Northwest

Open Space Plan

Las Vegas, Nevada

Prepared for:
City of Las Vegas
Comprehensive Planning Division

Prepared by:
Greenways Incorporated

In Association with:
The Greenway Team
JW Zunino Associates
ETC Institute
The Trust for Public Land

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January 5, 2005

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Chapter 1: Introduction

1.1 Project Background

Las Vegas has arrived at an important juncture. After more than two decades of record population growth, Las Vegas is now taking its place as one of North America's great metropolises. The city and its neighboring communities have enjoyed prosperity, economic growth and a diversification of cultural amenities. At the same time, there has been increasing pressure on community infrastructure including schools, parks, highways, water, floodways, and other important public assets. This includes open spaces, scenic vistas, natural areas and wildlife habitat. It has also threatened traditional access to trail recreation on lands that were once wild but now developed.

While there have been challenges, there are also opportunities resulting from a number of factors including: transfer of certain U.S. Bureau of Land Management (BLM) properties; existing state park land and increasing sophistication on the part of developers and planners when it comes to open space and resource stewardship.

This has been especially true in the Northwest region of the City. Understanding all of this, the City commissioned the preparation of this open space plan to preserve the unique quality of life, natural features and outdoor recreation of the Northwest region.

This Plan is the primary product of a 10-month planning effort that built upon previous community and regional plans aimed at growth management and resource protection. The open space planning process included substantial input from the public, agency staff and elected officials. A series of working group meetings, public open house events, a community attitude survey, and focus group meetings, shaped and guided the preparation of this plan.

1.1.1 The Study Area

The northwest region of Las Vegas consists of approximately 50 square miles that are bounded by Cheyenne Avenue to the south, *Red Rock Canyon National Conservation Area* to the west, Moccasin Drive to the north and the City of North Las Vegas to the east (Decatur Blvd.). The proposed Clark County Shooting Range and Quail Springs Wilderness Study Area that lie south and west of the *Desert National Wildlife Refuge* were also considered during this planning process, but are not officially part of the project study area. (Figure M1: Project Study Area Map)

1.1.2 Primary Partners

The City of Las Vegas and the project consultant team, led by Greenways Incorporated, developed this plan in cooperation with a citizens' Open Space Advisory Committee. Other agencies addressing land management, community development, utilities, law enforcement, stormwater management, and resource planning in the Greater Las Vegas area were involved at various stages throughout the planning process.

Figure M1: Project Study Area

1.2 Mission, Purpose and Goals

Early on in the process, a substantial effort went into tailoring the planning process so that its final products would provide clear steps towards a commonly held vision of open space protection and management. The conclusions of this Plan and the recommendations it contains are products of this effort. The following mission statement defines the project:

Project Mission Statement

- *Improve the quality of life and community character of Northwest Las Vegas with a well planned system of interconnected open spaces, greenways, trails, parks and protected landscapes*

- *Accomplish this through an inclusive, open, cooperative process that considers common and divergent interests including residents, businesses, public agencies, citizen organizations, tribal groups and others*

- *Arrive at a consensus for a vision that balances both conservation and development objectives. Achieve optimal, cost-effective, sustainable implementation and management of open space resources*

Through group discussions, a set of goal statements were established. These statements included interest in balancing growth and conservation, maintaining the high quality of facility design for active recreation areas, extending trail networks, combining water quality protection objectives with open space protection efforts, maintaining the open feel and distinct character of the community as it develops, expanding park and recreation services without altering well known areas such as Floyd Lamb State Park, minimizing the costs of managing recreation and open space resources, and improving connectivity for cyclists, pedestrians and equestrians as they use the local trails.

From these many comments and suggestions, the consultant team crafted four goal statements that reflect the essential interests that define open space in northwest Las Vegas:

Goal 1: Protect and enhance outdoor resources and infrastructure including parks, trails, vistas, cultural sites, and natural areas, including floodplains, aquifer recharge areas, and wildlife habitat.

Goal 2: Balance protection efforts and development activities in a way that is equitable, effective, and clearly understandable.

Goal 3: Maximize the number and variety of outdoor opportunities while respecting the existing conditions, the realities of water scarcity, and the need to minimize long-term management costs.

Goal 4: Improve the quality of life and community character of Las Vegas with a well-planned and interconnected network of natural, and designed open spaces.

1.4 Methodology and Process

The consultant team utilized a planning methodology that included four major elements:

- An assessment of current and future community needs and desires
- An inventory of physical resources
- An effective community review and comment process
- Creation of a clear, concise, visionary and workable plan that the community can implement in a timely manner

The involvement of stakeholders was at the heart of this process and included residents, representatives of user groups; local, state and federal agencies; and others who would share their ideas, aspirations, concerns and suggestions. This process has been supplemented by a scientific opinion survey of study area residents. Please see a presentation of the survey methodology and the survey findings in Chapter 3.

To effectively and equitably accomplish stakeholder participation two advisory committees were assembled and a public participation process was carried out. This process was enthusiastically embraced and valuable commentary was received.

The ***Open Space Citizens Advisory Committee*** consisted of representatives of users' groups, residents, businesses, elected officials, homebuilders, and others familiar with the emergence and needs of the area. The ***Technical Working Group*** included key agency decision-makers including transportation, parks and recreation, stormwater management, water and utilities and other functions at the local, state and federal level. The Public Process consisted of a series of public presentations and open houses where participants shared both verbal comments and written suggestions. At each public open house, response forms and maps were provided and participants were invited to write down their thoughts.

Review sessions with both advisory committees and the general public were held at key junctures in the process including: the initiation of the planning effort, at the completion of the analysis of existing conditions, when draft planning elements and concepts were prepared, and upon completion of the final draft plan. Generally, review sessions were held on a bi-monthly basis and comments were documented.

In addition to the public participation process, the City staff and consultants posted a web site (www.lasvegasopenspace.com) and published a newsletter updating progress and findings of the plan. News releases were also made to local and city-wide media outlets including newspapers and television stations announcing open houses, and other information about the plan.

An inventory of existing resources was accomplished using existing mapping and geographic information system mapping (GIS) and by automobile and foot tours of the study area. In addition, previous planning related to the area such as the Parks and Trails elements of the Las Vegas Master Plan, as well as numerous other studies and policy documents, were assembled and reviewed.

Finally, the staff and consultants drew on their professional knowledge of planning techniques and concepts as well as successful planning in other communities with challenges similar to Las Vegas to draft plan concepts. The team also called on specialists and recognized organizations, such as the Trust For Public Land, to assist, advise and share their ideas.

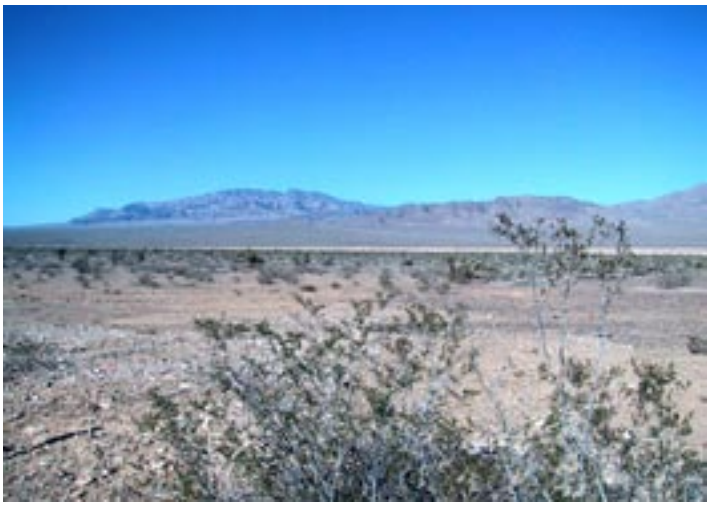
Ultimately, the final plan evolved out of an iterative approach with ideas passed back and forth between the professional planning team (city staff and consultants) and the stakeholders with review and, where appropriate, revision at key steps in the process. Every effort was made to ensure that the planning process was open, inclusive, and responsive. Indeed, it is the philosophy of the professional planning team that an open, inclusive, and responsive process is a vital component of a successful plan.

1.5 Open Space Criteria

The following criteria were used throughout the planning process in the identification and recommendation of lands for open space, trail corridors and potential future park sites. These include:

Open Space

- Preserves attractive sites with attractive views
- Preserves or enhances the mountain and desert wild land backdrops
- Preserves highly visible sites that represent the pre-development desert, mountain or agricultural character of the Las Vegas Valley
- Preserves sites with distinguishing topographic, high elevation points, historic, ecological or cultural features
- Preserves sites that offer relief and separation between concentrations of development
- Protects floodplains, floodways, erosive areas and other areas unsuitable for development



- Provides adequate size and shape to support natural vegetation, wildlife movement and habitat, or outdoor recreation where appropriate
- Helps create an interconnected system linking wildlife habitat areas, parks, trails and open space (see Vias Verdes in Chapter 4)
- Buffers sensitive places such as wildlife habitat, wetlands, and drainageways
- Supports current open space planning by the City, BLM, State of Nevada, adjacent developers and others

- Readily accessible for compatible public recreation
- Future potential use as parkland or cultural destinations such as a railroad park or equestrian area

Trails

- Attractive corridors with attractive views
- Readily accessible for neighborhoods, residents and places of employment
- Corridors with distinguishing topographic, historic, ecological or cultural features
- Opportunities for multiple uses (i.e. bicycle, walking, jogging, equestrian) while designed to avoid conflicts amongst uses
- Ability to link neighborhoods, civic areas, schools, shopping and other important destinations
- Ability to link parks, trails and open space with interconnected networks

- Grade-separated corridors creating minimal conflict with automobile traffic such as streets or driveway cuts
- Available rights-of-way such as the Las Vegas Wash, major road corridors, and other open spaces and parks
- Opportunities for multi-objective benefits such as drainageway and utility maintenance roads serving as trails
- Opportunities to cross barriers such as using existing or proposed highway underpasses or crossings
- Avoids adverse impacts on sensitive wildlife areas, businesses and other activities and private property
- Avoids steep grades, crossing hazardous barriers such as existing or proposed highways or arterials, and noisy or unpleasant settings
- Avoids close proximity to sensitive natural and wildlife resources
- Links to or interconnects with existing trail systems

Parks

- Availability of affordable land
- Attractive sites with attractive views
- Sites with distinguishing topographic, historic, ecological or cultural features not adversely impacting wildlife areas
- Good existing (or future) road, sidewalk and trail access

- Level, well-drained sites suitable for park development
- Parcel size and shape suitable for park uses and recreational facility development
- Neighborhood/Pocket Park sites located on an approximate one-mile spacing grid
- Sites not prone to erosion or frequent flooding (above the 10-year storm event)
- Soils suitable for park development
- Potential for park site to enhance and complement future residential or commercial development
- Compatibility of park use with existing or future adjacent land uses
- Ability to share sites with schools
- Ability to link parks, trails, open spaces and neighborhoods with interconnected networks

1.6 Document Description

This Plan document includes the following major components:

- An *Executive Summary* over-viewing the findings and recommendations of the plan
- An *Introduction* that presents the mission, goals, planning process and guiding principles of the plan
- An assessment of *Existing Conditions* that overviews growth trends, resources, current park, trail and open space amenities, and planning opportunities and constraints
- An analysis of the *Need for Open Space* amenities that considers the level of service needed to meet current and future populations and the results of scientific survey work that indicates community desires and the "market" for open space benefits
- A *Recommended Open Space System* that puts forward a framework and policy guidelines for open space systems, parks, trails, cultural facilities and related amenities
- *Implementation* recommendations that outline specific steps for achieving the plan's key elements over the next decade
- Guidelines and cost projections for resource *Stewardship, Operations and Management* of the open space park and trail system as it is created
- Graphic maps, cross-sections and photos that visually depict the plan's recommendations and components
- *Appendices* that summarize the public meeting process, design guidelines and define the GIS data used to create open space maps

Chapter 2: Summary of Existing Conditions

2.1 Introduction

Like many cities in America, the City of Las Vegas and the Northwest region in particular is a community that is working hard to balance competing interests, minimize the impacts that come from growth, and provide the necessary services and facilities for maximizing the quality of life of its residents.

This document lays out a strategy for successfully managing these issues as they relate to the community's parks, trails, and open spaces. Before a useful set of recommendations can be offered, however, it is essential to examine the existing conditions in the community and to build the recommendations and subsequent implementation strategy on the realities of present day Northwest Las Vegas.

The next several pages briefly examine a number of critical categories of information about Northwest Las Vegas. In the end, they present an overall picture of the natural and built environment, the growth and use characteristics that will shape the future of the landscape, and the current plans for managing change in Northwest Las Vegas.

2.2 Natural Resources and Open Space

Before there were buildings and streetlights and lawns in this area, the land was predominantly desert with its associated ecological systems. The desert was punctuated in places with washes, intermittent streams, springs and oases. In addition, there were spectacular vistas of the surrounding uplands and mountain ranges. The species and features of the desert remain in some places and protection of them is essential. What might have been, in the past, brushed aside quickly by some as wasteland is, in fact, bountiful land that supports species adapted to the extreme conditions of the Nevada desert. The native flora help define the character of Northwest Las Vegas and the wide open spaces provide, in simplest terms space - space for living, space for solace, space for recreation, relaxation, study, and contemplation.

For millennia, these arroyos have been the lifeblood of subsistence in the desert. Several major arroyos still exist in Northwest Las Vegas and serve a critical role in mitigating the hazards from stormwater run off. Many of these natural waterways, however, have been graded over or channelized for development

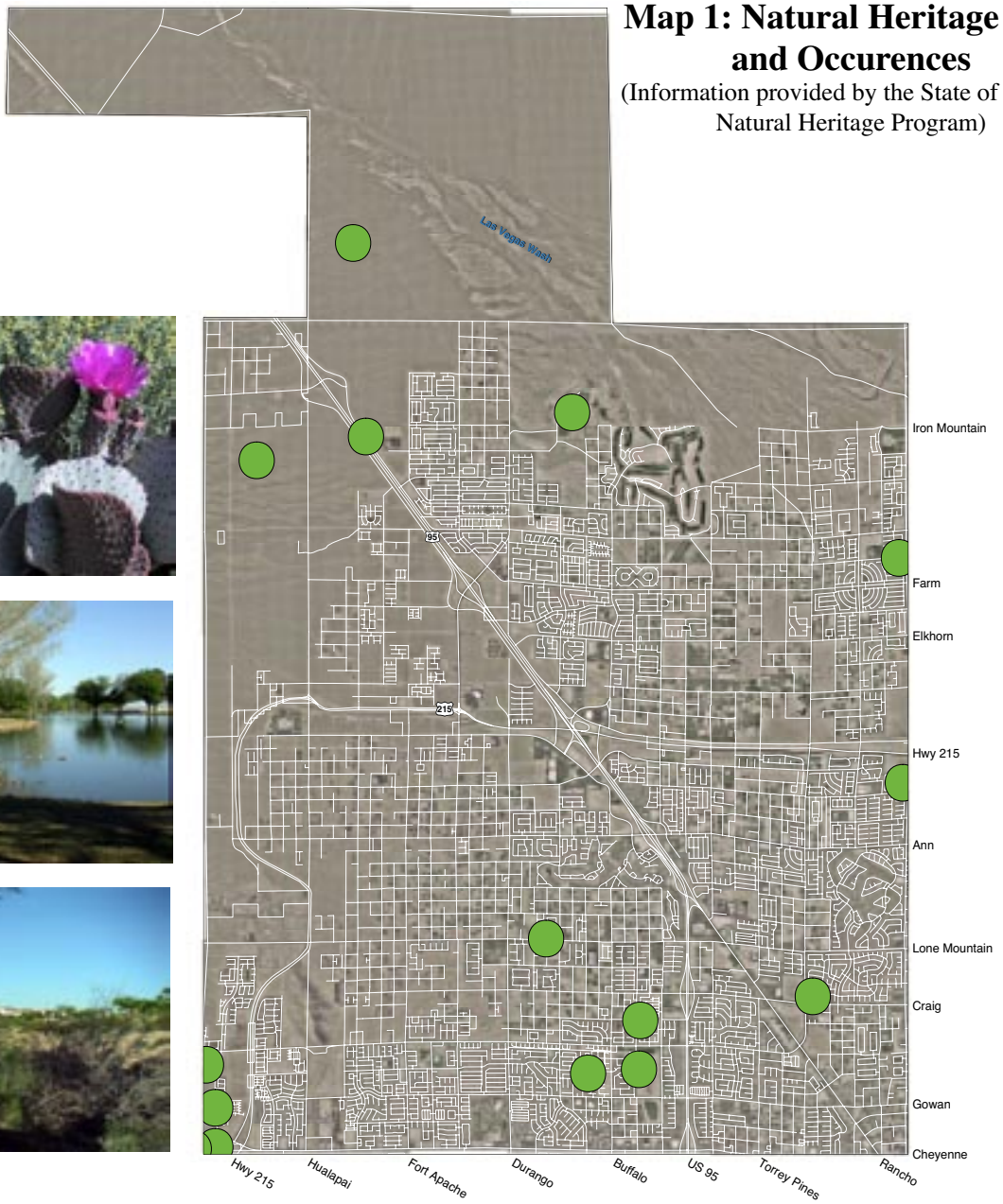
purposes. In some cases, new, permanent concrete-lined channels have been added to the landscape to divert stormwater away from developed areas.

Each of the features described here - the desert flora and fauna, the arroyos, and the simple openness of the ecosystem - are factors for consideration in the design of the built environment and therefore an element in the design of the open space network for Northwest Las Vegas.

The maps on the following pages depict the present layout of these elements on the landscape.

Map 1: Natural Heritage Sites and Occurences

(Information provided by the State of Nevada Natural Heritage Program)



Map 1 - Natural Heritage Sites & Occurrences - is data from the State of Nevada's Natural Heritage Program. This group maintains databases that detail the location of significant plant species, animal species, and geologic features. The points on this map represent historic and fairly recent sitings of plant species such as *White Bear Poppy* and *Las Vegas Buckwheat* as well as animal species such as the *Desert Tortoise* and the *Red-Tailed Blazing Star Bee*. In general, though, there are not any significant habitat areas for threatened and endangered species remaining in the primary project area. The chief factors in selecting

natural resources for potential protection, therefore, are water quality and open space potential.

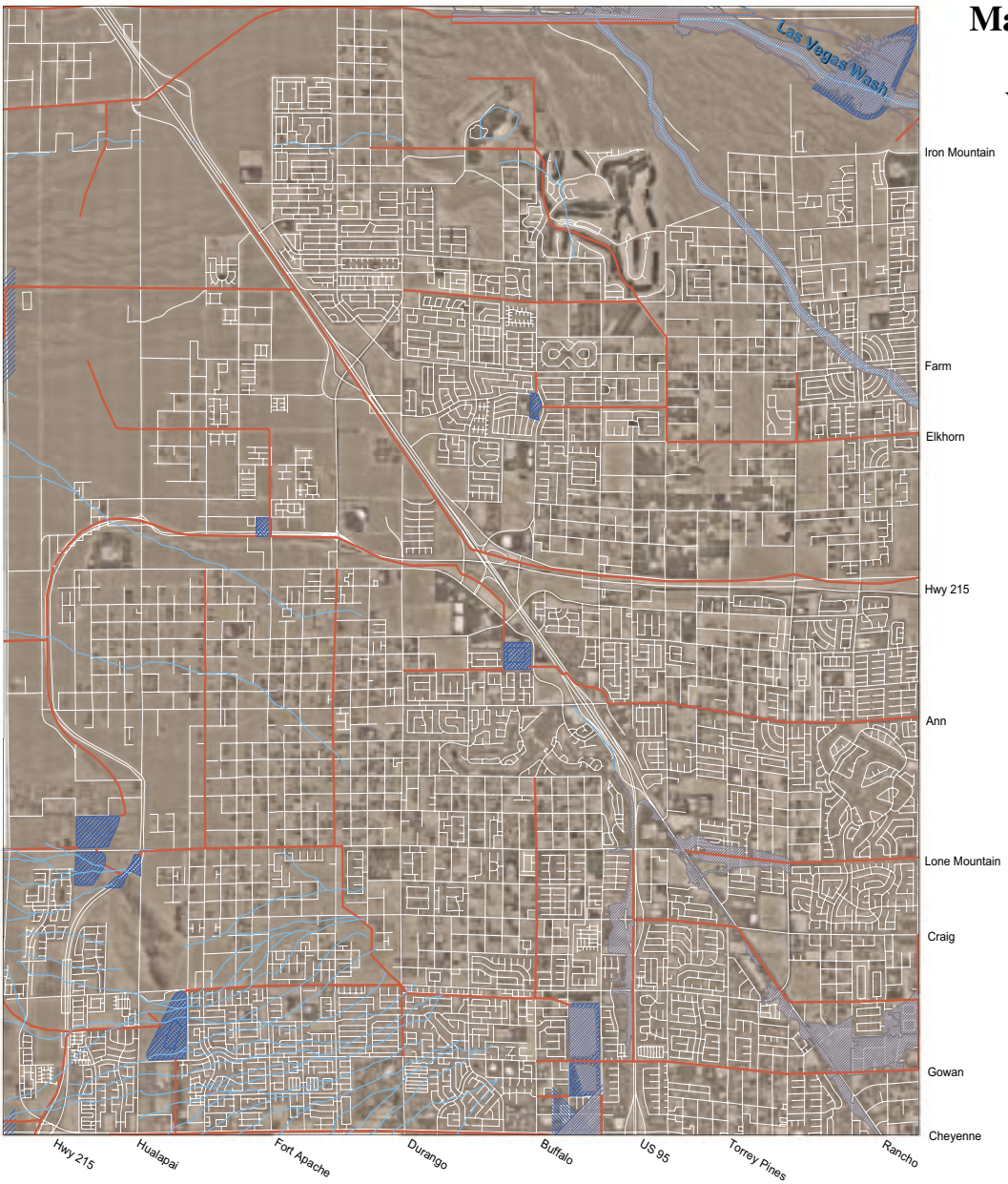
Map 2 - Open Space in NW Las Vegas - this is a composite map that shows where significant areas of currently undeveloped land exist which continue to display some of the characteristics of the desert ecosystem and ranch/agricultural lands that thrived here before the houses and roads were constructed. If they are set aside, in part or whole, these areas could still continue to function as close-to-home reminders of the wide open spaces and scenes that once characterized this portion of the Las Vegas Valley. While some of these lands are in public ownership, much of

Map 2: Open Space in Northwest Las Vegas

these lands are currently in private ownership and will require the cooperation of landowners in pursuit of an optimal mix of open space and developed land.

