

Flagstaff Regional Plan – DRAFT WATER ELEMENT

Water Resources

Introduction

Addressing water resources on a regional basis is challenging and complex. Although the entire regional plan area relies generally on the same resources (groundwater and surface water), the management and delivery of the water involves a number of different systems. The City of Flagstaff is the primary water provider within the region, serving most property within the City's jurisdictional boundary and also to water haulers (commercial and individuals) who transport the water to homes and businesses within the unincorporated areas of the County. Coconino County is not a water provider, but there are a variety of private water systems serving some of the outlying county communities and subdivisions, as well as small wells serving individual homes. As a natural resource, water knows no jurisdictional boundaries, however the commodity of water has been relegated to jurisdictions for regulatory and delivery purposes. An additional challenge is the ownership of land within Coconino County where 88% of the land is either in Federal, State or Tribal ownership.

The statutory requirement for the Water Element for the City's Comprehensive Plan is to identify the following items:

- a. Known legally and physically available surface water, groundwater, and effluent supplies;
- b. The demand for water that will result from future growth projected in the general plan, added to existing uses, and;
- c. An analysis of how the demand for water that will result from future growth projected in the general plan will be served by the identified water supplies, or a plan to obtain additional necessary water supplies.

The City is in the process of a major Water Resources Sustainability Study to answer these questions and the information will be available sometime in the Spring of 2011. While the statutory requirements address the commodity of water to serve human needs, the City and County both recognize the need to address the resource in a natural systems sense as well. This element will address water resources available to the region including the regulatory framework for water resources, and the current efforts to address water resource issues through a regional partnership.

Relationship to Vision and Guiding Principles

Water resources are integral to the future of the greater Flagstaff region, for both humans and the environment. Developing a sustainable water budget includes assessing the needs of current and future residents and businesses as well as the needs of the ecosystem. This is consistent with the Vision seeking stewardship of the natural environment. The goals and policies support the guiding principles including but not limited to accountability and responsibility, smart growth and quality development, regional partnerships, and healthy ecosystems.

Regional Water Planning

The Coconino Plateau Water Advisory Council (CPWAC) is a partnership of 27 entities, including Coconino County and the City of Flagstaff. The CPWAC was formed under the State's Rural Watershed Initiative to facilitate and implement sound water resource management and conservation strategies on the Coconino Plateau. The CPWAC mission is *"To ensure an adequate long-term supply of water is available to meet the current and future reasonable needs while preserving the health of the environment on the Coconino Plateau."* The CPWAC, in

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conjunction with the Bureau of Reclamation, completed the North Central Arizona Water Supply Study (NCAWSS) in 2006 which determined that based on the assumption of projected water use and current water sources there would be unmet demands for the region by 2050. The shortfall is 24,700 Acre Feet per year. One Acre-Foot (AF) is roughly the amount of water used by four families over one year. This shortfall exists even after increasing conservation measures by an additional 20%. The appraisal study identified alternatives to help meet these projected demands, which would be further evaluated in more detail through a feasibility study. The CPWAC has been pursuing federal authorization for the feasibility study since 2006.

Other strategic initiatives of the CPWAC include developing a regional water ethic and identifying a sustainable water budget.

Regulatory Framework

Historically, water has been deemed a resource of the State and authority over groundwater and surface water has remained at the state level; it is currently under the jurisdiction of the Arizona Department of Water Resources (ADWR). ADWR recognizes groundwater, surface water, reclaimed water, and Colorado River as water sources.

Water Management Programs administered by ADWR have generally been developed as consumer protection programs to address growing concerns about Arizona's limited water supplies. The 1980 Groundwater Management Act created Active Management Areas (AMAs) which operate under the Assured Water Supply (AWS) Program and have a management goal of Safe Yield which is defined as the long-term balance between groundwater withdrawals and the amount of water naturally and artificially recharged into the aquifers. The AWS program is mandatory and requires that a 100-year water supply must be demonstrated before a subdivision can be approved by the platting authority, such as a City or County. A 100-year supply is based upon 5 criteria: where the water must be continuously, legally, and physically available, where the water provider must demonstrate the financial capability to construct and maintain treatment and delivery facilities; and where the water must be of sufficient water quality to meet State and Federal standards. . It is the responsibility of the ADWR to determine whether these criteria have been met. No part of Coconino County (including Flagstaff) is in an AMA.

The Adequate Water Supply Program applies to the Flagstaff Regional Planning area. Under this voluntary program new subdivisions can proceed without demonstrating that a 100-year water supply exists prior to their approval by the local platting authority. In an attempt to address the relationship between water and growth, the State legislature passed SB1575 in 2007 which authorizes cities, towns and counties located outside of Active Management Areas to require an adequate water supply determination from ADWR prior to the approval of a new subdivision (i.e., Mandatory Water Adequacy Rules). However, these new mandatory rules do not apply to lot splits or major commercial/industrial developments that are not associated with a subdivision,

The City of Flagstaff was deemed to have a Designation of Water Adequacy back in 1973, although it was not based on hydrologic information. Many subdivisions in Coconino County have been unable to obtain a Designation of Water Adequacy, primarily due to the great depths to groundwater on the Coconino Plateau. As previously mentioned, one of the criteria is physical availability and that is tied to depth to groundwater over a projected 100-year period into the future. If groundwater levels are projected to decline below 1,200 feet after 100-years of providing water to that subdivision, then the water supply is not deemed to be adequate. Many wells in the County, including the Flagstaff region, are already at levels greater than 1,200 feet, typically over 1500-2000 feet.

