

CHAPTER 4: STRATEGIES



If we are to create a sustainable world – one in which we are accountable to the needs of all future generations and all living creatures – we must recognize that our present forms of agriculture, architecture, engineering, and technology are deeply flawed.

To create a sustainable world, we must transform these practices.

We must infuse the design of products, buildings, and landscapes with a rich and detailed understanding of ecology.

Sim Van der Ryn and Stuart Cowan
Ecological Design, 1996

INTRODUCTION

Although principles and policies have been determined and key open space and trail projects have been identified, a formal process for implementing these plans is necessary. This chapter is designed to provide a range of implementation actions, strategies, and tools to achieve the Open Space and Trails Vision. Rarely does a “one size fits all” approach work for an open space program, and each section seeks to balance flexibility and discretion with predictability in how the various tools are applied. Strategies are organized as follows:

- I. Open Space Protection Strategies
- II. Storm Drainage Strategies
- III. Trail System Strategies
- IV. Land Management and Stewardship Strategies
- V. Financing Strategies
- VI. Conclusion

Each strategy utilizes at least one of many available tools (i.e., conservation easement, zoning). As there are hundreds of tool variations available, a literature review of tool applications in desert environments can be found in Appendix B. The purpose of this chapter is not to simply replicate a list of potential tools, but rather to organize and focus implementation efforts first on feasible *strategies* that are most likely to succeed, relying on the appropriate *tools* as necessary. These strategy elements, while general in nature, are responsive to the planning objectives, existing conditions analyses, market opportunities, the Framework Plan, and community input.

I. OPEN SPACE PROTECTION STRATEGIES

Supporting Principles and Policies	
Policy 1.2	Sensitive Lands Protected
Policy 1.4	Open Space as Edges and Community Separator
Principle 2	Henderson will have an Interconnected System of Protected Desert Environments.
Policy 2.1	Connected Natural Areas Instead of “Islands”
Principle 4	Development will Respect the “Desert Edge.”
Policy 4.1	Desert Edge/Urban Transitions
Policy 4.2	Access to Public Lands at the Desert Edge
Policy 5.2	Resource Inventory for Future Growth Areas

Planning Tools

Recommendation 1: Maintain a Database of Natural Resource Occurrences

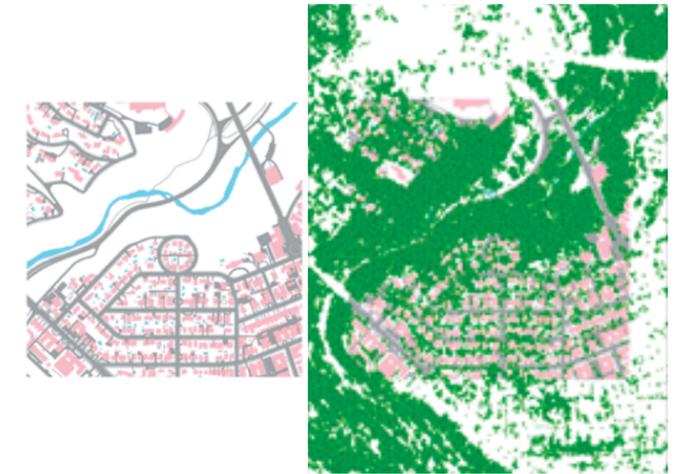
Completion of the Open Space and Trails Plan is only one step in the protection of important resource areas and the development of a regional trails system. The City should continue to add and maintain a regional database of natural resources within the City and in future growth areas in order to evaluate growth management decisions. Natural resources that can be mapped include significant drainages, slopes, historical cultural sites, critical wildlife habitats and corridors, sensitive ridgelines and landforms, geological hazards, springs and wetlands, and floodplains. The Natural Resources Map presented in Chapter 2 is an example of such an in-progress reference map, and should be updated biannually. The MSHCP program and Nevada Natural Heritage Program can provide annual updates of critical habitat and sensitive species data for land use planning, although confidentiality agreements limit public distribution of some information. For example, Appendix C: GIS Data Sources and Analyses of the MSHCP lists over 50 available datasets that could better inform City decision-making. Additional data gaps and resource inventories may be funded through the Clark County Desert Conservation Program, draft interlocal agreements, community groups (i.e., Audubon Society), or partnerships with agencies such as Nevada Department of Wildlife.

Recommendation 2: Identify Sensitive Lands on Future Public Disposal Properties and Future Growth Areas

The City should work with BLM and other agencies to establish a process for identifying, delineating, and protecting sensitive lands as open space prior to future public land auctions and zoning of new annexations. The administrative procedures for this recommendation will require further discussions between the City and BLM, in order to determine the proper mechanisms for this to occur, which may include the utilization of Recreation and Public Purpose (R&PP) leases and right-of-ways. The intent of this strategy is to ensure that sensitive areas are set aside for protection and that the development community is aware of these areas prior to land sales. Further, this policy is intended to promote the establishment of an interconnected open space system within future development areas. In addition, the City should consider procedures to work with developers to identify areas to be set aside as open space during initial land use planning stages.

Recommendation 3: Integrate Green Infrastructure Planning into the Future Land Use Planning Process

Similar to gray infrastructure (transportation, flood control, utilities, etc.) and other essential community support systems, green infrastructure should be carefully planned, designed, and protected in advance of land auctions, zoning, and development in order to minimize infrastructure costs of developing gray infrastructure. Green infrastructure plans should identify conservation values and ecosystem services (infiltration, flood storage, water quality, etc.) in concert with land development, growth management, and built infrastructure planning rather than in isolation from—or even in opposition to—development. Green infrastructure plans can reduce opposition to new development by assuring civic groups and environmental organizations that growth will occur only within a framework of expanded conservation and open space lands.



A planimetric map of a Washington DC neighborhood shows a neighborhood’s gray infrastructure including buildings and roads (left). Classified high-resolution satellite imagery adds a green infrastructure data layer (trees and other vegetation) with its associated environmental benefits (right). (Source: American Forests.)

In consultation with public land agencies, conduct hydrological and landscape analyses to identify lands that can maximize green infrastructure benefits (i.e., floodplains, greenways, conservation areas, and other sensitive lands) or that are unsuitable for future growth (i.e., mountainous areas, BLM Areas of Critical Environmental Concern, unsuitable soils, and faults). These land resources form the core of a green infrastructure plan that can be consulted during the annexation, comprehensive planning, and future land use planning processes. High resource value lands that are not annexed or auctioned can continue to provide scenic, ecological, and recreational benefits to the City, while minimizing fiscal, political, and infrastructure challenges. Sensitive lands that are annexed should be assigned a zoning district or overlay that protects the targeted resource, and should be represented as a distinct open space category in land use plans. The City should acquire or protect through other mechanisms lands in future growth areas where additional nature-based passive uses, such as regional parks, nature preserves, or trailheads are needed.

Recommendation 4: Require Disclosure of Site-Specific Natural Resources

The Hillside Overlay District requires that development plans within the Overlay identify the location of slopes above 15% and sensitive ridgelines. The City should consider requiring that site plans provide an inventory of site resources (i.e., identify local occurrences of natural resources such as washes, significant landforms, historical or cultural features, critical wildlife habitats and corridors, geological hazards, and/or springs and wetlands) that occur within or adjacent to the property prior to entitlement. The intent of this disclosure is to minimize impacts to natural amenities.

To streamline this process in development reviews, the natural resources GIS database (Recommendation 1) can be linked to the parcel database (KIVA), allowing staff to query parcels for any occurrences of natural resources within a property under review, and involve an open space coordinator as necessary.

Recommendation 5: Consider Preliminary or Conceptual Hydrology Study Concurrently with Development Approvals

The current development process allows for a hydrology study to be completed and grading permits issued in advance of traffic studies and development approvals. As a result, grading permits are issued for flood control structures that are independent of information related to a project. Therefore, opportunities for natural drainage facilities and adjacent trails are often not considered. Additionally, grading activities may destroy habitat, significant landforms, and other resources, therefore grading activities should be limited prior to a preliminary hydrology analysis. Consider requiring conceptual hydrology analysis to be completed concurrently with development approvals to allow a more comprehensive analysis of opportunities to incorporate the drainage system and trails into project designs. Identify opportunities and perform early planning in order to effectively coordinate hydrology needs with other departments and agencies.

Regulatory Tools

Recommendation 1: Strengthen Natural Resource Protection Provisions

A. Sensitive Lands Overlay District

The Henderson Development Code (the “Code”) currently contains a Sensitive Lands Overlay District (§19.6.10). The City Council is able to invoke the District regulations on a case-by-case basis, “upon its own initiative or upon the recommendation of the Planning Commission,” in which case the standards for this district supersede all other regulations applicable to the underlying land. However, the Overlay District does not provide much guidance on when to apply certain standards, as related to certain resources.

This plan recommends broadening the sensitive lands protection provisions to apply to any property that contains sensitive lands as identified through inventory mapping including but not limited to floodplains, streams, washes, wetlands, habitats of species of concern, or known cultural sites. The City could also consider additional protection standards so that sensitive resources are not developed, such as buffer and setback requirements, limitations for certain uses and activities, and other protections. In order to retain flexibility, the City Council could have the option to waive these requirements on a specific property, subject to specified criteria that establish the basis for a waiver. In addition, the Sensitive Lands Overlay could be used to more clearly identify areas of protection in future growth areas (BLM disposal lands), as described above.

B. Strengthen Hillside Overlay District

The Code also regulates land development to moderate development of mountains, foothills, and mesas that exhibit steep slopes, unstable rock, and sensitive ridgelines with a Hillside Overlay District (§19.5.9). Like the Sensitive Land Overlay, this Overlay is invoked by the City Council, Planning Commission, or by petition of property owners. Where the City has initiated the designation, the owner of property containing slopes of 15% or greater is subject to development standards contained in this section of the Code, which reduces

development potential as steep slopes increase. The Overlay allows for the transfer of development densities/site disturbance between lands within and outside a sensitive ridgeline setback (100’ from designated ridgeline). The Hillside Overlay District moderates density of development on slopes of greater than 15%, but it does not restrict grading, road building, or building on slopes. It may be more effective to designate the steepest slopes (i.e., 15% or greater or some other range) as sensitive lands and regulate them through the sensitive land protection provisions, as discussed above.