Map 3 - Arroyos, Washes and Water Conveyances
Depicts the system of natural and man made corridors that serve to move water across the landscape to detention areas where it can be stored for future use. Many of the minor arroyos do not appear on this map because a GIS data layer that depicts the system more completely is not currently available. Please contact the Clark County Flood Control District for an up-to-date map of the drainageways for Northwest Las Vegas.

Map 3: Arroyos, Washes and Water Conveyances



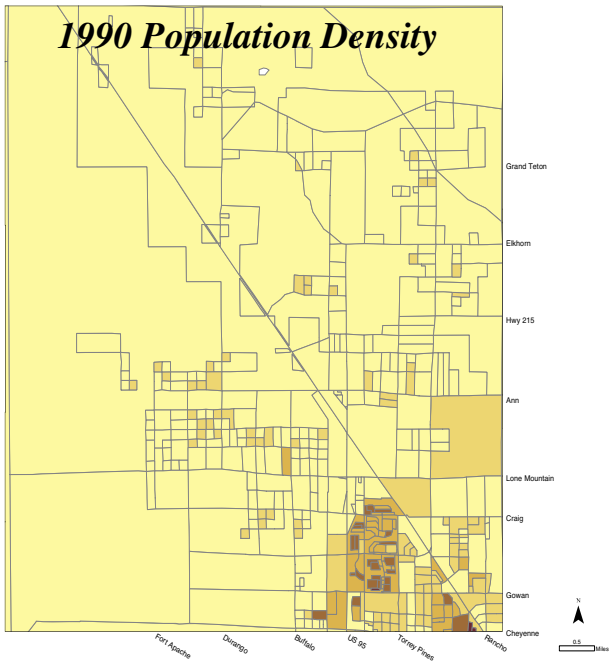
2.3 Rate of Growth and Development

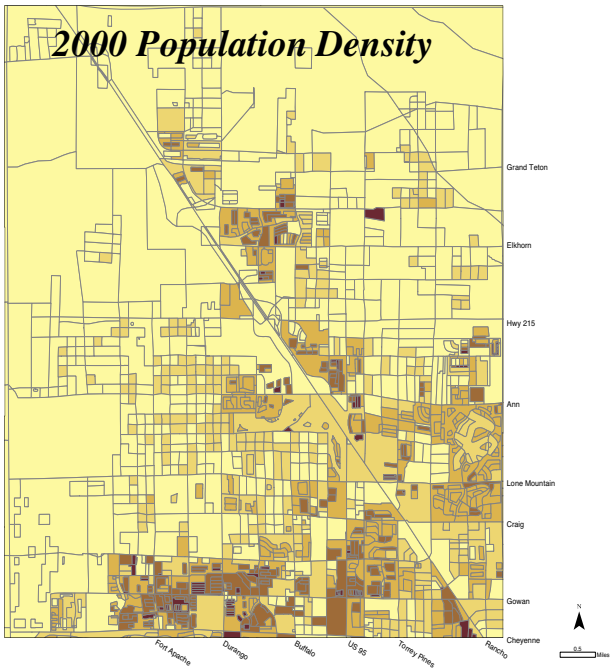
The greater Las Vegas area is one of the fastest growing metropolitan areas in the nation. The settled land area of the metro area has increased from 38 square miles in 1970 to 235 just three decades later—nearly a ten-fold increase. In the last decade, the city's population grew by more than 50% and it is estimated that two thousand people settle in the Northwest area every month. At 21% annually, it is the fastest growing sector of the city. One quarter of those arriving have household incomes of less than $25,000 (*according to the Center for Business and Economic Research, University of Las Vegas*). Year 2000 *Decennial Census* projections anticipate a population of 320,000 in the Northwest region.

This type of growth makes Las Vegas the type of community that many other cities would like to become in terms of economic development and constantly increasing property tax base. It is also the type of community that many cities fear becoming for intense building pressure and the demands on infrastructure and services that result from rapid growth.

In relationship to open space, the heavy development pressure is more of a liability than a luxury. As more and more people squeeze into a finite amount of space, they permanently change the character of the community from a wide-open, rugged, far-from-the city escape to a dense, urban/suburban community of homes, jobs and traffic. The challenge is finding the appropriate balance of character preservation and accommodation of growth.

The rate at which Northwest Las Vegas adds new residents is expected to continue, and with those new residents will come continued demand for new parks, new trails, and new recreational opportunities. Developing this infrastructure now, before development occurs, is a necessary step towards ensuring that the balance is preserved.





By comparing the two images (1990 and 2000 Population Density),it is clear that the Northwest region is experiencing explosive growth that is consuming undeveloped land at an accelerated rate. A continuation of this rapid rate of growth is expected.

2.4 Park, Trail, and Open Space Network

A visitor to Northwest Las Vegas is struck by the newness of the built recreational environment - new volleyball courts, new skateboard parks, new children's play areas, new baseball and soccer fields. This is indicative of the fast growing population and the city's efforts to keep up over the last several years.

Visitors to the Northwest will notice the development of new walkways and bike lanes emerging along roadways and through some new neighborhoods. The presence of this emerging trail infrastructure defines a city that is trying to put in place these important amenities and make them a requirement of new development. By way of example, Summerlin, located just south of the project study area, has been one of the most successful communities of the Las Vegas Valley. Summerlin, a master-planned community, has led the way with an integrated landscape of parks, trails and open spaces.

Visitors will also note some areas of undeveloped land in patches throughout the region and along the region's northern and western boundaries. These are significant open spaces that help define the past and present character of the landscape.

A detailed assessment of prior planning documents that serve to define future intentions for Northwest Las Vegas recommend connectivity between these different open space lands. However, on the ground, the current level of connectivity falls well short of citizen expectations. Trails are present, but rarely connect with the next trail. Parks and facilities are new, but in some cases cannot be accessed safely by foot or bike from nearby neighborhoods.

There is a strong need during the next several years to promote better connectivity, to conserve open space and vistas, to locate and develop facilities, and to expand the breadth of services and experiences that residents can expect from their parks, trails and open space network.

2.4.1 Publicly Owned Open Space

There is city, county and federal land in Northwest Las Vegas dedicated to parks, trails and set-aside open space. The table below shows the acreage of public open space. The data from this table was extracted from maps of the Northwest region produced by the City of Las Vegas. It includes facilities that are existing, as well as those that are proposed for new park sites.

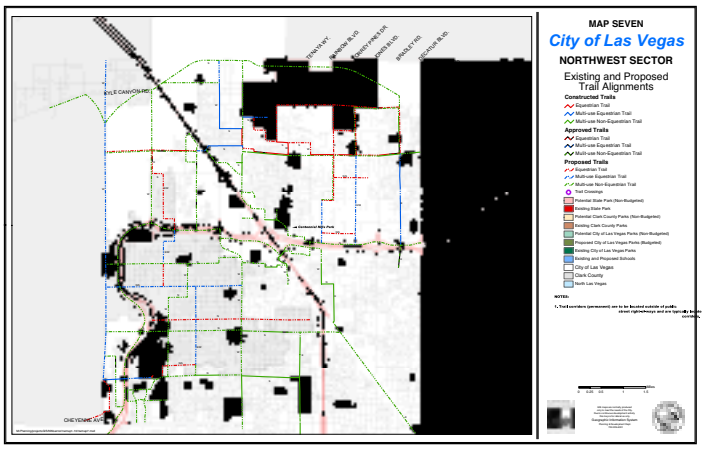
CATEGORY	OWNER	ACREAGE SUBTOTALS	ACREAGE TOTALS
Proposed	City of Las Vegas	99	99
Future	Clark County	394	
Future	City of Las Vegas	540	
Future	Clark County	1140	2074
Existing	State of Nevada	60	
Existing	City of Las Vegas	348	
Existing	State of Nevada	396	804

Data source: City of Las Vegas, combined GIS layers

In total, there are currently about 3,000 acres represented. Eight hundred acres already exist, but less than half of that is owned by the City of Las Vegas. There are also a significant number of miles of trail either existing or proposed for the area, and a number of natural area protection sites are scattered among the region.

2.4.2 Spatial Arrangement

The Northwest open space network is not very well defined at this point in time. The City of Las Vegas, Clark County, the State of Nevada and Bureau of Land Management offer a scattered collection of parks, trails and other public lands throughout the Northwest region. It is not an interconnected system, and it does not address issues critical to successful growth management. It can best be described as being the result of the development process. In other words, the spatial arrangement of open space is the remnant landscapes, or left over parcels of land. This is depicted in the map below.



2.4.3 Facility Descriptions

A number of images can be found on this and the following page that exemplifies different elements of open space in Northwest Las Vegas. The photos depict existing parks, trails, open space areas, powerline corridors and ranch/agricultural lands.

The images above depict typical park facilities of the Northwest region of Las Vegas.

Photos depict current trails throughout the Northwest region of Las Vegas.

Photos depict other types of open space, including ranch lands in the Northwest region.

2.5 Current Plans

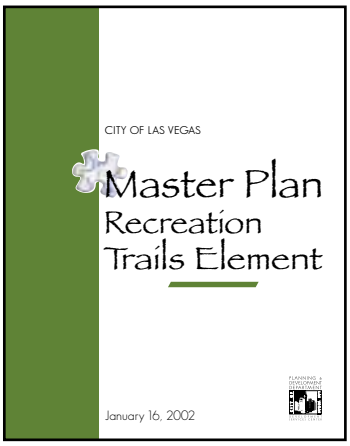
Over the past decade there have been a number of plans that recommend open space and recreational improvements applicable to the Northwest Area. Foremost and most applicable are the *City of Las Vegas Master Plan Parks Element* and the *Transportation and Recreation Trails Element*. Both studies conclude a need for substantial additional facilities in the Northwest region. Some of the documents are pictured here with brief descriptions of their findings and recommendations.

1) Recreation Trails Element: City of Las Vegas Master Plan, January 2002

A stand-alone document and part of the Las Vegas 2020 Master Plan, this element, "establishes standards, guidelines, objectives, policies, and priorities for the location, development and maintenance of recreational trails in Las Vegas." The document divides the trail types into two groups: Recreational Trails and Multi-use Recreational Trails. Maps have been included that depict both proposed and existing trails of both types. For the most part, the recreational trails are equestrian trails and are designed to connect to horse farms in the area and outside the city boundaries.

The document includes many recommendations. Some of the most significant ones are:

- Trails should be provided by developers in conjunction with the development of property.
- Existing and future parks should be integrated with the trails system and should provide appropriate trailhead amenities.
- Edges of hard-lined flood control facilities and natural drainage courses should be used for trails and should include appropriate landscaping. The Clark County Regional Flood Control district must approve trails near arroyos and drainage channels.



The document restates the findings from the 1992 Las Vegas General Plan (section 3G) that the rural nature of the NW area makes horse stables and equestrian activities popular. It also states that the large lots and zoning allow these sorts of activities and therefore the community's equestrian trails system should be developed in this area.

2) Southern Nevada Regional Policy Plan, February 2001

This is a Regional Action Plan and Vision Statement for managing growth cooperatively throughout the Las Vegas Valley. The report was required under the 1999 Assembly Bill 493, passed by the Nevada Legislature, and builds on previous work completed by the Southern Nevada Strategic Planning Authority. It serves as a status report of the region, including comparisons between the Las Vegas Valley and other major metropolitan areas in the Southwest.

The Regional Policy Plan promotes general concepts such as efficient use of land in the Valley, allowing the conversion of land from rural uses to other uses, and preservation of natural resources. It calls for a regional trails and open space plan and the implementation of flood control systems that also provide trails and recreational facilities.

3) Southern Nevada Regional Planning Coalition: Regional Growth Summits, Draft Executive Summary, September 2003

In 2003, two years after the Regional Policy Plan was produced, the community held a regional summit/workshop to address the question of, "How do we get to our goal?". The Draft Executive Summary briefly describes the summit process and some of its outcomes. Key findings in the document are: 1) There continues to be a need for and interest in regional collaboration, and 2) There continues to be a need for and interest in the creation of a Regional Plan for Parks, Recreation, and Open Space.

4) Transportation Trails Element, City of Las Vegas Master Plan, January 2002

This element of the Las Vegas 2020 Master Plan focuses on multi-use transportation trails and on-street bicycle trails. It includes maps and descriptions of opportunities for expansion of the system over the next two decades, and establishes a goal of locating a multi-use transportation trail within one mile of every location in our study area. A primary function of this trail system is to mitigate the impact of additional vehicular traffic.

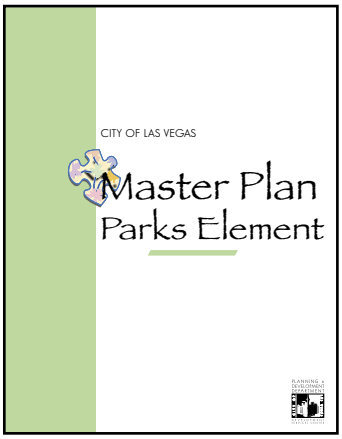
Two recommendations found in the Transportation Trails Element are: 1) Form a regional trails agency to work with city and private entities on trail maintenance, and 2) Most of the trails in new development should be constructed by the developer. The document also noted several pertinent policies from the Las Vegas 2020 Master Plan:

- All downtown parks and open spaces should be linked with non-vehicular corridors or routes.
- The city encourages the development of parks that link with trails and ped-bike traffic plans.
- City coordinates the planning, development, and construction of a Valley-wide trail system.
- Areas along the edges of hard-lined flood control facilities and along natural drainage courses should be utilized as public trails and walkways.

5) Parks Element, City of Las Vegas Master Plan, March 2000

According to the document's Executive Summary, "The purpose of the Master Plan Parks Element is to provide a strategy for an adequate amount of parks and recreational facilities in convenient and accessible locations to best serve the needs of the community." As the writers of the document worked towards this goal, they evaluated existing parks based on spatial distribution, quality, size, and type of recreational facilities available. The document catalogs all existing parks (year 2000) and offers some discussion about different classifications of parks, e.g. school parks, golf courses, regional parks, and neighborhood parks.

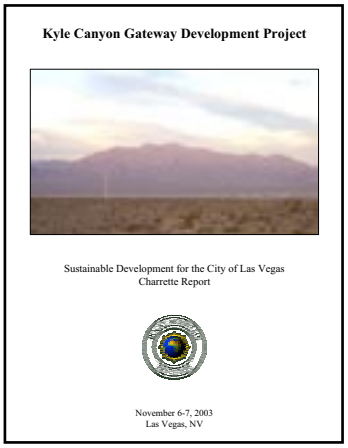
Two particularly relevant findings are:



- There is a current need (year 2000) for additional tennis courts, volleyball facilities, driving ranges, jogging tracks, and swimming pools.
- The fringe area (BLM lands) around the City boundaries is better suited than city parks for passive natural areas.

6) Kyle Canyon Gateway Development Project, Sustainable Development for the City of Las Vegas, Charrette Report, November 2003

In February 2005, the BLM is scheduled to auction off the Kyle Canyon Gateway site – approximately 1,600 acres of currently undeveloped land. In November 2003, the Rocky Mountain Institute managed a charrette that was designed to allow citizens and interested parties the opportunity to give input regarding the character of the potential development at this site. This report summarizes the Charrette process and findings.



The vision for this 1,600 acre development includes: 1) minimizing water use to 50-100 gallons/person/day, 2) net-zero electricity use on an annual basis, 3) multimodal transportation infrastructure that minimizes congestion, and 4) landscape principles that leave the natural corridor along arroyos undeveloped, protect the views of the mountains, and achieve a variety of types of open space which is linked by trails.

7) Floyd Lamb State Park Development Plan, 1987

This plan includes historical background information on the park and the region, addresses potential influences on the park, identifies the natural and cultural resources within the park, and defines a general strategy for the continued development and management of the facility.

The document notes on page 1-2 that "uncertain future water availability forms the primary environmental factor in development and management of this park." The report continues to say that the Las Vegas Valley Aquifer is overdrawn. Scattered throughout the plan are pieces of information or reference to studies that have evaluated local recreational needs and interests. Page 2-5 notes the significant unmet need for biking and hiking trails in the area. It is also mentioned that statewide studies find significant interest by Nevadans in protecting their historic heritage.

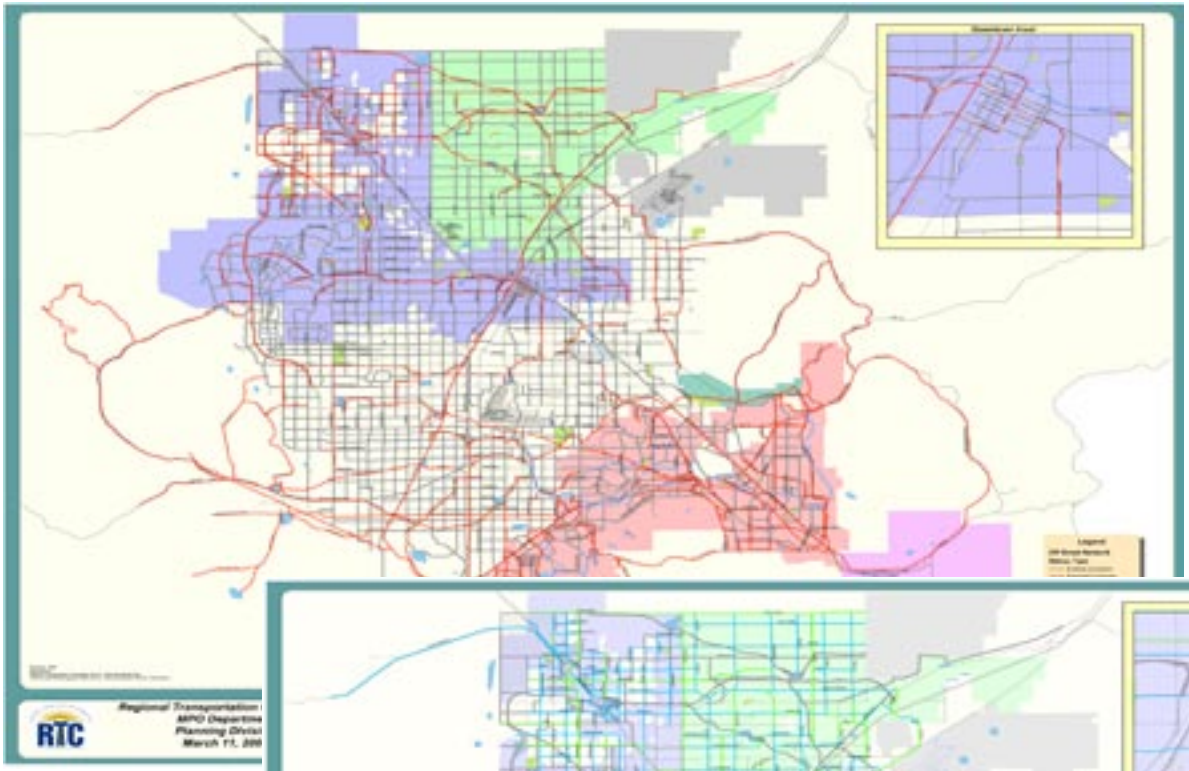
8) Regional Transportation Plans

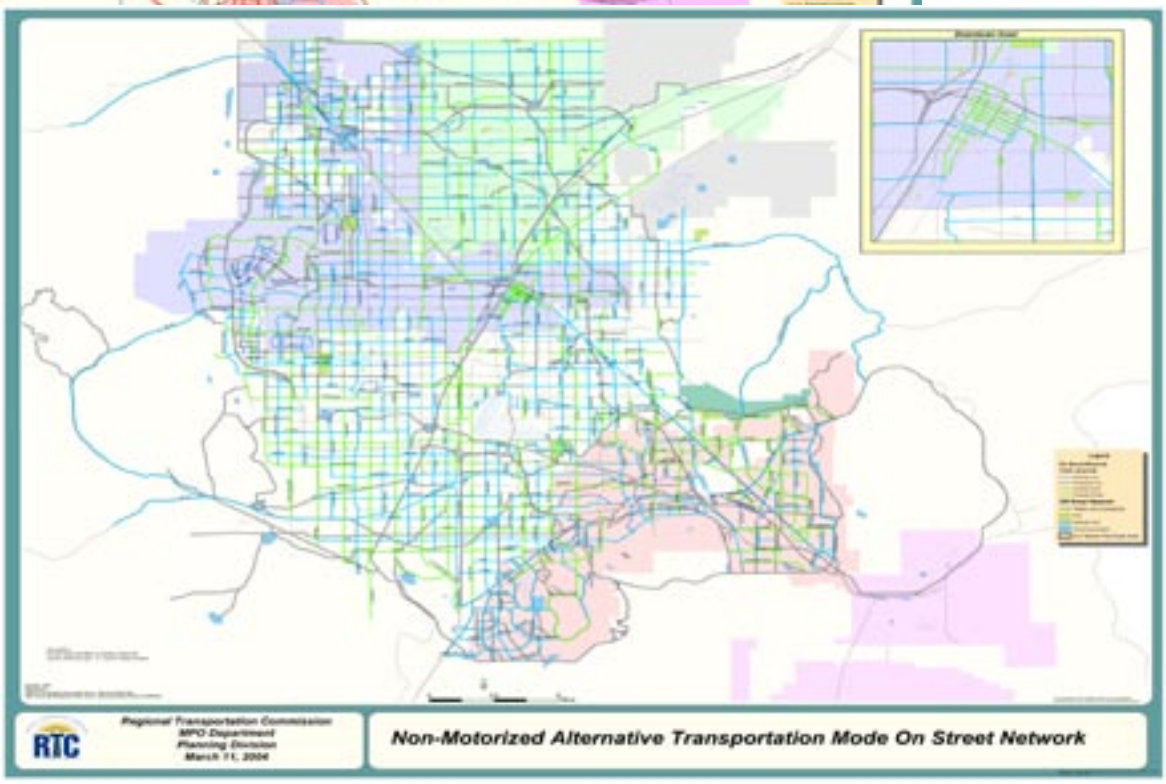
In every community across the country, regional level transportation plans affect the timing and nature of transportation system improvements. These plans are updated regularly and include traditional transportation planning for vehicular traffic as well as separate elements that address transit options, and bicycle/pedestrian options. In the Las Vegas area, studies such as the Las Vegas Valley Transit System Development Plan (2001) and the Alternative Mode Master Transportation Plan (2001) have served as material for the creation of the primary transportation planning document for the region, the Regional Transportation Plan (RTP) for FY 2004-2025.

The Bicycle and Pedestrian Element (BPE) of this document is of particular importance to the open space planning effort in Northwest Las Vegas. It provides guidance for the long-term development of bicycle and pedestrian facilities in Clark County and has integrated the goals of the Nevada Bicycle Advisory Board and the TEA-21 goals. These sets of goals call for maximizing safety; enhancing connectivity to schools, recreation facilities, and employment areas; and protecting the environment, promoting energy conservation, and improving quality of life.

