



**2007 PLAN AMENDMENT PROGRAM  
PLANNING AND ZONING COMMISSION  
STAFF REPORT**



<b>HEARING DATE</b>	October 31, 2007
<b>CASE</b>	Co7-07-04 Pima County – Water Resources Element Regional Comprehensive Plan Policy Major Plan Amendment
<b>SUBREGION</b>	All subregions
<b>DISTRICT</b>	All districts
<b>LOCATION</b>	Regional Comprehensive Plan policies are in effect for all of Pima County
<b>ACREAGE</b>	n/a
<b>REQUEST</b>	County-initiated plan amendment to review and amend the Pima County Comprehensive Plan Regional Plan Policies, Section 3, Water Resources Element
<b>OWNER</b>	n/a
<b>AGENT</b>	n/a

**APPLICANT’S STATED REASONS TO AMEND THE COMPREHENSIVE PLAN:**

At the December 4, 2006 Board of Supervisors hearing, the Board directed staff to undertake, during the 2007 Comprehensive Plan Amendment process, actions necessary to update and amend Comprehensive Plan Water Resources Element Regional Plan Policies to “...emphasize the interconnection between land use planning and regional water planning... [to] integrate land use and water resource planning in Pima County.” Policy recommendations in the November 2006 Regional Flood Control District report will serve as guidance in the development of new water resources element policies for the Comprehensive Plan.

**STAFF REPORT SUMMARY:**

Planning staff recommends **APPROVAL** of the proposed Comprehensive Plan Water Resources Element policy.

The proposed plan amendment policy would create a more direct connection between land use and water resources, specifically the impacts of groundwater pumping on surface water and shallow groundwater; the aquatic and riparian systems these water sources support; developed areas affected by subsidence; and the availability of infrastructure to provide access to renewable and potable water supply. Identifying these concerns as part of the planning review process would help protect residents and natural systems from future impacts.

## PLANNING REPORT

At the December 4, 2006 hearing, the Board of Supervisors directed Planning staff to amend the Comprehensive Plan to add Water Resources Element plan policies. The report *Integrating Land Use and Water Resource Planning in Pima County* (Pima County Regional Flood Control District, Water Resources Division with Development Services Department, November 2006) contains recommendations for policies that bring additional review to requests to increase land use intensity and potential effects on county water resources.

In addition, On May 1, 2007, the Pima County Board of Supervisors passed a Resolution (2007-84) in support of county sustainability initiatives. These included encouraging gray water systems and storm water harvesting in new private residential, commercial and industrial development in the county. The Board has recognized the need for water conservation measures and to maximize the water resources we do have, to protect our natural environment.

## WATER RESOURCES POLICY

### **Balancing Water Supply and Demand in Pima County**

Supplying water to human populations in southern Arizona has been a concern for centuries. An early desert culture, the Hohokam, was able to thrive due to the development of extensive irrigation canals. However, the collapse of this irrigation system and the inability to produce enough food for the burgeoning population likely brought their economy and culture to an abrupt end.

More recently, fossil fuel-based pump technology has allowed our culture to tap into groundwater resources locally, but not without impacts: pumping in areas with shallow groundwater dried up once-perennial rivers and springs, and stores of groundwater built up over millennia were quickly depleted. Groundwater overdraft and diminution of surface water supplies for originally used by Native Americans was addressed somewhat by the construction of the Central Arizona Project canal that delivers Colorado River water along the length to southern Arizona. However, as population increases, the question remains as to how the water demand for people and the natural ecosystems of Pima County can be met.

Arizona law requires:

[P]lanning for water resources that addresses:

- a) The 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 county plan, added to existing uses; and
- c) An analysis of how the demand for water that will result from future growth projected in the comprehensive plan will be served by the water supplies identified in subdivision (a) of this paragraph or a plan to obtain additional necessary water supplies

A.R.S. §11-821(C).(3).

The capacity of the Pima County water resource base has been addressed in a number of different studies, using different assumptions.

