

The Maricopa Association of Governments *Desert Spaces Plan.*

The Maricopa Association of Governments adopted the *Desert Spaces Plan* in 2000 encompassing the 9200 square-mile area of Maricopa County. The plan was subsequently adopted by the City of Phoenix in 1996. The thrust of the plan was to protect and preserve mountains, foothills, rivers and washes, canals, cultural sites, vegetation, wildlife and existing parks and preserves. The plan identified regionally significant mountains, rivers, and upland desert.

Specific policy recommendations of the *Desert Spaces Plan* include (1) discourage development within the 100-year floodplain, (2) protect upland Sonoran Desert Vegetation, and (3) protect ridgelines as well as terrain and foothills to preserve the pristine character of the region.

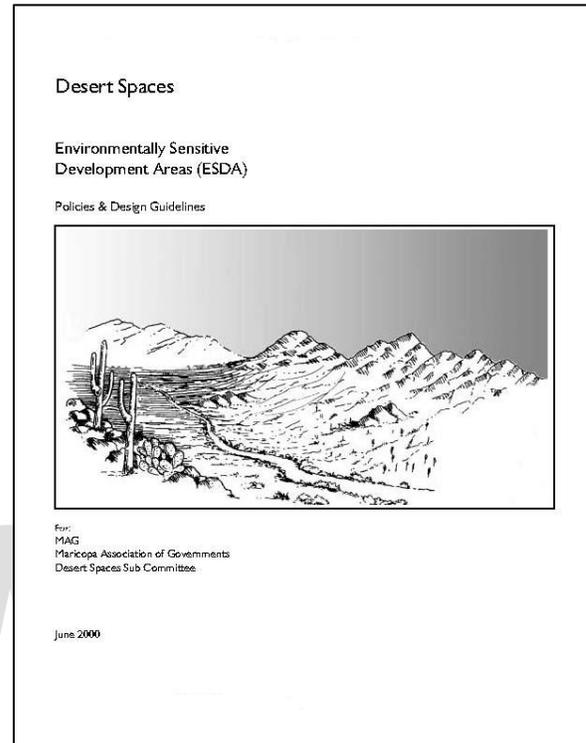
The *Desert Spaces Plan* set the groundwork for the Maricopa Regional Trail system which links nine of the ten County Regional Parks. The Plan builds on existing regional parks and preserves, recommending expansion where appropriate. An objective of the plan is to create a network of natural buffers from urban development while at the same time encouraging infill as an alternative to urban sprawl. The Plan seeks to connect mountainous areas and existing parks through rivers, washes and canals as primary access corridors.

The plan recommended conservation above the 12% slope line. Unfortunately, using a standard slope percentage does not adequately guarantee that enough of the hill or mountain will be preserve, nor does it guarantee space for access and public services.

Agricultural lands were not included in the final recommendation but the plan acknowledges that agricultural land helps to define the urban edge and adds variety and diversity to the landscape. Agricultural lands that surround municipal airports are compatible with airport operational requirements.

The plan states the case for preserving the character of significant mountain ranges (and mentions the Hieroglyphic Mountain range). Development should be discouraged from taking place on ridgelines, crestlines, or steep slopes. The flat bajadas surrounding these ranges are important buffers and links between ranges that provide important wildlife habitat and connections. Buffers around mountainous areas should be provided to protect the relatively flat foothills and bajadas.

The plan states that significant rivers and washes provide the opportunity to build a regional open space network (and specifically mentions the New River and the Agua Fria). The plan calls



for the restoration of portions of the Agua Fria that have been used for mining and dumping. Flood control improvements should be designed to minimize the loss of wildlife habitat. All road crossings should incorporate trail crossings that could also be used by wildlife.

The plan encourages development that does not require mass grading of the upper Sonoran Desert. Development should be allowed on relatively flat sites rather than mountains or steep slopes. The plan suggests protection of sites that contain ancient ruins or historical settlement through land acquisition or restrictions on development.

The New River is classified as a significant riparian area, with significant vegetation and biological resources. The Agua Fria is classified as also being a significant riparian area with important biological values and with significant cultural sites. The Hieroglyphic Mountains are classified as a significant mountain system, with important vegetation and biological value. The plan mapped several parcels that are private lands not in the public domain which were considered critical areas for preservation. Many of these lands in the Peoria area were recommended for sensitive development regulation, and other, smaller areas were recommended for protection from development through policy or acquisition.