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Special consideration is being given to the groundwater aquifers on the Coconino Plateau in this region and the State has developed hydrologic guidelines that would better accommodate the local hydrology in developing new rules for physical availability.

County Areas

County residents which are not part of the city's water distribution system obtain water in a variety of ways: public community water systems, owner cooperatives, Domestic Water Improvement Districts, shared wells, individual wells, and hauled water. The County has no regulatory authority over the operation of these systems and they fall under a variety of agencies for review. The following is a list of the unincorporated areas which are outside the City of Flagstaff's water service area.

Bellemont: Flagstaff Meadows (Utility Source, LLC) and Bellemont Water-includes Company-include water distribution systems for the subdivision and also for the industrial area; standpipe sales to water haulers is also available in this area (Flagstaff Meadows Subdivision has a 100-year adequacy designation). Camp Navajo has its own water system.

Doney Park, Timberline-Fernwood: Doney Park Water (an owner cooperative) provides water to a majority of area residents and businesses. They also maintain standpipe sales for water haulers. DPW has calculated their service abilities based on existing county zoning.

Fort Valley: Many residents have individual wells. The Majestic View Domestic Water Improvement District serves two subdivisions. Some residents rely on hauled water.

Kachina Village: Kachina Village Improvement District (KVID) provides water (and wastewater) service to the subdivision. KVID has constructed wetlands for their wastewater system and also sells reclaimed water to neighboring Forest Highlands for use on their golf course.

Mountaineire: Ponderosa Utility is a private water company serving the Mountaineire Subdivision and areas along Old Munds Highway east of I-17 including the Highland Meadows Subdivision.

Flagstaff Ranch: Flagstaff Ranch Water Company serves the commercial and industrial area just west of the City boundary between Route 66 and I-40, and Flagstaff Ranch Golf Club and Westwood Estates located south of I-40.

Forest Highlands: Forest Highlands Water Company serves this private residential golf course community. They also purchase reclaimed water from KVID for use on their golf courses.

Heckethorn: Flagstaff Heckethorn Water Company serves about 44 customers in the Heckethorn area located off of Lake Mary Road.

Mountain Dell: Mountain Dell Water, Inc. serves about 80 residential customers in a small county island north of Fort Tuthill.

West Village: West Village Water Company serves a mix of residences and businesses and standpipe for sales in a county island area in west Flagstaff north of Route 66.

Forest Dale: A County island off Butler Avenue served by the City of Flagstaff

Pine Del: This County subdivision located southeast of Fort Tuthill is served by the City of Flagstaff water system.

Water Sources

Surface Water

The City has two primary surface water supplies, Inner Basin and Upper Lake Mary which are significant sources of renewable water. Both of these supplies play an important role in the City's water development history dating back to the 1890s and 1940s, respectively.. However, these supplies are often subject to the impacts from drought and have been unreliable at times in the past. In 2009, these renewable surface water sources made up 38% (4,006 AF) of the City's total water deliveries to its customers.

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None of the unincorporated areas within the Regional Plan boundary rely on surface water for domestic supply.

Groundwater

Due to historical impacts of drought, the City searched for a more reliable water supply in the 1950s and started developing wells. Over the past 60 years the City has increasingly relied upon groundwater as its primary water supply. However, while this supply has been very reliable over time it is extremely expensive due to the great depths at which the regional aquifer exists on the Coconino Plateau and some well fields have experienced significant water level declines over the last 25 years. In 2009, groundwater made up 42% (4,393 AF) of the City's total water deliveries to its customers.

The wells providing service to the unincorporated county areas rely primarily on the same aquifer, although there have been some new wells developed which draw from the deeper, Redwall aquifer.. Others, particularly individual residential wells, draw from shallow, perched aquifers which are not considered as reliable.

Reclaimed Water

The City began treating its wastewater in the mid-1980s to a quality sufficient to reuse or recycle. This "reclaimed water" was first directly delivered to golf courses for irrigation. The unused remaining treated reclaimed water was then discharged into the Rio de Flag thereby recharging the groundwater aquifer. In the mid-1990s the City constructed its second water reclamation facility and ramped up its water reuse program; it now directly serves over 60 customers. Additionally, the City has recharged nearly 97,000 AF back to the aquifer via the Rio de Flag since the mid-1980s. In 2009, directly delivered reclaimed water made up 20% (2,141 AF) of the City's total water deliveries while recharging approximately 3,744 AF via discharge into the Rio de Flag.

