2.6 million gallons of wastewater is treated daily. A collection system with nearly 240 miles of pipeline brings effluent to the treatment plant. The current plant site is expected to accommodate future expansions that would increase capacity to 7.5 million gallons per day (MGD), which would serve a population of approximately 100,000.

7.2.1.5 WATER CONSERVATION

As previously mentioned, Active Management Areas are required to prepare and implement management plans. Among other things, the management plans establish conservation requirements for municipal, agricultural, and industrial water users. Municipal water conservation requirements apply to water providers, cities, towns, private water companies, and irrigation districts that provide water for non-irrigation uses. The goal of the municipal conservation program in all AMAs is to promote efficient water use. The Town of Prescott Valley has recently completed a water

conservation plan to comply with the conservation strategies of the Prescott AMA and the Arizona Department of Water Resources.

7.2.1.6 WATER QUALITY

The entire water production and distribution system for the Prescott Valley Water System is under the regulation of the Arizona Department of Environmental Quality (ADEQ.) ADEQ requires monthly monitoring and reporting of sample analysis for bacteria. Federal law requires all municipal water providers to develop and distribute to each customer an annual Consumer Confidence Report (CCR). The Town has a copy of the current CCR that describes in detail the Town's water sources and the respective water quality parameters. The current CCR is also available on the Town's website. Historically, the Town has provided safe drinking water according to State and Federal Laws and Regulations. Furthermore, the water quality throughout the Prescott Active Management Area (AMA) is considered excellent. The Town produces reclaimed water that is classified by the Arizona Department of Environmental Quality as "A+ Quality Reclaimed Water." This classification allows the most flexible and widespread uses of reclaimed water allowed under State law, including direct reuse and recharge for underground storage of unused quantities.

7.2.2 ENVIRONMENTAL PLANNING

7.2.2.1 AIR QUALITY

Prescott Valley lies in a valley surrounded by the Bradshaw and Mingus Mountains. The valley is located in a highly elevated (5,100 feet above sea level), semi-arid transition zone where several climatic conditions convene. The average daily maximum temperature is 70.1 Fahrenheit degrees, while the average daily minimum is 40.3 Fahrenheit degrees. Prescott Valley averages 12.8 inches per year of precipitation.

AMBIENT AIR QUALITY STANDARDS

Ambient air quality is described in terms of compliance with Federal and State Standards. Ambient air quality standards are the levels of air pollutant concentration considered safe to protect the public health and welfare. They are designed to protect people most sensitive to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness and persons engaged in strenuous work or exercise. The United States Environmental Protection Agency (EPA) has set forth primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter, ozone, sulfur dioxide, and lead. Primary standards are adopted to protect public health, while secondary standards are adopted to protect public welfare. The Arizona Department of Environmental Quality's (ADEQ) Air Quality Division has adopted the federal NAAQS, which are found in the Table E-1 of Appendix E.

LOCAL AMBIENT AIR QUALITY

Currently, Prescott Valley is in attainment for all six criteria pollutants (carbon monoxide, nitrogen dioxide, particulate matter, ozone, sulfur dioxide, and lead) established as National Ambient Air Quality Standards by the Environmental Protection Agency. Despite its rapid population growth during the 1990s, Prescott Valley maintains excellent air quality.

YAVAPAI AREA GOVERNMENTS "AIR AWARE" PROGRAM

AIR AWARE is sponsored by the Yavapai Area Governments, which includes the Tri-Cities of Prescott, Prescott Valley and Chino Valley, the Yavapai-Prescott Indian Tribe, and central portions of Yavapai County. The goal of AIR AWARE states that the healthy air in Central Yavapai County is a valuable natural resource that needs to be actively protected. AIR AWARE is a campaign to encourage voluntary efforts on the part of individuals, businesses, and local governments to keep our air clean, even if there is significant population growth in the region over the next 20 years.

In 1999, representatives of the Yavapai Area Governments and Prescott College participated in a pilot air quality sustainability study, sponsored by the Arizona Department of Transportation (ADOT), and identified an educational/outreach program as an important strategy to sustain clean air in Central Yavapai County. AIR AWARE is the follow-up effort to develop and implement the educational/outreach program also funded by ADOT.