This plan recommends broadening the Hillside Overlay District protection provisions to apply to any property that contains sensitive ridgelines or slopes of 15% or greater as identified through inventory mapping. In order to offer further protection to hillsides in future growth areas, these steep slopes and other sensitive lands areas should be identified prior to the nomination for land auction. Within future land releases, lands with slopes greater than 15% should be excluded from the auction process or identified as areas for preservation. In order to retain flexibility, the City Council could have the option to waive these requirements on a specific property, subject to specified criteria that establish the basis for a waiver.

Recommendation 2: Integrate Open Space Recommendations and Requirements into Subdivision and Master Plan Development Proposals

Open space and related environmental assets should be one of the primary considerations during development planning, review, and approval, rather than a secondary consideration. Conditions of approval for development proposals would continue to be an effective tool in achieving plan recommendations. Except for the hillside ordinance, the current Subdivision standards do not provide specific open space delineation or set aside requirements. This plan recommends considering amending relevant sections of the Code to address this issue. For example, the City could explore additional Subdivision Design and Improvements requirements for an open space set aside requirement and criteria when ap-

propriate where a sensitive land area exists, such as natural washes, or steep slopes as inventoried in accordance with Recommendation 1 above. In addition, the Subdivision standards could be amended to provide criteria for management of open space through Homeowner Association groups or other private entities and development agreements.

Recommendation 3: Change to Efficiency Lot Overlay to include Usable Park Areas and Natural Areas Towards Open Space Requirements

The current Efficiency Lot Overlay allows for increased densities with provisions for enhanced design standards and the dedication of additional “usable open space”. However, developers are not encouraged to preserve natural drainage facilities or provide more passive open space since these amenities are not considered under the current definition of “usable open space.” Consider expanding the definition of usable open space to include natural areas that are not usable.

Recommendation 4: Consider Developing Design Standards or Guidelines to Address Development at the Desert Edge

Consider amending the Code to add regulations or guidelines to guide the design of development adjacent to the edge (see examples on opposite page). Such “edge” regulations or standards should address when edge provisions would apply (e.g., they could be applied through an overlay whenever a property is within a certain range or distance from a protected open space property). Guidelines should also include criteria for visual and recreational access and land use compatibility by addressing site analysis and resource delineation, lower densities or transitions, density transfer or clustering, architectural design, public access, and other considerations. Potential guidelines and tools should be collaboratively developed with the public, land management agencies, and development community. Such a tool either could be regulatory or administered on an incentive-basis; whereas, developers are awarded credits for sensitive design or open space set-asides.

Recommendation 5: Protect the Natural Resources that the City Already Owns

The City of Henderson owns approximately 322 parcels of land for a total of 4,746.19 acres. Approximately 72% of the parcels owned by the City of Henderson are for flood control, municipal uses, or open space. The Framework Plan identifies approximately 2,100 acres currently owned by the City that may meet open space criteria. The City should develop written guidelines and/or management plans for parcels ultimately identified for open space.

Recommendation 6: Provide Consistency Between Definition of "Open Space" in this Plan and Regulatory Definitions

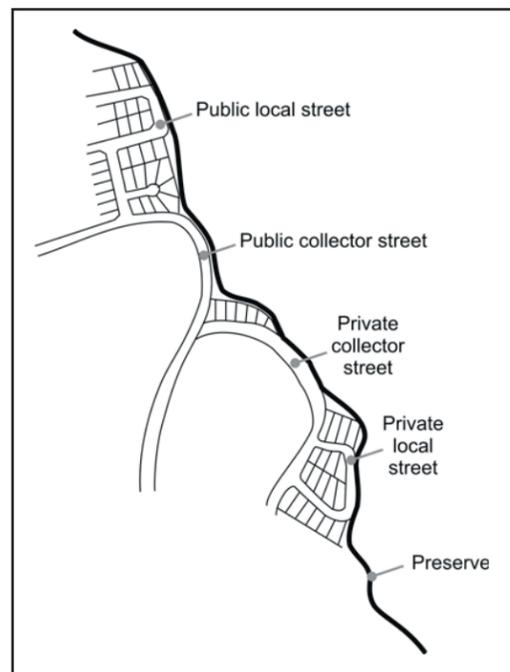
This plan defines "open space" as:

... a system of interconnected protected lands. It includes lands that remain generally undeveloped and retain a natural or natural-appearing condition. Open space areas provide resource conservation, visual, wildlife, or recreational benefits. These lands may be conserved in their natural state or improved with appropriate native landscape. Allowed uses vary depending on resource sensitivity.

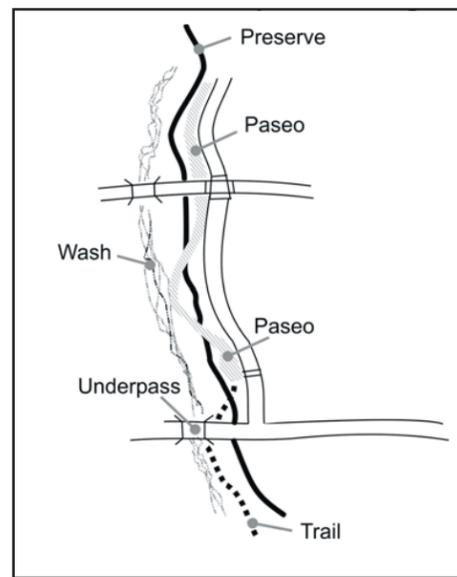
The Code includes definitions for "Common Open Space, and Usable Open Space." In general, "common open space" in the Code: means:

... a parcel or parcels of land, an area of water or a combination of land and water within the site that is designated and intended for the use or enjoyment of the residents or owners of the development. "Common open space" may contain such complementary structures and improvements as are necessary and appropriate for the benefit and enjoyment of the residents or owners of the development.

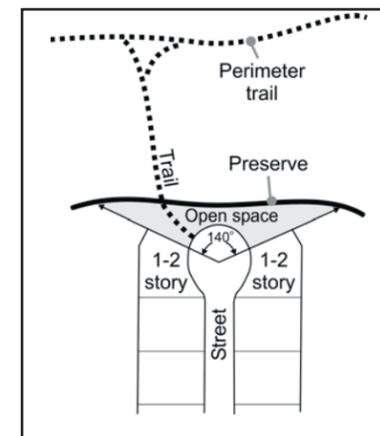
To eliminate confusion and misinterpretation, this Plan recommends amending the Code to change the term "common open space" to "common areas."



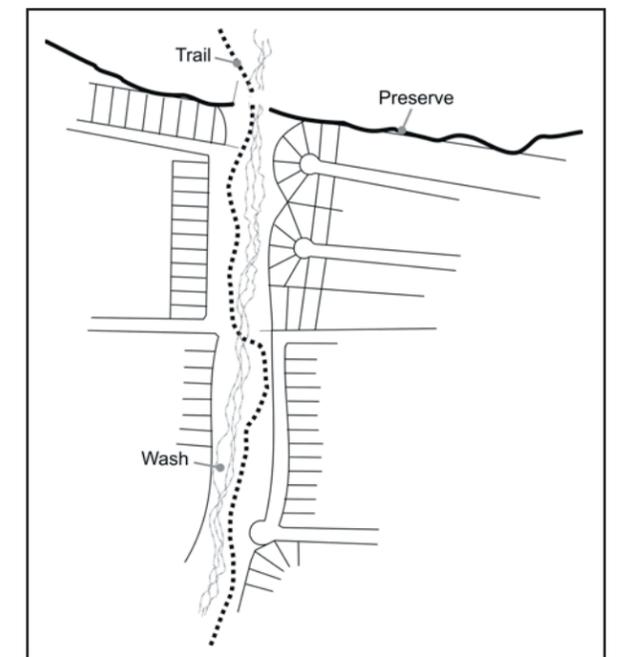
Combinations of public and private streets provides visual and recreational access to protected edges (City of Phoenix)



Roadway follows the form of the protected edge (City of Phoenix)



Cul-de-sac option that provides visual and recreational access to the protected edge (City of Phoenix)

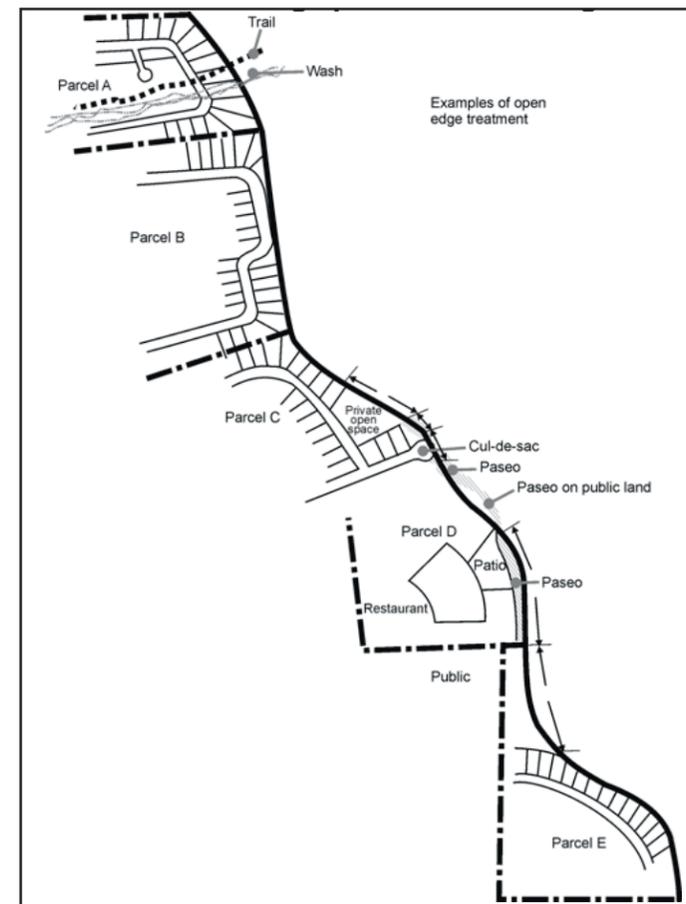


Protected wash corridors provide a connection to larger protected properties (City of Phoenix)