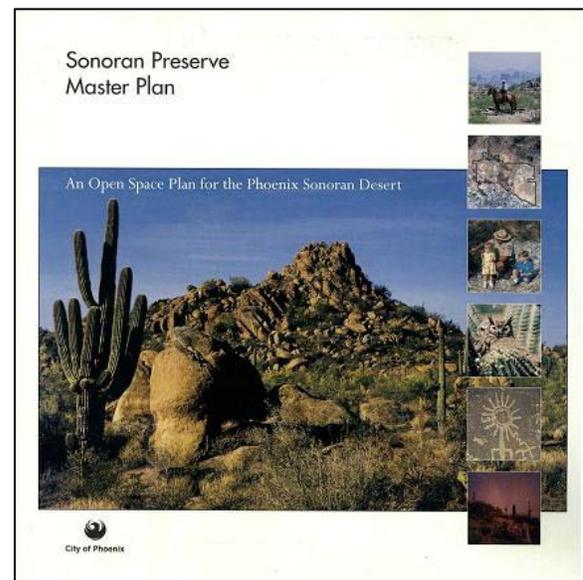
The plan recommended a number of preservation techniques including: fee simple purchase, purchase of development rights, purchase of right-way easements, lease agreements, right of first refusal agreements, installment sales, donations, exchanges, conservation easements, and density transfers.

The plan recommended that within 18 months of adoption, the primary funding mechanisms should be identified and developed to raise sufficient funds over a ten to 20 year period. Once the range of costs associated with development of the Plan were identified, real properties should be identified and examined for possibilities. Cooperation between cities, jurisdictions, the federal government and the county are encouraged.

Source: June 2000 Maricopa Association of Governments Desert Spaces

The City of Phoenix Sonoran Preserve Master Plan.

This plan was prepared by the City of Phoenix Parks, Recreation and Library Department and was approved by City Council in February of 1998. The plan builds on the *Desert Preserve Preliminary Master Plan* begun in 1994. The plan incorporates extensive inventory and analysis of targeted lands, filtered through landscape ecological theory. While many open space plans concentrate on slope, visual resources, and ownership, the *Sonoran Preserve Master Plan* sought to develop a plan that functioned on a biological level – maintaining species diversity



and ecological processes. Connectivity of open space lands was a key goal. The plan encompasses 21,500 acres in north Phoenix as well as 1000 acres adjacent to South Mountain Park. Eighty percent of the targeted lands were owned by the Arizona State Lands Department.

Primary objectives of the plan were to: (1) acquire a diversity of lands, (2) preserve natural hydrological processes, (3) establish a preservation ethic into the urban form, and (4) maintain internal and external connectivity with other public open spaces (schools, parks, floodways, basins, and other municipal lands):

The 1994 *Desert Preserve Preliminary Master Plan* identified several benefits of urban open space preserves. According to the National Park Service, *Property Values* often increase real property values and marketability of properties located near open space and parks. This can be seen locally through such examples as Camelback Mountain, South Mountain, the Phoenix Mountains, and Indian Bend Wash.

The Joint Economic Committee of the US Congress reported that “a city’s quality of life is more important than purely business-related factors when it comes to attracting new businesses, particularly in the high-tech and service industries.” Open space provides opportunities for advertising, television, and other commercial activities.

Tourism is the State’s second largest industry, and many visitors come to the area expressly for the Sonoran Desert experience. A plan that offers natural experience, native American cultural experience, recreation, and visual stimulation will lure the greatest number of visitors. Tourism and leisure time activities account for substantial portions of family spending.

Researchers Rachel and Stephen Kaplan noted in their 1989 volume *The Experience of Nature: A Psychological Perspective* that urban dwellers need open space to recover from mental fatigue associated with increasingly urban lifestyles. How Peoria balances growth with preservation will determine success or failure.

Perhaps the best way to preserve the natural environment and natural systems is to experience it. The educational laboratory of nature is the most effective way to foster stewardship of the land. As generations learn to respect the environment, they will help to maintain biological diversity, protect wildlife habitat, and preserve significant watersheds and vistas.