Air Quality Sustainability Strategies

Participants evaluated and screened 47 potential air quality sustainability strategies and selected 19 for further consideration in Central Yavapai County. The top five priority strategies are described below:

- ▶ **Fugitive Dust Control Plans.** Adopt an ordinance requiring construction and earth moving operators to develop dust control plans and apply control measures to minimize dust at the project site. The plan would have to be approved before a grading and drainage permit was issued.
- ▶ **Clean Burning Fireplaces in New Construction.** Develop an ordinance that prohibits the installation or construction of fireplaces and wood stoves in new construction, unless the devices are “clean burning,” as certified by the Environmental Protection Agency.
- ▶ **Educational and Outreach Campaign to Sustain Clean Air.** Conduct a comprehensive multi-media campaign to promote voluntary strategies such as alternative transportation modes, compressed work schedules, telecommuting, alternative fuels for vehicles, alternatives to wood burning in the winter, and fueling vehicles after sunset in the summer.
- ▶ **Mitigation Bond Requirement.** Require dust control plans to be accompanied by a letter of credit or bond, which guarantees that the dust will be controlled.
- ▶ **Stabilize Unpaved Roads and Alleys.** Pave, gravel, or stabilize all unpaved roads and alleys carrying a significant volume of vehicle traffic.

Clean Air Action Plan

A final product of the visioning process was a Clean Air Action Plan, listing actions to be taken, responsibilities, and general time frames for implementing the actions. The goal of the Clean Air Action Plan is to sustain the current air quality in the region and avoid any possibility that the region would be classified as a nonattainment area in the future. The Plan identifies five tasks:

- ▶ Set up an Air Quality Steering Committee;
- ▶ Scope and conduct a monitoring pilot study;
- ▶ Design and conduct an air quality outreach/education program;
- ▶ Identify voluntary measures; and
- ▶ Develop ordinances.

Educational and Outreach Campaign

In 2000, ADOT provided funding to initiate the third strategy, Educational and Outreach Campaign to Sustain Clean Air, now known as the Yavapai Area Governments' AIR AWARE Program. The second strategy, requiring clean burning fireplaces in new construction, is also being considered for implementation by local governments in Central Yavapai County.

There are ongoing efforts to sustain clean air in Central Yavapai County, including one of the first attempts in the nation to proactively protect air quality in an area that is well within the national standards. Implementing the Clean Air Action Plan will ensure that air quality in the area is not degraded, despite dramatic increases in population growth over the next 20 years.

7.2.2.2 ENERGY CONSERVATION

Energy is an important subject for all Arizona residents due to regional increases in energy prices and the continuing energy shortages affecting neighboring states. Arizona's population, including Prescott Valley, is increasing at a high rate and the new businesses continually entering the state also create more demand for energy.

Limited supplies and environmental concerns regarding conventional energy resources, such as oil, electricity, and natural gas, require their conservation. Renewable energy resources such as solar or wind power should be considered as options for future energy needs.

SOLAR ENERGY

Solar energy is becoming a viable option as an alternative and renewable energy resource in Prescott Valley. It can also help to maintain the Town's excellent air quality. Active solar systems involve the use of mechanical devices to convert solar energy to heat or electricity. Passive solar systems use natural heating and cooling from the sun through proper orientation and building design. The amount and quality of solar radiation received by Prescott Valley appears adequate for the use of solar technologies. In December of 2010, The Town issued a Request for Qualifications to assess the viability of photovoltaic (PV) panels on Town properties that would augment the electricity provided by APS. Town Council entered into a Power Purchase Agreement in June of 2011 to allow for the installation of PV panels at the Duplex and Triplex booster pumps, and the Wastewater Treatment Plant. The use of solar energy has also been incentivized through the Town's Residential and Commercial Energy Audit program, which provides no cost energy audits to homes and businesses throughout the town. Once the audit is complete, any energy conservation measures taken as a result of the audit's recommendations is eligible for a grant- subsidized building permit. A number of privately owned PV projects have been undertaken as a result of this program.

WIND ENERGY

Wind energy uses the energy in the wind for practical purposes like generating electricity, charging batteries, pumping water, or grinding grain. Large, modern wind turbines operate together in wind farms to produce electricity for utilities. Small wind powered turbines can be used by homeowners to help meet daily energy needs. Depending on the available technology and prevailing wind conditions, there may be potential to site wind farms in Prescott Valley or for individual home owners to use wind powered turbines.