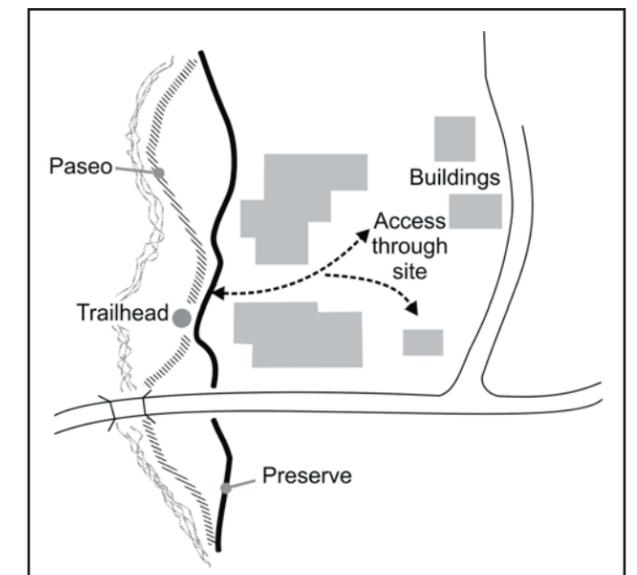
Administrative Approaches/ Programs

Recommendation 1: Support a Non-Profit Open Space Coalition

Encourage the establishment of a land trust or non-profit coalition for the purpose of fund-raising, coordinating volunteers, and protecting and providing management for open space properties. The City should investigate the collaborative roles non-profits, land trusts, or federal agencies may provide in managing these sensitive lands, as described under Land Management and Stewardship Strategies.



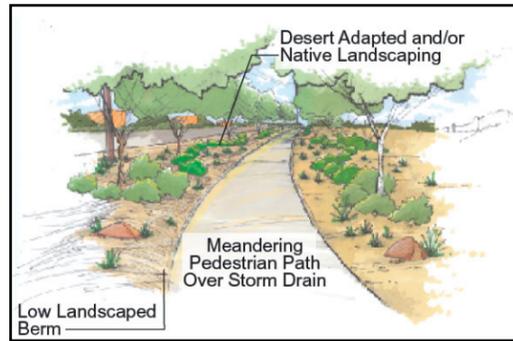
A coordinated edge plan between developments combines possible edge treatments on different parcels (City of Phoenix)



Pedestrian access through commercial site (City of Phoenix)



Whitney Wash near Galleria. Channels are now required to have an access road and in some cases a walkway for emergency services. This channel as depicted would not be permitted in Henderson today.



Pedestrian right-of-way w/ landscaping buffered from channel (concrete channel to the left).



Example of multi-use bridge - pedestrians pass on the right, flood waters pass on the far left.



Regional Detention Site in East Henderson College Area

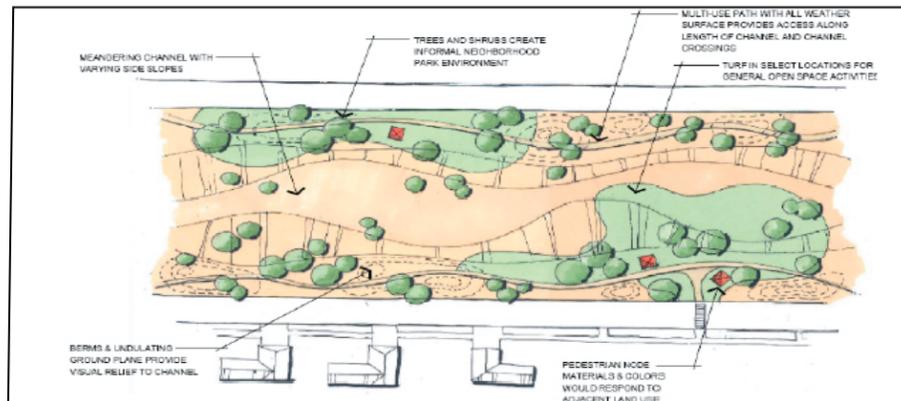


McCullough Hills multi-use detention basin (detention basin in blue outline)



Pitman Wash and Duck Creek showing pedestrian access (above). Some areas lack access points due to fencing. An expanded right-of-way in other areas would permit other pedestrian amenities in addition to the trail itself.

Engineered channel with native material, dual pedestrian alignments and amenities (kiosks, landscaping, access points from adjacent neighborhoods).



Pitman Wash is an example of a semi-natural wash with pedestrian circulation.



Recommendation 2: Purchase Lands Only When Necessary

Initially, relatively few acres will be acquired per year because of limited funds and the high cost of land. For a variety of reasons, it is recommended that open space remain privately owned except in those instances where public access is needed for trails or other passive uses as described under Land Management and Stewardship Strategies.

Recommendation 3: Continue to Involve the Open Space Plan Advisory Committee

Continue to involve the Open Space Advisory Committee members throughout the implementation process. Possible roles may include the review of future land nominations for plan conformance, providing input on management plans for open space areas and drainage facility designs for significant natural washes. Involvement could be on an informal basis with meetings as necessary. In addition, a quarterly newsletter could be distributed to the Advisory Committee and others to provide an update on the plan implementation.



Detention basins with natural vegetation

II. STORM DRAINAGE STRATEGIES

Supporting Principles and Policies	
Principle 1	Henderson's Open Space System Serves Multiple Purposes
Policy 1.1	Variety of Open Space Types
Policy 1.2	Sensitive Lands Protected
Policy 1.3	Recreation Use of Open Space
Policy 1.5	Open Spaces Adequately Sized and Configured for Purpose
Principle 2	Henderson will have an Interconnected System of Protected Desert Environments
Policy 2.1	Connected Natural Areas Instead of "Islands"
Policy 2.2	Trail Corridor Connectivity
Principle 3	Henderson will Consider Multiple Values in the Design of Storm Drainage Improvements
Policy 3.1	Coordinated Planning
Policy 3.2	Adequate Trail Width
Policy 3.3	Aesthetic and Recreational Benefits of Flood Control Facilities
Policy 3.4	Natural Channel Protection
Policy 3.5	Public Participation in Planning Storm Drainage Improvements

Storm drainage improvements are an essential element of the community. In addition to protecting human safety and property, the improvements constructed to accommodate storm drainage can provide other important benefits. In many desert communities, including fast-growing areas in Southern California and Arizona, storm drainage channels are a vital element of the parks, trails and open space system. In these regions, drainage improvements are routinely designed and constructed as multi-purpose projects that not only achieve flood protection, but also create opportunities for trail development, resource conservation and enhancement of the natural environment. As the price of land continues to increase, it will be imperative to maximize the capital costs of storm drainage improvements by meeting other community objectives.

Natural or natural-appearing washes and arroyos provide the most optimal recreational experience. They often have the lowest maintenance cost compared to other flood control structures. Many other flood control districts nationwide have further found that the cost of protecting natural washes (through

building setbacks, acquisition, easements, etc.) is less than the capital installation costs if such washes were channelized. However, high land costs in the Las Vegas Valley and a lack of regional and local regulations and incentives that encourage the protection of natural channels have limited this opportunity in Henderson.

The principles and policies presented in Chapter 3 and the following recommendations and alternative approaches to storm drainage are not intended to imply that a single goal or type of approach is right in all cases or that a "one size fits all" approach is appropriate. Rather, storm drainage recommendations are intended to encourage a consideration of other community values in the design of storm drainage improvements, one that incorporates a multi-purpose approach where possible without compromising other flood control objectives. Changing traditional approaches to storm drainage will require leadership, initiative, persistence, and at times, creative funding strategies.

Planning

Recommendation 1: Build Upon the Mission of the Clark County Regional Flood Control District

As described in Chapter 2, Clark County Regional Flood Control District (CCRFCD) mission centers on protecting "life and property for existing residents, future residents, and visitors from the impacts of flooding." Due to the rapid pace of community growth and historic catastrophic floods, the CCRFCD was created with a focused mandate. Although the CCRFCD has a policy that encourages municipalities to identify and plan for multi-use facilities, the District does not fund joint-use projects, therefore the potential for recreational facilities to be designed and constructed in tandem is limited. As shown by Table 2-3, the missions of other flood control districts in the urbanizing southwest include a more balanced approach and fund projects that serve multiple objectives. In order for funding for natural drainageways or joint-use facilities to be obtained from the CCRFCD, a change

to the CCRFCD mission and potential funding allocations would be needed through changes to the Nevada Revised Statutes.

In the absence of CCRFCD funding for joint-use projects, the City should build upon the mission and policies in place, which encourage early planning and coordination with the CCRFCD. Opportunities should be identified early and included in a open space and trails capital plan in concert with the CCRFCD 10-Year Capital Improvement Plan. Through coordination, funds for the most cost effective solution afforded by the CCRFCD could be supplemented with other monies obtained by Henderson to provide joint-use facilities and constructed at the same time, thereby minimizing capital costs.

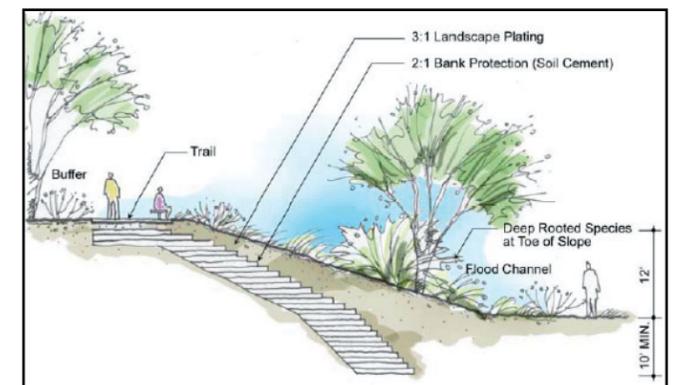
The City of Henderson should develop a formal policy basis to promote multiple use projects and maintain natural-appearing washes where public benefit is evident. The Southern Nevada Regional Policy Plan also promotes the use of flood control facilities as corridors for trail systems, and other recreational amenities as appropriate, as well as for the safe conveyance and detention of flood flows.