*Water Resources in Pima County* (Barbara Tellman, Water Resources Research Center, University of Arizona, June 2001) examines various projections of water demands of future population growth in the Tucson Active Management Area (TAMA). The TAMA includes 99% of unincorporated Pima County's population base, based on 2001 adjusted census data. This report found that reducing demand, mining groundwater in excess of recharge rates, reallocation of water currently allocated to agriculture and mining, or much greater use of treated effluent will be necessary to meet population scenarios in excess of 1.2 to 1.38 million.

A report prepared for the Sonoran Desert Conservation Plan (SDCP) (*Pima County Economic Analysis Section 10 Permit*, ESI Corporation and SWCA Environmental Consultants, May 2003) examined land availability in unincorporated Pima County under three development scenarios for three timeframes. This report used aggregate water supply estimates calculated by the Southern Arizona Water Resources Association for mining and agricultural uses. By assuming that agricultural use would dwindle to 25% of current levels, a "build-out" population of 1.9 million was derived.

A 2004 report prepared for Tucson Water discussed the water supply options for an area which included all of the designated growth areas in unincorporated Pima County. *Water Plan: 2000-2050* concluded that "without the expanded use of effluent, the successful acquisition of additional water resources, and/or the initiation of a more aggressive demand management program to reduce per capita water use, the Utility will not be able to meet future water demand."

*Water Resource Availability for the Tucson Metropolitan Area* (Sharon Megdal and Kelly Lacroix, Water Resources Research Center, University of Arizona, July 2006) quantifies the number of people that could be sustained by 2030 under a variety of scenarios. The report identifies scenarios in which human populations projected by Pima Association of Governments (PAG) for the TAMA, where the majority of unincorporated Pima County's planned growth will occur, can remain in balance with water supplies. The scenarios are dependent on major diversions of effluent from the Santa Cruz River, large investments in infrastructure to treat and move water, and new water management agreements among various entities. If significant water conservation does not occur, use of effluent does not increase dramatically and population exceeds PAG projections by 10 percent, then the 2030 population projections will overshoot even the reallocated water supplies.

A more recent report (*Beyond the Colorado River: Is an International Water Augmentation Consortium in Arizona's Future?* Karl Kohlhoff and David Roberts, *Arizona Law Review*, Vol. 49:257, 2007) examines municipal water supply and demand. Projections suggest eventual deficits in the availability of renewable supplies available for municipal growth could be forestalled in Pima County, a mere 70 plus years (until 2080), if the full supply of in-state Colorado River water is available each year and if all effluent is fully utilized by the municipal sector. The report also states that Colorado River flows "will likely be insufficient to allow for the total 16.5 MAF of annual allocations...without significant shortages."

In conclusion, a number of sources suggest we will need to conserve water, obtain and use more renewable supplies, and/or reallocate water from other sectors of the economy. None of these are easy changes, but changes will be necessary to supply a burgeoning municipal demand.

### **Key Issues in Water Use in Pima County**

Even if water supplies were adequate for planned growth, Pima County would have additional causes for concern. Most of the water scenarios discussed above assume that the physical infrastructure for delivering renewable and potable supplies is or will be available. There are major infrastructure limitations in the region's ability to deliver water. Only a very small part of Pima County has the infrastructure to treat and deliver a renewable and potable water supply. Unincorporated Pima County's adopted growth areas are served today by Tucson, Ray and Flowing Wells water companies. Neither Flowing Wells nor Ray has built the water infrastructure needed. Tucson Water's infrastructure is the only large system having a direct physical connection to a renewable potable supply. Tucson Water can deliver stored CAP water through water pipelines to the tap. Pima County has seen several other water providers besides Tucson Water, namely Marana Water, Oro Valley Water, and Metropolitan Domestic Water Improvement District (Metro) do the necessary technical and financial planning to use CAP water for potable purposes in the future. While CAP itself may be constrained in future years, it is the only supplemental potable water supply that providers have used so far. Other water sources might be treated and stored for potable supplies in the future. These same companies are preparing to use reclaimed for non-potable uses. Infrastructure to treat and deliver effluent for outdoor irrigation or other uses is also spatially and financially constrained.