In addition to alternative and renewable energy sources, the residents of Prescott Valley can help to conserve energy by purchasing products with the Energy Star label, which are designed to lower energy use. Products range from refrigerators or washing machines up to entire homes that typically have tighter construction, improved insulation, advanced windows, and high-efficiency heating and cooling equipment.

7.2.2.3 LAND RESOURCES

Prescott Valley is a rural community with large amounts of vacant land for development. Additionally, the Town's Sphere of Influence is almost entirely undeveloped, with the exception of the Yavapai Downs Fairgrounds/Race Track and scattered residential units. Since the Town is expanding and continues to grow, much of the vacant land has been planned for development. The following section discusses the Town's land resources including soils, mineral resources, and agricultural production.

SOILS

The following discussion is based on information obtained from the Town of Prescott Valley's GIS Department and the National Soil Survey Center (NSSC), an agency of the U.S. Department of Agriculture. The NSSC is a technical facility of the Natural Resources Conservation Service (formerly Soil Conservation Service). The NSSC recognizes a number of soils located in the Prescott Valley area, all of which are suitable for development. These soils, also identified by the Prescott Valley GIS Department, are described below.

Lonti-Balon-Lynx. This is the most common soil association within the Town and the Sphere of Influence. This soil association consists of deep soils that are dominantly loam, gravelly or cobbly sandy loam, and gravelly sandy clay loam on nearly level and very steep fans, plains and flood plains. The vegetation is oakbrush, deerbrush, squawbrush, and an understory of grasses, snakeweed, cactuses, and annuals. This association is used mainly for range, wildlife, urban development, recreation, and watershed. The principle kinds of wildlife are deer, quail, dove, cottontail rabbits and migratory waterfowl.

Pastura-Abra-Lynx. The second most common soil association within the Town is found within the northwest portion of the Town. This soil association consists of shallow and deep soils that are dominantly loam, gravelly loam and clay loam on nearly level to moderately steep fans, plains and side slopes. The vegetation is grasses or juniper and pinyon pine and an understory of grasses and annuals. This association is used mainly for range, irrigated farming, urban development, wildlife and watershed. Where the soils are cultivated, such irrigated crops as small grain, corn, and alfalfa are grown. The principle kinds of wildlife are deer, antelope, quail, dove, cottontail rabbits, and migratory waterfowl.

Cabazon-Thunderbird-Springerville. This soil association is generally found to the east and southeast of the Town. This soil association consists of shallow to deep, gravelly, cobbly and stony, fine-textured, nearly level to very steep soils on basaltic plains, mesas and hills. These soils are used for range, wildlife habitat, urban development, and watershed catchment areas.

Lithic Haplustolls-Lithic Arguistolls-Rock Outcrop. This association is characterized by dark-colored, well-drained, shallow and very shallow, gravelly and cobbly, moderately coarse to moderately fine-textured, gently sloping to very steep soils and rock outcrops formed in the residuum on igneous and sedimentary on hills and mountains.

Tortugas-Purner-Jacks. This soil association is found to the northeast of the Town's Sphere of Influence. This soil association consists of very shallow, shallow, and moderately deep; gravelly, cobbly, or stoney soils that are dominantly loam. The vegetation is pinyon pine, juniper and an understory of grasses. This association is mainly for range, wildlife, watershed, and building-rock quarries. The principal kinds of wildlife are deer, dove, cottontail rabbits, and turkey at higher elevations.

AGRICULTURE PRODUCTION RESOURCES

Although Prescott Valley maintains a rural character with many acres of rolling hills and mesas covered by grasslands, agriculture does not play a significant role in the Town's economic infrastructure. Currently, only a small lot of land located to the northeast of the intersection of Robert Road and Highway 89A is zoned for agricultural use. However, livestock grazing is still a prominent activity in the Town and occurs on both State Trust and privately owned land.

MINERAL RESOURCES

No major metallic mineral mining districts, energy and/or industrial mineral occurrence districts, or industrial mineral production sites are located within the boundaries of Prescott Valley. The Town of Prescott Valley and its Sphere of Influence are composed primarily of Tertiary and Quaternary geological deposits. These deposits, when excavated are commonly referred to as sand and/or gravel. These sediments have the potential to be excavated for economic purposes. Currently, in the southern area of the Town, there is a quarry that excavates flagstone, a rock-type that is commonly utilized as a building material.² Although no major metallic mineral mining districts are located within Prescott Valley, Gold (placer) has been found in the vicinity of Lynx Creek in the Prescott Valley area.