Recommendation 2: Create Safe, Pleasant Pedestrian Environments Adjacent to Storm Drainage Facilities for Future Developments

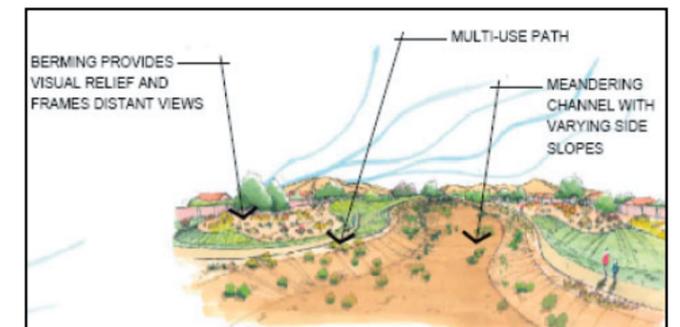
The purpose of jointly planning for trails and drainage facilities is to make possible the creation of a safe, pleasant pedestrian environment. The width of adequate right-of-ways should vary with the type of channel (e.g. regional drainage channels would typically provide enough room for a multi-purpose trail with a tread width of 12 feet, local channels would be designed with a smaller width and serve neighborhood needs). Fencing and guardrails should be designed to meet the Flood Control District's standards and to minimize liability to the City. Bridges and box culverts should be sized so as not to eliminate the opportunity for a vehicle-pedestrian separated trail crossing in the future. Landscaping for aesthetic purposes, as well as to provide shade, screen trail users from adjacent property owners, and separate



Minor wash in the Cornerstone Lake vicinity



Design Concepts for Agua Fria Channel, EDAW



Loop 303 Corridor/White Tanks Drainage Master Plan



Whitney Mesa Wash before and after it flows in to a concrete channel



Washes in Sloan Canyon and West Henderson



Aerial of Las Vegas Wash floodplain



In some instances, developers have conserved natural washes as a neighborhood amenity.

“The site plan should identify any existing natural washes, drainage tracts, easements, or drainage channels located on the lot, or bordering the lot, that may involve or affect the drainage of the lot to be developed. **The intent of these guidelines is to minimize the impacts to the numerous washes that flow throughout the area.**”

Rio Verde Drainage Master Plan



Less intense uses in key floodplains provide scenic and recreational opportunities connecting throughout the community, in addition to the water quality, infiltration, and wildlife benefits as shown in these examples from Sparks, NV.



“The 100-year floodplain of watercourses within the environmentally sensitive lands (ESL) area with a capacity of 50 cubic feet per second (c.f.s.) or greater shall be dedicated to the city by a drainage easement and maintained in their natural state.”

The purpose of this policy is to reduce the capital and maintenance costs incurred when natural drainages are channelized following urbanization.

City of Scottsdale





Duck Creek Channel near Pecos

users from concrete channels should be provided (see trail figures in Chapter 3). These standards can be formalized as described below in Storm Drainage Strategies: Regulatory Approaches.

Recommendation 3: Provide Pedestrian Amenities within Existing Areas

Existing channels often offer the potential to provide greater community benefits. A number of existing drainage channels, including portions of Duck Creek and Pitman Wash, have an adequate amount of room to develop a trail and to incorporate other enhancements such as landscaping. Trails and pedestrian amenities, such as a combination of traditional park features and native vegetation, should continue to be developed along existing channels.



Existing and proposed conditions of the Bethany Home/Grand Canal Flood Control Project, a joint project among the cities of Glendale and Phoenix and the Maricopa County Flood Control District



Proposed improvements along existing Bethany Home / Grand Canal, Arizona

Recommendation 4: Protect Significant Natural Washes

In developing areas, floodplains can naturally form the linear spine of an interconnected regional greenway of open space, parks and trails. The City should investigate a watershed approach to flood management in key areas that allow storm flows to naturally disperse over an open area, thereby increasing infiltration and groundwater recharge, improving water quality, maintaining riparian plant communities, and creating recreational and scenic corridors. Consideration should be given to preserving natural floodplain characteristics in upstream areas. For existing urban areas, the City should investigate partnering with other regional agencies in flood-prone land acquisition programs to reduce chronic flooding and to provide for enhanced trail connectivity and infiltration. When regional facilities may be protected, the City should investigate funding strategies to supplement CCRFCD resources. Since CCRFCD is limited in funding the most cost effective solution, the City is responsible for the identification of any additional needed funds.

Regulatory Approaches

Recommendation 1: Investigate Floodplain Development Policies

The City should investigate a range of floodplain development policies for developing areas to minimize the potential losses and hazards to life and property that are created when development in floodplains increases the likelihood of flooding on either the property under development or other properties downstream. Without policies that consider floodplain encroachment, it will be difficult to preserve significant natural channels since increased storm flows from urban encroachment on the floodplain will typically require natural channels to be structurally reinforced.

As stormwater regulatory plans are updated, consideration should be given to reducing stream impacts from peak flows by minimizing impervious surfaces, detaining stormwater runoff on-site prior to discharge into natural washes, and other appropriate strategies.

Recommendation 2: Recommend City Design Standards to the Clark County Regional Flood Control District Hydrologic Criteria and Drainage Design Manual

All regional flood control projects completed within the City of Henderson must meet the Regional Flood Control District's minimum design standards, as contained in the Hydrologic Criteria and Drainage Design Manual. The City can add additional standards to the Manual, which then supersede minimum standards. Multi-use design requirements, natural-appearing channel designs, and pedestrian amenities are some standards that should be investigated.

III. TRAIL SYSTEM STRATEGIES

Supporting Principles and Policies	
Policy 1.3	Recreation Use of Open Space
Principle 2	Henderson will have an Interconnected System of Protected Desert Environments.
Policy 2.1	Connected Natural Areas Instead of "Islands"
Policy 2.2	Trail Corridor Connectivity
Policy 2.3	Hierarchy of Trail Types
Principle 3	Henderson will Consider Multiple Values in the Design of Storm Drainage Improvements.
Policy 3.1	Coordinated Planning
Policy 3.2	Adequate Trail Width
Policy 3.3	Aesthetic and Recreational Benefits of Flood Control Facilities
Policy 3.5	Public Participation in Planning Storm Drainage Improvements
Policy 4.2	Access to Public Lands at the Desert Edge
Policy 5.4	Public Education about Mohave Desert and Stewardship
Policy 5.5	Safety in Open Spaces

Planning Tools

Recommendation 1. Consider the Needs of Pedestrians in All Development Decisions

A trails system is only one aspect of a functional alternative transportation system (albeit a critical one), and trails will not be fully utilized if the remaining pedestrian system is dysfunctional. First and foremost, walking must be a practical and enjoyable means of travel. This implies not only that pedestrian environments are adequately designed and maintained (with provisions for shade, resting, aesthetic enhancements, etc.), but that destinations are connected and mobility options are available. City, regional, and federal entities must provide a full suite of complimentary travel choices in order for single-occupancy vehicle dependence to decrease. City leadership should ensure that inventories of existing facilities and capital improvement plans are current, that potential funding mechanisms are fully employed, and adequate staff are assigned to create and maintain pleasant pedestrian environments. This may include

a review of bicycle, pedestrian, and transit policies and programs to identify additional means necessary to facilitate increased use of these alternative modes of transportation.

Regulatory Tools

Recommendation 1: Ensure Consistency Between Bicycle, Pedestrian, and Trail Facility Plans and Definitions

While this study has focused solely on community needs for trails, a functional trails system is dependent on the entire pedestrian system as described above. The City should review other existing plans, such as the Bicycle Master Plan for consistency in alignments, design criteria, and terminology. This may include clarifying regulatory definitions in the Code for trails, shared use paths, and neighborhood sidewalks, and other pedestrian facilities.

Recommendation 2: Strengthen Trail Corridor Dedication Provisions in the Code

The City's Development Code includes requirements for connectivity and other regulations related to trails. However, requirements are not in a central location in the Code. By strengthening the dedication provisions for trails and landmark corridors and consolidating trail Code requirements, the development review process will be streamlined to increase dedication compliance. Furthermore, to ensure the timely construction of trail facilities, the completion of trails facilities should be completed prior to project Certification of Final Occupancy.

Recommendation 3: Amend Code to Require Internal and External Connectivity within Subdivisions

Walls, cul-de-sacs, and other subdivision designs limit internal and external trail, bicycle, and pedestrian connectivity. Consider amending the Development Code to require connectivity between residential and non-residential developments to reduce vehicle trips per

day and the total number of vehicle miles traveled. While walls and fences act as a buffer for noise and limit neighborhood traffic, trail access should be maintained. Code Sec. 19.9.9, Transportation and Circulation, and regulations related to wall and fence design would be amended to require a minimum of paths which link residential subdivisions to adjacent commercial, industrial, or public uses.

An additional modification to the Development Code or Design Standards that could be made to improve connectivity is recommendation of a modified cul-de-sac neighborhood design as an alternative to the traditional cul-de-sac. This design would require pedestrian connections from residences to adjacent roadways and developments, thereby decreasing the distance of pedestrian travel.

Prioritization Tools

Due to sustained, rapid growth in Henderson, implementing a successful trail system will require that planning efforts stay ahead of development as much as possible. Retrofitting existing infrastructure is more costly and difficult in comparison to integrating trail requirements into initial land use and transportation plans. The greatest opportunity for quickly advancing a safe, connected trail system is in future growth areas.

As a general rule, most trail improvements in existing urban areas will continue to be opportunistic. That is, that trails will be created and connected as bridges, underpasses, rights-of-way expansions, and other infrastructure projects arise. As a result, urbanized areas typically will be a lower priority unless life and safety issues are a concern.

This section outlines a twofold approach for prioritizing system development in existing urban areas and future growth areas.

Existing Urbanized Area Recommendations

Priority 1: Current Liabilities

There are some instances where existing trails are located in or provide access to potentially hazardous areas. Examples of safety issues include areas where existing trails meet or cross arterial streets without signals or designated crossings, and areas where trails parallel are immediately adjacent to an abrupt drop-off exceeding thirty inches where no guardrails are installed (i.e., flood control facilities). Safety concerns may create liability issues for the City if not resolved quickly.

Liabilities should be addressed on a site-specific basis as soon as they are identified. Affected City departments should reach a consensus on the resolution of each issue, and ensure that future design and construction will not create further risks to public safety.