Developed portions of the City of Phoenix had all but erased traces of the natural environment. Consideration was given to restoration of these areas . It was noted however, that restoration is much more costly than preservation since the natural processes take decades to reestablish. The best strategy is to identify portions of undisturbed Sonoran Desert and make every effort to set it aside for preservation.

The 1994 *Desert Preserve Preliminary Master Plan* identified several key goals in the development of a plan: (1) Connect significant public open spaces (utility corridors, canals, and recreation areas), (2) preserve existing wildlife corridors along drainageways, (3) provide passive recreational opportunities, (4) provide alternative transportation opportunities (walking, biking, and horse-back riding), and (5) preserve significant views, cultural sites, and landmarks.

The *Sonoran Preserve Master Plan* developed a GIS database that included the following key themes:

Aerial mapping	Elevation
Hillside analysis	Vegetation
Aspect modeling	Visual Quality
Geology	Floodways
Slope Analysis	General Plan
Soils	Existing Land Use
Utility corridors	LANDSAT Imagery
Existing Utilities	Washes
Digital Terrain model	Ownerships.

A Preservation Acquisition Model was developed based on a modified desirability rating and resource allocation. Potential lands for acquisition were mapped, and significant features such as washes, slopes, cultural sites, and activity centers were identified. A land features weighting system was developed;

60	Slopes greater than 10%
45	Slopes greater than 5%
45	Major washes
30	Slopes less than 5%
30	Secondary washes
30	Near-term potential development
15	100-year floodplain
10	Proposed Activity Center/access point
10	Archaeology site

From this, additional data was gathered for areas where development was likely to occur soon, near term, or in the future (over a 40-year period); and for specific parcels the City had identified as highly desirable. Resource allocation was based on a 1/10 cent sales tax. It was determined that acquiring the 21,500 acres would take between 10 and 20 years.

The City utilized the following resources and systems for analysis: (1) BLM Visual Resource Management (VRM) system for scenic and visual analysis, (2) the ASU Environmental Resources program for wildlife inventory and study. It was suggested that acquisition of additional rights-of-way, easements, or deeper building setbacks could provide significant linkages as well as preserving significant images for residents and visitors. The plan notes that to truly integrate scenic drives and scenic values into the plan, guidelines for scenic corridors must be established.

The plan also noted that where urban development approaches the edge of preserved open space, edge treatments must receive careful attention (otherwise the development could have significant negative impact on the preserve including invasive species and intrusion by domesticated animals. The plan recommends the use of single-loaded streets to form the edge of the preserve, or cul-de-sacs that end at the preserve, but provide adequate public access. The edge is a critical transition zone, especially for wildlife. Road kills are a significant impact

on wildlife. Accommodating wildlife ingress and egress is just as important in the planning process as is other major infrastructures.

The *Sonoran Preserve Master Plan* noted the importance of preserving the integrity of secondary washes in addition to the major river systems. The study pointed to the forward-thinking precedent of the City of Tucson's 1988 stormwater management study whereby 98% of the 77 miles of secondary washes surveyed were recommended for preservation in a natural state. The City estimated a savings of \$413 million over 30 years due to a shift from structural solutions for flooding to an emphasis on nonstructural natural systems.

The City of Phoenix used GIS modeling to develop growth scenarios and assumptions to determine which parcels should be acquired under a variety of funding options. Methods identified are as follows:

- Fee simple purchase
- Purchase of Development Rights
- Purchase of Rights-of-way or easements
- Leases
- Condemnation
- Donations or gifts

In addition, the Plan identified a variety of governmental regulation methods that could be applied:

- Transfer of Development Rights
- Planned Community Developments
- Hillside ordinance
- Special Overlay Districts
- Design Guidelines
- Performance Zoning
- Dedications/extractions