Much of Pima County's planned growth since 2002 has occurred via member land expansion in the Central Arizona Groundwater Replenishment District (CAGRDR). All CAGRDR member subdivisions will rely on local groundwater wells for all of their needs. For instance, some of the subdivisions in the southwest Tucson Basin are quite close to lines which have access to potable CAP, but they are not connected to this infrastructure. CAGRDR subdivisions in Green Valley and Catalina are distant from both potable CAP and reclaimed water infrastructure. Their payments to the CAGRDR will not build an infrastructure that will provide a more resilient potable water supply to their homes, nor will they receive reclaimed water infrastructure to reduce demand on the local portion of the aquifer. Lack of infrastructure to connect to alternative water supplies leaves these areas with fewer choices in the event of the discovery or migration of contaminants or other "surprises" that the future may bring.

A report by the University of Montana, Public Policy Research Institute, *Bridging the Governance Gap: Strategies to Integrate Water and Land Use Planning* (2007), notes that water is allocated by state agencies, whereas land use decisions are made by local jurisdictions. The failure to connect land use and water planning has contributed to the lack of infrastructure and other water problems we see today. Review of these requests to increase land use intensity, their proposed source of water, and their potential to cause localized impacts due to groundwater withdrawals, could help to better protect local water supplies, natural systems and the built environment.

Even if a region such as the TAMA may be in balance, in localized areas, groundwater depletions have significant impacts on aquatic and riparian systems, the built environment and local residents. Groundwater pumping has impacted aquatic and riparian systems throughout the region. The previously-mentioned report *Water Resources in Pima County* describes where limited water supplies exist within and outside the TAMA; it found an imbalance in the geographical distribution of water supply and demand, such that some areas of the County were already exceeding sustainable supplies and damaging groundwater-dependent aquatic and riparian ecosystems.

A similar Pima County report (*Water Resources and the Sonoran Desert Conservation Plan*, July 1999) describes the challenges of water resources supply with respect to the conservation goals of the SDCP. The loss of surface water flow due to groundwater depletion and continued overdraft has had a deleterious effect on riparian systems. Much of the region's best riparian habitats are believed to have been lost since 1890, with related impacts on wildlife species that are directly dependent upon or which indirectly use these systems. This represents a direct loss of biodiversity and areas that facilitate movement of species between eco-regions, and could potentially cause the county to fail to meet federal species protection mandates. Aquatic and riparian ecosystems are of extreme importance in the Sonoran desert eco-region. As such, areas of shallow groundwater, intermittent and perennial streams, and springs are identified and mapped in the SDCP. In addition, the presence of groundwater-dependent ecosystems may be related to local hydrogeology.

Some of the region's hydrogeologic basins, such as the Avra Valley and Tucson Basins, are notable for the size of their aquifers – these deep basins receive groundwater inflows from tributary basins and are well-equipped with infrastructure for both recharge and moving water to developed areas. In comparison, some hydrogeologic basins may be more isolated, shallower and lack significant inflows. These basins may have more accessible groundwater and dependent riparian or aquatic ecosystems, but may also be more susceptible to impacts from pumping. Proposed requests for increases in land use intensity should be reviewed for their proximity to these important sensitive resources.

Besides impacts to biotic resources, decades of groundwater pumping has caused subsidence in some areas, with impacts to buildings and infrastructure, and continued pumping may exacerbate problems. The US Geological Survey (USGS) has published maps of areas of subsidence in eastern Pima County; it may be beneficial to discontinue pumping in these specific areas so as not to further damage the built environment.

On a related note, unregulated development can affect water supply and water quality. For instance, about forty percent of the unincorporated County's growth occurs through unregulated lot splits, which enables growth without consideration for the provision of adequate development infrastructure. Lot splits are allowed under Arizona State statute, and are outside local jurisdictions' purview. Properties using wells exempt from ADWR regulation, such as those created through the lot-split process, have been particularly vulnerable to inadequate groundwater supplies, inadequate infrastructure investment and poor water quality.

Planned increases in land use intensity have and will continue to affect the exempt wells used by existing residents in many parts of Pima County. Domestic wells have been deepened or gone dry in the Tanque Verde Valley as municipal pumping depleted the shallow aquifer and stressed mesquite bosques. In the J6 area, ADWR predicts that as many as 75 domestic wells may need to be deepened or go dry due to pumping of wells for new subdivisions. The Arizona Corporation Commission declined to impose water conservation or monitoring requirements upon the water company.