Priority 2: Current Development Projects

Locations where commercial developments, bridges, intersections, or flood control channels are currently under design may significantly impact the connectivity and user experience of the overall trails system if trail facilities are not adequately addressed. Current projects also allow the City to maximize connectivity opportunities or repair noncompliant trail facilities at a lower cost.

All current projects should be reviewed against the Trails Framework Plan, trail design standards, and trails classifications to identify potential impacts to recommended alignments. Once areas of conflict are identified, appropriate City staff from all departments involved should work together to develop an acceptable solution.

Priority 3: Critical Connectivity Gaps

For most trail segments in urbanized areas, trails staff will need to act single-handedly in closing critical gaps in the trail system. The process for acquiring rights-of-way, trail easements, or property for “retrofit” alignments will be highly variable. Each site will need to be addressed on a case-by-case basis and may require coordination with multiple property owners and agency jurisdictions, established neighborhood associations and businesses, and incompatible infrastructure. For example, the 2½ mile Pittman Wash Landmark Corridor dead-ends at Arroyo Grande Park and Santiago Drive. Existing arterials and flood control channels create significant obstacles in continuing an off-street trail north to Whitney Mesa or Wetlands Park.

In urbanized areas, developing Landmark Corridors should be the first priority as they provide key connectivity and the best user experience. Primary Trails and Secondary Trails should follow in importance. Secondary Trails already occur in many areas per the Code. Trail segments of the same type should be prioritized according to user demand, current levels of service, amount of users served, connectivity to the existing trail system, and potential connections to key community amenities such as parks and recreation centers.

Future Growth Areas Recommendations

Priority 1: Future Growth Areas

Future growth areas, recently annexed areas, and other areas in the initial land use planning phases present the greatest trail opportunities. With a proactive approach, trail principles and policies for these areas – including most Open Space Opportunity Areas identified on the Framework Map (Black Mountain, Southwest Henderson, River Mountains, etc.) – can still be achieved.

Trail corridors should be fully integrated into private and public land use processes away from road corridors. Conceptual corridors in some future growth areas are identified on Framework Map, but may be deviated from to accommodate future roads and uses. Further study, including GPS “staking” of each alignment, should occur during initial land use planning for each growth area to take into account existing and planned natural features and amenities. Landmark Corridor planning should occur in tandem with flood control and traffic master planning in order to identify right-of-way, bridge, or underpass requirements early in the process. Integrating trail corridors early in the process will require close coordination and supervision between City departments.

Once land use plans have addressed trail requirements, City trails compliance staff should review transportation, flood control and infrastructure master plans during the preliminary design and entitlement process. Gated community master plans should provide access around or through their developments in addition to providing internal circulation. Site plan submittals should demonstrate compliance with the Framework Plan, and should be reviewed by trails staff to ensure that proper trail corridors are preserved and that the corridors will provide first class user experiences. Successful completion of this goal will require substantial coordination between City departments and other government agencies.



Trails in Seven Hills, Henderson

IV. LAND MANAGEMENT AND STEWARDSHIP STRATEGIES

Supporting Principles and Policies	
Principle 5	Our Community will Provide Long-Term Stewardship of our Open Space System.
Policy 5.1	Natural-appearing Desert Condition of Open Spaces
Policy 5.3	Variety of Open Space Stewardship Approaches
Policy 5.4	Public Education about Mohave Desert and Stewardship
Policy 5.5	Safety in Open Spaces

Land management refers to the day-to-day field tasks and programs that ensure that natural resources, facilities, and user experiences achieve plan goals. A well-managed open space and trails system promotes positive user experiences, protects wildlife requirements, and limits liability.

These responsibilities will occur in two phases. Initially, the City's open space responsibilities will emphasize public awareness, intergovernmental coordination, property negotiation/acquisition, and amending codes and existing plans that impede conservation efforts. As the City acquires additional land and encourages public use of natural areas, it will incur additional responsibilities, such as funding needs for capital improvements, maintenance, environmental stewardship, and public safety.

The maintenance and improvement of the City's open space and trails system is essential in ensuring the safety of users and the value of the system as a whole. Development of new open space areas may require that the Parks and Recreation Department's traditional role in parks maintenance be expanded to encompass land management where passive recreation is desired. Fortunately, open space maintenance is substantially less than costs associated with the maintenance of active parks; the cost of maintaining parks is up to 4 times more expensive than maintaining open space. Furthermore, natural areas that remain in private ownership (through zoning, conservation easements, HOA agreements,

etc.) or that are managed by other public land agencies do not require City maintenance. For this and other reasons, the Open Space and Trails Plan recommends that open spaces remain privately owned or not be disposed of, except in situations where opportunities for public access are desired.

Open Space Maintenance Implications

Maintenance level costs for open space require significantly less manpower and equipment, and may be able to rely more on volunteer restoration and clean-up activities than traditional parks maintenance. Experience indicates that on average open space costs less than \$100 per acre for natural areas with no facilities, and up to \$400 per acre for more developed sites. For example, analyses of comparative open space and trail maintenance costs revealed that:

- The Stratton Meadows Open Space in the City of Colorado Springs costs \$95 per acre/year (Rick Severson, phone communication)
- Larimer County, Colorado determined an average of \$95 per acre/year among publicly-funded open space programs (Larimer County FY 2000 Study)
- Jefferson County, Colorado averages \$89.45 per acre/year (Stanton La Breche, email communication)
- The Environmental Protection Agency's 1999 Report, *Landscaping with Native Plants*, demonstrates that the cost to maintain a monoculture turf is roughly \$1,000/per acre/year, whereas the cost to maintain a meadow is approximately \$150/acre/year

In contrast, City of Henderson parks maintenance requires an average of approximately \$15,400 per acre/year (City of Henderson Office of Budget and Strategic Management, Budget in Summary: Fiscal Year 2004-2005), with a standard of 1 maintenance employee per 10 acres of developed park (City of Henderson Parks & Recreation Department, Five year Plan, 2000-2005).

Since many current funding programs, such as SNPLMA, require that the City maintains any facility designed or constructed utilizing grant monies, a burden is placed on the City's budget to fund the maintenance of additional facilities. The City should establish procedures for allocating maintenance funds or additional personnel to the appropriate department (Parks or Public Works) upon receipt of grant monies to ensure that these additional facilities are properly maintained.

Maintenance of natural open space lands is typically limited to periodic clean-up, restoration, vegetation management, storm channel maintenance, and access management. Of these, proper flood control and access management (i.e., people management) is critical to reducing maintenance requirements. Flood control monitoring and maintenance conducted by the Public Works Department, including bank stabilization, culvert cleaning, and vegetation restoration is required to ensure that flooding does not exceed natural disturbance patterns or pose a threat to built facilities or safety. Potential damage caused to open space resources by vandalism, illegal dumping, off-road vehicles, and cross-country hiking and mountain biking can be minimized through access management tools such as appropriate fencing, posted regulations, enforcement, and volunteer stewardship programs.

Trail Maintenance Implications

Routine trail maintenance varies with the surface type and may include sweeping the trail clean of debris, minor repairs to trail fixtures and features, and limited vegetation management of xeric and native plantings. The path or trail should be inspected on a regular basis to assess the overall condition of the drainage, pavement, signage, pavement markings and vegetation growth. Drainage areas should be improved or repaired as problems are noted. Vegetation should be removed from the pavement and surrounding areas where it can affect use of the path. Signage should be repaired, replaced or upgraded. Properly constructed concrete, asphalt or soft surface trails require minimal maintenance. Proper planning and design, however, is a key to the reduction of maintenance costs.

Soft Surface Trail Maintenance

Special training of City staff or volunteers is recommended for maintenance of soft surface trails. The International Mountain Biking Association, for example, and other non-profit groups are valuable resources for providing training and evaluating trails which require maintenance. Evaluation of site specific soil and slope conditions are critical to determining required stabilization and dust mitigation materials. There are multiple options available to mitigate or minimize dust and erosion, including soil hardeners, recycled asphalt and compacted fines. It is recommended that the City construct test sections of trail for proposed materials and evaluate existing BLM and County facilities to determine what combinations of materials work best for each environmental condition.

Trail Corridor Maintenance

Landscaping within City owned trail corridors, easements or Rights-of-Way should be irrigated and maintained by City staff. Native plant communities should be protected from disturbance during construction in order to minimize re-landscaping, irrigation, and soil stabilization costs. In order for naturalized desert, wetland or riparian corridors to be maintained in a more natural rather than manicured state, additional staff expertise may be required in wetlands, plant ecology or weed management.

Trail Maintenance Costs

Trail maintenance costs vary, depending upon numerous factors such as location, level of use, surface type, level of involvement from volunteers, and many others. For planning purposes, a reasonable cost estimate is \$2,000 per mile per year. A recent study (Rail-Trail Maintenance & Operation, July 2005) published by the Rails to Trails Conservancy, provides some good cost information. This study found through a survey of approximately 39 trail providers that the average cost of maintaining a trail among those surveyed was \$1,500 per mile per year. For trail systems run by some type of governmental organization, which typically rely less on volunteer efforts than non-profit or volunteer organizations, this cost increased to \$2,000 per mile per year.

Irrigation

Irrigation systems will be required to establish and maintain landscapes throughout the trail corridor. The length of these corridors and lack of utility access can often make permanent irrigation systems a costly expense in some areas. Careful selection of native plants and efficient irrigation systems will help reduce water costs, plant loss and maintenance of landscape areas.

Management Tools

Recommendation 1: Dedicate Staff Resources Needed for Plan Implementation

Stewardship means responsibility for resources. City departments and staff assigned to the open space and trails program will be responsible for important natural, fiscal, and human resources. To complete their tasks effectively, staff must be both knowledgeable and dedicated, with sufficient authority and resources to act and be accountable for project results. With that in mind, many staff have expressed concern about the additional responsibilities associated with plan implementation since existing budgets and staff responsibilities are already overstretched.

Given the diverse nature of sensitive lands and the development process, successful open space projects will require coordination, cooperation, and communication between the departments of Community Development, Parks and Recreation, Fire, Public Works, Utilities, Property Management, and Police. While the range of departments involved in open space and trails planning provides a wealth of expertise, coordination among departments will create new challenges. It is particularly difficult to provide effective development plan review, funding application processing, project prioritization, and monitoring as no one individual has the specific knowledge, direct authority, or responsibility to enforce open space, trails, bicycle, or pedestrian decisions.