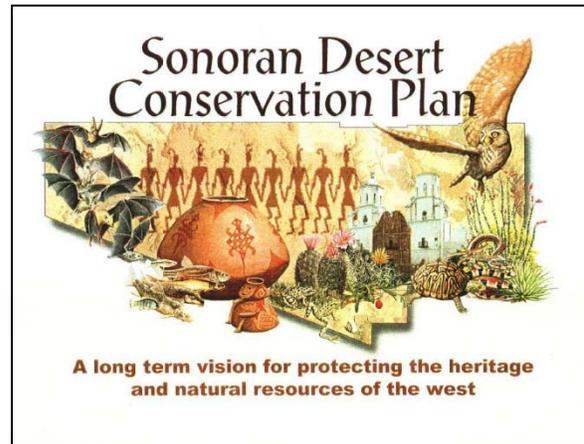
Fee simple purchase was determined to be the most viable option. Three basic funding options were available to the City. (1) sales tax. (2) bonding, and (3) infrastructure/impact fees. Sale tax and bonding have certain risks inherent with public or voter rejection. On the other hand, development related fees were understood to only provide about 15% of the total cost of an acquisition program. Bonds were considered the next best option, and transfer of development rights slightly more effective than bonds. A general purpose sales tax option was considered as the only technique that would attain the acquisition goal, and that combinations with the other two options would be the most cost effective plan.

The *Sonoran Preserve Master Plan* provided for significant citizen involvement. The citizen groups with input are, in order of hierarchy: (1) the Parks and Recreation Board, (2) the Phoenix PRESERVE Committee (appointed by the Parks and Recreation Board), the Ad Hoc Technical Advisory Group (composed of professionals and scientists, as well as City staff), and (4) volunteers (such as Preserve Watch and Ranger Cadets).

Source: 1998 Sonoran Preserve Master Plan, City of Phoenix, Herberger Center for Design Excellence

Pima County Sonoran Desert Conservation Plan.

Pima County is home to over 6 million acres of Sonoran Desert. The citizens of Pima County have long had an affinity for the deserts and mountains that give the area its intrinsic values. Through the boom years of the mid to late 20th Century, the County was in danger of losing the most desirable portions of the desert to development. In 1998 the County established necessary protections through a *Sonoran Desert Conservation Plan*.



The plan was triggered when the County experienced its first Endangered Species Act (ESA) listing with the Pygmy Owl. Only twelve birds were found in the County which triggered Federal protection from development in habitat areas. Section 10 of the Endangered Species Act allows for an “incidental take” permit that would allow habitat modification where development and the species might occur together. This requires a Habitat Conservation Plan. Pima County found the best avenue for success involved the County obtaining the Section 10 permit through a County wide habitat conservation plan, hence the Sonoran Desert Conservation Plan was born.

The Section 10 permit allows a small number of endangered species to be harmed as long as habitat is protected in the most advantageous and critical areas. Without a permit, harming or killing endangered species is a Federal crime. By address the problem in a holistic county-wide fashion rather than a localized case-by-case basis, the Plan ensures the best methods of protection are engaged in the most appropriate areas. Because the County obtained the Section 10 permit, development was allowed to continue, thereby expanding the economic tax base. This minimized fines and regulatory delays to new building projects. Typically a habitat conservation plan is species-specific. Pima County’s ecosystem approach was unique and innovative. The advantage is that if an individual species drops out of the plan, the overall habitat plan doesn’t change because many species depend on the same habitat areas.

As the Plan developed over time, the scope was broadened to include biological and scientific concepts, and reframed planning to merge development with natural and cultural context and significance. Science-based planning took the place of subjective and local political considerations. The County was now in a position to ask fundamental questions about resource capacity and impacts on the land and wildlife. The concept became known locally as “bio-planning.”

Bio-planning starts with the assumption that areas with the jurisdiction are endowed with certain natural, cultural, and historical resources that deserve and should receive protection. According to the Nature Conservancy, the Sonoran Desert is rich in biodiversity and provides habitat for more than 2500 pollinators and 500 migratory birds – nearly two-thirds of the bird species of North America.

There are six elements to the *Sonoran Desert Conservation Plan*:

- Ranch Conservation
- Riparian Area Restoration
- Establishment of Mountain Parks
- Preservation of Historic and Cultural Sites
- Identification and Protection of Critical Habitat and Biological Corridors
- Establishment of a Conservation Reserve and a Development Reserve

Ranching was a significant historic land use in Pima County, much like farming was an important land use of early Peoria. Many of the ranchers in Pima County were under pressure to sell their land for urban development. Without a conservation effort, ranching would disappear from the landscape altogether.

Riparian habitats are among the most important natural resources in any given area. As cities expand, pressure is brought to control and channelize major streams and rivers to protect residents from flooding. This often resulted in the destruction of habitat. The *Sonoran Desert Conservation Plan* seeks to restore riparian habitat in concert with non-structural methods of flood protection.