Finally, as reported in *Climate Variability in Pima County*, southern Arizona has gotten warmer. Water demands for riparian and aquatic ecosystems, as well as for municipal use, rise with temperature. Climate models for our region predict even warmer temperatures and increased variability in precipitation.

In conclusion, accounting approaches for county-wide water use and supply cannot fully address issues that affect the health, safety and welfare of Pima County residents and preservation of natural systems. A process to review water supply and identify areas of potential impact from groundwater pumping at the local scale, and to propose mitigation measures to protect sensitive resources, would protect against these impacts on the built and natural environment, and support a more sustainable water future. It would also help link the water resource element to other elements of the Comprehensive Plan, including the growth element, the environmental element, and the cost of development element.

### **Water Resources Element Policy Goals**

Water resources sustainability involves managing uses of land and water in a way that can be maintained over an indefinite period of time, without causing unacceptable environmental, economic or social consequences. Lack of water supply infrastructure, subsidence, impairment of natural recharge functions, depletion of groundwater flows to riparian ecosystems, impaired water quality, and lack of alternatives to mining groundwater are some of the unacceptable consequences that can and have resulted from decisions about land and water use.

Pima County requires an adequate water supply to satisfy the demands of a population growing into the indefinite future, as well as to provide for aquatic and riparian ecosystem needs.

A regional approach to sustainable water management will help ensure an adequate water supply. The goals of the following regional policies are:

- to provide pertinent information to land-use decision-makers about the impacts and sustainability of water resources development;
- to promote the efficient utilization of existing infrastructure and the prudent construction of additional infrastructure needed for a safe, reliable and renewable water supply;
- to increase reliance upon renewable water supplies;
- to minimize adverse impacts of water supply development upon existing and future residents of Pima County; and
- to protect the groundwater-dependent ecosystems of Pima County, including springs, perennial and intermittent streams and shallow groundwater areas.

**Applicability:** The following policies shall apply to land use recommendations in unincorporated Pima County. As required by State statute, County staff will review new proposed development in those areas outside unincorporated Pima County where development will affect resources or citizens in Pima County as a whole and provide comments.

**Implementing Departments:** The following policies shall be implemented by the Pima County Public Works departments. These departments include Development Services, GIS Technical Services, the Regional Flood Control District, Wastewater Management, Natural Resources, Parks and Recreation, and Environmental Quality.

**Definitions:**

- A. Primary Service Area means the original service area of the water provider plus any contiguously connected areas that have been added to the original service area. In order for an area to be considered part of the primary service area, it must have physical connection to the distribution network which allows water to flow from one area to another.
- B. Isolated Water Service Area means any area *not* within a primary water service area.
- C. Isolated Basins means all hydrogeologic basins in Pima County, except the Tucson and Avra basins.

**Water Supply and Water Resources Impacts Review**

County staff shall review information on the potential impacts of proposed development on water resources as part of the development review process. Information shall include the planned source of water for a proposed development (access to renewable and potable water would likely have fewer impacts to local water resources), and proximity to areas that may be affected by increased groundwater pumping, such as riparian systems supported by surface water or shallow groundwater, shallow hydrogeologic sub-basins, and known areas of subsidence.

**Comprehensive Plan Amendment Review:** County staff shall conduct a Water Supply Impact Review on proposed comprehensive plan amendments that are larger than four acres and rezoning applications that require a Site Analysis. The review will evaluate five critical issues on existing water infrastructure and potential environmental constraints of the site:

- Water service and renewable water supply options
- Current and projected depth to groundwater and groundwater trend data
- Proximity to areas of known or potential ground subsidence
- Proximity to known groundwater-dependent ecosystems
- Location within a hydrogeologic basin, including depth to bedrock

County staff will use current information from federal, state and local sources on water resources inventory of available water supplies, infrastructure, and environmental conditions when developing the review. The review will be included in the staff report for Comprehensive Plan amendments and requests for rezoning.