Specifically, the BPE promotes the implementation of a network of signed bike routes, bicycle lanes, and shared use paths. Issues such as opportunity, connectivity, trip length, proximity to public facilities,

safety, and cost were all factored into the evaluation of locations for bicycle facilities. Other information in the BPE includes: design details that define each of these types of facilities, information on overall bicycle facility financing, and expectations regarding implementation and maintenance.





9) Clark County/City of Las Vegas Interlocal Agreement (2002)

The Interlocal Agreement between the City of Las Vegas and Clark County significantly affects the nature of planning and implementation of open space and trails in Northwest Las Vegas. The agreement establishes joint policies on corporate boundaries, annexations, land use planning, transportation planning, parks and trails planning, and urban services. Born out of requests from citizens of Northwest Las Vegas, the plan creates a framework for future growth in their communities. One important component of the Agreement is a provision for some large rural areas in the County to be exempt from annexation by the City while a Joint Land Use Planning Area for the rest of Northwest Las Vegas designates areas where annexation and more dense development may be appropriate. The exemptions allow for the protection of the rural lifestyles chosen by some of the Northwest Las Vegas residents. The Agreement also calls for specific, coordinated roadway designs that provide ample shoulder space for future non-motorized uses. Perhaps most important to this planning process though, the Interlocal Agreement prompted the creation of new plans for parks and for recreational trails and for the creation of a joint recreational trails map.

2.6 Land Ownership/Use Patterns

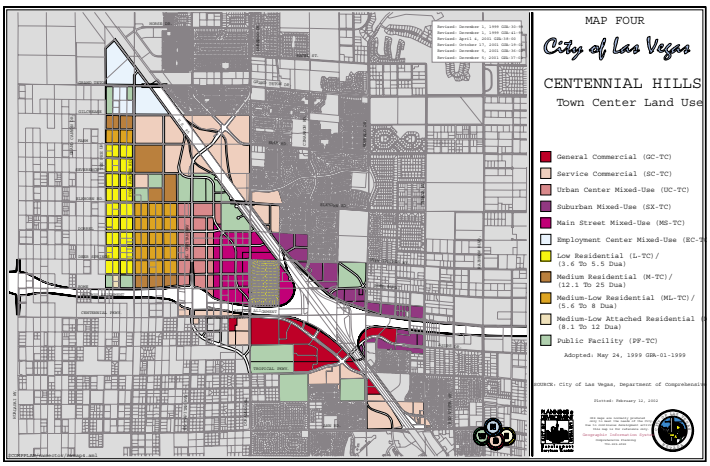
The pattern of land use in the Northwest region can be generally divided into four categories: predominantly residential, agricultural and ranch lands, commercial, and public lands.

In general, the predominantly residential areas can be found along the southern and central portions of the project area and development is rapidly expanding north along the boundary with the city of North Las Vegas. West of Highway 95 and into the Northwest quadrant of the project area, there are pockets of residential growth, with largely undeveloped areas separating them. These areas along with some of the completely undeveloped sections of Northwest Las Vegas are considered the BLM expansion areas.

The agricultural and ranch area is an island of land that sits in the north eastern quadrant of the project area and is surrounded by the residential communities. The commercial uses are spread out across the Northwest region in close proximity to residential areas. One commercial area that deserves special mention is Town Center. In essence, this is a new “downtown” for the Northwest region.

Horse and Ranch Areas

This region of Northwest Las Vegas was quite rural and remote in the recent past. These days it is nearly surrounded by booming development of schools and houses. At the heart of this part of the city, one can scarcely be convinced that he is in the City of Las Vegas. Paved throughways give way to dirt roads, block wall barriers become wire and rail fences, and manicured lawns are replaced by calf barns and feeding troughs.



Targeted Commercial Area

As the residential growth continues further and further from Downtown Las Vegas, commute times and traffic concerns also grow. To alleviate some of this pressure, the City has envisioned a new, northern downtown area that would provide the commercial opportunities that residents of the Northwest can now only find in more southern parts of the City. Eventually, a thriving downtown is envisioned for this part of the project area.

Chapter 3: Needs Assessment

3.1 Introduction

Residents of Northwest Las Vegas are often inspired by, awed by, and emotionally connected to the vast open areas that have historically defined the Las Vegas Valley. While most want modern lifestyles complete with convenient access to shopping, work, and the local park, surveys show they also want to protect the feel and character of their desert home.

The consultants' research found that residents want to be active in the outdoors and want facilities that support their varied activities. On the whole, they respect the climatic and natural resource constraints of living in a hot, arid climate – though they tend to push for a little extra green and a few more shade trees than would be found here naturally.

In essence, Northwest Las Vegas residents want safe, inspiring, convenient, thoughtfully designed trails and open space areas. They are generally satisfied with much of the work that the City of Las Vegas has recently accomplished to develop and maintain parks, but they have some very clearly unmet needs. To determine the gap between what is present on the ground and what the community would like to see, the consultant engaged in a number of exercises designed to solicit input regarding the community's wishes, expectations, and appropriate levels of service.

Each of these exercises is described in this chapter along with a summary section at the end of the chapter that considers all of the inputs collectively. This needs assessment serves as the foundation for the Plan, which offers a set of physical and policy recommendations as well as an implementation strategy and timeline.

3.2 Level of Service Assessments

Over the past several decades, the *National Recreation and Park Association* (NRPA) has recommended standards for the provision of park and recreation facilities in communities. Using these and other standards, park planning professionals often use the term "level of service" or "LOS" to calibrate how well the needs of a community are being met by existing and planned facilities.

For purposes of this Plan, LOS could be described as a measurement of supply versus demand for open space, greenway, trail and other "passive" recreational facilities that serve residents of the Northwest area. ("Passive" generally refers to non-competitive and non-team sports activities such as walking, bicycling, picnicking, horseback riding, wildlife viewing and enjoying open space.) LOS information for active parks is also considered as derived from the *2002 Parks Element of the Las Vegas Master Plan*.

Clearly the distance to, and availability of, facilities is an important factor in determining whether a community adequately serves its population with recreational facilities. Factors such as actual physical distance; hours of operation; crowding and level of accessibility to users of all ages, income groups and abilities must be considered. Another important factor is whether there are barriers such as busy highways, drainageways and other land uses or constraints that prevent or limit access.

While optimal distances and population ratios for active parks have been fairly well defined by national standards, access to trails, greenways and open spaces have been less specific, though this is changing. Recent surveys by the *American Association of Home Builders* and *National Association of Realtors,* for example, (see www.nahb.com/news/smartsurvey2002.htm) suggest a high demand for readily-accessible trail and open space facilities. Walking, jogging and bike trails

ranked 2nd from the top of the "important to very important" list of amenities and a 1994 Survey by *American Lives, Inc.* showed that 77% of consumers ranked natural open space as a "must" deliver. *American Trails, Inc*., a national trails and greenway advocacy organization recommends accessible trails within 15 minutes of every American home. The implication from these and other findings is that there is a strong desire for trails and open space within convenient walking distance.

The typical LOS analysis tabulates a classification list of types of parks, open space and recreation facilities by distance in miles from users and the size of the population served within the service radius. For example, the *2002 Las Vegas Master Plan Parks Element* (Parks Element) indicates a desired ratio of 5-10 acres of neighborhood parkland within a service radius of ¼ to ½ mile of residents served.

The Parks Element also establishes a goal of 2.5 acres of park space per 1,000 residents. This goal was originally established by the Southern Nevada Strategic Planning Authority (SNSPA). However, an overall ratio of 6.25 to 10.25 acres of all types of active-use parkland per 1000 population has been used by the NRPA. The lower Las Vegas standard of acceptability reflects in part the community's proximity to a number of large national and state level resources as well as a large number of publicly accessible (if not pricey) golf courses. These nearby resources relieve some of the burden for recreational lands that might otherwise be borne by the City and County. This allows the local governments to establish a lower ratio for their provided amenities.

The Parks Element suggests that to reach their 2.5 acre per 1,000 people goal, a minimum of 84 additional neighborhood parks should be constructed in Las Vegas between 2000 and 2020. A portion of these would be developed in Northwest Las Vegas.

Using NRPA guidelines for LOS can be helpful in measuring how well community needs are met and in defending planned future investment in facilities. However, it should be pointed out these guidelines have their limitations. First, the standards address only a limited range of classifications of park, recreational and open space amenities. Second, the standards do not differentiate by community, demographics, climate, region of the country, market and other factors. For example, there may be myriad types of recreational activities popular in the Northwest Las Vegas area such as equestrian activities that may not enjoy the same popularity in Detroit, Cleveland or Chicago. Third, the LOS standards do not offer measurable quantities of several kinds of facilities such as natural resource areas, greenways and trails. In addition, the 1995 NRPA *Park, Recreation, Open Space and Greenway Guidelines* publication, the latest standards guideline in use, does not list specific LOS ratios for open space.

For this and other reasons, the NRPA has more recently taken the stance that fixed numerical standards may be too limited to be applied across the board as a sole determinant of LOS. Rather, NRPA recommends that the unique demographic, market preferences, trends and environment factors of each community be considered as well. Therefore, NRPA guidelines and similar LOS standards should be taken as only one benchmark for comparison and a number of other factors should be considered. Some of these include:

- Demographic and leisure activity trends
- Opinion surveys
- Comments at public forums by user groups and stakeholders
- Input from planning professionals and public officials
- Market reckoning
- Studies on the benefits of open space, natural parks and trails

- Comparisons to other communities regionally and nationwide

Some communities around the nation have recommended numerical standards that might be useful as a starting point for determining additional LOS figures for Northwest Las Vegas. For example, the *New Jersey Green Acres Program* suggests "balanced land use" guidelines in its 1999 recommendations. It suggests that individual municipalities set aside 3% of their developed and/or developable areas for recreation. The guidelines also advocate that counties set aside 7%.

The *National Park Service* standards (dating back to 1966) recommend .5-miles of bike trail and .5 miles of foot trails per 1000 population, though it should be noted that urban trail use has increased substantially since 1966.

Studies in San Diego—a community with population, demographic and other similarities to Northwest Las Vegas might be of some use. The San Diego study suggests a minimum baseline of .84 miles of trail per 1000 residents within 15 minutes travel time. At the Northwest region's projected build out population of 320,000, this suggests a need for a minimum of 268 miles of trail.

The Trails Component of the Las Vegas Master Plan 2020 reports that an average rate of trail development in larger cities in the southwestern United States falls between 3.75 and 5.68 miles of transportation trail per 100,000 residents.

CITY / ENTITY	NET ACRES / 1000 POPULATION *
Albuquerque, New Mexico	4.2
Clark County, Nevada	1.1
Henderson, Nevada	1.7
Las Vegas, Nevada	1.1
North Las Vegas, Nevada	2.3
Scottsdale, Arizona	2.5
SNSPA	2.5
Tucson, Arizona	4.3
Yuma, Arizona	5.4

Comparison of Park Acreage: Parks Element, Las Vegas Master Plan

Comparison of LOS to other communities locally and nationally is a useful benchmark for evaluating level of service. As the table depicts, the City of Las Vegas is substantially deficient in park space acreage (table does not include open space areas).

3.3 Community Attitude Surveys

Two community attitude surveys have been completed in the area over the last few years. In 1999, the *Quality of Life in Las Vegas* telephone survey was conducted by the City of Las Vegas Planning and Development Department. That survey concluded that parks and recreational areas and protection of the environment ranked as "very important" (the highest ranking) to the people of Las Vegas, but that people were only moderately satisfied with the current park and recreation facilities and marginally dissatisfied with protection of the environment.

Significantly, the survey showed that 30% of respondents would increase funding of park and recreation facilities and 67% would maintain the current level. More than half of those surveyed would pay increased taxes to protect the environment.

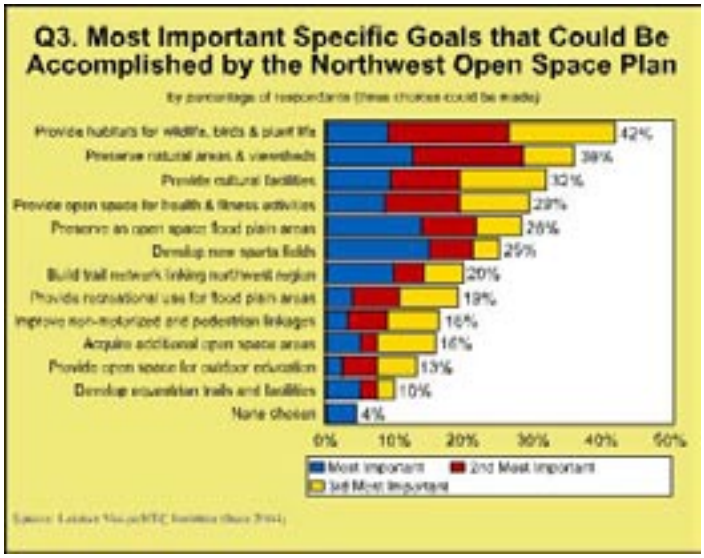
During May and June of 2004, as part of this Open Space Plan the *Community Attitude and Interest Survey* was conducted by the ETC Institute, Olathe, KS, to help establish priorities for the planning of parks, trails, open space areas and outdoor recreation facilities within Northwest Las Vegas. The survey was designed to obtain statistically valid results from households throughout the Northwest region. The survey was administered through a combination of mail and telephone contact.

The results of 688 household respondents, with a 95% level of confidence and a precision of at least +/- 3.7%, include:

- 83% of respondent households have visited City of Las Vegas parks during the past year. 91% of respondents rated the physical condition of all the City of Las Vegas parks they have visited as either excellent (35%) or good (56%).

- From a list of 12 specific goals that could be accomplished by the Northwest Open Space Plan, respondents rated very important (the highest rating) “provide habitats for wildlife, birds and plant life” (61%); “preserve natural areas and viewsheds” (59%); and “preserve as open space flood plain areas” (54%).

- Respondents were also asked to select the three goals they think are most important. “Provide habitats for wildlife, birds and plant life” (42%) is the goal that the highest percentage of respondents selected as one of the three most important. There are two other goals that over 30% of respondents selected as one of the three most important, including: “preserve natural areas and viewsheds” (36%); and “provide cultural facilities” (32%). It should also be noted that “develop new sports fields” had the highest percentage of respondents select it as their first choice as the most important goal.

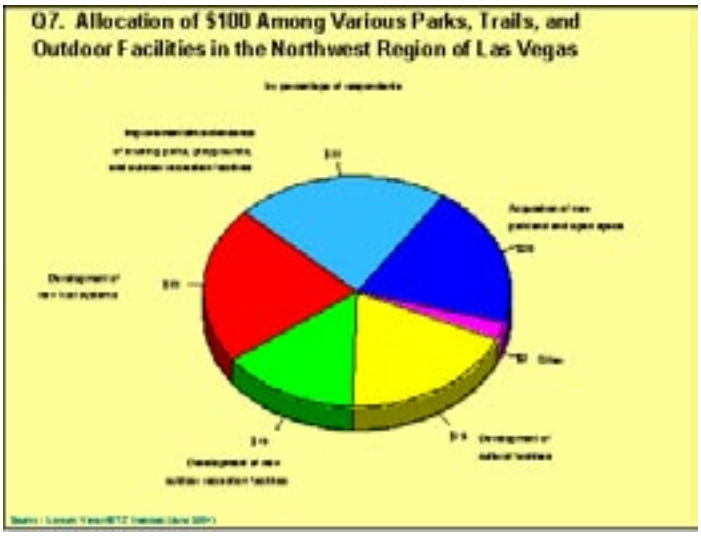


- The parks and facilities that the highest percentage of respondent households indicated they have a need for include: walking and biking trails (76%); natural areas/wildlife habitats (68%); small neighborhood parks (67%); cultural facilities (66%); picnic shelters/areas (65%); large community parks (61%); zoos (55%); and outdoor swimming pools/water parks (52%).

- The parks and facilities that had the highest percentage of respondent households indicate that the facility 100% meets their needs includes: large community parks (32%); playgrounds (31%); skateboarding parks (30%); small neighborhood parks (29%); and senior activities (26%). It should also be noted that all 25 of the listed facilities had less than one-third of respondent households indicate that their needs are being 100% met by the facility.

- Walking and biking trails had the highest percentage of respondents (43%) select it as one of the four most important facilities. There are three other facilities that over 25% of respondents selected as one of the four most important, including: small neighborhood parks (33%); natural areas/wildlife habitats (29%); and cultural facilities (28%). It should also be noted that small neighborhood parks had the highest percentage of respondents select it as their first choice.

- Eighty-five percent (85%) of respondents indicated being either very supportive (64%) or somewhat supportive (21%) of the City protecting various areas as natural landscapes by using them for projects such as walking, biking, and equestrian trails.



- Respondents were asked how they would allocate $100 among five categories of funding for parks, trails, and outdoor facilities in the Northwest region of Las Vegas. The above chart and text below summarize these findings:

  Respondents indicated they would allocate $22 out of every $100 to the development of new trail systems, and an additional $22 to the improvements/maintenance of existing parks, playgrounds, and outdoor recreation facilities. The remaining $56 was allocated as follows: acquisition of new parkland and open space ($20); development of cultural facilities ($19); and development of new outdoor recreation facilities ($15). The remaining $2 were allocated to "other."

- Eighty-six percent (86%) of respondents felt it is either very important (42%) or somewhat important (44%) for Las Vegas to fund outdoor parks, trails, and recreation facilities compared to other priorities for the Northwest region.

3.4 Public Comments

Separate from the community attitude surveys mentioned in the previous section, the consultant team regularly asked for citizen input at public meetings. In May of 2004, City of Las Vegas planning staff and members of the consultant team held two community open house meetings. At those meetings, the process for this planning project was introduced along with discussion about the expected outcomes of the project and the concerns and interests of the participants. At the end of the meetings, participants were given the opportunity to complete a brief comment form that requested information about the participants' intended use of open space and trail facilities, about the degree to which the current facilities met their needs and what suggestions they had for future facility design and development.

Large, multi-use community parks and walking trails were the two categories of use that most of the respondents claimed they were most likely to use in the next year. When asked what facilities they would like more of, there was regular interest in more trail opportunities and more equestrian facilities - specifically, a large, centralized equestrian facility where rodeos and other group equestrian events could be held.

There were also a number of recommendations that requested improved connectivity between individual trail segments as well as to destination points such as residential, commercial, and recreational locations. A continued, general expansion of both the park and trail system was broadly requested when the forms were examined collectively.

Appendix A contains a more detailed report on the results from the comment forms and from the most recent survey.

3.5 Conclusion

Comparison of survey data from the 1999 survey (the City of Las Vegas) and the 2004 survey (Northwest Las Vegas only) it appears that Northwest residents are generally more satisfied with the quality of the parks they now have than are the residents of the city as a whole. However, both groups suggest a clear interest in dedicating greater effort to the development

of more park, recreation, and open space resources, with particular interest in natural area protection, water quality protection, trails, and the protection of scenic viewsheds.

At the same time there is a significant portion of the community who wish, above all else, to have more sports fields. It seems then that in the Northwest, the protection of natural areas, scenic areas, trails, and water quality is of significant importance among all groups, but among a large subset of the Northwest Las Vegas community, the need for additional playing fields is of primary importance.

The most recent survey showed that additional walking, biking and equestrian trails is a very commonly perceived need. It also shows that while those citizens who have what they believe is good access to small and large parks are particularly pleased with these resources, those that do not have what they believe as good access feel it is quite important to have those facilities provided.

The desired character of these new facilities is generally discernible through examination of the survey responses in conjunction with the individual comment forms that were returned at public meetings. This examination suggests that greater trail connectivity is needed as well as, simply, many more trail options. Among lower and moderate-income residents of the Northwest area, access to public facilities is a significant interest. Trails that support equestrian use and that provide links between important destination points are often requested. In the end, it seems that most of the community would be pleased with an approach that blended natural area protection, flood hazard mitigation, and provision of additional trails for biking, walking, and equestrian use.

It also appears that the citizens of Northwest Las Vegas are comfortable with having a healthy percentage of their tax dollars spent on parks, open space and natural area protection. They support a fairly equal division of those funds among land acquisition, park development, trail development, and maintenance. As a full group, they would spend the least amount on provision of new recreation facilities, but again the subset that has a greater need for new facilities (particularly playing fields and equestrian facilities) feels strongly that this should be a priority.

It is useful to note that the *Nevada State Comprehensive Outdoor Recreational Plan (SCORP)* lists “public access to public lands for diverse recreation”, “funding of parks and recreation”, and “recreational trails and pathways” as the three top priorities identified in its surveys and research.

The collected group of findings presented in this chapter, when combined with some of the information presented in Chapter 2 - Existing Conditions, suggests that the Northwest area is currently underserved - and may be significantly underserved in the near future - by park, trail, open space and recreational facilities unless these amenities are significantly expanded and improved. There is a desire for a readily accessible trail and open space network within walking distance of residences and places of employment. The network should be useful, safe and suitable to a wide range of users including pedestrians, bicyclists, and equestrians. There is a strong demand and desire for park, recreation and open spaces and a significant segment of the population is willing to invest additional tax dollars to realize these benefits.

Chapter 4: Open Space System Recommendations

4.1 Overview

Native landscapes, undeveloped land, habitat for plants and animals, and scenic vistas were defined to be the most highly desired types of open space by respondents to the *Community Attitude Survey* conducted for this Open Space Plan.

This rapidly diminishing resource, especially throughout the Northwest region, has become increasingly important to Las Vegans because it connects people to the natural places that surround them, beautifies their community, provides places of solace and inspiration and improves their quality of life, even for those who don't visit or interact with these landscapes. In numerous studies nationally, open space has been shown to increase property values, lower community infrastructure costs, and improve health and wellness. In addition, open space provides vital urban infrastructure, absorbing stormwater runoff during heavy rainstorms, collecting and storing drinking water in underground aquifers, reducing fire hazards, and promoting a healthy urban plant and animal ecology.

Throughout Northwest Las Vegas, there are two distinctly different types of open space that add value and function to the landscape. The first is non-programmed, unprotected, natural open space, which consists of arroyos, washes, and other desert landscapes. These lands protect the fragile ecology, native plants and animals that inhabit the desert. The second type is programmed, protected open space, which consists of parks, trails and lands that are owned and managed by the City, Clark County, State of Nevada, the United States government, and private sector landowners, including non-profit land trusts. Approximately 3,000 acres of protected open space currently exist within Northwest Las Vegas. An estimated 1,200 acres are currently owned by the City of Las Vegas.

The purpose of this Open Space Plan is to protect both types of open space, which in the future can be devoted to 1) the preservation of natural resources, 2) outdoor recreation, 3) preservation of historic and cultural property, 4) protection of scenic landscapes, and 5) protection of public health, safety and welfare.