7.2.2.4 Biologic Resources

Arizona is a large state with a diversity of plants, animals and ever-changing environmental conditions. Consequently, many areas may contain species that biologists do not know about or species noted in a particular area may no longer occur there. Not all of Arizona, including Prescott Valley, has been surveyed for detailed listings of flora and fauna, and surveys that have been conducted have varied greatly in scope and intensity. The following discussion identifies indicator species for the biotic communities found in the planning area, (i.e., species that are commonly found in such areas). However, since most of Prescott Valley has not been surveyed, the existence of a particular species of flora or fauna is not officially confirmed.

A majority of Prescott Valley's biologic resources are located in areas free from large-scale development intrusion. Areas such as these are found on Glassford Hill, in the Lynx Creek and Fain Lake areas, and in grassland areas throughout various portions of the Town. The Town of Prescott Valley is located at an elevation of approximately 5,100 feet above sea level. The elevation of the Town, coupled with the climate and associated weather patterns, provides for an area of transition or overlap of biotic communities in the project area.

Based on paleontology records, Prescott Valley was part of a vast, ancient mountain lake where large animals, such as prehistoric horses, bison, wolves, bears, and mammoths, once roamed. However, as humans occupied the region and development began to form the foundations for today's landscape, the range of wildlife has been reduced to those species that have adapted to relatively close human contact. Despite changes to the landscape over time, Prescott Valley still has an abundance of valuable biological resources, including a wide diversity of fauna.

Prior to the development of the Town, the natural landscape was covered with a wide variety of native grasses and riparian habitat in the southern portion of the Town. Although development has altered much of the natural environment, Prescott Valley still contains valuable biologic resources that are located in areas free from large-scale development. The grassland and riparian communities found within the planning area represent the conditions prior to human habitation of the Town.

GRASSLANDS

Grasslands play a significant role in the diversity of fauna species. There is a direct relationship between the type and diversity of plants found in an area and the type and diversity of wildlife supported by this vegetation. Typically,

² Arizona Geological Survey (AZGS). Map 33, "Arizona Geologic Highway Map." Supplemental information provided by conversation with Rick Trapp (Geologist) at AZGS on August 27, 2001.

grasslands can support a large range of animals, from large mammals such as pronghorn, to small mammals such as ground squirrels and foxes. In addition, a wide variety of amphibians, reptiles, and birds are found in grassland areas.

The Arizona Game and Fish Department has identified cold temperate grasslands and warm temperate grasslands as occurring in the Prescott Valley area. Although, these two biotic communities are not typically found in concurrent areas, Prescott Valley's unique geographical conditions allow for the transition of various biotic communities.³

Cold Temperate Grasslands. Great Basin and Plains Grasslands (a subcommunity of cold temperate grasslands) are found in Prescott Valley's natural landscape. This transitional grassland biotic community is typically situated on high level plains, in valleys, and on low hillsides, rises, ridges, and mesas, in what is predominately flat and open country. Almost all of the Plains Grassland is composed of mixed or short-grass communities. Plant lists for species generally associated with the cold temperate-grassland community are found in Appendix D, Table D-1, *Plants Found in the Great Basin and Plains Communities*.

Plains and Great Basin Grasslands provide habitat for a wide range of animals. A list of animals generally associated with this community is included in the Appendix D's Table D-2, *Animals Found in the Great Basin and Plains Grassland Community*. Because the center of the Plains grassland is well outside the boundaries of the Southwest, some of the birds most characteristic of Plains grassland are peripherally found as nesting species in this area. The Arizona Game and Fish Department conducted a survey of birds in the Prescott Valley, which are also listed in Appendix D, Table D-3.

Warm Temperate Grasslands. Semi-desert grasslands (a sub-community of warm temperate grasslands) are also found in Prescott Valley. This biotic community is potentially a perennial grass-scrub dominated landscape. It is found between lower elevations of desert scrub and higher elevations of evergreen woodland, chaparral, or plains grassland. It often appears as a grassy landscape broken up by the uneven stature of large, diverse, and well-spaced shrubby perennials. Table D-4, *Plants Found in the Semi-Desert Grassland Community*, in Appendix D lists plants found in semi-desert grasslands.