**Review of Rezoning Applications:** County staff shall conduct an assessment of water resource impacts on any rezoning that requires a Site Analysis. The assessment shall include a review of the five critical issues described above, plus the information provided by the applicant.

1. *Information to be provided by the Applicant in the Rezoning Site Analysis*

Applicant will identify where their rezoning occurs geographically based upon its proximity to renewable and potable water supply infrastructure:

A. Category 1: served by the primary service area of a water provider that is likely to have a renewable and potable water supply.

B. Category 2: served by an isolated water service area that is operated by a water provider likely to have a renewable and potable water supply.

C. Category 3: served by a water provider that is unlikely to have a renewable and potable water supply either because it is outside the current extent of the water supply service provider's primary service areas or because the applicant chooses not to connect to the infrastructure.

D. Applicants whose proposed development falls into Category 3 shall provide water demand projections for their development, based upon the *existing* zoning. For comparison, demand projections for the *proposed* zoning shall also be generated, using:

[http://www.azwater.gov/WaterManagement\\_2005/Content/OAAWS/Generic\\_Demand\\_Calculator10.xls](http://www.azwater.gov/WaterManagement_2005/Content/OAAWS/Generic_Demand_Calculator10.xls)

Applicants that are required to provide water demand projections shall provide additional information based upon their projected level of demand:

- i. Rezoning proposals whose water demand projections at full build-out is less than 20 acre-feet per year shall be required to provide:
  1. An analysis of water level trends in the area and depth to groundwater at the nearest existing well location (<http://www.sahra.arizona.edu/wells/>); and
  2. The location of the development relative to all groundwater dependent ecosystems including: springs, perennial streams, intermittent streams and shallow groundwater areas mapped on the Sonoran Desert Conservation Plan GIS database. (<http://www.dot.pima.gov/cmo/sdcpmaps/>); and
  3. A plan for the location of all wells, new and existing, that will be used to supply water to the development, with ADWR well registry numbers for existing wells.
- ii. Rezoning proposals whose water demand projections at full build-out is more than 20 acre-feet and less than 50 acre-feet per year shall be required to provide:

1. All of the information required for developments with a water demand projection at full build out of less than 20 acre-feet (section i, above); and,
  2. Existing site-specific geologic and hydrogeologic studies available for the area; and
  3. Any existing aquifer test, pump test or production well data available for the area.
- iii. Rezoning proposals whose water demand projection at full build-out is more than 50 acre-feet per year shall be required to provide:
1. All of the information required for developments with a water demand projection at full build out of less than 50 acre-feet per year (section ii, above); and
  2. A draw-down analysis for impact of water demand of the development on wells within the 10-ft draw down contour after 5 years of pumping at full build-out; and
  3. A feasibility study conducted to prove renewable water or physical availability of recharged water to the development within 50 years after full build out, OR the applicant may provide a statement declaring no feasibility study has been conducted. Statement will not bar rezoning approval, but will be weighed in the decision.

## *2. Rezoning Review*

The policy of maintaining sustainable water resources shall be implemented through the use of appropriate rezoning conditions. Rezoning conditions similar to the following may be used to encourage the maintenance of sustainable water resources:

A. Applicants whose proposed rezoning site will be served by an existing water provider with physical access to a renewable and potable water supply (Category 1, above) should provide written proof to that effect as a condition of rezoning.

B. Applicants whose proposed rezoning site will connect to a water provider with physical access to a renewable and potable water supply in the future (Category 2, above) should provide written documentation showing intent of the water provider to connect as a condition of rezoning.

C. Category 3. Rezoning proposals that show an increase in the water demand above that projected by the existing zoning should be required to implement mitigation strategies. Water demand projections showing water demand below the average estimates for similar land use types should be required to list mitigation strategies or methods that are proposed to achieve the lower demand. Implementation of mitigation strategies listed in the rezoning proposal should become conditions of rezoning. Rezoning requests proposing to employ water conservation strategies for individual properties such as landscaping restrictions or private pool regulations should be required to include the restriction in the Covenants, Codes, and Restrictions (CC&Rs).