Tucson Mountain Park was established by the County in 1929. The popularity of the park is established through its scenic views. New mountain parks are created through the *Sonoran Desert Conservation Plan* to preserve the vistas and inspiration that the mountain experience provides to the citizens and visitors of Pima County.

The early efforts of the *Sonoran Desert Conservation Plan* involved mapping critical habitat and wildlife corridors. Prior to the Plan, there were no standards or vegetation/wildlife maps available. The Plan recognized the inter-connectivity of vegetation and wildlife and wove the science into the planning process for maximum protection of the fragile desert environment. In the process, not only were natural processes protected, but also historic and cultural goals were met.

The *Sonoran Desert Conservation Plan* effectively combines short term action with long range planning to enable development and the natural environment to co-exist. The Plan seeks to determine where growth should occur – generally in areas with the fewest critical natural, historic and cultural resource values. The Plan creates a regional conservation reserve, and in the process, by defining the areas of greatest significance creates a regional development reserve where development can comfortably occur.

Key to this process is a Science Technical Advisory Team (STAT) comprised of experts in a variety of technical natural resources fields. The STAT conducted habitat surveys and made recommendations to the County Supervisors on how best to protect the pygmy owl and other critical species. First step in the process was a foundational study *the Multi-Species Conservation Plan* which became the basis for the *Sonoran Desert Conservation Plan*. Over the course of four years of study, the Habitat Conservation Plan for the Pygmy Owl, the STAT identified 54 additional vulnerable species that needed similar protections.

Because the STAT was focused on the science of habitat protection, hot-button issues and local politics were kept at bay and out of the decision making process. Former *Sonoran Desert*

Conservation Plan Director Maveen Behan likened this relationship to a “firewall” between the science and the politics of the process, which as a result gave greater credibility to the scientific work.

A volunteer citizens steering committee made certain that various interests were represented at the decision making table. Both the County and the citizen-based Coalition for Sonoran Desert Protection have won many awards for the concept and innovation of the *Sonoran Desert Conservation Plan*.

Through the *Sonoran Desert Conservation Plan* process, a new National Reserve was created – the Ironwood Forest National Monument, managed by the Bureau of Land Management. This not only protects the native species within its borders, but is a tourist and local recreation draw as well.

Pima County used GIS to map the land categories in concert with the US Fish and Wildlife Service and Arizona Game and Fish. This process produced guidelines for development. For example, one guideline states that 80% of a parcel with a biological core area must be preserved in its natural state. A ten acre parcel thus would yield 2 acres available for development. Guideline restrictions are applied on a parcel by parcel basis rather than region-wide.

The Department of the Interior earmarked nearly \$3 million over a three year period to support the development of the science for the Plan. These funds were available through Section 6 of the Environmental Species Act for planning efforts. In 2004, voters passed a 10-year bond dedicated in part to open space. The County is following a map produced by the Nature Conservancy for priority land purchases. Of the \$175 million in bonds, \$112 million will go to habitat protection. Full implementation is estimated to cost between \$40 million to \$2 billion depending on the lands ultimately protected.

An economic analysis of the Plan made additional recommendations: (1) build an endowment to stabilize the Plan, (2) set up a mitigation land bank, (3) build in periodic revenue adjustments to account for inflation and land value increases, (4) be flexible with developer’s funding options, and (5) develop a balance between fees and taxes.

Source: The Sonoran Desert Conservation Plan, Chuck Huckleberry, 2002 the Endangered Species Bulletin and 2005 the Conservation Fund case Study Series

The Salt Lake County (Utah) Open Space Acquisition Plan.

Salt Lake County developed a goal to create a diverse portfolio of conserved lands for the express purpose of improving quality of life and protection of the natural ecology of the region. In 2004, the County established the *Open Space Trust Fund* to protect lands throughout the County for the benefit of all residents. Salt Lake County has 105,885 acres, of which 105,885 acres (22%) are federal lands. County residents passed a \$24 million bond measure for open space acquisition. A full time bond manager was hired in 2007 to administer the funds and work with a citizen’s committee.

The plan established a selection process and developed policies for implementation. It was understood that no single property would meet all values, but that through a broad data gathering process and the use of GIS, decision making could be facilitated.