4.2 A Target for Open Space Protection

The Northwest region is growing at such an accelerated rate, significant change to the landscape occurs every 30 days. The City of Las Vegas needs to adopt aggressive policies and programs that balance growth with natural resource conservation. The city is in need of a **stewardship** program that protects valued open space before it is permanently lost to development. Other communities throughout the United States have used an open space goal or target to publicly declare the community's intent to balance growth and development with land conservation. The consultants for this Plan recommend that the City of Las Vegas establish a planning goal of protecting 30% of the land in the Northwest Region as future open space. This 30% goal is recommended as a minimum target based on the ecological, social, economic, and political realities of Las Vegas and is designed to ensure a quality of life in the 21st century that is progressive, sustainable, healthy and economically viable. The 30% goal would be applied to the Northwest region as a whole and not parcel-by-parcel.

Reaching this goal will not be easy. It will cost money, it will involve more stringent land use planning, and it will create a greater stewardship responsibility for the City and its residents. Thirty percent permanently protected open space will require Las Vegas to balance its rate of land development with an increased rate of conservation and protection.

However, the City is not expected to achieve the goal all by itself. This Plan defines a strategy for how this goal can be accomplished through partnerships with other public sector and private sector partners.

The 30% open space goal is not a product of a scientific formula, but rather, is based on understanding two land planning concepts - ecological carrying capacity and an appropriate balance between developed and undeveloped land. The first concept relates to the city's need to sustain plant and animal habitats, ensure good air quality, and protect native desert ecosystems. These pursuits were one of the top rated open space goals derived from the *Community Attitude Survey* completed as part of this Open Space Plan. The second measure is human related and deals with economic and political realities, values associated with aesthetics, sense of place, and maintaining sufficient recreational opportunities.

The practice of combining these two measures to determine an appropriate conservation target is the state-of-the-practice land use planning philosophy, emerging across the country. The city need look no further than its own community to see where a 30% open space goal has been successfully implemented. Within the award winning community of Summerlin, approximately 30 percent of the 25,000 acre planned community has been designated as open space. The Summerlin Open Space network includes passive and active parks, trails, recreational facilities, golf courses, the Summerlin Trail System, landscaped areas and natural preserved areas. Of this, almost 20 percent of the open space is designated as parks, trails and golf courses, and approximately 15 percent of the community is dedicated to the preservation of natural areas such as washes, arroyos and desert canyons. Furthermore, the Urban Land Institute study of 1997, the Southern Nevada Regional Policy Plan of 2001, the Kyle Canyon Gateway Development plan of 2003 and the City of Las Vegas Parks and Recreation Master Plan of 2002 all recommend that the city take a much more aggressive approach to resource conservation and natural areas protection.

The consultant recommends that the city work with its public sector partners to achieve this goal. First, we recognize that the city and its public sector partners have already protected a significant amount of open space in the Northwest region. Further protection measures directed toward new land development and at the protection of arroyos and washes would net additional acreage and could be pursued by the city and its partners. Finally, a program of targeted acquisition would fulfill the established 30% goal for open space protection.

The summary chart on this page and map (Figure M3) on the following page illustrates how the 30% goal could be achieved by the City of Las Vegas and its partners.

Northwest Las Vegas Open Space		
Category of Land	**Acres**	**Percent of Total Open Space**
City of Las Vegas Open Space (Exist)	1,200	3.75%
Clark County Open Space (Exist)	1,540	4.81%
State Nevada Open Space (Exist)	460	1.44%
BLM (Exist)	2,000	6.25%
Protected Arroyos*	1,200	3.75%
Open Space from CSD*	1,500	4.69%
Targeted Acquisitions*	1,700	5.31%
(* future open space)		
Total Projected Open Space	**9,600**	**30.00%**
Total Land Area of Northwest	**32,000**	

Figure M3: Illustration of 30% Goal for Open Space Protection

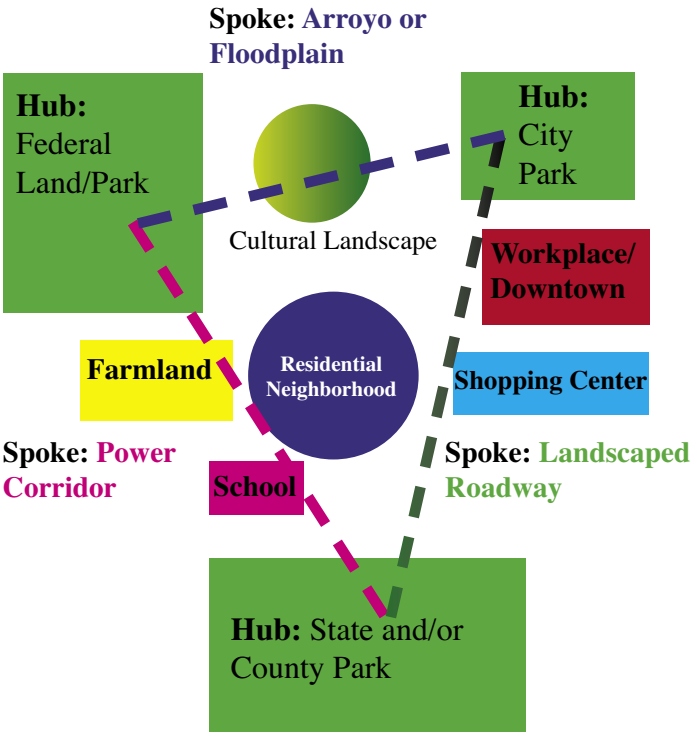
4.3 Conceptual Open Space Framework

Connections to the land are one of the most tangible products of this Open Space Plan. The physical framework of the Northwest Open Space Plan is based on a popular national concept known as "Hubs and Spokes." Under this concept, residential, commercial and business landscapes are linked to parks, preserves and open spaces via greenway corridors. For residents of the city, this will mean improved access to the outdoors for recreation; non-automobile transportation; and participation in activities that can improve health, fitness and quality of life.

As an element of the city's transportation system, multi-purpose trails are aligned along roadways within ample rights-of-way that accommodate bicycle, pedestrian and equestrian trails. Trails should also be built along the edges of arroyos and washes, and within existing power line and historic railroad rights-of-way. In addition to the city's multi-purpose trail corridors, private trails within neighborhoods provide connections to the city's system, offering a web of interconnected landscapes that allow residents to travel throughout the Northwest region of the city.

4.3.1 Hubs and Spokes

The hubs and spokes concept determines that within any given landscape there are areas of land that serve as either traffic generators and/or destinations for human activity. Additionally, there are landscapes that communities should appreciate for their ecological value and work to protect from encroachment and development. These origin and destination hub landscapes are linked by a variety of "spokes" or linear landscapes that include arroyos, landscaped roadways and utility corridors. The hubs and spokes model provides for maximum connectivity between origin landscapes and destinations (illustrated in the graphic above right).



Northwest Las Vegas residents clarified through personal surveys that connections was one of the most important issues for the Open Space Plan.

4.4 Open Space Components

The framework for the Open Space system can further be defined by different landscape components that respond to areas of interest and need defined by Northwest residents. As defined through the personal surveys and public workshops, there are four primary areas of need and interest, including:

- protection of natural systems that provide a resource for passive recreation,
- active recreation landscapes,
- historic and cultural landscapes, and
- contiguous open space that links landscapes together.

4.4.1 Passive Recreation/Natural Systems

Northwest residents are most interested in protecting and conserving the native desert landscapes, wide open spaces and natural ecosystems that once dominated the region, and served as a primary attraction for many current residents. This is probably the most difficult element of open space to maintain in light of the exponential growth in the region. These passive landscapes consist of the native desert ecology for plants and wildlife, arroyos and uninterrupted vistas of the Northwest region.

4.4.2 Active Recreation

Traditional parks that contain baseball, softball, soccer, and lacrosse fields, water play areas, picnic tables, restrooms and meeting halls, are very much in demand throughout the Northwest region of the city.

4.4.3 Historic and Cultural Landscapes

An emerging need and desire of Northwest Las Vegas residents is to afford greater protection of historic and cultural landscapes that define and express the unique culture and heritage of the Las Vegas Valley. These include ranch lands, Floyd Lamb State Park, archaeological and paleontological sites, Tule Springs, the historic stagecoach road, and the historic railroad corridors.

4.4.4 Contiguous Open Space (Trails)

Being connected to the popular destination landscapes of the Northwest region will require a series of contiguous open space corridors. Northwest residents want an abundant supply of these corridors, and they want some of these to be off and away from roadways.

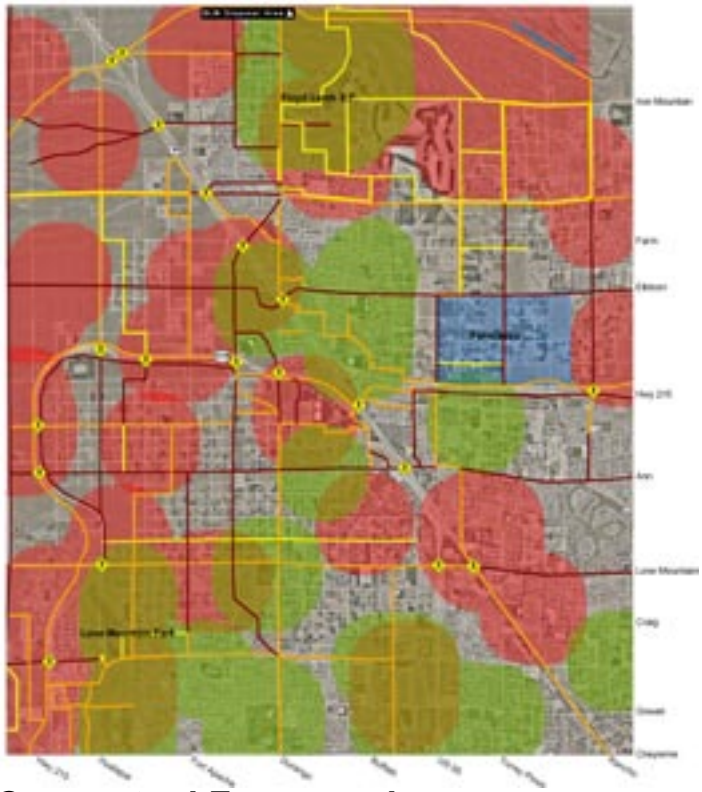
The Plan considers two types of contiguous open spaces: human activity corridors (trails) and wildlife/visual corridors. Trails provide recreation, transportation, health and wellness, and connectivity. Wildlife and visual corridors link together large open space lands (federal, state, county and city) and form an open space and visual backdrop for the greater Las Vegas area. Major elements of this system include the Las Vegas Wash corridor that links the Desert National Wildlife Refuge to Lake Mead and a potential to link the Wildlife Refuge to the Red Rock Canyon National Conservation area via the Kyle Canyon landscape. The consultant has defined this

as the ***Vias Verdes of Las Vegas***. The Vias Verdes will in the future be a contiguous, open and publicly accessible landscape, with sensitive areas such as wildlife habitat, archaeological and paleontological lands, surrounding the Valley and offering residents and tourists with access to one of the most spectacular desert landscapes in the world.

The Northwest Parkway offers Las Vegas residents with an opportunity to create a corridor that supports a variety of human activity and movement. Principally developed as a transportation corridor, the Parkway should be designed and developed to incorporate multi-use trails for hiking, biking and equestrian activity. The Parkway should link residents to other important destinations of the Northwest region.

4.5 Conceptual Framework Map

The consultant team used the four primary component landscapes of open space, and input from community residents, to produce a conceptual framework map that depicts how the hubs and spokes concept would be implemented in Northwest Las Vegas. This map illustrates existing community parks (dark green) future community parks (light green), a network of trails (yellow and red) and an area of ranch lands and local farms (blue) that comprise an important cultural landscape. Also emerging from the conceptual framework plan is the Northwest Cultural Park, a 2100-acre assemblage comprised of Tule Springs, Floyd Lamb State Park and property currently owned by the State of Nevada and BLM. The conceptual framework map represents a first step in illustrating how the hubs and spokes concept is applied to the Northwest Region.



Conceptual Framework
Northwest Open Space Plan

4.6 Northwest Cultural Park

The Northwest region of Las Vegas contains a collection of important federal and state owned land that offers the city with a unique opportunity for future conservation, park and recreation oriented development. Our research shows that currently, the Las Vegas valley has a deficient supply of cultural landscapes and venues that serve the interests and needs of residents and visitors alike. While it is fully understood and appreciated that the community's primary economic engine is the gaming industry, the city is afforded with an opportunity to invest in non-gaming landscapes and venues that could broaden its economic base and appeal to other leisure interests.

Specifically, the federal and state owned assemblage of land surrounding and east of the Floyd Lamb State Park could, if effectively conserved and programmed, be transformed into a destination landscape that could serve certain non-gaming interests that have been identified through the Northwest Open Space Plan process. Some of these interests are currently identified as:

a) Equestrian Park (see Appendix B)
b) Model Railroad Park
c) Archaeological Park

By virtue of establishing the Northwest Cultural Park, the city would also be able to create an effective program for accomplishing other open space goals for the Northwest region, including the development of important stormwater detention basins, protection of archaeological sites within the Tule Springs and Early Man corridor, protection and future enhancements for the Las Vegas Springs Wash corridor, future alignment and development of the Northwest Parkway and associated interchanges, routing and location of Nevada Power transmission lines, buffering and protection of the Desert National Wildlife Refuge landscapes, future development of the Clark County Shooting Range, open space buffers for neighborhoods and agricultural properties south of the assemblage, and linkage for a network of emerging multi-use and equestrian trails in Northwest Las Vegas, Clark County and North Las Vegas.

The approximate 2100-acre assemblage offers ample space and opportunity to accommodate these separate interests, and if effectively planned and designed could create an interconnected and interdependent destination landscape that we will now refer to as the "Northwest Cultural Park." Additionally, if this cultural park is established as a fee-entry park, revenue generation could support operations and management requirements for all venues and potentially result in spin off revenue necessary to support the revitalization and operation of Floyd Lamb Park. The resulting revenue from these successful enterprises could provide the city with operational funds necessary to negotiate the transfer of the park property from the State of Nevada and cover other costs. The consultant recommends that the city conduct a thorough economic analysis of this fee-entry facility.

Other American communities have recognized the importance of identifying and developing a variety of large-scale destination parks in close proximity to urban centers to provide metropolitan residents and visitors with access to cultural and native landscapes. Nashville, TN is currently developing an 850-acre

site on the Cumberland River as an environmental park to celebrate rural settlement patterns and native landscapes. Charlotte, NC has benefited from the private development of the Anne Springs Close Greenway, a 2,000-acre environmental park, located 20-minutes from downtown, where equestrian, hiking, canoeing, fishing and environmental studies are the primary activities. Denver, CO has invested a significant amount of resources in the transformation of the Rocky Mountain Arsenal into an environmental park that promotes a better understanding of native landscapes and habitat. Chattanooga, TN is currently launching a program to transform 2,800 acres of former federally owned land into a cultural and environmental park. These are but a few examples of an emerging trend by American communities to establish large-acreage parks and cultural landscapes to protect important resource areas and develop venues that support both passive and active recreation.

This Plan defines a regional framework and implementation strategies for protecting important viewsheds, landscapes and corridors. The specific design for the proposed Northwest Cultural Park is not a component of the current scope of work for the Open Space Plan. This Plan provides conceptual definition for the proposed Park and suggests space allocation for individual venues. However, more detailed design development and programming will be required to advance this idea from concept to reality.

Finally, there are a number of sponsors associated with each of the venues identified for this proposed Park. These venues already have specific design requirements and planning teams who are prepared to execute project development once land is secured. The city has access to planning and design monies that have been allocated for a proposed 320-acre equestrian park, which is one of the parcels included in the assemblage. It may be possible to use portions or all of these funds to support a more detailed examination of how this Cultural Park could be developed, operated and managed.

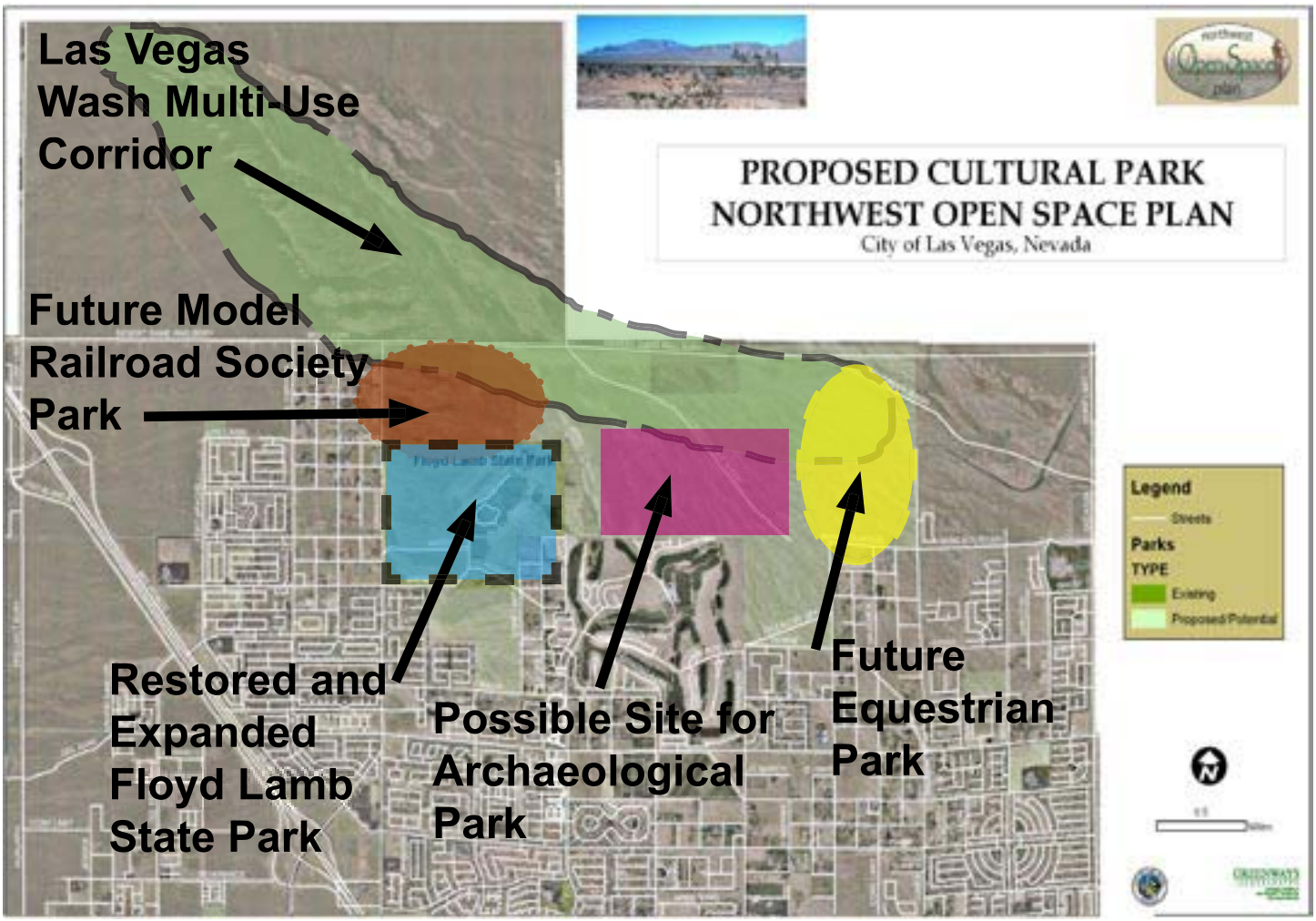
The planning, design and development of the proposed Northwest Cultural Park is an opportunity for the City of Las Vegas, State of Nevada and Bureau of Land Management to effectively partner together and resolve the future land use for 2100 acres of prime real estate. This Cultural Park could become the centerpiece of a park, recreation and open space network that will serve to improve the quality of life for Valley residents for many years to come.

4.6.1 Floyd Lamb State Park

An “oasis” in the high desert landscape, Floyd Lamb is a asset unique in the Valley. Currently, thousands enjoy the lakes, surrounding historic character; however, this area could be significantly improved through restoration and renovation to become a major destination. Under this proposal, Floyd Lamb would be transferred from the State of Nevada to the city. Proposed extensive renovations to the grounds and lakes would be carried out to enhance the interaction between people, water and the landscape it supports, maintaining a green jewel in the desert. While Floyd Lamb has been a state park, serving the needs of Nevada residents, under this proposal it becomes part of a new city and regional park for residents of Las Vegas Valley.

Improvements could include walking paths, shaded picnic and rest areas, overnight camping facilities, historic interpretation sites, potentially model farm/ ranch for education, interactive plant and animal habitats, and other complementary activities.

This renovation effort would include infrastructure upgrades to include entry road, parking, management facilities, water and sewer lines and other utilities, expansion of existing ponds, trails and green areas.



The goal of the overall plan would be to make Floyd Lamb accessible to surrounding neighborhoods and metro Las Vegas through a system of interconnected trails that support hiking, bicycling and equestrian activities.

Figure M6: Concept Plan for the Proposed Northwest Cultural Park

The above concept plan depicts the possible locations for various elements of the proposed Northwest Cultural Park. This map is provided for information purposes only and is not intended to represent the final mix of activity centers, land use, or location of activities. A separate planning and design process for the Northwest Cultural Park will be conducted by the City of Las Vegas in partnership with federal, state and other local partners, and citizens of the City to determine the future design and implementation for this park.

4.6.2 Northwest Equestrian Park

In addition to Floyd Lamb State Park renovations, a long-awaited and often promised equestrian park would emerge within the Northwest Cultural Park. The City of Las Vegas should team with the Horse Council of Nevada to conduct a thorough economic feasibility study for the proposed equestrian park to accurately determine revenues and expenditures that would be associated with the full function of this park. The City should seek out a private sector partner that could assist the community in developing the park. A specific proposal for the Equestrian Park has been submitted by the Horse Council of Nevada and is incorporated in this document as Appendix B of the Northwest Open Space Plan.

4.6.3 Railroad Society Park

The Las Vegas Railroad Society has also long dreamed of being able to construct a railroad park that would serve as an attraction for residents and visitors to the City. The proposed Northwest Cultural Park affords the City and the Railroad Society with an opportunity to consummate a partnership to build the park. The Society estimates that it needs 100 acres of land to fulfill its mission for a high quality railroad park that will generate revenues to support its operation, and contribute to the financial well-being of the Cultural Park.

The Railroad Society has support from many different interest groups and anticipates that it will be able to raise the majority of the capital necessary to build and operate the park.

If properly planned, designed and operated, the Railroad Society Park could be compatible with and an enhancement to other venues of the Northwest Cultural Park. The City of Las Vegas should partner with the Railroad Society to complete a financial feasibility study to determine the costs and revenues associated with the future development of the park.