D. Rezoning proposals that increase the water demand above existing zoning should be mitigated in areas of shallow groundwater (less than 50 feet below the land surface). Increases in water demand may be offset by recharge, legal and verifiable water rights, or retirement or purchase of water rights from within the same or up-gradient shallow groundwater area.

E. Rezoning proposals that increase the water demand above existing zoning should be mitigated in areas of Isolated Basins. Increases in water demand may be offset from within the same hydrogeologic basin by recharge, legal and verifiable water rights, or retirement or purchase of water rights.

F. Groundwater dependent rezoning proposals in any category within a five-mile radius of mapped shallow groundwater areas and groundwater dependent springs and streams, carry the burden of proof to show that the development will not adversely affect ecological assets. Rezoning proposals that are likely to adversely affect mapped shallow groundwater areas and groundwater dependent springs and streams should employ pump tests and monitoring, and use avoidance strategies, including site selection and screening of wells.

G. Rezoning proposals in any category that are groundwater dependent and located in high subsidence potential areas should employ mitigation measures to minimize subsidence in the area.

### *3. Water Conservation Strategies and Mitigation Measures*

A. The following water conservation strategies may be used to mitigate increased water demand above that projected by the existing zoning. Strategies will be evaluated based on the severity of the water supply constraints of the proposed rezoning and in conjunction with overall advantages and disadvantages of the land use proposal.

i. Site Planning:

1. Implement rainwater / storm water harvesting and reuse strategies
2. Implement swimming pool and spa water conservation measures
3. Implement effluent reuse strategies within the development
4. Install reclaimed effluent irrigation (where available) for individual properties and common areas
5. Install drought-tolerant native vegetation and drip irrigation systems with timers and rain sensors
6. Co-locate parks in subdivision detention basins
7. Minimize impervious surfaces to maximize storm water infiltration

ii. Residences / Commercial and Buildings – to include the above strategies at the residence / building scale, and:

1. Install gray water reuse plumbing systems
2. Install water efficient appliances and fixtures, and automatic faucets, water-free urinals and/or dual flush toilets in common use buildings

3. Install plumbing systems that drain pools into the sewer
4. Limit private pool and spa construction
5. Install sub-metering for each tenant for multi-family and multi-occupancy commercial buildings
6. Provide “water-wise” or similar water conservation information as part of sales contracts to home buyers

B. The following mitigation measures may be used to minimize subsidence in groundwater dependent areas and areas located in high subsidence potential areas:

- i. Enhance net recharge of stormwater runoff in the affected area
- ii. Fund construction of recharge facilities in the affected area
- iii. Fund construction of infrastructure to connect with a regional water supply infrastructure having access to renewable supplies

### **Implementation Strategies**

Implementation strategies Pima County will use in moving towards a more sustainable water future include:

A. Consider the water use requirements of current and future residents of the area, as well as other needs, including the natural environment.

B. Work with neighboring counties to evaluate and provide input on water-resource impacts of development in adjacent jurisdictions, in accordance with State Statutes.

C. Maintain an inventory of County water resource assets including groundwater rights, surface rights and production and use of effluent to sustain and protect the County’s natural environment.

D. Maximize acquisition of County water resource assets including groundwater rights, surface rights and production and use of effluent to sustain and protect the County’s natural environment.

E. Amend land use regulations to require that all new houses discharging to septic systems also be provided with a gray water reuse system.

F. Revise design and construction standards to capture and mitigate stormwater generated on-site for water harvesting and the incorporation of light-colored permeable materials into the pavement of parking lots and roads, to reduce heat-island effects, water runoff and dust emissions.

G. Limit pumping near shallow groundwater areas of regional importance -- Methods for implementing this strategy include land use controls and the purchase of development and water rights.

H. Maximize use of CAP, rainfall, runoff, and reclaimed water -- Implementation methods might include County-sponsored, multi-purpose recharge and reuse projects, limitations on rezonings outside the service area and incentives to landowners.

I. Limit human groundwater use in certain areas -- Implementation methods might include limitations on rezonings outside the service area and incentives to landowners.

J. Protect and promote natural recharge functions of watercourses -- Implementation methods include floodplain management, land acquisition, and land use decisions to minimize floodplain encroachments and maintain natural hydraulics and hydrology.