The semi-desert grassland provides habitat for a wide range of fauna. Mammals are generally well represented in semi-desert grasslands. A list of animals generally associated with this community are listed in Table D-5 in Appendix D. The grassland and other open landscape-adapted animals have fared poorly compared to their scrub-adapted competitors. For example, pronghorn antelope are nearly absent in some semi-desert grassland ranges, but Mule Deer and Javelina have both increased in density and extended their range during the last century. This is largely due to the thinning and elimination of grasses by livestock overgrazing, which has reduced the incidence of fire, thereby helping woody and shrubby species to invade.⁴

RIPARIAN

Although riparian areas cover only a small percentage of the landscape, they are among the most biologically productive of all lands and are especially complex. Riparian areas are found at the interface between terrestrial (upland) and aquatic ecosystems and, therefore, interact with both. Typically, riparian communities are associated with relatively permanent springs, creeks, streams, seeps and ponds. The biotic and abiotic components of the riparian system are inextricably linked to the groundwater, surface water and hydrologic processes in the aquatic environment and to the changes in vegetative cover, rates of erosion and surface water runoff in upland ecosystems.

³ Source: Letter correspondence from Sabra Scgwartz, Coordinator for the Habitat Data Management System, Arizona Game and Fish Department, dated August 14, 2001.

⁴ Source: Biotic Communities: Southwestern United States and Northwestern Mexico. David E. Brown (Editor). 1994. Pg. 130.

In Prescott Valley, such communities are found in the southern portion of town, near Lynx Creek and Fain Lake. Because of available water, these areas provide favorable habitats for a large variety of trees, shrubs and grasses.

Currently, no detailed field surveys are available to indicate the species of flora in the riparian habitats. However, it is logical to assume that the riparian habitat would consist of the wetlands, and possibly marshlands, of the previously discussed grassland sub-communities.

The overall riparian biotic community in the Lynx Creek area is probably characterized by chaparral and shrublands.⁵ Indicator species would likely include live oak, manzanita and gambel's oak. The flora species that might be found in the Lynx Creek area are listed in Table D-6 in Appendix D.

As previously noted, no comprehensive field studies have been conducted for riparian habitats in the project area. However, it is possible to make general assumptions about riparian habitats in the project area, including the Lynx Creek area.

Structural diversity (different layers of vegetation, different ages of plants, and ground litter) in the plant community provides a wide diversity of habitats for wildlife. Because of the vegetative diversity and close proximity to water, riparian areas typically meet the needs of more wildlife species than adjacent upland areas.⁶

In addition to the species identified in Tables D-2 and D-5 of Appendix D, indicative species of fauna in the riparian areas would likely include a variety of amphibians, including the tiger salamander and northern leopard frog. Mammals may include an occasional ocelot and deer, mountain cottontails, and several species of bats. Also, beavers are beginning to be seen more often in these areas. Birds would include hawks (Harris, Cooper and Harrier), belted kingfishers, bald eagles, several species of owls, several species of hummingbirds, and kestrels. Comprehensive listings of all species commonly associated with wetlands can be found in the book, Biotic Communities: Southwestern United States and Northwestern Mexico, by David E. Brown (Editor). Due to the vast diversity of species in riparian areas and lack of field survey data, no further listing of wildlife is provided in this document.

SPECIAL STATUS SPECIES

The Arizona Game and Fish Department's Heritage Data Management System (HDMS) indicates the presence of special status species located within five miles of Prescott Valley and/or its vicinity. However, HDMS data is not intended to include potential distribution of special status species. In addition, the HDMS records indicate that there are no proposed or designated Critical Habitats in the planning area vicinity. Table D-7, found in Appendix D, provides a listing of special status species identified by the Department's HDMS.⁷

PRONGHORN ANTELOPE

One species of unique and special interest that inhabits various areas of the remaining undeveloped lands within Prescott Valley is the Pronghorn Antelope. Prior to the 1920s, pronghorn roamed freely and in abundant numbers

⁵ Source: Scott Anderson, Director of the Riparian Institute.

⁶ Source: Arizona Riparian Inventory and Mapping Project, Arizona Game and Fish Department. December 1, 1993. Pg. 86.