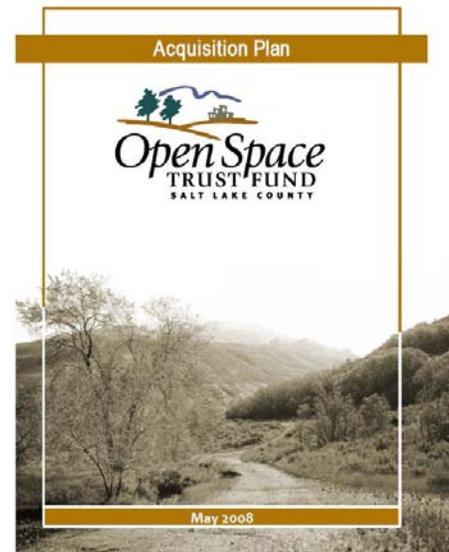
Primary objectives of the plan were to: (1) preserve natural areas with high conservation and ecological values – particularly along streams and rivers; (2) provide land for walking, hiking, biking and other outdoor activities; (3) leverage the Trust Fund and Open Space Bond through easements, donations, and funding partnerships. The process was directed to be consistent, quantitative, and science-based. Lands already protected by development constraints such as slope, floodplain, or geologic hazards were not acquired unless some additional consideration made purchase desirable.

Open Space was defined as follows: natural areas, wildlife and plant habitat, wetlands or watershed lands, passive low-impact activities, little or no land disturbance, and trails for non-motorized activities. The objectives of the Plan are protection of natural aesthetics, visual relief, natural buffers between communities, conservation, stewardship of the environment, quality of life, passive recreational opportunities, and protection of archaeological and historical sites.

In terms of making public funds available for open space acquisition, the Plan calls for all expenditures to be transparent to the public, accountable to the citizens of the County, the selections be based on objective data as possible, evaluations are to reflect the public's interest, and the process is to avoid even the appearance of any conflict of interest. County staff administer the Plan, and a twelve member advisory committee evaluates staff recommendations for acquisitions.

Salt Lake County used GIS modeling to develop growth scenarios and assumptions to determine which parcels should be acquired under a variety of funding options. A conservation importance index (CII) and a development pressure index (DPI) were developed and combined to create a composite Open Space Index (OSI). Both indices were based on existing data collected over a two-month period in late 2007. The model captures a snapshot of conditions based on current information and site investigations. The CII is divided into four major components: hydrology, flora/fauna, proximity to open space, and agricultural lands. The DPI considers existing development, location of parcels being converted to residential use, planned road and infrastructure expansions, real estate values, projected population, and projected employment growth. Conservation is weighted at 80% of the total score and development pressure is weighted at 20%.

Generally excluded from acquisition are lands restricted by ordinance, land preserved through development exactions, and land that is inaccessible. Conservation easements, whereby a land



trust or other qualifying agency may enforce the protection of the conservation value of a parcel, was another of the County’s acquisition strategies. The value of easement is generally the difference between the value of the land if developed and the value of the land if set aside for preservation. Landowners who donate conservation easements may realize a significant tax break. Many times, the purchase of an easement is an attractive alternative to a full price fee simple sale.

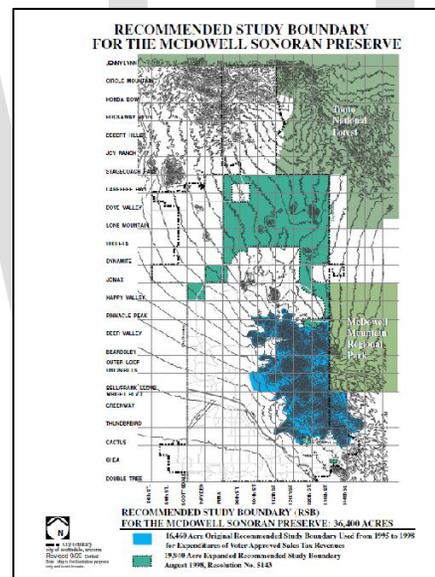
The mining heritage of Salt Lake County creates a situation where it is difficult to acquire full fee title to property because the mineral rights have been segregated from the property and are held by third parties. This shouldn’t exclude consideration of the property for acquisition, but may require some risk assessment of the possibility of mineral exploitation and disturbance for mining operations in the future.

*Source: 2008 Acquisition Plan for the Open Space Trust Fund of Salt Lake County.
www.openspace.SLCO.org*

The City of Scottsdale McDowell Mountain Preserve Plan.