A significant opportunity exists to streamline the open space and trail planning processes and allow for more effective coordination of efforts by delineating departmental responsibilities and assigning sufficient staff. While the existing system involving representatives from several departments works effectively in most instances, the designation of additional staff has the potential to substantially improve the efficiency and effectiveness of plan implementation.

Additional roles, especially land management tasks, will eventually need additional staff resources to fulfill various open space functions. In the immediate term however, remaining open space and trails responsibilities can be filled by existing City staff who “wear several hats.”

Essential functions include:

- Acts as a point person in identifying and protecting high resource value lands;
- Oversees negotiations with property owners and the BLM
- Represents open space interests in current and advanced planning, including transportation and flood control improvements, development reviews, and annexation agreements
- Provides expertise and official representation in planning and entitling trail corridors and in other plan review processes, including managing the interests of each department in trails, bicycle and pedestrian facility planning efforts
- Supervises the design, construction, and maintenance of trail corridors, and participates in the capital improvement process to ensure connectivity and multi-use goals are achieved in traffic and flood control projects
- Serves as a centralized source of information on the trail facility and open space property inventories
- Assures that the Open Space Map, Trails Map, and Master Bicycle and Pedestrian Facilities Map are current, and that master plans are updated every 5 years

- Leads intergovernmental coordination efforts to protect adjacent natural resources and promote recreational access
- Coordinates land acquisitions with other City departments
- Represents open space concerns at Parks and Recreation Board, Planning Commission, and City Council meetings
- Acquires funding and fosters partnerships for open space protection, trail construction, and maintenance
- Monitors plan implementation

Recommendation 2: Develop Management Plans for Open Space Properties

Develop Management Plans for significant Resource Areas, Preserves (i.e. the proposed Black Mountain Nature Preserve), or open space properties of similar land types (hillsides, washes, etc.). These concise, sensible, and realistic management plans should follow the same process used in preparing individual park master plans, and give additional direction regarding the following:

- administrative responsibilities,
- required capital improvements,
- vegetation, weed, and pest management approaches,
- ecosystem and/or single species management that focuses on improving the viability and diversity of species,
- special lands management that addresses natural washes or natural communities of significant value,
- maintenance level of service costs,
- volunteer opportunities,
- appropriate recreational or educational uses and their locations
- mitigation of conflicts between different user groups
- mitigation of threats to open space resources,
- mitigation of potential liabilities,
- monitoring efforts; and
- an estimate of long-term stewardship costs.

Management plans should be reviewed annually and updated every 5 years with tasks, operational policies, and land management goals.

Recommendation 3: Coordinate and Form Partnerships to Implement this Plan and to Manage Open Space Properties

The City should continue to work with other agencies, including Clark County, the Bureau of Land Management (BLM), the Bureau of Reclamation, National Park Service, Clark County Flood Control District, Regional Transportation Commission, other agencies, and local developers to implement the principles of this plan. The Union Pacific Rail Road Trail is an example of an existing partnership between the City of Henderson, Clark County, and the Regional Transportation Commission.

The City must be proactive in ensuring that maintenance agreements are established in order to ensure the safety and integrity of open spaces and trails in master planned communities. Property Associations should accept perpetual responsibility for the preservation and maintenance of natural washes, neighborhood trails, and open spaces within their subdivision before or concurrently with the approval of the final development plan.

Recommendation 4: Develop a Volunteer Steward Program

As open spaces become available for public use, continue to utilize and expand volunteer efforts to accomplish land management goals. Volunteer projects might include trail building and maintenance, office assistance, plant and wildlife inventories, trash removal, etc. Adopt-a-Natural Area, a Ranger Program, or a Naturalist Outreach program can provide opportunities for citizens to take an active part in the stewardship of local natural areas. Volunteer naturalists can be trained by the Parks Department to explain the values and benefits of natural areas in the urban environment to local groups and take groups on guided tours.

Recommendation 5: Develop a Safety / Risk Management Program

Public safety in natural areas and on trails is a priority for the City. The City should use a four-fold approach to minimizing threats to public safety and damage to protected resources.

1. **Planning and Design:** Risk management reviews should be conducted for each large open space property acquired by the City during the land management planning process. Police and fire should participate in the design review for all proposed improvements, and Crime Prevention Through Environmental Design (CPTED) practices should be utilized in planning and designing passive use areas to deter criminal activities. The City should continue to implement an emergency response protocol for accessing and responding to accidents in isolated areas, such as Black Mountain and Sloan Canyon NCA, with the Police and Fire Departments and BLM and County EMS agencies.
2. **Education and Partnerships:** Rules and regulations should be adequately posted on sites and in program literature. Adjacent neighborhoods and property owners should be encouraged to take responsibility for their use of open spaces through Adopt-a-Natural Area Programs and other joint projects.

The City of Henderson should maintain a close relationship with other agencies and non-profit groups such as the Nevada Department of Motor Vehicles Office of Traffic Safety, Clark County School District, SAFE KIDS, and the Boys and Girls Club, in order to foster partnerships in the promoting trail safety and awareness. The City of Henderson also should work with Clark County and the Southern Nevada Regional Trails Partnership (SNRTP) in their education and awareness programs. For example, their National Trails Day activities represent an important opportunity for the City of Henderson to promote safety guidelines.

3. **Monitoring:** Trails and facilities should be routinely inspected for safety hazards, liabilities, and vandalism.
4. **Enforcement:** Enforcement of existing laws ensures that all users will feel comfortable using the bicycle and pedestrian facilities and will enjoy a pleasant experience. The City of Henderson Police Department has responsibility for ensuring that trail and open space users comply with both traffic and behavior-related laws. Patrolling the City's extensive bicycle and pedestrian system, particularly on those facilities which are more isolated (e.g. River Mountains Loop Trail), may require an increased need for enforcement. The City's Police Department does not currently have the staff necessary to provide for full-time patrols of the facilities. Patrols of trails and open spaces occur intermittently, with specific actions resulting only from complaints or emergency calls.

As a result of the successful 2005 law enforcement sales tax measure, it is anticipated that additional funding, personnel, and equipment will increase the attentive presence of uniformed officers on trails to prevent criminal acts. In addition to their assistance, Parks staff can also be highly effective in encouraging compliance with posted regulations. Many municipalities have seen significant decreases in littering, OHV use, off-leash dogs, and other minor acts of vandalism through joint staff and volunteer monitoring and reporting. In most municipalities with developed programs, Parks and Police jointly coordinate a Ranger Program (supplemented by trained volunteers) to monitor vandalism, user behavior, off-leash dogs, and issues citations or calls for emergency personnel as needed.

V. FINANCING STRATEGIES

While identifying potential projects is a critical step in developing an open space and trails system, funding is required to make this plan become a reality. Through the identification of internal and external funding sources, tracking of key application deadlines, City leadership in regional initiatives, community partnerships, and completing necessary documentation (including monitoring), the Plan can become a reality.

The City of Henderson has been successful in securing funds from a variety of federal and local sources for open space and trail projects such as the River Mountain Loop Trail, the Pittman Wash Trail, and the Whitney Mesa Nature Preserve. While past project funding has focused primarily on the development and construction of new trail facilities, funds are also available for open space acquisition, educational programs, trails and parking facilities, and safety programs.

Most open space in Henderson will be protected through regulatory (i.e., dedications, zoning) and long-range planning means (i.e., proactively identifying and protecting resource areas prior to future auctions), with only administrative costs being incurred by the City. As a result, some of the recommendations below are also cited in the Open Space Protection Strategies section (i.e., regulatory strategies, conservation easements, gifts or donations). For acquisition, construction, and a land stewardship program, a combination of strategies and sources is the best financing approach.

Planning Tools

Recommendation 1: Incorporate the Open Space and Trails Plan and Supporting Bicycle and Pedestrian Facility Plans into Regional Plans

Many federal grants require that the proposed bicycle and pedestrian facilities are part of the Metropolitan Planning Organization (MPO) overall transportation

plan to be considered for funding. Updates to the City of Henderson Open Space and Trails Plan and Master Bicycle and Pedestrian Facilities Plan must be incorporated in planning documents by the Regional Transportation Commission (RTC) and the Regional Trails Plan, which is an effort by the Southern Nevada Regional Planning Coalition (SNRPC) to ensure connectivity within a Valley-wide system.

In addition, trail and pedestrian facilities collocated through coordination with the Regional Flood Control Master Plan should be built in conjunction with new flood channels and facilities as feasible. By including Henderson's bicycle and pedestrian facilities at flood control channels and utilizing funds through the Regional Flood Control District, these facilities can be constructed concurrently and can prove to be more economical. The dual use of Regional Flood Control District maintenance roads for trails is an opportunity to develop trails for lesser costs. However, local and outside funding sources should be identified to supplement CCRFCD funding when additional right-of-way or alternate designs for landscaping or other treatments are required.

Recommendation 2: Continue to Participate in the Neighborhood Services' Grants Clearinghouse

The City's Neighborhood Services Department acts as a clearinghouse for all grant funds obtained. The expertise of the Grants Clearinghouse staff should be utilized to assist in the identification of future grant opportunities for open space and trails projects. In addition, all grants applied for and received should be processed through the Grants Clearinghouse to assist in the coordination between involved Finance, Parks, and other involved departments.

Recommendation 3: Continue to Track Deadline Dates

Application deadline dates should be carefully tracked to ensure the timely submission of all necessary information to the grant source. Coordination between Parks and Recreation, Public Works, and the Community Development Departments to complete these

Program	Date of Application Availability	Application Deadline Date
Recreational Trails	December	January/February
SNPLMA	Fall	January
TEA-21	December	January/February
RTCA	April	July
CDBG	November	December

Table 4-2: Ensure Grants are Submitted

applications is critical. Dates for application availability and deadlines are shown in Table 4-2.

Recommendation 4: Foster and Document Community Support

For many grants, the demonstration of community support is one of the criteria that are weighed in the application process. When an open space or trails project is proposed, holding neighborhood meetings is an effective method of documenting support for the project to the funding agency. At such meetings, program changes to meet the needs of the residents can be made in advance. Additionally, continued involvement with user groups such as the Southern Nevada Regional Trails Partnership (SNRTP) and River Mountains Loop Trail Partnership (RMLTP) provides an opportunity to gather community input and support.