4.6.4 Archaeological Park

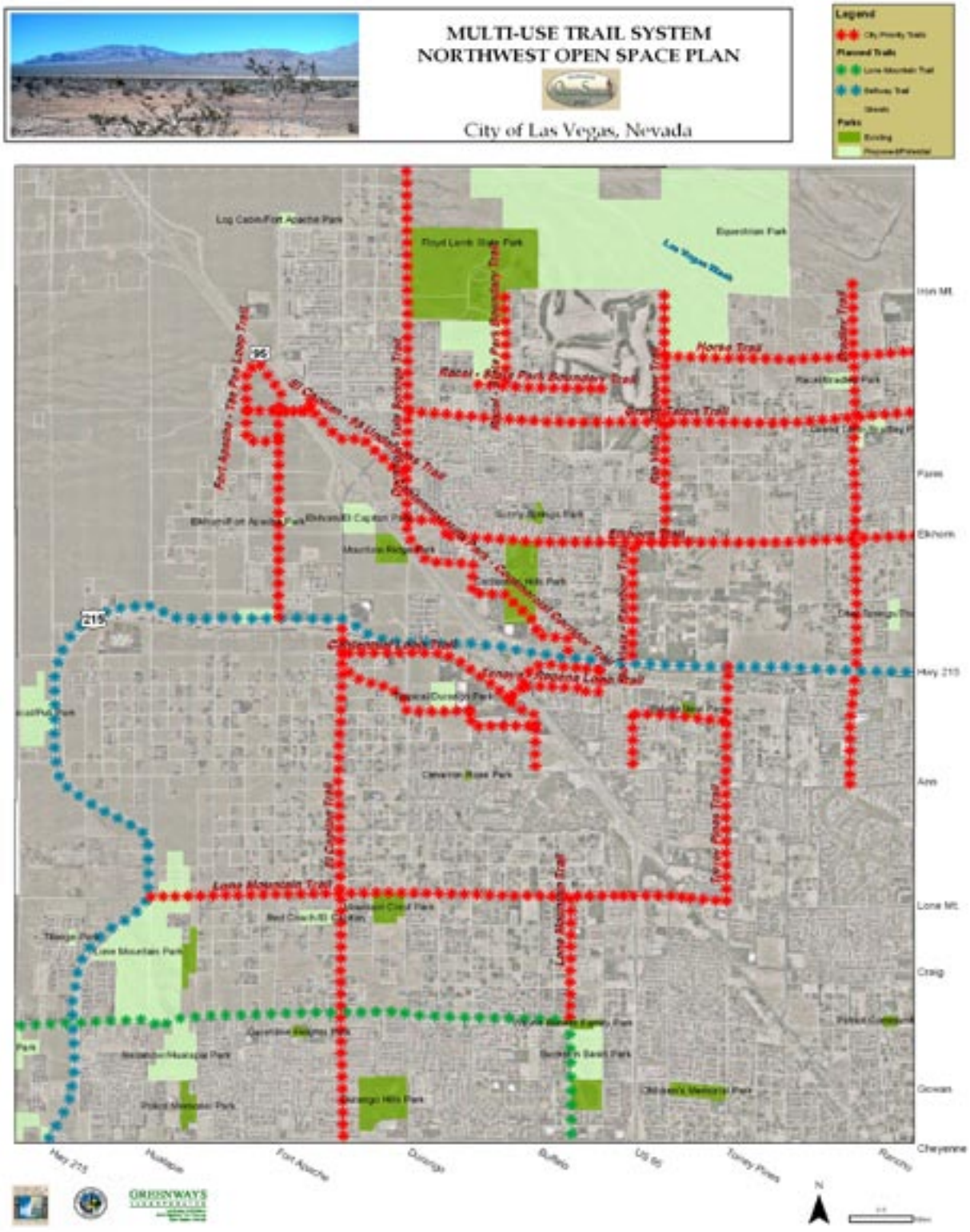
The Northwest region of Las Vegas is rich in archaeological and paleontological resources. The city would benefit tremendously from an investment in an archaeological park. This park could be developed in partnership with state and federal agencies, and also in partnership with the City of North Las Vegas. Such a park would enable residents and visitors to explore the natural and cultural history of the Las Vegas Valley within a nationally significant landscape.

It would also enable the city to protect and conserve these landscapes for future generations of Valley residents.

It is envisioned that this park could be established as part of the Tule Springs and Floyd Lamb State Park complex. The park might include an exhibit center, interactive laboratory for volunteers to be trained in the science of archaeology and paleontology. The park should also include a docent program, interactive exhibits, guided tours and dig sites for youth and adults.

The City should conduct a financial feasibility study to determine the possible costs and revenues associated with the future development of this proposed park.

Figure M4: Northwest Trails System



4.7 Northwest Trails System

Trails in Northwest Las Vegas would be expanded from the current condition and used to link residents to popular destinations. The future trails system would also serve as an alternative transportation route for local and city-wide commuting traffic, and as a way for tourists to be linked from downtown to the Northwest region. Please refer to Map M-4 for a schematic of the Trails System and see Chapter 6: Implementation for a detailed discussion of each trail corridor.

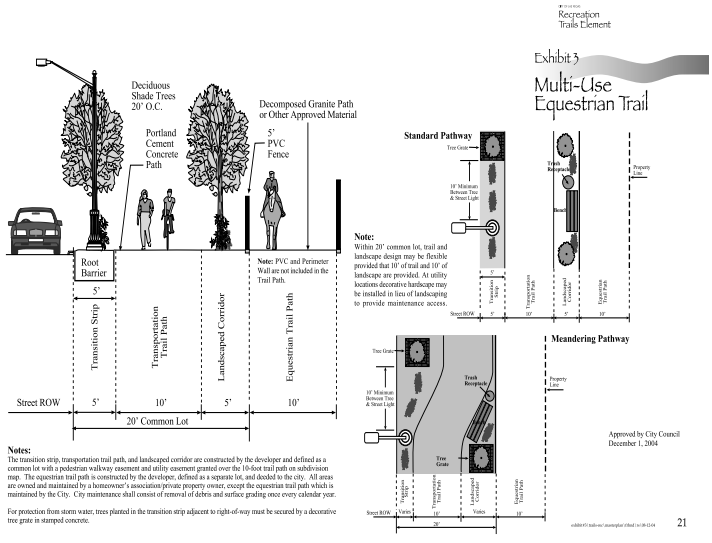
The trails system is comprised of several elements, including off-road multi-use trails, roadside multi-use trails, equestrian trails, bicycle routes and sidewalks.

4.7.1 Off-Road Multi-Use

Currently, off-road multi-use trails comprise a very small percentage of the total trail mileage in the Northwest region. This is the single most requested trail type based on public input received during the planning process. Despite this strong level of need and interest, it is unlikely that the percentage of off-road multi-use trails will substantially increase, mainly because there are very few naturally occurring or human-made corridors that can host such trails in the Northwest region.

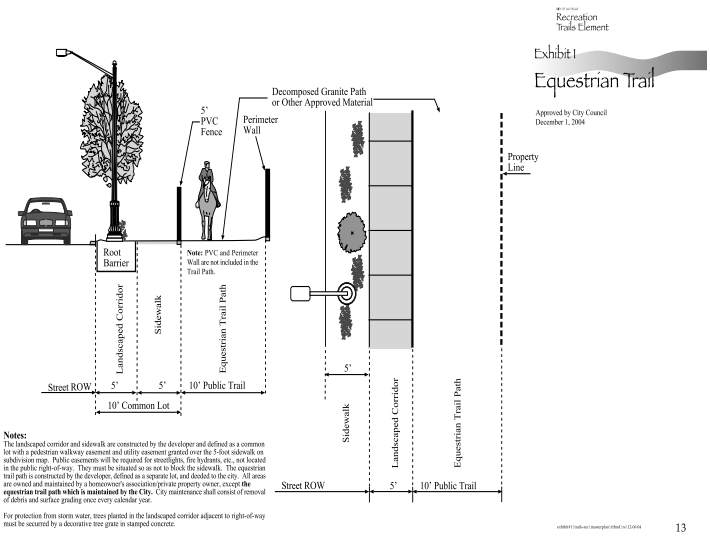
4.7.2 Roadside Multi-Use

Roadside multi-use trails comprise the greatest percentage and mileage of trail types in the Northwest region. The City of Las Vegas has done an excellent job of placing these trails within the ample rights-of-way throughout the Northwest region. These trails offer the public with the best opportunity for connectivity and link residents and tourists alike to the most popular activity centers and destinations in the Northwest region.



4.7.3 Equestrian Trails

The most vocal group in support of trails are equestrians, who happen to be represented in significant numbers throughout the Northwest region. It is not uncommon to drive around the northern parts of the Northwest Las Vegas and see homes with horse stalls in the backyard. Equestrian trails will be expanded throughout the Northwest region to accommodate the demand and need for these facilities.



4.7.4 Bicycle Routes

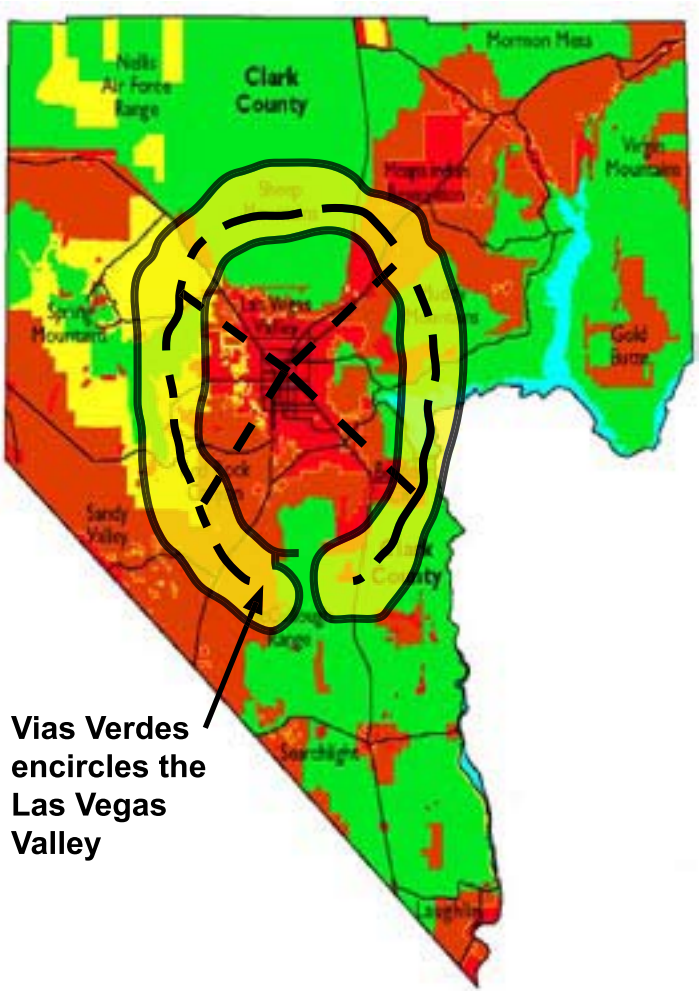
In addition to multi-use trails, on-road bicycle routes will also be expanded to accommodate commuting traffic throughout the Northwest region, and to link tourists from the downtown area to the region.

4.7.5 Sidewalk Trails

Sidewalks are currently found throughout the Northwest region. Some serve as elements of the multi-use trails previously described, others are simply pathways for pedestrians. Linking sidewalks to the trails network is a very important element of the Northwest region.

4.8 Vias Verdes Las Vegas

In addition to the multi-use networks of trails and open space in the Northwest region, the City of Las Vegas and its partners have a unique opportunity to establish an open space corridor consisting of publicly owned lands that surround the Valley. *Vias Verdes Las Vegas* would consist of federally owned, state owned and locally owned lands extending from Lake Mead to the Sheep Mountains to the Red Rock Canyon National Conservation Area and would form one of the most significant natural resource corridors in the United States. This horseshoe shaped network of open land protects the visual backdrop of the Valley, conserves habitat for plant and animal communities native to the desert Southwest, can be used to mitigate urban flooding, and also opens for public access and use, thousands of acres of land for environmental study and recreational use. The consultant recommends that the city work in partnership with the Southern Nevada Regional Planning Coalition to take steps necessary to establish the Vias Verdes as an important open space element of the Southern Nevada region.



Vias Verdes encircles the Las Vegas Valley

The National Park Service's Rivers, Trails and Conservation Assistance Program is cooperatively leading a Las Vegas Valley-wide effort where local, regional and federal jurisdictions are identifying and planning trail connectivity. The City of Las Vegas is actively participating in this effort and hopes to lead the way in linking residents and visitors to the nationally significant recreational areas that surround the Valley.

4.9 Open Space Policies

Several open space policies are defined within this Plan that should be considered, incorporated and adopted as practice by the City of Las Vegas. These policies address areas of land use planning and governance where the City can improve in order to better conserve natural resources and encourage more compatible growth and development.

4.9.1 Encourage Higher Density Development

For the Northwest region it is apparent that the City and Clark County will need to consider encouraging higher density development in order to maximize natural resource protection goals. Land costs in the Northwest region are approaching or exceeding $250,000 an acre for raw land, making open space conservation a difficult voluntary option for landowners and developers. The City and County should consider minimum densities of 8 units to the acre and revising land development codes to increase the amount of open space required in future land development scenarios.

The Zoning Code and Subdivision Ordinances for the City of Las Vegas do not contain a clearly stated development option that specifically minimizes the impact of development on sensitive natural features by clustering development on the more suitable portions of the site. In the absence of this option, it is possible that some of the existing codes can be used to achieve a similar result. In the existing codes, there are development options that are designed to maintain rural character through low density and large lot development patterns. There are also high-density residential options for more suburban and urban landscapes and options for large-scale and small-scale planned development communities. The wording of these development options suggests that their primary function is not the protection of natural areas or scenic viewsheds, but rather the efficient provision of residential amenities, economic development, or comprehensively planned communities.

Three existing options provide the greatest potential at present. A summary of their strengths and weaknesses is below:

<u>P-C Planned Community District</u>

The P-C District option is only available to developments on at least 3,000 contiguous acres of land. This type of development is rare, so the rules and regulations associated with this development option will also be rarely applied. In addition, achieving a true conservation perspective under this development provision depends on the good will of the developer. It is not specifically mandated in the language. This is due, in large part, to the fact that the essential goal of this option is not conservation, but the development of a comprehensively planned community. In the end, there are too many ways to achieve 20% open space that do not really meet true conservation goals - which regularly depend on the set aside of wider, larger areas instead of narrow swaths of landscaping. The positive side of this option is that it does promote comprehensively planned communities. Environmental systems tend to be protected through this type of scenario better than in more “piecemeal” approaches. Conservation is an option for a developer under this development provision.

<u>R-PD Residential Planned Development District</u>

This is a development option for tracts of at least 5 acres. The stated purpose of this option is to be flexible in permitting imaginative and innovative residential design. This allows for creative conservation, but does not require it. It is another option whereby conservation depends on the interest of the developer. One particular strength of this option is that, according to the open space formula provided in 19.06.040.G, as the developer increases his density he must also increase the amount of required open space. However, later in this section, it is made clear that the open space can be made up entirely of landscaping along streets and some

developed community recreational facilities. These types of land use offer no guarantee of ecological protection.

PD Planned Development District

"Encourage the conservation of open space" and "preserve natural features" are two of the intentions listed for this type of development option. A developer may well choose to use this option for these reasons, but there is really nothing in the language that requires a minimum target level of conservation.

Recommendations

The City of Las Vegas should consider some of the following recommendations:

- A new chapter could be created under Article 19 that covers "Flexible Options for Natural Area and Scenic Viewshed Protection." This chapter would detail the density exchange and clustering options available to a developer in exchange for setting aside different percentages of open space above the existing 20% already required. All open space set asides above the 20% should be used for off-road trail facilities; passive, un-modified, non-motorized recreation areas; natural area preserves, or wildlife habitat sanctuaries. No credit should be given for additional ROW areas, paved/constructed recreation centers, or parks designed for active recreation.

- Alternatively, a completely new option could be created for a Conservation Subdivision Planned Development. Model language for this type of amendment is available. These model ordinances can be quite lengthy and it may be prudent to simply lift text from portions of them to add to the existing Las Vegas codes and ordinances.

- Another (or additional) option is the creation of a "Natural Area Protection" clause for specific residential and planned development zones/ districts. This clause would establish minimum conservation requirements for these individual districts, effectively turning them into conservation-oriented development options. Some language change would be needed earlier in the document, where these districts are introduced, which specifies the natural area and viewshed protection orientations of these development options.

- Flexibility can be built into the "required minimums" articulated in the code for each of the different districts. Narrower (perhaps private) streets and smaller setbacks might be considered in exchange for setting aside additional percentages of the site as open space (as described above, not as described in 19.06.030.G – Open Space and Landscape Area Requirements for the Planned Community District).

- Section 19.060.050.D should specifically require that developers include a map of natural features, viewsheds, habitat areas, and noteworthy vegetation in their rezoning application. Similarly, sub-section F should clearly state that approval of the Master Development Plan may be dependent on the degree to which natural features have been preserved.

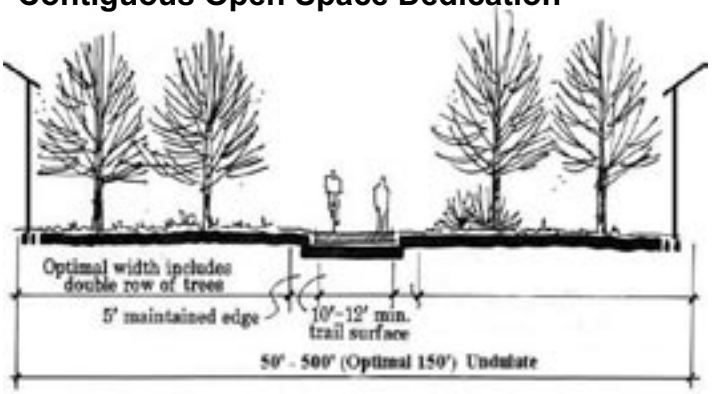
- Other slight modifications might be made in sections 18.30.030-050 (Mitigation Fees) to reduce the fees for developers who choose a conservation subdivision design. This would be consistent with the Land-in-Lieu practice articulated in 18.030.090.

- Some language modification may be necessary in the Open Space rules defined in the Urban Design Guidelines and Standards section on Site Planning.

4.9.2 Open Space Dedication

The city should also revise the minimum dedication requirements of land development code to require 10% dedication of **contiguous** open space throughout the Northwest region. The city should require a minimum open space width of 100 feet and desired width of 300 feet. The width of the corridor should undulate to reflect natural contours. The open space should be accessible to residents of the neighborhood and connect to other contiguous open space lands that abut the development. The developer should strive to protect natural arroyos from development as conveyance for stormwater flow. The open space should be designed to be a quality landscape that enhances the neighborhood and surrounding landscapes.

Contiguous Open Space Dedication



4.9.3 Conservation Subdivision Design

One land development practice that the city should consider is Conservation Subdivision Design (CSD). Using CSD, the yield of a particular property slated for development would be similar to that of a conventional subdivision design. However, instead of parceling out all of the land into private lots, conservation subdivision design arranges houses and buildings on a site so that natural landscape features remain open, undeveloped and in common or public ownership. Using CSD principles, it may be possible to conserve as much as 1500 acres of open space during the land development process.

4.9.4 Drainage Buffers

Protecting natural arroyos and floodprone landscapes is an important element of this Open Space Plan. This can be achieved by establishing buffers along arroyos throughout the Northwest region. National studies have shown that buffers can reduce flooding, support plant and animal habitat, and promote ecological functions necessary to naturally clean pollutants from water. This strategy can be implemented immediately by the city for all arroyos and washes in the Northwest region of the City. This plan recommends that City of Las Vegas establish

a buffer program for all arroyos within the Northwest region. These buffers should also be wide enough to accommodate the development of multi-purpose trails for recreation and transportation purposes. The City of Las Vegas should work in close partnership with the Clark County Flood Control District to implement this buffer ordinance. The tendency in Clark County and the City is to use concrete lined culverts, ditches and conveyance structures to channel rain water. This plan recommends the use of natural design and engineering practices to protect some of these native arroyos, drainage areas and floodplains in the Northwest region (photo below).

Chapter 5: Stewardship, Operations & Management

5.1 The Concept of Stewardship

A well-managed open space, trail and park system is critical to the long-term success of this Plan. This includes both stewardship and operations and management. By "stewardship" we mean the oversight of resources. This includes such activities as monitoring the condition of open spaces and recreational resources, monitoring the impact of growth on open spaces and long-term application of policies—such as land-use and development measures—in accordance with the objectives of this Plan. Stewardship might range from cleaning up litter to assuring that a project does not visually scar a mountain backdrop.

The stewardship process must consider both private sector—such as land subdivision and development, and public sector activities—such as the construction of roads and utilities. In pursuit of this, coordination among agencies at the local, regional, state and federal level is vital to ensure that these activities are supportive of the Plan and complementary to each other. Long-term stewardship also calls for the enduring commitment of agency staff, elected officials and concerned citizens all working together. This suggests the need for a shared community vision and value system centered on the protection of open space and outdoor recreation resources. This Plan and similar plans can help coordinate and guide that action.

Equally important is committed community and agency staff leadership. To that end, the creation of or perhaps continuation of the existing Open Space Advisory Committee and Technical Work Group entities would be very helpful. These groups should be identified, assembled and agree to timely meetings, communications and information sharing. Activities might include: review of critical public and private sector projects that might impact open space as they come on line; identifying and pursuing recommended open space projects; pursuing grants; establishing cooperative agreements; monitoring of operations and maintenance and other advocacy functions now and over the years to come.

Stewardship of sensitive resource areas such as desert open space, washes and uplands should include:

- Vegetation, weed and pest management plans (including eradication, prescribed burns and Integrated Pest Management (IPM))
- Ecosystem management that focuses on maintaining and improving functionality and species diversity
- Featured species management that addresses threatened and endangered , keystone, indicator and other identified plant and animal species

- Special lands management that addresses areas such as deserts, riparian areas, and other resources of special natural, cultural or urban infrastructure value

5.2 Operations and Maintenance

Operations and maintenance refers to the specific day-to-day tasks and programs to ensure resources and facilities are kept in good usable condition. This begins with sound design, durable components and a comprehensive management plan. The plan should be embraced by the responsible entities at the beginning of the implementation process. Programs and protocols should be instituted—including training of field and supervisory personnel—that will endure. In addition, community groups, residents, business owners, developers and other stakeholders should be engaged in the long term stewardship of the resources preserved and enhanced by this Plan as discussed above.