⁷ Table D-7 of Appendix D, *Special Status Species within 5 miles of Town of Prescott Valley*, obtained from letter correspondence, dated August 14, 2001, with Sabra A. Schwartz (Heritage Data Management System, Coordinator), Arizona Game and Fish Department.

across the grasslands of Arizona, including Prescott Valley. However, as communities throughout the State developed, the pronghorn habitat began to shrink, causing their numbers to reduce.

Pronghorn herds move within their home ranges in response to influences such as water and food availability, irritating disturbances, and weather conditions. Yearly migrations from one seasonal use to another typically follow the same pattern, but now barriers often restrict or prevent pronghorn movements. Movement barriers, both natural (e.g., dense vegetation, canyons, lakes, major waterways) and human-made (e.g., fences, highways, canals, housing developments), can have serious impacts on pronghorn populations and need to be identified.

Movement barriers such as net-wire fences or railroad and highway rights-of-way can cause fragmentation of populations into isolated herds. Isolation of populations is important because genetic interchange can be lost and inbreeding can occur, thereby resulting in low genetic diversity. If populations drop below minimum viable levels the pronghorn herds suffer reduced birth rates, increased mortality of young, and higher probabilities of local extinction due to random or systematic events.⁸

Pronghorn Antelope mainly occur in grasslands, but they are also found, at lower densities, in open woodlands, coniferous forests, and low desert areas. In Prescott Valley, Pronghorn Antelope can be found in the Glassford Hill area and in various areas both north and east of Town. Past highway construction and general development of the Town have created movement barriers that inhibit the pronghorn from crossing town in an east-west direction. This has caused isolation and restricted movements among local herds, resulting in fewer pronghorn numbers and smaller habitat areas. Therefore, to help managers improve habitat and protect important areas, it has become increasingly important in recent years to understand how the Pronghorn Antelope use their specific home ranges.

7.3 Looking Toward 2025

Water resource policies address water supply and water quality. Since the overall Active Management Area that includes Prescott Valley is considered not to be in “safe-yield,” the Town must be diligent in pursuing adequate water for future growth and development. The Town’s water budget can support a population of approximately 55,000, based on Certificates of Assured Water Supply for already planned developments. After the Town begins to receive recharge credits for its 1.6 million gallons per day (MGD) recharge into the Agua Fria River, the population figure may increase to approximately 75,000 or 80,000. Among Prescott Valley’s options for additional water are to continue its current program to accumulate recharge credits in the upper Agua Fria sub-basin, to use more reclaimed water, and to intensify water conservation efforts.

As the Town grows, more emphasis will need to be placed on stormwater management as it affects surface water quality and ultimately, the groundwater aquifers. The Environmental Protection Agency’s stormwater permit regulations require a high level of monitoring and oversight. It is advantageous for the Town to ensure that new development is initially in compliance, rather than have to retrofit in the future.

Prescott Valley must protect its excellent air quality by addressing the source of potential degradation: increased vehicular emissions, new types of industry, and development in the surrounding jurisdictions. The Recreation and Open Space Element’s proposed trails system complements the Land Use Plan’s compact land use pattern to reduce vehicular use and emissions.

The land use designations and mixed use Planned Area Developments (PAD) in the Land Use Plan will reduce unnecessary automobile use that could negatively affect Prescott Valley’s air quality. Also, Prescott Valley is seeking to attract industry sectors that will not degrade the Town’s clean air.

⁸ Source: Home Ranges, Movement Pattern, and Habitat Selection of Pronghorn in Central Arizona, Arizona Game and Fish Department, 1994.

The Town's historical, archaeological, and paleontological resources need to be identified, and their preservation and use coordinated with the appropriate agencies and non-government organizations.

Energy conservation opportunities in Prescott Valley are addressed through consideration of alternative energy sources, increased recycling, home building practices, and the purchase of recycled products.

The Town values the wildlife in the surrounding area, especially the Pronghorn Antelope, and wants to sustain their existence. However, the situation created by already existing development, where movement barriers impede herd migration and reproduction is negatively affected, are not easily solved. Solutions will come from a cooperative effort on the part of public agencies, organizations, and private individuals/land owners.