Recommendation 5: Identify Future Eligible Projects and Funding Criteria

Based on the deadline dates, level of community support, and estimated project costs, a listing of eligible open space and trails projects and available grants should be maintained. This listing will help to facilitate an efficient application process and will minimize the resources expended by staff in seeking grants.

Funding Tools

The following funding sources are organized by potential revenue sources, grants and outside sources, districts, partnerships and regional activities, and other opportunities and summarized at the conclusion of this section in Table 4-4.

Potential Revenue Sources

Voter-Approved Sales Tax

Given public support for open space and trails (as demonstrated by past surveys), a sales tax proposition may be a future option but is unlikely in the immediate term given the results of past elections. A recent police sales tax (1/2 cent per \$1) narrowly received all three approvals to hire more uniformed officers, a first in recent history. As a result, a sales tax increase is seen by some as a highly unlikely option, as Southern Nevada communities historically have not supported additional taxes. However, the City should work with the County to survey voters to gauge willingness to pay such a tax, and then design a sales tax ballot initiative if voters are supportive.

Sales taxes are one of the most commonly used strategies for funding open space programs in many parts of the nation. A dedicated sales tax on the sales of goods or services in Clark County could pay for protection, acquisition, and maintenance of open space, trails and parks. An amendment to the state statute would be necessary, however, since NRS 376A is limited to counties with a population of less than 400,000.

Park and Recreation Tax-Neutral Property Bond Reallocation (Current and Future)

In 1997, Henderson voters approved a 30-year tax-neutral property bond for parks and recreation improvements and maintenance. In combination with SNPLMA funds, revenues from this bond are primarily focused on increasing services to built areas. Past bonds have provided for additional Parks Department staff as new recreation centers and parks

come online. As open space and trails falls within the Parks and Recreation Dept. mission, bond revenues may provide a future source for administrative and land management costs.

User Fees

Fees cover the cost of providing improvements and maintenance on properties where recreation uses take place, for example at a trailhead parking lot. These fees are an annual or per-use cost to the user of the facility. This type of funding mechanism could be used in certain instances, but the opportunities for revenues from this source are limited.

General Fund Allocation

The General Fund, which is one source to fund parks, recreation, and property maintenance activities, is the most likely source of on-going operations and maintenance for open space and trails. The General Fund would also be a possible source for other capital costs. It is recommended that General Fund allocations be increased to fund the additional operations and maintenance activities associated with implementation of this Open Space and Trails Fund. These costs are not expected to be significant, especially in the immediate term as discussed in Land Management and Stewardship Strategies. The City should explore streamlining responsibilities between departments to increase efficiency, and collaborating to increase annual budget contributions to fund open space and trails maintenance.

Continued Creation of Local Improvement Districts (LID's)

Anthem and Green Valley Ranch created 10-20 year LID's to fund park and trail improvements, paid to the City by property owners. The City could require or encourage the additional creation of LID's to fund internal improvements to existing and future master planned community open spaces and trails (turnkey and developer-provided parks and open spaces).

Impact Fees

A number of jurisdictions impose an impact fee on new development as a means of financing needed public improvements, including open space. In effect, development in Henderson is subject to an impact fee associated with implementation of the Clark County Multi-Species Habitat Conservation Plan. This plan requires developers in Clark County to pay a fee of \$550 for each acre of raw land developed. At an average density of 4 or 5 units per acre, this is a relatively modest fee per household. It should be noted that despite the revenue generated from the mitigation fee, no projects have been funded by the MSHCP in the City of Henderson, as most funds are directed beyond the disposal area boundary.

Although not in wide-spread use, several jurisdictions impose an impact fee specifically to meet community open space needs. For example, the Town of Berthoud, a rapidly-growing community in northern Colorado, imposes a \$3,000 per home fee through a density transfer program. This fee is in addition to fees collected for parks and recreation facilities. More commonly, open space needs are addressed through a combined fee structure that includes developed parkland as well as trails and open space. The City of Albuquerque, New Mexico recently adopted an impact fee that addresses all three elements through a combined program.

Voter-Approved Funding Sources

As previously noted, dedicated sales or property tax measures are a commonly-used strategy for financing open space and trails projects. In most cases, these financing measures are designed to provide funding not only for land acquisition and facility development but operations and maintenance as well. The reasons for this are obvious, but a compelling consideration is the fact that voters are generally less supportive of a tax initiative that only funds maintenance. A combined funding package is more likely to generate voter interest and support. Nevertheless, some communities have been successful at obtaining voter approval of stand-alone funding programs for parks and other maintenance activities. Voters in Berkeley, California, for example, passed a measure that imposes a special tax on all improvements to real property. This

Project	Amount	Funding Round
River Mountains Loop Trail	\$1,500,000	2
Union Pacific Railroad Trail – Phase 1	\$1,350,000	3
Union Pacific Railroad Trail - Phase 2	\$1,300,000	3
Wetlands Trail Connection	\$300,000	3
St. Rose Parkway Trail and Landscaping – Phase 1	\$791,515	3
Boulder Highway Trail	\$500,000	3
Whitney Mesa Nature Preserve	\$1,673,250	4
Amargosa Trail	\$2,356,230	4
Anthem East Trails	\$1,328,250	4
Burkholder Trail	\$1,606,710	4
Pittman Wash Trail	\$1,106,700	4
Cactus Wren Trail	\$577,500	4
Cornerstone Lake Community Park	\$12,080,640	5
Mission View Park	\$3,935,000	5
River Mountains Loop Trail 13-14 Equestrian Trail Head Improvements	\$5,189,184	5
Amargosa Trailheads	\$5,662,800	5
Hidden Falls Park	\$7,777,440	5
St. Rose Parkway, Phase 2	\$8,305,440	5
Union Pacific Railroad Trail (ROW Acquisition)	\$9,000,000	5
Union Pacific Railroad Trail, Phase 3	\$27,500,000	5
Bird View Preserve	\$1,600,000	5
Wetlands Parks - Pabco Trailhead & Picnic Area (Clark Co)	\$2,112,000	5
Heritage Recreation Area	\$7,392,000	5
Total	\$104,944,659	

Table 4-3. SNPLMA Parks, Trails, and Natural Areas Grant Monies Awarded since 1999

measure generates approximately \$7 million per year for the maintenance of parks, medians, open space and city trees. A similar measure could be presented to voters in Henderson.

Revenue From Increased Property Values

Studies in a wide range of urban areas have shown that properties located adjacent to open space and trails can stabilize or increase adjacent and nearby property values. Homes located near greenways or adjacent to open space sell for higher prices than those located farther away. Consider evaluating the increased taxes received from properties located adjacent to open space and directing a portion of these revenues towards the implementation of the open space program and the ongoing maintenance of open space.

Other Measures

Both lodging taxes and real estate transfer fees are used to fund open space acquisition and related purposes in some communities. For example, the Town of Silverthorne, a resort community located in the mountains west of Denver, Colorado, imposes a 2% lodging tax that is used for parks, trails and open space. Lodging tax receipts can be used for open space acquisition in a number of states; for example it is specifically listed as an authorized purpose in the enabling legislation for a lodging tax in the State of Washington. In Nevada, use of this funding mechanism for open space and trails would appear to require new legislation.

A number of communities have adopted a real estate transfer fee to help finance open space acquisition. These programs, which impose a fee on real estate transactions, are often controversial – the Colorado legislature passed legislation making it illegal after several communities adopted real estate transfer fees. However, this funding mechanism is used in a number of states, including New Jersey and California.

Grants and Outside Sources

Southern Nevada Public Lands Management Act (SNPLMA)

In the recent past, the Bureau of Land Management SNPLMA Parks, Trails, and Natural Areas Fund has been an exceptional source of revenue for purchasing land and paying for capital improvements. As shown in Table 4-3, the City of Henderson has been highly successful in repeated successful open space and trails applications with over \$100 million in project receipts since 1999. Increased competition for funds from other entities combined with ongoing legislative efforts to redirect revenues away from the Valley may reduce this funding in the future. Although it is possible that current funding amounts will continue, the City should diversify its natural area and trails funding portfolio by pursuing other strategies presented here.

Exploring possible methods to expand the legislation to pay for operations and maintenance (“capital asset preservation”) could also be promoted.

Leverage Local Funds by Pursuing State and Federal Grants

The most notable grant sources that could continue to be utilized for open space preservation and trails development are listed below:

Question 1

In November of 2002, Nevada voters passed Question 1, which authorized the State of Nevada to issue general obligation bonds in an amount not to exceed \$200 million. Purposes cited in the initiative include:

“...to preserve water quality; protect open space, lakes, rivers, wetlands, and wildlife habitat; and restore and improve parks, recreational areas, and historic and cultural resources.”

Of the total \$200 million in funding, \$65.5 million is directed to the Nevada Division of State Lands to provide grants for state agencies, local governments, or qualifying private nonprofit organizations for various programs including recreational trails, urban parks, habitat conservation, open spaces, and general natural resource protection projects. The remaining funds were allocated to specific agencies and programs, such as the Nevada Department of State Parks and Nevada Department of Wildlife.

Approximately \$290,000 was awarded to the City of Henderson in Round 1 for Project Green (Pittman Wash). Question 1 funds must be allocated to projects by November 5, 2008. Matching contributions of between 5 percent and 50 are required, depending upon project type. Given the limited time remaining in the Question 1 funding cycle, it will be important to identify projects well-suited for this program in the near future.

Question 10

In 2002, Clark County voters passed another in a series of Question 10 initiatives -The Fair Share Funding Program. Subsequently in 2003, the Nevada State Legislature approved Senate Bill 237, which allows the Board of Clark County Commissioners to implement additional revenue sources for transportation improvements. One of the new revenue sources is a sales tax of one quarter of 1 percent to fund additional transportation improvements in Clark County. In addition to multimodal transportation improvements and highway projects, the program can be used to funding additional bicycle trails and related facilities.