5.2.1 Facilities Maintained

The Operations and Maintenance (O & M) program should address the following elements:

- Natural Open Spaces
- Landscaped Open Spaces and Corridors
- Arroyos and Drainageways
- Greenways and Greenbelts
- Buffer Spaces
- Wildlife Habitat and Movement Routes (including nuisances and pests)
- Off-Street Multi-Use Trails
- Road-Side Multi-Use Trails
- All-Terrain/ Primitive Trails
- Trail-Related Corridors (landscaped and open space areas)
- On-Street Bicycle Routes (bike lanes, bike routes, and streets used for biking)
- Trailheads
- Sidewalks and Streetscapes
- Wayfinding Signage, Fixtures and Furnishings (on-street and off-street)
- Regulatory and Safety Signage
- Tunnels, Underpasses, and Street Crossings
- Passive Parks and Cultural Destination Parks and Landscapes
- Access Parking and Maintenance Roads
- Active Parks Systems (under current agency maintenance programs)

5.2.2 Functional Areas of Operations and Maintenance

An effective O & M plan should include the following areas:

- Maintenance—Routine and Remedial
- User Safety and Risk Management
- Programming and Events
- Resource Stewardship and Enhancement
- Oversight and Coordination

5.2.3 Routine and Remedial Tasks Defined

Routine Maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, trail sweeping, sign replacement, tree

and shrub trimming and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacements such as fixing cracks and potholes or repairing a broken hand railing. Routine activities also include crime prevention, law and regulation enforcement, search and rescue, and user education.

Remedial Maintenance refers to correcting significant defects as well as repairing, replacing or restoring major components that have been destroyed, damaged, or have significantly deteriorated during the life of the project. Some items ("minor repairs") may occur on a five to ten year cycle such as repainting, seal coating asphalt pavement or replacing signage. Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction remedial maintenance include stabilization of a severely eroded hillside, repaving a trail surface or a street used for biking or replacing a footbridge. Remedial maintenance should be part of a long-term capital improvement plan.

5.2.4 Guiding Principles for Effective Operations and Maintenance

The Northwest Las Vegas open space, trails and park system should be viewed and maintained as a public resource. Indeed it will become infrastructure similar to the street system or utility networks serving the community for generations to come. The following guiding principles will help ensure the preservation of a first class system:

- Good maintenance begins with sound planning and design
- Foremost, protect life, property and the environment
- Promote and maintain a quality outdoor recreation experience
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals
- Maintain quality control and conduct regular inspection
- Include field crews, police and fire/rescue personnel in both the design review and on-going management process
- Maintain an effective, responsive public feedback system and promote public participation
- Be a good neighbor to adjacent properties
- Operate a cost-effective program with sustainable funding sources

5.3 Operations/Maintenance Tasks

Following is a summary of specific O & M tasks:

5.3.1 Opens Spaces, Trail-Related Corridors and Resource Conservation Areas

- Inspection and Citizen Response
- Vegetation Management
- Irrigation Systems (where applicable)
- Stream/Wash Channel Erosion Maintenance
- Litter and Trash Removal
- Graffiti and Vandalism Control
- Pest and Feral Animal Management
- Dust Reduction
- Fire Management
- Maintenance of Signage, Fences and Structures
- Patrol, Security, Enforcement, Safety Hazard Reduction
- Accident and Incident Data Tracking

5.3.2 Off-Street and Roadside Multi-Use Trails

- Inspection and Citizen Response
- Trail Surface Maintenance

- Sweeping
- Vegetation Management
- Irrigation Systems (where applicable)
- Litter and Trash Removal
- Graffiti and Vandalism Control
- Dust Reduction
- Repair Trail Structures/Erosion
- Rest Areas, Shelters and Water (Including Equestrian) Stations
- Toilet Facility Service
- Remedy "Social Trails" (such as shortcuts)
- Address Detours/Disruptions
- Maintain Connecting On-Street and Sidewalk Routes
- Patrol, Security, Enforcement, Safety Hazard Reduction

- Accident and Incident Data Tracking
- Special Event Policies and Permitting

5.3.3 All-Terrain Trails (such as foot paths, single-track "mountain" bike, equestrian and nature trails)

- Inspection and Citizen Response
- Surface Repair
- Vegetation and Pest Management
- Litter and Trash Removal
- Graffiti and Vandalism Control
- Irrigation Systems (where applicable)
- Dust Reduction
- Repair Structures
- Remedy Social Trails
- Rest Areas, Shelters and Water (Including Equestrian) Stations
- Patrol, Security, Enforcement, Safety Hazard Reduction
- Special Event Policies and Permitting
- Accident and Incident Data Tracking

5.3.4 On-Street (bike routes and bike lanes)

- Inspection and Citizen Response
- Street Surface Upkeep and Repair
- Street Sweeping
- Repaving and Pavement Overlays
- Signage, Striping and Lighting
- Vegetation Management
- Graffiti and Vandalism Control
- Education and Enforcement
- Detours/Disruptions
- Accident and Incident Data Tracking

5.3.5 Trailheads

- Inspection and Citizen Response
- Mowing/Vegetation/Pest Management
- Litter and Trash Removal
- Graffiti and Vandalism Control
- Fixture Repair
- Parking Lot Repair
- Incident Data Tracking

5.3.6 Sidewalk and Streetscape

- Inspection and Citizen Response
- Repair
- Sweep
- Vegetation Management
- Fixture Maintenance
- Accident and Incident Data Tracking

5.3.7 User Safety and Risk Management

- The City of Las Vegas should implement a safety program that includes: systematic

risk management assessment, inter-agency design review for all proposed improvements, and accident and crime reporting. In addition to department managers, planners, designers and engineers, police and fire/rescue and field maintenance personnel should be consulted in the design and review process. In pursuit of this concept, the Las Vegas Metropolitan Police Department has been effectively pursuing the D.I.C.E. (Ditch Improvement Collaborative Effort) program that involves coordinated management and enforcement of safety and security along the drainage corridors and surrounding areas. The program includes special training and techniques as well as integrated data management.

Metro Police also recommend implementation and on-going practice of CPTED (Crime Prevention Through Environmental Design) in pursuit of security and crime prevention, wise design and review of design by professionals, agency managers, field staff and safety and security personnel. Metro Police stress the importance of this as an up-front action to ensure that parks, trails and open space do not deteriorate due to crime or from fear of criminal activity. Expanded implementation and support of these techniques in cooperation with Metro Police and other agencies is vital to the long-term success and enjoyment of parks, trails and open space.

- The City of Las Vegas should implement an emergency response protocol working with law enforcement, EMS agencies, and the fire department that includes mapping of trail and open space access points, design of trails and access roads (to accommodate up to 6.5 tons), an “address system” such as mile markers to identify locations and where appropriate, 911 emergency phones in remote areas.

- Implement a database management system with police for tracking specific location and circumstances of all accidents and crime, and create a safety follow-up task force to address any problems that develop

- Routinely inspect for safety hazards, defective structures, missing safety signs, etc.

- Post and enforce safe user behavior and bicycle speed limits in congested and risk areas

5.3.8 Conflict Reduction (Sources: Pauline Gambill, Roger Moore—American Trails Library documents)

- Plan design and manage to reduce conflicts among users, with adjacent properties including: reckless and unsafe behavior; incompatible uses and values; trespass; disturbances and adverse environmental impacts

- Recognize the different goals of different users, such as equestrians and bicycles and separate where feasible

- Provide user education through signage, patrol, volunteers, brochures, and media

- Provide adequate trail mileage and open space acreage to accommodate user populations

- Solicit input from user groups

- Monitor, document and log problem areas and address problems through design and management

- Promote trail etiquette
- Educate bicyclists and hikers on how to pass horses using subdued voice cues rather than bells, horns or sudden loud noise that might startle a horse

- Avoid excessive regulatory signage
- Employ temporary closure of facilities when conditions dictate or for resource recovery

Ways to reduce conflicts with trail and open space neighbors include (Source: Flink, Searns and Olka—Trails for the 21st Century)

- Provide contact information for reporting problems
- Maintain facilities regularly

- Distribute or publish (on the Internet) maintenance schedule
- Respond to illegal or disturbing activity quickly
- Meet periodically with neighbors and provide other feedback means
- Respond promptly and effectively to complaints, concerns and suggestions

5.4 Cost of the O&M Program

Annual operations and maintenance costs vary depending upon the improvements to be maintained, level of use, location and standard of maintenance. Operations and maintenance budgets should take into account routine and remedial maintenance over the life cycle of the improvements and on-going administrative costs for the operations and maintenance program. Table 5.1 provides an overview of approximate costs for basic open space and trail operations and maintenance services. The estimates include field labor, materials, equipment and administrative costs. Table 5.2 provides a sample of comparable programs in other metropolitan areas that may be helpful in gauging the costs associated with a large-scale open space and trails system.

While actual costs will vary depending upon a number of factors such as availability of water in the future and labor rates, the estimates below can provide a general idea of potential operations and maintenance obligations. Following are typical annual costs for key components:

5.4.1 Routine O&M Costs

- Natural Open Spaces and Buffer Areas—Maintenance of natural open space costs between $ 75 and $ 200 per acre per year to maintain depending on level of use and disturbance. (The Jefferson County Open Space Program in Metro Denver offers a

comparable situation, managing 51,000 acres of passive open space with 2 million visitors per year at a cost of $118 per acre annually.)

- Arroyos and washes - natural arroyos with minimal landscaping, including debris pick up, weed control, and minor repairs may cost about $2,500 per mile annually. It is assumed that the Regional Flood Control District and Homeowner Associations would participate in this effort.

- Landscaped Open Space (Includes landscaped arroyos, which are 100 foot wide corridors that cost $37,000 per mile to maintain) These are assumed to be semi-developed park space addressing such items as: weed control, litter and graffiti management, erosion control, irrigation, plant grooming and law enforcement. Based on surveys by UNLV Landscape Architecture Program, an annual cost per acre is $3,000, not including water costs.

- Multi-Use (Off-street) Trails—Crew sizes tend to range from 0.5 to 5 full-time employees (FTE's) per 10 miles of off-street trail. Annual routine maintenance costs may range from less than $3,000 to over $7,000 per mile. A recent white paper by Clark County estimates costs of $5,000 per mile.

- All-Terrain Trails—Annual maintenance costs range from nominal to $2,000 per mile/year depending on usage and level of development. East Bay Regional Park District has estimated $1,000 per mile/year. Volunteers may absorb all or part of this function.

- On-Street Bike Corridors—It is assumed that the current street maintenance crew can handle an on street system at the current level. Some provision should be made however for fifteen regular inspections per year, to include minor repairs of signs, vegetation grooming and other items that an inspector could remedy in the field. Additional attention should be paid to any potholes or other pavement damage. Some additional sweeping may be required where wider shoulders are provided along roads.

- Landscaped, Park and Feature Areas (Includes formal trailheads)—Turf grass park and feature areas such as plazas are estimated at $10,500 per acre (Source: UNLV).

- Sidewalks—These are assumed to be maintained by public works, property owners and homeowner associations.

Remedial O &M Costs (These figures are included in the annual routine maintenance costs.)

Off-street paved trails—A 10-to-12-year life is assumed for asphalt and crusher fine trails after which an overlay may be required. A complete resurfacing after 20-25 years is anticipated. Concrete is assumed to last twice as long. Bridges, tunnels, retaining walls and other heavy infrastructure are assumed to have a 100-year life or longer.

Off-street non-paved (all-terrain) trails—For purposes of this study, remedial work on non-paved trails will be assumed to be negligible, since volunteers may accomplish much of this work. There may be some administrative costs associated with this.

Table 5.1 Projected Annual Maintenance Costs

Northwest Las Vegas Open Space Facility	Annual Maintenance Costs per Mile or per	Estimated costs by 2015	Build Out Costs
Natural Open Space	$118/acre	960 acres	$113,260
Landscaped Open Space	$3,000/acre	2,240 acres	$6.7 million
Multi-use Trails	$5,000/mile	46.8 miles	$234,000
All Terrain Trails	$1,000/mile	10 miles	$10,000
On-Street Bike Lane	Street Maintenance	NA	NA
On-Street Sidewalks	Street Maintenance	NA	NA
Active Park Trailhead	$3,000/acre	7 acres	$21,000
Arroyos/Washes (natural)	$2,000/mile	13.6 miles	$27,260
Arroyos/Washes (landscaped)	$36,000/mile	63 miles	$2.4 million

Table 5.2 Comparable Maintenance Costs for Other Communities

Entity	Facilities Mix	Acreage	Annual Budget
Jefferson County Open Space Program, Golden, Colorado	**Mostly natural open space with all-terrain trails, trailheads and minimal amenities. (450,000 residents in jurisdicition with 2 million visitors to open space.)**	**51,000**	**$6 million (from 1/2 cent sales tax)**
South Suburban Parks and Recreation District, Littleton, Colorado	**Mix of parks, paved and non-paved trails (111 miles), open space. Metro Denver (160,000 residents in District)**	**3,200**	**$5 million (from-property tax)**
City of Albuquerque Open Space Program	**Mostly natural open space (mountains, arroyos and river bottomlands with all-terrain trails, trailheads and minimal amenities (450,000 residents in city). Includes administration, resource management, law enforcement and visitor services.**	**28,000**	**$3.5 million (from 1/4 cent gross receipts tax)**

Data Source for Table 5.1: Greenways Incorporated, JW Zunino and Associates, Urban Edges, Inc., Denver Urban Drainage and Flood Control District, South Suburban Park and Recreation District - Denver, Boulder Parks and Recreation, and East Bay Regional Park District - San Francisco, UNLV Landscape Architecture Program, Clark County, NV. All values adjusted for inflation.

Data Source for Table 5.2: Jefferson County, Colorado, South Suburban District, Colorado and City of Albuquerque, New Mexico.

Roadside trails—Remedial work for roadside "trails" includes asphalt repaving (5' on either side of the street for a two-way bike route, total 10' width) along with curb and gutter, sewer-grate and manhole repair. Pothole and crack repair are considered routine. Since this work is done as part of the current street maintenance regime, the cost is assumed to be zero.

5.5 Administration and Jurisdictional Responsibilities

5.5.1 Overview of Inter-Agency Cooperation

Maintenance responsibility will be with the Public Works Department and Field Operations, depending on the type of landscape to be maintained. A number of other jurisdictions and entities such as the Las Vegas Metropolitan Police Department, Clark County Parks and Community Services, homeowner associations and business groups will also have roles on their respective segments. The Las Vegas Public Works Department and Field Operations will be key agencies in the maintenance of facilities along roads, utility corridors, arroyos and washes in cooperation with the Clark County Regional Flood Control District. The Leisure Services Department, or where appropriate, homeowners associations, should maintain the off-street trail and greenway system. It will be helpful to create a citizen's group that could ultimately play an important role in coordination and advocacy (See stewardship discussion above).

Resource Conservation Areas and Open Spaces—These spaces would be maintained by Public Works, Field Operations or Leisure Services crews, or by homeowner associations where appropriate, for dedicated areas added into the system by new development.

Roadside Trails—This system should be maintained by Public Works or Field Operations and patrolled by the Las Vegas Metropolitan Police Department. A key to continued success will be the establishment and acceptance of roadside trail operations and maintenance guidelines and proper training of both supervisory and field personnel in the fine points of roadside trail facility upkeep. There should also be inter-agency coordination and user feedback protocols that ensure timely response to citizen complaints and suggestions.

Trailheads and Feature Areas—These areas are to be maintained by the Public Works Department, Field Operations or the respective homeowners associations if appropriate.

Sidewalk Maintenance—Sidewalk maintenance is to be performed by the adjacent property owners and tenants as prescribed by city ordinances. This may include individual owners, business and resident associations and special districts as applicable. Special furnishings and amenities such as benches and signage will be the responsibility of the appropriate jurisdictional entity such as the Public Works Department or Field Operations.

5.6 Funding the O&M Program

Identifying funding sources, creating funding sources and sustaining reliable funding over the long term is critical to the overall success of operations and maintenance and, ultimately, the success and growth of the trail program. Several types of funding sources can be identified and it is likely that a combination of these might offer the best solutions. Following are likely potential sources:

Budget Allocations to Current Agency Programs—These are funds coming directly from existing agency and department programs as part of annual budget contributions. Typically this is the base revenue source for operations and management.

Multi-Objective Partnerships—Most trails serve multiple public and private benefits including access for floodway and ditch upkeep, utility access, street maintenance and enhancement of adjacent private properties. This may pose a number of opportunities

for task sharing and cost sharing among the various beneficiaries, particularly with respect to storm drainage management along river, creek and canal corridors.

Outside Funding—The Clark County Flood Control District can be a key player in both routine and remedial maintenance along drainage corridors. The City of Las Vegas Public Works should explore potential for regional funding of trail maintenance. The city should explore funding from the Regional Transportation Commission, Nevada Power, and the Nevada Department of Transportation.

In-Kind Services—Such as volunteers, youth and student labor, and seniors. May also include donations of material and equipment. Consider also adopt-a-trail programs working with service clubs, scouts, school groups, businesses and others. Adopt-a-trail programs should include credit signage and written agreements with adopting group.

Department of Corrections Program—This may be a source for a labor pool.

Creation of an open space special district—some communities have created overlay special districts to address park, trail and open space facilities. Such districts are quasi-jurisdictional entities with the ability to raise revenues and develop and maintain facilities (Example: South Suburban Parks and Recreation District in Littleton, CO).

Creation of and open space management endowment—from the proceeds of land disposal sales and other contributed sources. At 4% annual interest, an endowment of $ 100 million would yield $4 million per year for operations and maintenance.

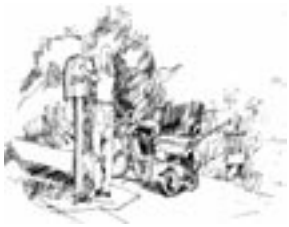
5.7 Implementing the O&M Program

The following actions should be pursued in conjunction with implementation of the plan:

- Establish a staff O & M coordinating committee with representatives from each of the participating agencies and stakeholders
- Refine an annual O & M budget and pursue the various funding sources
- Identify an entity to provide ongoing oversight, coordination and leadership for the total system
- Based on this plan, pursue development of an easy to use management manual and training program and incorporate it into existing and new O & M programs and procedures within the participating agencies. This could include an open space and trail management “certification” for staff, contractors and others working on the trail corridors
- Establish a public education, citizen participation program and a feedback phone number and Web address. Agree to and institute an agency response and quality control process

5.8 References

For a listing of operations, maintenance and management publications and resources visit American Trails (www.americantrails.org/resources/ManageMaintain/index.html) and Rails to Trails Conservancy (http://www.trailsandgreenways.org/). For a discussion of user conflicts see also www.imba.com/resources/bike_management/conflictsfull.html



Chapter 6: Implementation

The concept of this Open Space Plan is simple. Identify the most valued lands within the Northwest region of the City that can be protected and conserved, and link these lands together with multi-use trail corridors. Within these corridors, build pathways that people can travel by foot, bicycle, rollerblade or on horseback. And make the corridors wide enough so that they will help to protect arroyos, conserve habitat for wildlife, preserve historic landscapes, and beautify area roadways.

Implementing the recommendations contained within this Open Space Plan will require leadership on the part of the City of Las Vegas, a dedication to stewardship, conservation of critically important resources, bold initiatives in the area of funding, land acquisition and facility development, and a commitment to the plan of action that is defined in this chapter.

The City of Las Vegas will not be able to accomplish the recommendations of this Plan alone. It will need to build upon the partnerships already begun with Clark County, the State of Nevada and the Bureau of Land Management, and join with private sector land conservation organizations, landowners and businesses to accomplish the strategies of this Plan.

6.1 Roster of Projects

Based on input received during meetings with the citizens of Northwest Las Vegas, discussions with the two advisory committees and input of city staff, the consultant has compiled a Roster of Projects that defines activities that should be undertaken to protect open space and improve access to outdoor landscapes. This roster is described in greater detail on the following pages.

6.1.1 Land Conservation

The conservation of key parcels of land is central to the goals and objectives of this open space plan. Land is a rapidly diminishing resource in Northwest Las Vegas. It has become an expensive commodity and if it is going to be conserved as open space for parks, trails, cultural and natural landscapes, the city will need to enter the competitive real estate arena and protect a proportionate share of undeveloped land for Northwest residents. This protection, or conservation of land, can be accomplished through different methods, including the purchase of land, exactions through the land development process, gifts of land to the city and land management agreements.

Land conservation will not happen unless the City of Las Vegas takes an aggressive approach. Land costs are too high to encourage “voluntary” participation in open space protection. With land prices now approaching $300,000 an acre throughout the Las Vegas Valley, land conservation becomes a critical element of urban infrastructure, and is equally important to a quality lifestyle as roads, water, sewer, electricity, schools, and high speed internet service. The City and its partners cannot be passive in their efforts to conserve open space resources; they must act quickly, decisively and effectively.

There are a host of tools that the City can use to acquire land other than fee simple purchase. Long term management agreements, conservation easements, life estate gifts (bequest), and bargain sales are just a few of the tools that can be used to conserve open space in a competitive real estate market. The Southern Nevada Public Land Management Act of 1997 was prepared to provide for the orderly disposal of specific federally held land in Clark County. The profits from the sale of land in the disposal boundary goes into several funds. Part of the funds in the Treasury account are made available for the purchase of environmentally sensitive lands and the development of parks, trails, and natural areas in Clark County.

Creative strategies can be employed and should be utilized where time and opportunity are present. One of the biggest obstacles of a land conservation strategy in Northwest Las Vegas is the current rate of change. Property is bought and sold quickly and the city will need to partner with specialists in land conservation, such as the Trust for Public Land, to implement the recommendations of this Plan in a timely manner.

Transfer of Reversionary Interest

In Nevada, a transfer of reversionary interest applies to lands that have been patented through Recreation & Public Purposes (R&PP) or through special legislation where the conveyance of land was for a specific purpose. When the patentee wants to use the land for something other than for which it was conveyed, rather than have the land revert back to the government, they have the option of purchasing the reversionary interest. An appraisal of the reversionary interest is completed, giving the patentee the opportunity to purchase the land. By doing so, the patentee acquires the land and can use it for whatever he or she wants. If the land was conveyed through R&PP, a very discounted price was paid. In the case of special legislation, the land is sometimes conveyed at no cost. The appraised fair market value (FMV) would provide BLM with full compensation at today's price for the value of the land.

For example, the City acquires land for a fire station through R&PP. Shortly after patent issuance, the fire department is approached by someone offering to buy the land from them to build a gas station. Because the land was designated for a specific purpose, it can only be used for another public purpose. The gas station offers a different piece of land to the fire department at no cost if the fire department will sell them the parcel obtained from BLM. In order to sell the former BLM land, the fire department will pay to have BLM obtain an appraisal, which will be for the FMV of the land. BLM offers to sell the land at that price. Going through escrow, the developer pays for the land for which the reversionary interest is patented to the fire department. The fire department flips the land to the developer, who deeds his other parcel of land to the fire department.