K. Utilize effluent and surface water for riparian restoration -- Preservation of current discharges to the environment, stormwater harvesting, repair of altered flow paths and allocation of the water resources to riparian preservation and restoration are favored implementation methods. County effluent uses shall sustain and protect the County's natural environment.

L. Reduce per capita consumption -- Implementation methods might include landscape requirements and requirements for conservation features in new housing.

M. Limit turf water use -- Limit the establishment of golf course uses and requirements that new courses use non-groundwater sources and limitations on the use of turf:

1. Grass is only to be used for functional purposes
2. No lawns for decorative uses
3. Plant only low water using turf
4. Rely on rainfall as primary irrigator
5. Set irrigation system timers or clock to manual only
6. Landscape with native plants – the following link includes a list of plant which are native to Pima County: <http://www.pima.gov/cmo/sdcp/species/plants.html>

N. Prevent subsidence -- Implementation strategies include substitution of renewable supplies for groundwater and recharge in subsidence-prone areas.

O. Restore and preserve natural areas -- Implementation of this strategy could include floodplain acquisition, improvements to the floodplain management ordinance, purchase of development and water rights and limitations on rezonings.

P. Rehabilitate or create wetlands and riparian areas -- Use of reclaimed water, surface runoff and CAP is suggested. Multi-purpose recharge or water quality improvement projects are also suggested as an implementation method to realize this strategy.

Q. Balance the water budget of Isolated Basins -- Pursue options such as purchase of development or water rights, and limitations on rezonings consistent with sustainable yield.

R. Implement a Water Supply Impact Review on rezoning proposals on property where the water system(s) that serve less than 15 homes, where such proposals will demonstrate to Pima County Department of Environmental Quality that it could serve an increased water demand before being approved. Potable water supply requirements for systems involving fewer than 15 homes will be developed as a condition of rezoning.

S. Domestic Water Improvement Districts (DWID) -- Develop a board policy requiring consideration of the renewable supplies, available infrastructure, groundwater trends, subsidence, groundwater-dependent ecosystems, and isolated basins in the development and approval of any new DWID.

### **Plan Amendment Criteria**

Staff reviewed this plan amendment request to determine if one or more of the following criteria have been adequately met:

1. Promoting the implementation of:
  - a. The ***Conservation Lands System (CLS)***:

The proposed policy will examine the proximity of new groundwater pumping to aquatic and riparian systems, springs, surface water and shallow groundwater areas – these are often classified as Important Riparian Areas under the CLS. The policy will identify impacts to these sensitive areas, make this information available to decision-makers as part of the planning review process, and propose strategies to mitigate these effects.

- b. ***Growing Smarter Acts***, with particular emphasis given to the principles of smart growth, such as: (i) mixed use planning, (ii) compact development, (iii) multi-modal transportation opportunities, (iv) rational infrastructure expansion/improvements, (v) conservation of natural resources, and (vi) the growth area element (where applicable):

The proposed policy would provide additional information on requests for increased land use intensity, such as the concurrency with the availability of existing infrastructure to deliver renewable and potable water, and impacts on the built environment and natural resources.

- c. Other plan policies set forth in the Regional Plan Policies, Rezoning Policies and Special Area Polices:

The Comprehensive Plan should examine all elements of development in an interrelated fashion.

2. Fulfilling the “Purpose” of the Annual Plan Amendment Program of the Pima County Zoning Code, § 18.89.040(A)(2) and (3):

The annual plan amendment program provides an opportunity to address oversights, inconsistencies, or land use related inequities in the plan, or to acknowledge significant changes in a particular area since the adoption of the plan or plan updates.

Annual amendments are reviewed concurrently in order to analyze potential cumulative impacts.

The current Comprehensive Plan Water Resources Element is a list of strategies for water conservation. The proposed Water Resources policy will create a stronger connection between land use planning and water resources by identifying the potential impacts of increased land use intensity on water resources, the built environment and aquatic and riparian systems.