Nevada Recreational Trails Fund

This program, which is administered by Nevada State Parks, has limited funding but can be used to supplement other available funding sources for trail development. In 2004, grants of approximately \$661,000 were awarded through the program. Eligible

Strategy / Fund	How Can it be Used?			Term
	Acquire Land	Capital Impr.	Land Steward.	
Potential Revenue Sources				
Voter-Approved Sales Tax	X	X	X	Long
Park tax-neutral property bond (current & future)		X	X	Immediate
User Fees			X	Short
General Fund Reallocations	X	X	X	Immediate
Local Improvement Districts	X	X	X	Short
Grants and Outside Sources				
SNPLMA	X	X		Immediate
State and Federal Grants	X	X		Immediate
Partnerships and Regional Activities				
Joint Use Projects and Partnerships	X	X	X	Immediate
Regional Initiatives	X	X	X	Long
Clark County Programs	X	X	X	
Other Strategies				
Establish Foundation		X	X	Short
Land Trusts	X	X	X	Short
In-kind and Volunteer Services		X	X	Short
Department of Corrections labor		X	X	Short
Open Space Management Endowment			X	Short

Table 4-4. Open Space and Trails Financing Options. The Term column describes strategy feasibility in the immediate term (0-1 year), short-term (1-5 years), and long-term (5+ years)

projects include maintenance and restoration of existing trails; development and rehabilitation of trailside and trail head facilities and trail linkages; purchase and lease of recreational trail construction and maintenance equipment; construction of new recreational trails, acquisition of easements and fee simple title to property; and operation of educational programs to promote safety and environmental protection. A minimum match amount of 20% is required.

In 2005, Congress passed the Transportation Equity Act: A Legacy for Users, legislation that reauthorizes the Federal-aid surface transportation program through FY 2009. Major funding for a wide variety of transportation projects, including recreational trails and bicycle facilities, is authorized by the legislation and may lead to increased funding for programs such as the recreational trails fund.

Partnerships and Regional Activities

Joint Use Projects and Partnerships

Joint use projects have the opportunity to achieve adopted goals and other policies at a reduced cost for the City and its partners. In addition to capital cost sharing, the City should explore joint-use agreements or joint funding for operations and maintenance. For example, potential projects could include (1) developing East Equestrian Park and Trailhead in southeast Henderson with Nevada State College, (2) developing an interpretive area in the BLM Quarter Section or Nature Preserve at Whitney Mesa with Clark County School District, or (3) conserving lands in East Henderson with the Bureau of Reclamation and Southern Nevada Water Authority.

Other potential partners include the Regional Transportation Commission, Nevada Power, Nevada Division of Wildlife, Clark County Desert Conservation Program, the Nevada Department of Transportation, and the Clark County Flood Control District. While flood control projects typically have not provided funding for joint recreation or conservation purposes, there will be many more opportunities in the City to create linear parks and trails and establishing key linkages along flood control channels as part of the City's green infrastructure. Leveraging CCRFCD fund allows for the more economical construction of joint use projects.

Strengthen Coordination of Regional Planning Efforts

A regional organization that has taxing authority and that can acquire and manage open space and trail lands may be another option for long-term stewardship and acquisition funds—for Henderson and other cities in the valley. The Regional Open Space plan currently being prepared by the Southern Nevada Regional Planning Coalition will provide for a regional open space definition, identify opportunity areas, and investigate management strategies for regional open space. This plan recommends supporting the on-going regional open space planning efforts and actions proposed by the Southern Nevada Regional Planning Coalition. The City will still need to act independently to secure funds for remaining local program needs in addition to supporting regional projects.

Other Strategies

Establish a Non-Profit Foundation

City could support (or spearhead the creation of) a non-profit, tax-exempt (501(c)3) organization for the purpose of promoting and encouraging the advancement of open space and trails. Such an organization can do fundraising, accept donations, be an advocate for the program, manage volunteers, administer grants, and assist with maintaining open space and trails among other duties. Some cities have been instrumental in establishing and continuing to work with such anon-profit organization (e.g., Loveland

Parks and Recreation Foundation in Colorado (see www.ci.loveland.co.us/parksrec/Foundation.htm) and Prospect Park Alliance in Brooklyn, New York (see <http://www.prospectpark.org>) whereby members of staff serve on the board and are directly involved in day-to-day operations of the foundation. It will be critical to involve key community leaders and businesses to have some corporate and neighborhood support who can help attract private contributions, endowments, and sponsorships. Contributors are eligible for tax benefits.

Work with Land Trusts

In many communities, land trusts are instrumental in managing land and conservation easements. Southern Nevada does not currently have land trusts actively acquiring and managing properties, however, national organizations such as Trust for Public Land and The Nature Conservancy are currently involved in planning efforts throughout the region. Local and national land trusts also play an important role in holding and managing conservation easements—a potential tool to limit land maintenance requirements for the City. However, land trusts need adequate financial resources, staff, and volunteers to fulfill their obligations of managing parcels. In Henderson it would take time to get a local land trust off the ground, however, it may be possible to collaborate with or expand on existing or regional organizations in the valley.

In-Kind Services

The City Support volunteers such as youth and student groups, seniors, and service clubs in adopt-a-trail or adopt-an-open space programs as described previously under Management Tools.

Department of Corrections Program

The City will investigate using the Department of Corrections labor pool to assist with O&M of open space and trails parcels.

Open Space Management Endowment

The City will consider establishing an endowment from the proceeds of land fund sales or other contributions and use the interest for operations and maintenance. This will be feasible only if a substantial influx of sales tax, bond revenues, or SNPLMA funds are dedicated for this purpose.

Estimated Costs

As with any effort to predict the future, it is difficult to anticipate the full range of costs associated with implementation of the open space and trails plan. In general, however, it appears that the revenue needed in the near term for development of trails and other facilities, land acquisition and other capital costs is available through the use of existing programs, especially the grant program associated with SNPLMA. These external funds cannot be used for maintenance or to cover other operational costs, so it will likely be necessary to obtain funding for these purposes from the City's general fund. An estimate of these costs is outlined in the 2010 scenario (Table 4-5), which is based on implementation of the projects that have received prior funding through SNPLMA as well as the Black Mountain Regional Preserve.

Based on an estimated cost of \$100/acre in current (2005) dollars, the annual cost of maintaining these new properties would be approximately \$163,700.

Additional maintenance costs will be associated with development of new trails. As shown in Table 3-X, an additional 30 miles of trail will be developed by 2010 (based on the assumption previously stated, i.e. implementation of those trail segments with SNPLMA funding). At an annual cost of \$2,000/mile, total trail maintenance costs would be approximately \$60,000 per year.

The combined maintenance and operations costs would be \$223,700 each year for the first 5 years.

The magnitude of these costs would not appear to require immediate adoption of a new revenue approach or voter-approved funding initiative. In the future, however, as the City's open space and trails programs expand, it may become necessary to adopt new funding mechanisms. A variety of funding tools were outlined earlier in this chapter. In general, voters are more inclined to support funding measures that include both project development and maintenance activities than they are to support stand-alone maintenance. Therefore, the City should consider adopting a dedicated funding source for open space and trails in the future when revenue from other sources such as SNPLMA begin to diminish. Whether through a voter-approved property tax initiative or other strategy, any initiative presented to the public should specifically provide for the use of funding to maintain and operate the lands and facilities that are developed through adoption of the ordinance.

Project	Acres
Black Mountain Regional Preserve	1,377
Whitney Mesa Open Space	35
Bird Viewing Preserve (potential new area expansions)	140
Hidden Falls Park	60
Lake Las Vegas Wetlands Park	25
Total	1,637 acres

Table 4-5. Planned Projects to be Implemented by 2010. The natural area element of Cornerstone Lake Park is not included and is assumed to be part of the community park. See Table 2-2 for full project descriptions.

VI. CONCLUSION

The City should use a judicious blend of strategies and tools to develop and fund the open space and trails program, such as regulatory means, partnerships, reallocation of existing funds and staff resources, and ultimately, new voter-approved taxing or bond mechanisms. It is recommended that work sessions with the Parks and Recreation Board, Planning Commission, and City Council be held to determine the best course of action among the various options available. Small steps can be taken immediately towards implementing the City open space program irrespective of long-term funding sources. Continued public outreach, and successful immediate-term projects can foster public support for regulatory changes (i.e., flood control designs) and new funding mechanisms (i.e., dedicated sales or property taxes).

Other key considerations are as follows:

- Most open space will be conserved through modifications to existing regulatory procedures and policies rather than through acquisition.
- Acquire and provide stewardship for only those properties that are identified in this plan as having a public benefit or that meet the criteria of being physically accessible to the public, containing important visual resources or sensitive environmental resources, or that are connected to other parks, or public facilities. Limit acceptance of open space dedications to the City, except where a property demonstrates an obvious public benefit. Other mechanisms, such as conservation easements, allow for land to be conserved without the City being responsible for management costs.
- Seek outside sources, including grants and partnerships with other agencies, in order to leverage local funds.

An overarching purpose of the Open Space and Trails Plan is to ensure that open space and trail needs are considered when all development and recreation planning decisions are made. Further, the Plan serves as an important policy document that can effectively guide the City of Henderson in its transportation, recreation, public works, and community planning for the next five years.

In conclusion, landscape patterns matter. It is no longer appropriate to plan based on totals or averages of prices, jobs, wages, infrastructure costs, real estate values, parkland, water flows, and so forth. Rather, the arrangement of land uses, natural drainage ways, and scenic resources is crucial to making Henderson a place to call home.

Works Consulted

American Forests. "Urban Ecosystem Analysis for the Washington DC Metropolitan Area: An Assessment of Existing Conditions and a Resource for Local Action." At URL=http://www.americanforests.org/downloads/rea/AF_WashingtonDC2.pdf. 2002.

City of Henderson. *2004-2005 Budget Overview*. Department of Budget and Strategic Planning. 2004.

City of Phoenix. "Sonoran Preserve Edge Treatment Guidelines." At URL=<http://phoenix.gov/PLANNING/sonindex.html>. 2005.

Dramstad, W. E., J. D. Olsen, and R. T. Forman. *Landscape Ecology Principles in Landscape Architecture and Land-Use Planning*. Island Press. 1996.

Ewan, Joseph and Michael Underhill. *Explorations at the Edge*. Phoenix, AZ. 2003.

State of Nevada. *State of Nevada Bicycle Plan*. 2002.