Opportunities for Conservation

Without defining specific properties, the key areas of open space conservation are along the western and northern boundaries of the Northwest region where undeveloped land still exists. Significant opportunity for open space conservation exists within land that is under the jurisdiction of Clark County. The City needs to work closely with the County to acquire key parcels of open space to meet future park and trail needs. The City also needs to work closely with the State of Nevada and BLM to define a detailed development program for the Northwest Cultural Park.

The City should also work with other public and private sector partners, including the Nevada Field Office of the Trust for Public Land, to establish a not-for-profit Las Vegas Valley Land Trust. A future non-profit land conservancy based in the Valley could become an important partner for the City, Clark County, State and Federal agencies and other Southern Nevada communities.

Conserve Arroyos and Washes

This plan advocates the conservation of an estimated 4,000 acres of land in the Northwest region. There are three major areas of land conservation defined in this plan. One is to protect arroyos and washes in the Northwest region. The plan estimates that as much as 1,200 acres of arroyos and washes should be protected. This protection can be accomplished through the land development process and in partnership with the Clark County Flood Control District.

Conservation During Land Development

A second major pursuit would be to implement land conservation through the land development process. One way to accomplish this is to encourage the land

development community to increase the amount of land that is conserved and to use the open space plan as a framework for meeting the open space needs of Northwest residents. This plan targets as much as 1,500 acres to be conserved during the future land development process. This would be accomplished primarily by looking at providing increased density in exchange for the conservation of open space.

Acquire Targeted Open Space

The final pursuit is a targeted acquisition strategy by the City and its public and private sector partners. This plan estimates that approximately 1,700 acres of land would be targeted for acquisition and public ownership, for use as future parks, trails, natural areas and cultural landscapes. Again, the city would not accomplish this alone, and in fact will need assistance from a variety of partners to complete this bold undertaking. Some of this land may need to be acquired as full fee-simple value. Other land may be acquired through below market values that would come through relationships with local and national land trusts.

6.1.2 Facility Development – Trails

The second major element of the Roster of Projects is the development of the regional trails network in Northwest Las Vegas (Figure M4. Trails System Map). This trail system was developed by soliciting input from Northwest residents. The City of Las Vegas should undertake a more detailed "gap" analysis to define sections of trails that are incomplete within the selected corridors. The City will also need to amend the Interlocal Agreement with Clark County and the Transportation Trail and Recreation Trails elements of the City Comprehensive Plan to reflect changes to the trail corridors in the Northwest that result from this plan and the subsequent gap analysis work. The following text defines major trail corridors that are proposed for future development.

Indian Springs Corridor

Location:

A diagonal corridor that extends along an existing elect rial easement from the intersection of Alexander and Durango north and west to Interstate 215. A total distance of 2 miles.

Description:

The proposed Indian Springs Trail will be an off-road unpaved trail that extends approximately 2 miles. The right-of-way may not currently provide for trail use, so the City of Las Vegas will need to purchase an easement or the land in fee simple to provide for the trail, or have it dedicated as part of the land development process. Also, some portions of the trail will need to run parallel to existing roads in areas where the diagonal corridor has been lost to development. Finally, several roads will need to be crossed to facilitate development.

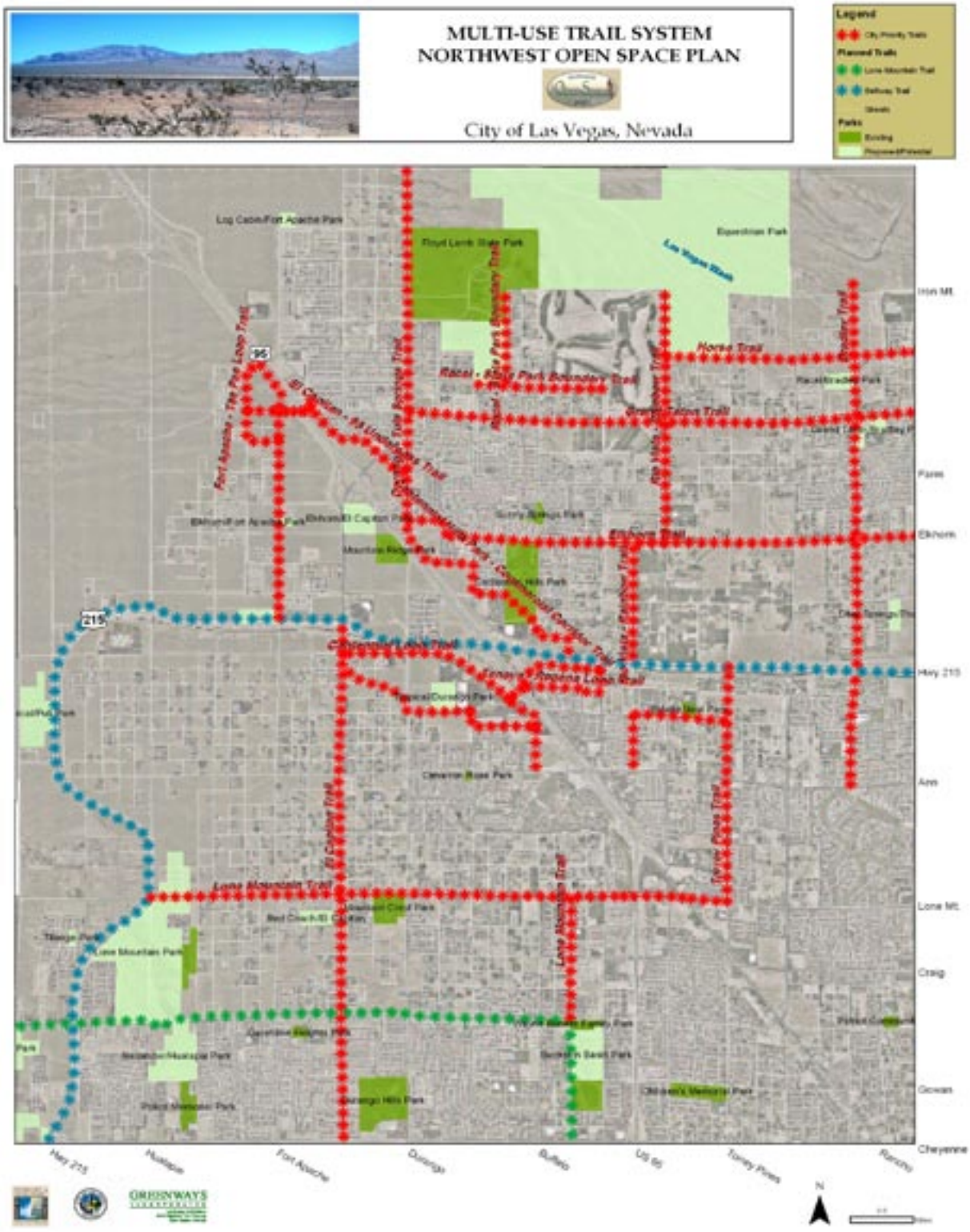
Cost of Trail Development:

It is estimated, for budget purposes, that the project will cost $4 million for full build out. This will include trail development, at-grade intersection crossings, shade structures, native landscaping, drinking fountains, area lighting, signage and traffic signs.

Cost of Land Acquisition:

Assuming that the city has to acquire all of the right-of-way for the project, it is anticipated that 24 acres of

Figure M4: Northwest Trails System



land will need to be acquired to facilitate trail development. At a cost of $300,000 per acre, the total estimated cost for acquisition is $7.2 million.

Timeframe:
This project can be accomplished immediately. Right-of-way acquisition can begin right away, trail design can also begin after property is assembled. The project can be completed within 2 years from inception.

Grand Teton Corridor
Location:
Grand Teton Drive from the North Las Vegas boundary to US 95, across US 95 to Puli Road. A total distance of 6.5 miles.

Description:
Grand Teton is a partially constructed roadway that provides a 120 foot right-of-way, large enough to accommodate a multi-use trail on one or both sides. This is a high priority corridor for future trail development among trail enthusiasts in the City. Approximately one half of the trail system has been installed

to date. The purpose of this project will be to fill in the missing gaps and complete the project from end to end, estimated to total 3.5 miles.

This trail would link to the North Las Vegas system of trails to the east, into the Red Rock Canyon Conservation Area to the west, and north to Floyd Lamb State Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $6 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Portions of this project can be constructed immediately as the right-of-way exists and roadway exists to build the project. Portions west of US 95 up to Puli Road may have to wait on the future development of roadways.

Lone Mountain Corridor Trail
Location:
Beginning at the intersection of Rancho and Lone Mountain Road, this trail runs adjacent to the north side of Lone Mountain Road. The trail passes Lone Mountain Park, following the curve in Alexander to Interstate 215. The trail crosses I-215 on an existing overpass and then heads west to the Red Rock Canyon Conservation Area. Total distance is approximately 5.2 miles.

Description:
This off-road trail would be developed in the Lone Mountain corridor right of way and provides east-west

travel for trail users. It also connects users to major public parks, including Mountain Crest, Lone Mountain and the Red Rock Canyon Conservation area. This is a popular route of travel for a wide variety of users, and the new trail system will make it possible for more residents to utilize the corridor.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $7 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Construction can begin on this project immediately as the right-of-way is already publicly owned. This project can be completed within 2 years from date of inception.

El Capitan Corridor Trail
Location:
From the intersection of Cheyenne, this trail heads north along El Capitan to its intersection with Centennial. Total distance is 3.9 miles.

Description:
This is primarily an off-road multi-use trail that will serve rural residents of the northwest area of the City and Clark County. It links to Durango Hills, the Centennial Hills area, Mountain Crest Park, and El Capitan Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $5 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Torrey Pines Corridor Trail
Location:
From the intersection of Lone Mountain Road and Torrey Pines, this trail heads north along Torrey Pines to its intersection with the I-215 corridor. Total distance is 2.3 miles.

Description:
This is primarily an on-road multi-use trail that will serve residents and commercial areas of the city. The northern section of the corridor is undergoing rapid development at this time.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $4 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Bradley Corridor Trail

Location:
From the intersection of the 215 Beltway and Bradley, this trail heads north to the BLM and Las Vegas Wash, providing access to the proposed Northwest Cultural Park. Total distance is 3.2 miles.

Description:
This is primarily an on-road multi-use trail that will serve equestrians, hikers and bikers of the northwest area of the City and City of North Las Vegas. Project links to Deer Springs Park, proposed Grand Teton and Bradley Park, proposed Racel/Bradley Park and proposed Northwest Cultural Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $5 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Rio Vista/Rainbow Corridor Trail

Location:
From the intersection of the 215 Beltway and Rio Vista, this trail heads north to Floyd Lamb State Park following Rio Vista and Rainbow, using Elkhorn as a connector. Total distance is 3.3 miles.

Description:
This is primarily an on-road multi-use trail that will serve primarily hikers and bikers of the northwest area of the City. Project links to Centennial Hills and rural residential neighborhoods in Northwest Las Vegas, terminating at Floyd Lamb State Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $5 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Elkhorn Corridor Trail

Location:
From the intersection of Decatur and Elkhorn, this trail heads west to US Highway 95 corridor. Total distance is 3.7 miles.

Description:
This is primarily an on-road multi-use trail that will serve equestrians, hikers and bikers of the Northwest area of the City. Project links to Centennial Hills Park and rural residential neighborhoods in Northwest Las Vegas.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $6 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Horse Corridor Trail

Location:
From the intersection of Decatur and Horse, this trail heads west to Rainbow at Floyd Lamb State Park. Total distance is 2 miles.

Description:
This is primarily an on-road multi-use trail that will serve primarily hikers and bikers of the northwest area of the City. Project links residential areas to Floyd Lamb State Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $3 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Durango-Tule Springs Corridor Trail
Location:
From the intersection of the US 95 Highway and Tule Springs, this trail heads north to Floyd Lamb State Park following Tule Springs and Durango. Total distance is 2.9 miles.

Description:
This is primarily an on-road multi-use trail that will serve equestrians, hikers and bikers of the Northwest area of the City. Project links residential areas to Floyd Lamb State Park.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $4 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

El Capitan/95 Underpass Corridor Trail
Location:
From the intersection of the Tule Springs and El Capitan, this trail heads west to US Highway 95 and the underpass. Total distance is 1.2 miles.

Description:
This is primarily an on-road multi-use trail that will serve equestrians, hikers and bikers of the Northwest area of the City. Project links to an existing underpass beneath US Highway 95 and surrounding residential communities.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $2 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Fort Apache/Tee Pee Corridor Trail
Location:
From the intersection of the 215 Beltway and Fort Apache, this trail heads north to US Highway 95 along Fort Apache and links to the Tee Pee Road loop. Total distance is 3.6 miles.

Description:
This is an on-road multi-use trail that will serve primarily hikers and bikers of the Northwest area of the City. Project links to Centennial Hills and residential neighborhoods in Northwest Las Vegas.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $5 million for full build out. This will include paved and unpaved trail development, at-grade intersection crossings, shade structures, native landscaping, area lighting, signage and traffic signs. There are no right-of-way costs associated with this project.

Timeframe:
Much of this project can be placed under design and construction immediately. The right-of-way is available for future trail development.

Las Vegas Wash
Location:
This off-road corridor extends from Floyd Lamb State Park north and west along the Las Vegas Wash to the northern boundary of the BLM Disposal. The Sheep Mountains are north and east of the Wash.

Description:
This 4 mile off-road loop trail corridor promises to be one of the premier trails in Northwest Las Vegas. It can be developed as a loop trail on both sides of the wash for hiking, equestrian use and off-road biking. Separate treads for each user group may be preferred to limit conflict among multiple users.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $4 million for full build out. This will include unpaved trail development, shade structures, native

Northwest Las Vegas Open Space Trails	Trail Length (miles)	Estimated Costs	Horse	Bikers	Hikers
Indian Springs Corridor	2	$4,000,000.00	X	X	X
Grand Teton Corridor	6.5	$6,000,000.00	X	X	X
Lone Mountain Corridor	5.2	$7,000,000.00	X	X	X
El Capitan Corridor	3.9	$5,000,000.00	X	X	X
Torrey Pines Corridor	2.3	$4,000,000.00	X	X	X
Bradley Corridor	3.2	$5,000,000.00	X	X	X
Rio Vista/Rainbow Corridor	3.3	$5,000,000.00		X	X
Elkhorn Corridor	3.7	$5,000,000.00	X	X	X
Horse Corridor	2	$3,000,000.00	X	X	X
Durango-Tule Springs	2.9	$4,000,000.00	X	X	X
El Capitan/US 95 Highway	1.2	$2,000,000.00	X	X	X
Fort Apache/Tee Pee	3.6	$5,000,000.00		X	X
Las Vegas Wash	4	$4,000,000.00	X	X	X
Kyle Canyon Wash	3	$5,000,000.00		X	X

landscaping, signage and traffic signs. There are no right-of-way costs associated with this project as this is currently under BLM ownership and would be part of a proposed 1000 foot conservation corridor.

Timeframe:
This is a future project and will depend on the BLM Disposal proceedings, establishment of the 1000 foot conservation corridor and clearance for trail construction.

Kyle Canyon Wash Trail

Location:
Northwest corner of the project study area, bounded to the east by the Highway 95 corridor and to the west by Puli Road.

Description:
This is one of the most significant arroyos remaining in the Northwest region and the City should do everything possible to protect and conserve this landscape for open space, park, and flood protection purposes. Trails can be developed throughout this landscape and would link to surrounding residential and commercial development. Trails should be multi-use and can be paved to support cycling. Estimated length of the trails system is 3 miles.

Cost of Trail Development:
It is estimated, for budget purposes, that the project will cost $5 million for full build out. This will include paved and unpaved trail development, shade structures, native landscaping, area lighting, and signage. There are no right-of-way costs associated with this project as this is currently under BLM ownership and is subject to the disposal auction proceedings in the spring 2005.

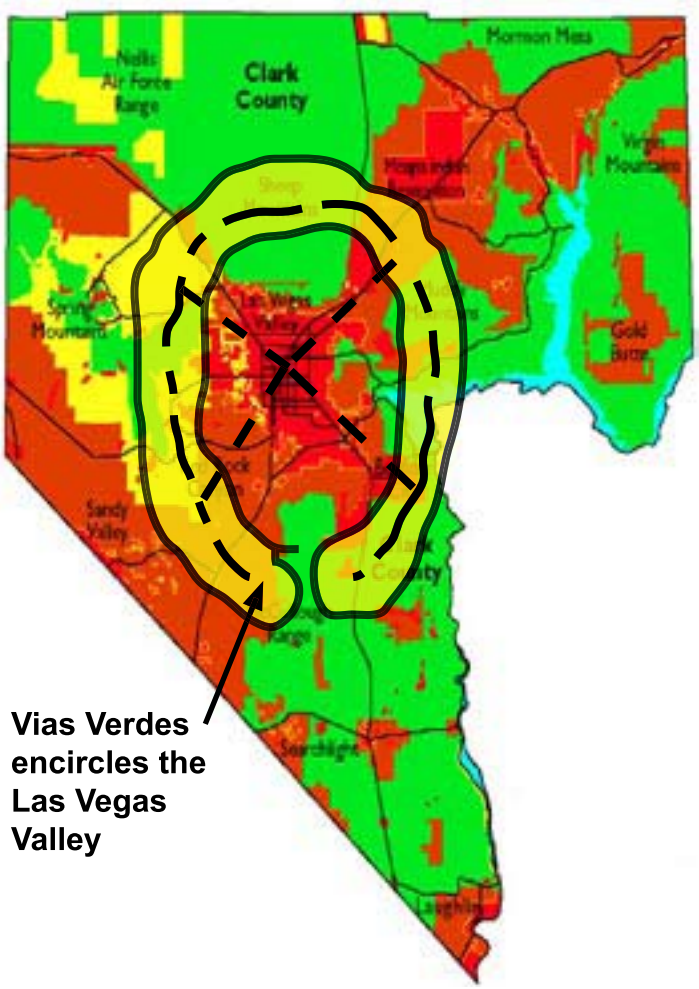
Timeframe:
This is a future project and will depend on the BLM Disposal proceedings, establishment of the conservation easements and clearance for trail construction.

6.1.3 Las Vegas Vias Verdes

Vias Verdes Las Vegas, a greenbelt that would surround the Las Vegas Valley, has been proposed in this Plan. In order to implement this proposal, the consultant recommends that a stakeholder group be formed that is comprised of agencies and private sector interests to advocate for and coordinate the activities necessary to establish the project boundaries.

The Vias Verdes can likely be established through the Southern Nevada Public Lands Management Act, in conjunction with federal and state agencies. A set of guiding principles needs to be established that would define long term protection strategies, access guidelines and management requirements for the Vias Verdes.

The most important focus for the stakeholder group would be to define gaps in the Vias Verdes that exist between current public lands surrounding the Valley. These are the areas of the greenway that would become the focus of the project in terms of future protection strategies. Once these gaps have been identified, an action plan needs to be developed that defines a program of conservation, protection and implementation.



Vias Verdes encircles the Las Vegas Valley

6.1.4 Facility Development – Roadway/ Highway Crossings

Throughout Northwest Las Vegas, there are several roadways and highways that need specialized crossings in order to provide linkage for transportation and recreation access. A list of these is provided as follows.

US 95 at Farm Road

Description:
This important overpass will provide connections from the existing rural landscapes on either side of US 95, and serves an important north-south link across this heavily traveled highway (see example photo below). This crossing is part of the recommended strategies of the adopted Inter-local Joint Use Trails Plan.

Cost of Overpass:
Estimated cost for overpass is $2 to $4 million.

Timeframe:
Design and construction can begin immediately on this project.

US 95 at Grand Teton Road

Description:
Part of the Grand Teton Drive Trail, this crossing is needed to provide east-west travel for pedestrians, equestrians, cyclists and other trail users. It will need to be developed as an independent crossing. This crossing is part of the recommended strategies of the adopted Inter-local Joint Use Trails Plan.

Cost of Overpass:
Estimated cost for overpass is $2 to $4 million.

Timeframe:
Design and construction can begin immediately on this project.

US 95 at Lone Mountain

Description:
This important overpass will provide connections from the existing rural landscapes on either side of US 95, and serves an important north-south link across this heavily traveled highway. This crossing is part of the recommended strategies of the adopted Inter-local Joint Use Trails Plan.

Cost of Overpass:
Estimated cost for overpass is $2 to $4 million.

Timeframe:
Design and construction can begin immediately on this project.

US 95 at Elkhorn

Description:
The consultant understands that this crossing is currently under design and will be incorporated as part of a new transportation bridge of the Elkhorn roadway.

I-215 at Torrey Pines

Description:
This overpass will provide connections from the existing rural landscapes on either side of the 215 Beltway, and serves an important north-south link across this heavily traveled highway.

Cost of Overpass:
Estimated cost for overpass is $2 to $4 million.

Timeframe:
Design and construction can begin immediately on this project.

I-215 at Grand Canyon
Description:
This crossing is needed to provide north-south travel for pedestrians, equestrians, cyclists and other trail users. It can be developed in conjunction with the road crossing or as an independent crossing (see example photo above). This crossing is part of the recommended strategies of the adopted Inter-local Joint Use Trails Plan.

Cost of Overpass:
Estimated cost for overpass is $1.5 to $2 million.

Timeframe:
Design and construction can begin immediately on this project.