Most of the unincorporated areas of the County rely on individual septic systems rather than community wastewater treatment and thus reclaimed water is not widely available (the exception being KVID). Nonetheless, over the past 20 years major developments have been required to incorporate reclaimed systems into their design when a community wastewater system is being developed. There are two golf course communities outside the city limits and both were required to incorporate reuse for watering. However, there is not adequate wastewater generated to rely solely on reclaimed water.

In areas of the County without reclaimed systems many residents rely on other means of water conservation and reuse such as roof-collection harvesting and gray water systems.

Goal W.1 : Develop a sustainable water budget incorporating regional hydrology, ecosystem needs, and social and economic well-being.

Policy:

1. **Participate in and support regional processes to develop a sustainable water budget.**

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Goal W.2: The City shall manage a coordinated system of water, wastewater, and reclaimed water utility service facilities and resources to adequately serve residential and commercial customers.

Policies:

- 1. Develop and adopt an integrated water master plan that addresses water resources, water production and its distribution, wastewater collection and its treatment, and reclaimed water treatment and its distribution.**
- 2. The City shall maintain existing facilities in order to provide reliable, safe and cost effective water, wastewater and reclaimed water services.**

Water Demand

Measuring Demand

Water demand is generally related to needs associated with current and projected uses. One way the City estimates its long-term or build-out water demands is combining existing utility billing records for various land uses and applying those to the undeveloped land uses per the Regional Plan.

In the unincorporated areas of the Regional Plan, the ability to project demand can be based on best available information. In those areas that are served by public water systems, supply and demand has generally been assessed and managed by the operators. In areas that are served by individual or shared wells the data is not available, and; the same is true for areas that rely on hauled water. Generally, residents and businesses relying on hauled water implement the most conservation measures to offset demands. Water hauled from the City of Flagstaff system is typically around one (1) percent of the City's overall water demand.

The 2006 North Central Arizona Water Supply Study Report of Findings made projections for future demands within the region based on population estimates and maintaining the current Gallons Per Capita per Day (GPCD) water usage. Projection of the shortfall by 2050 did not anticipate any substantial change in type of business or industry which the region attracts. The addition of a major water-consuming use would skew the results of this study. The study did address demands being offset by increased conservation (20%), the result still being unmet demands using current supply sources.

Managing Demand

While the ADWR water management programs have attempted to address the relationship between growth and water resources there has not been a mechanism to truly address this outside of AMA's. Although the potential to adopt a mandatory water adequacy program related to subdivisions addresses a part of this relationship, there is a substantial amount of development which does not go through the subdivision process and could not be considered through such a program. The City of Flagstaff has reduced potable water consumption by 40% through strict water conservation requirements particularly tied to watering and car washing. Some concern has been expressed that these requirements are so strict that they limit the ability to maintain other sustainable practices, such as home vegetable gardens, and that special consideration should be given to those uses.

The County has adopted a Sustainable Building Program which is voluntary but provides suggestions for accelerated water conservation measures beyond what codes currently require. The County's Landscape Ordinance is based on principles of Xeriscape and requires appropriate low water consumptive and native vegetation.

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The County and City both allow gray water and water harvesting systems. A Conservation Ordinance that could be applied to all new development, commercial and residential, would be a more effective approach to managing the development/water connection.

Goal W.3: Satisfy current and future water demands through sustainable and renewable water resources and strategic conservation measures.

Policies

- 1. The City, County, and all regional partners shall work together to address regional water needs.**
- 2. Low-water consuming businesses and industries shall be favored over water intensive uses.**
- 3. Integrate sound water conservation and reuse systems into new and updated public facilities.**
- 4. Meet needs for non-potable uses through use of reclaimed wastewater and water harvesting where appropriate.**
- 5. Encourage residents to practice water conservation by installing high-efficiency low-flow plumbing fixtures, repairing leaks promptly, harvesting rainwater, planting native and drought-tolerant landscaping, and utilizing gray water systems.**
- 6. Adopt a water conservation ordinance that includes standards for plumbing fixtures, appliances, gray water, and rainwater harvesting.**
- 7. Encourage private well owners to install meters to understand how much water is used as well as alert property owners to possible leaks.**

City-Specific Policies

- 8. The City shall estimate hydrologically the volume of local water resources it has available and make periodic updates as appropriate**
- 9. The City shall implement a water management program that creates a linkage between new growth and a minimum 100 year water supply to support that growth.**
- 8. The City shall identify adequate funding sources to pay for new resources to ensure a long-term renewable water supply.**

Goal W.4: To avoid leap-frog development, logically enhance and extend public water, wastewater, and reclaimed water services including their treatment, distribution, and collection systems in both urbanized and newly developed areas of the City in accordance with policies established by City Council. Public infrastructure could support infill incentive areas; private development would support extensions into newly developed areas.

Policies

- 1. The City shall update the Integrated Water Master Plan to better plan for the necessary infrastructure sizing and location to accommodate planned growth as envisioned by the land uses in the Regional Plan.**
- 2. The City shall maintain a financially stable utility to provide reliable, high quality utility services.**
- 3. Developments requiring city-level services shall be located within the City limits.**