In 1990, Scottsdale citizens through the non-profit McDowell Sonoran Land Trust (now called the McDowell Sonoran Conservancy) initiated the preservation of Scottsdale's McDowell Mountains and Sonoran Desert. The initial vision was to preserve approximately 36,400 acres, equivalent to 1/3 of Scottsdale's total land area.

The Preserve consists of mountains, Sonoran Desert, and natural corridors linking to natural open space in adjacent communities and to the Tonto National Forest and the Maricopa County Regional Park. The intent was to create a large sustainable natural desert habitat for wildlife and desert flora, available for appropriate passive recreation public use.



In 1995, Scottsdale voters approved a .2% sales tax increase to purchase land in the original 16,460 acre planned preserve. In 1998, voters approved using the sales tax to purchase land in the 19,940 acre expanded preserve. 19,643 acres of the preserve are State Trust Lands. In 1998 State Trust Lands within the original boundary plus 317 acres adjacent to the McDowell County Regional Park was reclassified as suitable for conservation under the Arizona Preserve Initiative (API). In 2001, an additional 13,021 acres of State Trust Land in the expanded boundary were reclassified as suitable for conservation under the API.

In 2004, Scottsdale voters approved an additional .15% increase in the sales tax for land acquisition and for access area amenities. When completed, Scottsdale's McDowell Sonoran Preserve will be one of the largest urban preserves.

Land for acquisition into the Preserve is identified based upon: (1) access potential, (2) unique geological, historical and archaeological features, (3) ecosystem & wildlife habitat, (4) scenic quality, (5) the potential for appropriate passive public use (i.e. hiking, biking, rock climbing, equestrian), and (6) corridors connecting natural open space areas .

A primary objective is that land within the McDowell Sonoran Preserve be preserved in as pristine of a state as possible as a legacy to future generations while providing appropriate passive recreational use opportunities.

The importance of saving these lands is underscored by Arizona Game and Fish, which considers the McDowell Mountains the most significant wildlife habitat in the valley outside the Tonto National Forest.

Sources: <http://www.scottsdaleaz.gov/preserve/history.asp>

The Town of Cave Creek *Open Space Initiative.*

More than five years in the making, the Town of Cave Creek is close to preserving over 4,000 acres of prime Sonoran Desert habitat. Much of the land is adjacent to two County Parks - Cave Creek Regional Park and the Spur Cross Ranch Conservation Area.



Thanks to a groundbreaking agreement with the State Land Department and the Governor's Selection Committee, nearly 6000 acres of State Trust Land will be annexed by the Town and made available for purchase.

A 2,000 acre portion of the land will be zoned for higher density or commercial development in exchange for establishing the land the Town of Cave Creek wants to preserve as open space. The Town will hold public hearings and obtain final approval of the Town Council for the annexation.

Once the process is completed, the State Land Department will auction the annexed land. Since the proposed 4,000 acres of conservation lands will be zoned for conservation purposes and cannot be developed, it is expected that developers will have no interest in acquiring these parcels and the Town will be the successful bidder.

The Town will have a maximum of 20 years to purchase the 4,000 acres from the State Land Department. After a thorough real estate appraisal, it was determined that the value of the conservation lands was an astoundingly low price - \$400 to \$500 per acre.

This low figure was due primarily to the fact that the land can only be used for conservation or low-impact recreational purposes. Although the total acquisition costs are estimated to be between \$1.55 to \$2 million, the Town qualifies for funding assistance from the Growing Smarter Initiative passed by voters in 1998. This initiative provides matching funds for public or non-profit agencies to acquire State Trust Land for open space.

An Open Space Citizens Advisory Group was assembled by the Town of Cave Creek's Mayor and Town Council to develop a plan for the acquisition and use of the new open space. The Citizen's Advisory Group is a combination of town residents, Parks and Recreation representatives and

area conservationists. The vision of the Citizens Advisory Group is to protect our unique Sonoran Desert through conservation and preservation, for the enjoyment of current and future generations. In the months ahead, the Citizen's Advisory Group will celebrate this once-in-a-lifetime opportunity to preserve over six-square miles of living desert with various outings and fundraising activities.

Source: <http://www.cavecreek.org/index.aspx?NID=273>

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