Water Resources

Water is an essential resource to sustain human life, a healthy environment, and a strong economy. Since its early days, Tucson has relied on the same underground water source. In the mid-1940s, the city began to grow rapidly, which resulted in a significant lowering of the groundwater table with both economic and environmental consequences. Today there is competition for

limited water resources—including potable water, reclaimed water, and rainwater—among commercial, industrial, and residential sectors, water companies, and private well owners.

One important long-term goal for water managers is the attainment of what is called "safe yield," meaning that no more water is withdrawn from the groundwater aquifer than is replenished. Tucson has decreased its use of groundwater in recent years, and two-thirds of its current water supply now comes from recharged Colorado River water (*Exhibit WR-1*). As the largest municipal water provider in the region, Tucson Water, a department of the City of Tucson, plays an important role in assuring a long-term, high quality, dependable supply of water. The City's Environmental Services Department is responsible for monitoring and protecting groundwater and stormwater at 23 abandoned landfills within the City limits.

Defining a sustainable water future will require changes in how water is used and managed in Tucson and throughout the region. In 2009, the City of Tucson and Pima County released the results of a joint project called the Water & Wastewater Infrastructure, Supply & Planning Study. This study was the result of unprecedented regional cooperation to plan the area's water future.



EXHIBIT WR-1 Transition to Renewable Supplies

Source: City of Tucson Water Department



The study defines a new paradigm for water resource planning and management that:

- recognizes scarcity and uncertainty
- includes the natural environment as a recipient of water
- balances water supply and demand
- builds upon the link between urban form and water use
- elevates public discussion of water resource planning to a central position in the future.

The three essential pillars of long-term water planning identified in the Water & Wastewater Study include aggressive demand management, the development of new water supplies, and guiding growth in terms of urban form, density, and location. Associated with the Water & Wastewater Study is the five-year City/ County Water Sustainability Action Plan, which spans January 2011 to December 2015.

A historic disconnect between land use planning and water resource and infrastructure planning has had negative impacts on the region, including declines in the groundwater level and growth in places that lack adequate water infrastructure and other public infrastructure and services. The region's urban growth patterns have contributed to subsidence, habitat loss or degradation, groundwater contamination, and increased flooding. The cost of this growth has been born by local governments, other service providers, and taxpayers.⁵

An outcome of the Water & Wastewater Study was the adoption of a Water Service Area Policy by the Tucson Mayor and Council in 2010 (Resolution No. 21602). This policy establishes a water service boundary for Tucson Water as shown in *Exhibit WR-2* on the next page. Requests for water service outside this boundary will be carefully evaluated and the impact on existing and future obligated customers will be assessed



EXHIBIT WR-3 Single-Family Residential Water Use (GPCD), 2008

Source: Western Resource Advocates, Arizona Water Meter: A Comparison of Water Conservation Programs in 15 Arizona Communities. 2010.

⁵City of Tucson and Pima County. "Integrating Land Use Planning with Water Resources and Infrastructure." Technical Paper, July 2009.

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EXHIBIT WR-2 Tucson Water Service Area, Established 2010

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following an established set of criteria.

Along with guiding growth to better manage water use, Tucson Water has actively and successfully sought ways to decrease water demand. Tucson has been at the forefront of water conservation efforts in Arizona and in the country for three decades. Tucsonans use less water per person than many other communities in Arizona (*Exhibit WR-3, pg. 3.88*).

Public awareness of the importance of limited water resources and increases in water conservation behavior, greater water efficiency and conservation by public agencies and water utilities, and local regulations have all contributed to a decrease in the demand for water. The Commercial Rainwater Harvesting Ordinance (No. 10597) and the Residential Gray Water Ordinance (No. 10579) both encourage greater use of alternative supplies of water for nonpotable uses. The City's reclaimed water system provides water for non-potable uses to many Tucson Water customers.

Rainwater that falls onto Tucson's streets and buildings has the potential to contaminate groundwater through a process called "non-point source pollution." Rains wash oil, grease, animal waste, and other contaminants from the street into storm drains which then empty to washes and rivers. The Stormwater Quality Ordinance passed by the Mayor and Council in 2005 (No. 10209) gives jurisdiction over management of stormwater quality in the city to the Department of Transportation. Under the Ordinance, the City can inspect businesses, facilities, and construction sites to ensure that pollutants such as oil, grease, sediment, and trash do not get picked up by stormwater runoff and transported to the region's fragile washes.

The following policies support the continuation of water planning to achieve a long-term, high quality, dependable water supply.



A rain water cistern captures water for non-potable use.



Debris and contaminants from streets may be carried into washes during flooding.



POLICIES

Water Resources (WR)

- WR1 Continue to plan and manage the City's water supplies, quality, and infrastructure for long-term reliability and efficiency.
- WR2 Expand the use of alternative sources of water for potable and non-potable uses, including rainwater, gray water, reclaimed water, effluent, and stormwater.
- **WR3** Expand effective water efficiency and conservation programs for City operations and for the residential, commercial, and industrial sectors.
- **WR4** Ensure an adequate amount of water to meet the needs of riparian ecosystems.
- **WR5** Protect groundwater, surface water, and stormwater from contamination.
- WR6 Integrate land use and water resources planning.
- **WR7** Collaborate on multi-jurisdictional and regional water planning and conservation efforts.
- **WR8** Integrate the use of green infrastructure and low impact development for stormwater management in public and private development and redevelopment projects.
- **WR9** Provide opportunities to supply alternative water sources for sewer system flush.
- WR10 Continue to manage the City's Water Service Area, considering service area expansion only when it furthers the long-term social, economic, and environmental interest of City residents.
- **WR11** Conduct ongoing drought and climate variability planning.

Other Related Policies

ELEMENT	POLICY #	PAGE #
Housing		3.11
Public Safety	PS9	3.15
Parks & Recreation	PR9	3.20
Arts & Culture	AC4, AC9	3.27
Public Health	PH8	3.31
Urban Agriculture	AG1-AG4	3.35
Education	E7	3.40
Governance & Participation	G1-G12	3.46
Jobs & Workforce Development	JW3	3.56
Business Climate	BC6, BC7	3.66
Regional & Global Positioning	—	3.70
Tourism & Quality of Life	TQ5	3.76
Energy & Climate Readiness	EC3, EC7-EC9	3.86
Water Resources		3.91
Green Infrastructure	GI1-GI6	3.97
Environmental Quality	EQ1, EQ2, EQ6, EQ7	3.103
Historic Preservation	HP4, HP5	3.113
Public Infrastructure, Facilities, & Cost of Development	PI1-PI7	3.121
Redevelopment & Revitalization	RR5	3.128
Land Use, Transportation & Urban Design	LT1, LT3, LT4, LT7, LT8, LT10, LT12, LT18–LT21, LT27	3.148