7.4 Guiding Principles, Goals and Policies

GUIDING PRINCIPLE EPW-A: PRESERVE AND ENHANCE ITS ENVIRONMENTAL RESOURCES INCLUDING, BUT NOT LIMITED, TO AIR QUALITY, WATER, BIOLOGICAL RESOURCES, AND HISTORICAL RESOURCES. THE TOWN SHALL CONTINUE PROMOTING PUBLIC EDUCATION AND PRACTICES TO PROTECT THESE RESOURCES.

GOAL: EPW-A1 *Satisfy current and future water demands through sustainable and renewable water resources for the next 100 years.*

POLICIES: EPW-A1.1 Encourage the water utility to maintain, upgrade, enhance, and expand water service.

EPW-A1.2 Protect long-term stability of current water supplies.

EPW-A1.3 Develop alternative water supplies, such as imported water, reclaimed water, storm water and other options, to ensure long-term water availability for the community.

EPW-A1.3 Implement local, regional and state water conservation programs and promote water conservation efforts.

EPW-A1.4 Conserve groundwater or imported water resources by utilizing water conservation techniques, water conserving fixtures, and low-water use drought-tolerant landscaping.

GOAL: EPW-A2 *Manage a coordinated system of water and wastewater services and resources to serve existing and new development.*

POLICY: EPW-A2.1 Update water and wastewater Master Plans on a regular basis and implement Master Plan recommendations as appropriate .

GOAL: EPW-A4 *Continue to protect and maintain the Town's excellent water quality.*

POLICIES: EPW-A4.1 Utilize Best Management Practices (BMPs) during construction activities to reduce the potential to degrade surface and groundwater quality.

EPW-A4.2 Storm drain runoff should be planned and managed to minimize surface and groundwater degradation, to reduce the waste of fresh water, to enhance wildlife, and to reduce the impact of erosion.

GOAL: EPW-A5 *Encourage adequate solid waste collection and disposal, which complies with Arizona Environmental Regulations, minimizes solid waste, and enhances recycling efforts.*

- POLICIES:** EPW-A5.1 Continue private enterprise's solid waste collection and disposal.
- EPW-A5.2 Support recycling efforts and the use of recycled materials by residential, business, and government uses, and support the expansion of recycling facilities, including the possibility of curbside recycling.
- EPW-A5.3 Support the use of recycling practices and use of recycled materials by the construction industry.
- EPW-A5.4 Continue to cooperate with other jurisdictions to establish a regional site for household hazardous waste.

GOAL: EPW-A6 *Promote environmental awareness and resource conservation.*

POLICY: EPW-A6.1 Develop educational and informational programs at all community levels.

GOAL: EPW-A7 *Promote resource and energy conservation within Prescott Valley.*

- POLICIES:** EPW-A7.1 Encourage development that promotes energy conservation by use of active and passive solar systems, building orientation and site planning, and use of low-energy appliances and building systems.
- EPW-A7.2 Support the exploration of alternative energy sources, such as wind power, solar power, and other technologies that may be appropriate for Prescott Valley.
- EPW-A7.3 The Town's governmental agencies should take a lead role toward implementing programs and practices in their existing and future facilities to conserve natural resources and encourage businesses and residents to use recycled materials.

GOAL: EPW-A8 *Maintain the Town's good air quality.*

POLICY: EPW-A8.1 Implement the air quality sustainability strategies identified for the Yavapai Area Governments AIR AWARE Program.

See the Economic Development Element for additional goals and policies related to clean industry.

GOAL: EPW-A9 *Provide contiguous open areas for wildlife habitat and protection of sensitive natural terrain.*

- POLICIES:** EPW-A9.1 Support the preservation of contiguous open space areas and corridors for the migration of native wildlife.
- EPW-A9.2 Identify wildlife species that may need preservation.
- EPW-A9.3 Actively participate with appropriate Federal, State, and County agencies that are trying to preserve or aid endangered wildlife.
- EPW-A9.4 Support infrastructure design that is sensitive to wildlife needs and minimizes impacts on the land.

See the Recreation and Open Space Element for additional goals and policies related to providing open space.

GOAL: **EPW-A10** *Preserve the Town's archeological, paleontological, and historical resources.*

POLICIES: EPW-A10.1 Identify the Town's archeological, paleontological, and historical resources.

EPW-A10.2 Coordinate with appropriate agencies and organizations to protect and preserve the Town's archeological, paleontological, and historical resources.

This page intentionally left blank.