### **ENVIRONMENTAL PLANNING COMMENTS**

The Environmental Planning Section reviewed the proposed plan amendment policy. *Water Resources and the Sonoran Desert Conservation Plan* (Pima County, July 1999) discusses the loss of most perennial stream flow and the dramatic decline and continued overdraft of groundwater in the region over the last century. This has led to the loss of 85 to 95% of riparian habitats, and has had concomitant effects on imperiled, endangered or extirpated wildlife species – an estimated 85% of Arizona wildlife population depends on riparian areas for some part of its life cycle. Unlike State programs that work to attain “safe-yield” for larger watershed basins, there is no accounting for the environmental impact of local stream flow or groundwater depletion, which affects implementation of meaningful conservation under the SDCP.

The importance of these areas is reflected in the CLS guidelines: Important Riparian Areas have the greatest set-aside of natural undisturbed open space for requests to increase land use intensity. The Water Resources policy would provide information for additional protection of these riparian areas: a proposed groundwater-dependent development would be required to determine the effects on nearby surface or groundwater sources that support riparian systems, and provide strategies to mitigate these impacts.

Pima County needs to provide a sustainable water future for current and future residents, as well as for other needs, such as the environment. Environmental Planning recommends approval of the proposed plan amendment policy.

### **FLOOD CONTROL COMMENTS**

The Pima County Regional Flood Control District has reviewed the proposed plan amendment policy. The District states that its Water Resources Division formulated this policy proposal in order to bring water resource issues into the discussion regarding comprehensive planning and rezoning proposals, as directed by the Board of Supervisors. The potential groundwater recharge and/or depletion are tied to storm drainage conditions and water use. The District is responsible for evaluating and regulating the flood control measures of private and public projects, and for evaluating and regulating impacts to riparian areas. Additional evaluation of groundwater resources ensures water impacts and management will be considered in a comprehensive manner.

The District recommends approval of this proposed plan amendment policy.

**WASTEWATER COMMENTS**

The Long Range Planning Division of the Pima County Wastewater Management Department has reviewed the proposed plan amendment policy, and strongly supports the policy to strengthen the relationship between water resources and land use planning for the County.

**DEPARTMENT OF ENVIRONMENTAL QUALITY COMMENTS**

Pima County Department of Environmental Quality has reviewed the proposed plan amendment policy. The Department recommends discretion in requiring new homes on septic systems to have grey water reuse systems – limiting site conditions may not allow typical grey water systems to be installed and more complex systems may not be economically feasible.

**UNITED STATES FISH AND WILDLIFE SERVICE COMMENTS**

The US Fish and Wildlife Service reviewed the proposed plan amendment policy and are supportive of the proposed policy. The Service states that, given rapid development of unincorporated Pima County, it is appropriate to more closely tie the demands on water resources to the permitted land uses. Conservation of this scarce resource in Pima County is of particular value to the threatened and endangered species that reside here.

Such policies, in conjunction with Pima County's Sonoran Desert Protection Plan, will work towards the preservation of the extremely valuable riparian, aquatic, and shallow groundwater resources that are so important to the persistence of many species of concern.

**CULTURAL RESOURCES PROGRAM COMMENTS**

Pima County Cultural Resources and Historic Preservation Office has reviewed the proposed plan amendment policy and offered no comment.

**TRANSPORTATION COMMENTS**

No comments were received.

**NATURAL RESOURCES, PARKS AND RECREATION COMMENTS**

No comments were received.

**HEALTH DEPARTMENT COMMENTS**

No comments were received.

**SCHOOL DISTRICT COMMENTS**

No comments were received.

**OTHER AGENCY COMMENTS**

The Acting Attorney General for the Tohono O'odham Nation reviewed the proposed plan amendment policy and has no comment.

Rural Metro Fire Department had no concerns or comments.

**PUBLIC COMMENT**

The Regional Flood Control District conducted extensive outreach on the proposed Water Resources policy. The District conducted one-on-one meetings with eighteen (18) local municipal governments, state agencies, organizations and private sector contacts, and attended eight (8) general public meetings to discuss the proposed policy; a list of these is attached. A number of these also provided formal comments, and the Regional Flood Control District drafted responses to individual comments, which are also attached.

Respectfully submitted,



Mark Holden  
Senior Planner

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