6.1.5 Facility Development – Trailheads

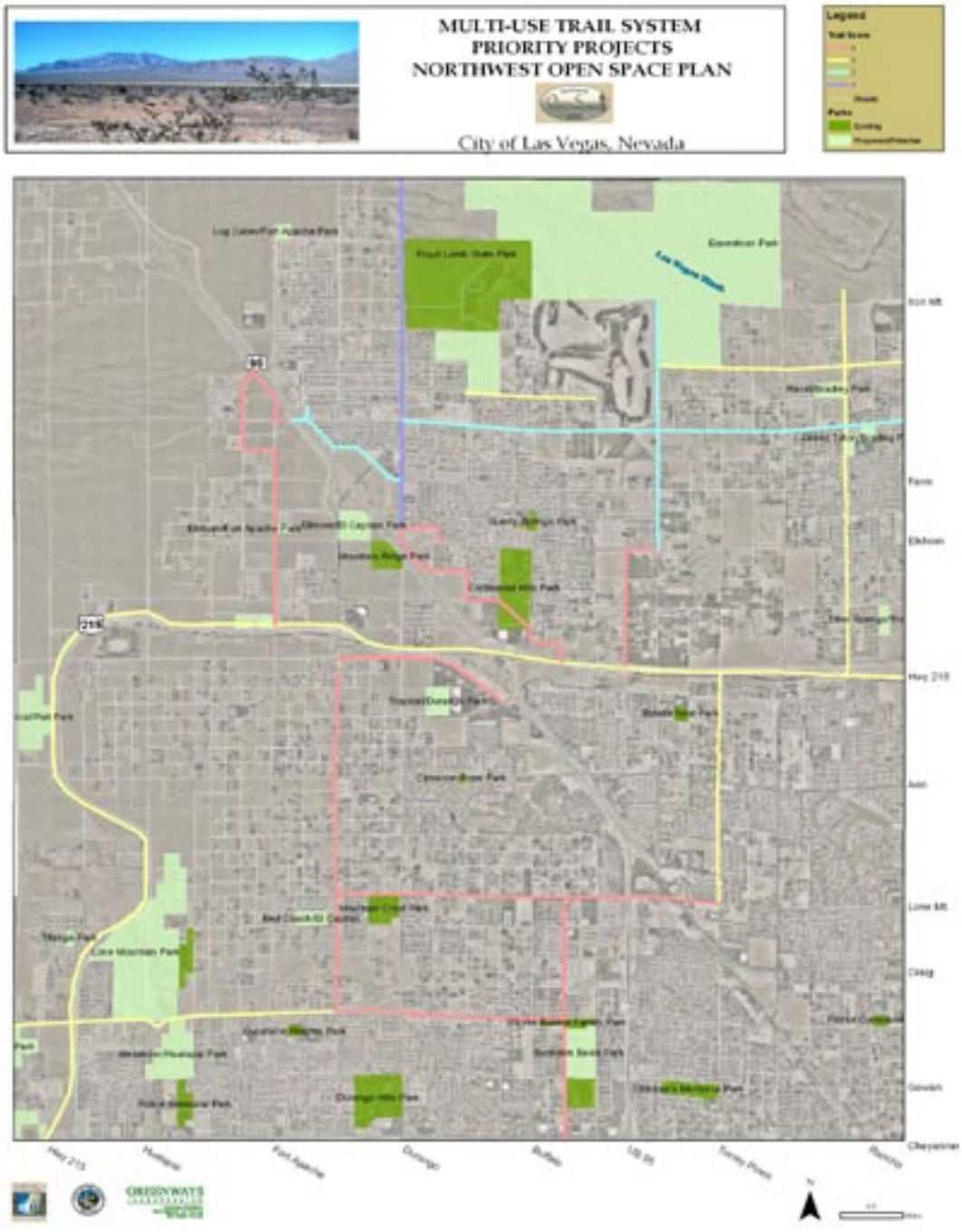
Trailheads are an integral part of the regional trail system proposed for the Northwest region of the city. The following trailhead locations have been defined by city staff and are included as future development projects of this open space plan.

Mountain Crest
Buckskin Basin
Durango Hills
Lone Mountain Park
Teton Trails Park
Centennial Hills Park
Tropical Park

Typically, most trailheads will provide ample parking, restrooms, water fountains, shade structures, air pumps for bicycle tires, signage to guide trail users, kiosks for posting information and vending machines. The average costs for a trailhead will range from $100,000 to $500,000.

6.2 Prioritization of Trails

The consultant team worked with local residents, the Citizens Advisory Committee and the Technical Work Group to define a set of priority trails for the Northwest region. These priorities are depicted in the map on this page.



6.3 Funding the Open Space System

In order for the City of Las Vegas to implement the recommendations of this Open Space Plan, it will be necessary for the city to use a combination of local, state, federal, and private funding. Fortunately, the benefits of open space are many, allowing open space programs to access money for a variety of purposes including stormwater management, recreation, and alternate transportation (pedestrian and bicycle facilities). By acknowledging that competition is stiff for state and federal funds, the primary responsibility for funding any type of open space preservation and protection plan will rest with the City. State and federal funds, while substantial, should be viewed as supplements to locally funded programs.

It is important that the City of Las Vegas fully evaluate its available options and develop a funding strategy that can meet community needs, maximize local resources, and leverage outside funding.

This Plan does not estimate the funding necessary to fully execute the Open Space Plan, nor does it attempt to predict the amount of funding that might be generated by the various financing mechanisms. A list of the most likely funding sources is provided as a guide to where the City can access funds to support the recommendations of this Plan.

Southern Nevada Public Lands Management Act

One of the principal funding sources for this Open Space program will be SNPLMA. Established in 1998, SNPLMA allows the Bureau of Land Management (BLM) to sell land and use revenue derived from the sale for specific programs throughout Southern Nevada, including the acquisition of open space and development of park and trail facilities.

The recommended strategies for open space acquisition, park and trail facility development that are defined in this Plan are specifically funded pursuits of SNPLMA funding. The BLM will accept Round 6 applications for funding until November 2004 for funding in the following cycle. The City of Las Vegas will submit applications for Round 6 funding, and subsequent funding cycles of SNPLMA to pay for elements of this Open Space Plan.

Nevada Department of Transportation - TEA 21

While generally a transportation-based program, the Transportation Equity Act for the 21st Century (TEA-21) funds programs to protect the environment. Through increased funding to the Surface Transportation Program (STP) and the National Highway System (NHS), TEA-21 allows for more environmental projects. States may spend up to 20 percent of their STP dollars (used for transportation facility reconstruction, rehabilitation, resurfacing, or restoration projects) for environmental restoration and pollution abatement projects. Additionally, each state sets aside 10 percent of STP funds for transportation enhancement projects, which can include acquisition of conservation and scenic easements, wetland mitigation, and pollution abatement, as well as scenic beautification, pedestrian and bicycle trails, archaeological planning, and historic preservation.

Nevada Recreational Trails Fund Grants

The Nevada Recreational Trails Fund Grants originate from TEA-21 federal funding and is administered by the Nevada State Parks. Grant applications are submitted on an annual basis to State Parks, and funding is distributed to selected recipients. Eligibility for grants extends to any local government, non-profit organization, tribal government or service group. Projects that are funded must be free of charge and open for public use. Grant funds can be used for trail development, maintenance, acquisition of easements and fee-simple property and operation of educational programs. The maximum grant award is $100,000. The program operates as an 80/20 match, requiring the sponsoring entity to supply 20 percent in cash or qualified in-kind labor. The program operates as a reimbursement of completed and qualified projects.

State of Nevada Funding

Ballot Question # 1

State of Nevada received voter authorization to issue general obligation bonds in an amount of not more than $200 million to protect, preserve, and obtain the benefits property and natural resources throughout the state. Of the total bond issue, funding allocations will be made as follows:

1. $27 million to Nevada's Division of State Parks for property acquisition or capital improvements and renovations,

2. $27.5 million to Nevada's Division of Wildlife for property acquisition, facility development and renovation, or wildlife habitat improvements,

3. $25 million to the Las Vegas Springs Preserve in Clark County for planning and developing the preserve, providing wildlife habitat, and constructing support facilities,

4. $10 million to Clark County for development of a regional wetlands park at the Las Vegas Wash,

5. $35 million to Nevada's Department of Cultural Affairs to establish a museum at the Las Vegas Springs Preserve,

6. $10 million to Washoe County for enhancement and restoration of the Truckee River corridor,

7. $65.5 million to Nevada's 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.

Land and Water Conservation Fund

The Land and Water Conservation Fund is the largest source of federal money for park, wildlife, and open space land acquisition. The program's funding comes primarily from offshore oil and gas drilling receipts, with an authorized expenditure of $900 million each year. However, Congress generally appropriates only a fraction of this amount. Between 1995 and 1998, no funds were provided for the state-and-local grant portion of the program, which provides up to 50 percent of the cost of a project, with the balance of the funds paid by states or municipalities.

LWCF funds are apportioned by formula to all 50 states, the District of Columbia and territories. Cities, counties, state agencies, and school districts are eligible for LWCF fund monies. These funds can be used for outdoor recreation projects, including acquisition, renovation, and development. Projects require a 50 percent match.

City of Las Vegas Funding

The City of Las Vegas already has funding in place to support the acquisition, development and operation of parks, recreation, trails and open space. The recommendations of this Plan will require the city to assess its funding capacity for these programs and take steps to increase funding levels as necessary. Typically, the City allocates funds from its general revenue stream. The City can also issue bonds, with voter approval, to cover elements of this open space program. There are two types of bonds that the City can issue: revenue bonds and general obligations bonds.

Revenue Bonds

Revenue bonds are bonds that are secured by a pledge of the revenues of the City of Las Vegas. The City pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment) times a factor, termed the coverage factor, which is designed to provide additional protection to the bondholders. The coverage factor generally ranges from 110 to 150 percent of the utility's annual or maximum annual

debt service requirement in the current or any future year. Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are more expensive than general obligation bonds.

General Obligation Bonds
The City of Las Vegas can also issue general obligation (G.O.) bonds that are secured by the full faith and credit of the City. In this case, the City pledges to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public improvements, the City will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the payments. G.O. bonds distribute the costs of open space acquisition and makes funds available for immediate purchases. Voter approval is required.

6.4 Next Steps

The next steps for the Open Space Plan will be to implement the recommendations provided in this Plan. There are a number of different recommendations that are called for, including policies, programs, facilities and operations. These are organized under the following short term, mid term and long term strategies.

Short Term: Zero to 2 year (FY 05-06)

The consultant recommends that the City of Las Vegas implement the following recommendations in the 2005 and 2006.

Policies, Plans and Programs
• Revise the subdivision ordinance to promote more open space conservation through higher density development in Northwest Las Vegas

• Complete and adopt a detailed design program for the Northwest Cultural Park and its component parts: the equestrian park, railroad society park and archaeological park

• Establish a coordinating committee for the Vias Verdes Las Vegas

• Work with the Clark County Flood Control District to define protection strategies for arroyos and washes in the Northwest region

• Apply for SNPLMA funding to pay for the open space acquisitions and facilities recommended in this Plan

Facilities
• Work with public and private sector partners to acquire the most highly ranked and threatened open space properties

• Build the number one ranked trail facilities defined within this Plan

• Build the number one ranked roadway crossings defined by this Plan

• Build the number one ranked trailheads defined by this Plan

• Begin construction of facilities for the Northwest Cultural Park: equestrian park, railroad society park and archaeological park

Operations
• Establish the Las Vegas Valley Land Trust in cooperation with other local governments and the Trust for Public Land

• Define appropriate management roles for public and private sector organizations that will care for open space resources

Mid Term: Three to five year (FY 07-09)

The consultant recommends that the City of Las Vegas implement the following recommendations in the 2007, 2008 and 2009.

Policies, Plans and Programs

• Work with project partners to implement Vias Verdes Las Vegas recommendations outlined in this Plan

• Apply for SNPLMA funding to pay for the open space acquisitions and facilities recommended in this Plan.

Facilities

• Continue construction of Northwest Cultural Park facilities

• Work with public and private sector partners to acquire the secondarily ranked open space properties

• Build the number two and three ranked trail facilities defined within this Plan

• Build the number two and three ranked roadway crossings defined by this Plan

• Build the number two and three ranked trailheads defined by this Plan

Operations

• Define operation and management agreements for lands and facilities that are part of this phase of implementation

Long Term: Six and beyond (FY 10)

The consultant recommends that the City of Las Vegas implement the following recommendations from 2010 and beyond.

Policies, Plans and Programs

• Update this Open Space Plan, reconsider the recommendations and priorities of this Plan

• Apply for SNPLMA funding to pay for the open space acquisitions and facilities recommended in this Plan

Facilities

• Continue construction of Northwest Cultural Park facilities

• Work with public and private sector partners to acquire outstanding open space properties

• Build the number four and five ranked trail facilities defined within this Plan

• Build the number four and five ranked roadway crossings defined by this Plan

• Build the number four and five ranked trailheads defined by this Plan

Operations

• Update any management agreements that were established in the short and mid term phases to reflect changes in the open space program

Appendix A: Summary of Public Input

A.1 Overview

Open, comprehensive and fair citizen, agency and stakeholder input was critical to the success of this Plan. To achieve this, the consultant created numerous opportunities for broad involvement in the preparation of this Open Space plan. Major steps included:

- Project Web Site—The City of Las Vegas has maintained a project web site throughout the planning process that provides up-to-date information about the project, dates for community meetings and the outcomes of these meetings
- Project Newsletter—The City published a project newsletter that chronicles the important milestones of the project
- Media Exposure—The City's Public Information Office worked with local media to broadcast meetings and provide up-to-date coverage of planning events
- Working Committees—The City established two working committees that have worked closely with the City staff and consultant team to prepare this Plan
- Open House Public Meetings—The City sponsored three rounds of public open house meetings to solicit direct and specific input into the Plan. At each of these meetings, public comment forms were made available to attendees
- Scientific Community Survey—The City engaged ETC Institute of Olathe, KS, a highly regarded public survey firm, to conduct a mail-in survey of Northwest residents to more accurately define needs for this project

The results of this public input is summarized within this section of the Plan report. The recommendations contained within this Plan strives to be an accurate reflection and representation of the desires of Northwest residents.

A.2 Working Committees

Two advisory committees were established at the outset of the Open Space planning process to advise the consultant and City of Las Vegas staff with

respect to key issues and concerns for the Northwest region. An *Open Space Citizens Advisory Committee* was established by Councilman Michael Mack and Councilman Larry Brown. These citizens of Northwest Las Vegas met six (6) times with the consultant and staff at key stages in the planning process. Many of these same citizens attended open house meetings with the general public. Their guidance and input was extremely valuable in providing the proper context and specific recommendations contained within this plan.

A second advisory committee was established, the *Technical Working Group*, comprised of staff from local, state and federal agencies throughout the Las Vegas Valley. The role of this committee was to receive presentations from the consultant and staff and offer guidance and direction on the Plan recommendations as they relate to other local, state and federal lands, policies and implementation strategies. This group also offered the consultant and staff valuable input during each of the six (6) meetings that were conducted.

A.3 Open House Meetings

The consultant conducted three sets of public open house meetings. The first set of meetings occurred in May, a second set in July, and a third set in October, 2004.

At the May open house meetings, the consultant provided an introductory presentation that defined the scope of the project, goals and objectives of the work program and timeframe for completing work. The consultant produced maps of the study area and display boards that provided definition of project goals and objectives. During the meeting, the consultant invited the public to identify key issues of concern, as well as opportunities and constraints for open space implementation. The consultant also furnished a public opinion survey to solicit specific input on a series of questions relevant to the project.

At the July open house meetings, five separate stations were set up to provide a progressive set of information about the Open Space Plan that took participants from analysis through to proposed alternatives for open space implementation. A second public comment form was also furnished at this meeting.

In October, the consultant presented the draft final open space plan recommendations and asked participants to prioritize both open space and trail projects.

A.4 Media Coverage

Throughout the planning process, local television, newspaper and radio stations broadcast stories and wrote articles about the Northwest Open Space Planning process and products. Interviews were conducted with the consultant team and key project staff to define the important elements of the Open Space Plan and provide the public with notification of opportunities for input.

A.5 Citizen Surveys

Three separate surveys were conducted by the consultant team during the planning process. First, a public opinion survey was administered by the consultant at the first public open house meetings in May. Residents were also invited to download a copy of the survey from the project web site. Second, a statistically valid *Community Attitude Survey* was administered by the ETC Institute of Olathe, KS. This mail-in survey was direct mailed to 3,000 households in the Northwest region of Las Vegas. 688 completed

surveys were returned to ETC Institute for tabulation. A full report of the results of this survey was provided to the City of Las Vegas and has been summarized in Chapter 3 of this Plan. Finally, participants at the July Open House Workshops were provided a third opportunity to provide input into the planning process through an opinion survey administered by the consultant.

A.6 Project Newsletter

The consultant produced three (3) project newsletters at key times during the planning process to inform the public about the Open Space Plan, define meetings times and dates and summarize key recommendations for the plan. These newsletters were distributed to individuals who registered by e-mail with the City, and were provided at open house meetings conducted by the consultant. All newsletters were uploaded to the project web site.

A.7 Project Web Site

The consultant and City of Las Vegas teamed to produce a project web site for the Open Space Plan (www.lasvegasopenspace.com). Through this web site, which has been functional since April 2004, residents of the City have been able to get updates about the planning process, download meeting agendas and meeting minutes, determine the location, date and times for all public meetings, send specific comments to the consultant and staff and download copies of the draft plan report and maps. The web site has been an invaluable communication tool for this process and citizens throughout the Las Vegas Valley have used the site to keep abreast of the open space planning process.

City of Las Vegas
Northwest Region Open Space Plan

Issue 1 | www.lasvegasopenspace.com | April 2004

Open Space Planning Underway for City's Northwest Region

The City of Las Vegas has begun the process of preparing an open space plan for the Northwest Region of the city. The City has selected a consultant team comprised of national and local experts to lead the planning process and work with northwest residents to develop a strategic plan that will conserve open space resources and balance growth and development in order to ensure a high quality of life for all residents.

The plan will address the current supply of parks, trails, natural areas and viewsheds, and define a program for optimizing land conservation and development strategies to ensure that residents have an adequate supply of open space for years to come.

The consultants will work during the next 10 months to collect information, conduct public meetings, prepare a draft open space plan and a final strategic action plan.

The consultants will also work with two separate committees, a specially constituted Citizens Advisory Committee and a Technical Working Group, consisting of local officials, to prepare the Open Space Plan.

A draft plan will be unveiled in September. The final open space plan will be presented to the Las Vegas City Council in December.

Citizen Input Sought for Open Space Plan

The residents of Northwest Las Vegas will have several opportunities to become involved in the Open Space Planning Process. A statistically valid public survey will be conducted by the ETC Institute of Olathe, KS. Randomly selected residents will receive a mail-in survey during May.

Residents that recieve this mail-in survey are strongly encouraged to fill out the form and mail it back quickly. The results of the survey willl help determine the direction of open space recommendations.

Residents will also have the opportunity to participate in several public forums, beginning in May, and then in July and September.

At these meetings residents will be able to view maps of the region, speak with project consultants and city staff, fill out public comment forms and help to determine the location of future parks, trails and other open space resources.

Please visit the city's special web site for the project www.lasvegasopenspace.com to learn more about these meetings.

This newsletter was designed by Greenways Incorporated and has been approved for distribution by the City of Las Vegas Planning Department.

Appendix B: Equestrian Park

The Horse Council of Nevada has submitted the following proposal for the future development of an equestrian park. Under this proposal, the future Park would be developed over time in three phases: Phase 1- local use facility; Phase 2 - local show facility; Phase 3 - national show/event facility. This proposal is described in further detail as follows:

Phase 1: Local Use Facility

The following facilities would be developed in the first phase:

- Perimeter fencing should enclose entire three-phase facility
- Trailhead for unloading & pull through parking. area for 20 trucks/trailers. Site would be unpaved
- Restroom facilities: (2) one at each end of park
- Trail system that would be based on the perimeter of the park, meandering, where possible, through the park, with exits to other trails
- One Round pen, (1) 100 x 200 arena, (1) 60 x 100 arena. All with proper footing. Arenas could utilize a common fenceline
- Hitching posts (2) each with six loops for securing horses
- Holding pens (6) 10 x 10, 4' gate, shaded
- Water spigot
- Connection to nearby trail systems
- Shaded picnic tables (4) on concrete slabs

Phase 2 Local Show Facility

- Trailer & spectator lighted parking, 2-acre unpaved site, complete with RV hookups for 20 spaces
- Two Arenas:
  A) Rodeo Arena, 200 x 300, with roping chutes, & cattle pens. Judges & announcers stands, lights, sound system, appropriate footing & covered spectator bleachers
  B) Covered Arena, 200 x 300
- Two practice arenas 100 x 200
- One round pen 60 foot diameter
- 300 stall barn,12 x 12 stalls, with wash rack, outlets & lights
- Show office (2), one for each arena, 20 x 20.
- Vendor Alley, half acre area
- Men's & women's restrooms each with 6 stalls & 2

showers
- Maintenance facility to house necessary machinery
- Maintenance equipment: tractor, front-end loader, asst. drags, Kiser water system for tractor
- Qualified facility manager with knowledge in equestrian facilities & proper use of machinery.
- Rental storage space for local equestrian clubs (10) 10 x 10 units and (5) 20 x 20 units all lockable

Phase 3 National Show Facility
- Indoor climate controlled arena with seating for 10,000, and sky boxes to fit
- Second arena 200 x 300 with covered seating for 5,000
- Judges & announcers booths, sound system, lighting & appropriate footing for both
- Three warm up arenas (2) 100 x 200, (1) 200 x 300
- 500 stall barn, 12 x 12 stalls
- Five acres of unpaved pull through trailer parking
- RV & spectator parking, necessary acreage to be determined
- Picnic area with covered tables
- Outdoor vendor pavilion
- Fenced tot lot- specific equipment conducive to nature of facility

The equestrian park would mirror efforts completed in Arizona and California and offer Las Vegas an opportunity to host regional and national equestrian shows and events. The facility might charge local residents an annual pass to generate revenues that would help to support its operation.

Statistics furnished by the Las Vegas Convention and Visitors Bureau (LVCVA) indicate the ability to support future development of a world-class equestrian park. In 2003, 35.5 million people visited Las Vegas and contributed $32.8 billion to the local economy. Most revealing about these statistics is the fact that Las Vegas is no longer viewed as just a gaming destination. The city has in fact evolved into a entertainment destination. LVCVA has sought to broaden both the appeal and diversity of offerings to visitors. With a strong equestrian base and heritage, Las Vegas is uniquely positioned to take advantage of equestrian shows and events within a world-class equine park.

South Coast Casino, Las Vegas, NV, is in the process of opening a new equestrian facility at its Orleans Casino. The drawing below illustrates the new riding arena at South Coast. The rendering below left is an artists concept of how the arena willl look when the facility is completed.

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Northwest

Open Space Plan

Las Vegas, Nevada

Prepared for:
City of Las Vegas
Comprehensive Planning Division

Prepared by:
Greenways Incorporated

In Association with:
The Greenway Team
JW Zunino Associates
ETC Institute
The Trust for Public Land

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Accepted by Las Vegas City Council

January 5, 2005

Northwest
Open Space Plan

Las Vegas, Nevada

Las Vegas City Council
Mayor Oscar B. Goodman
Mayor Pro Tem Gary Reese
Councilman Larry Brown
Councilman Lawrence Weekly
Councilman Michael Mack
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Appendix D: GIS Resource Database

D.1 Overview

At the beginning of the planning for the Northwest Las Vegas Open Space Plan, it was determined that ArcView GIS was the preferred platform for data management and graphic mapping. The first step in building an accurate data set for the Northwest region was to collect all available geographic information system data from a variety of local, State of Nevada, federal and private resources. This information was provided to Greenways Incorporated, prime consultant, who then cataloged the information and utilized certain dataset combinations to produce a variety of maps for the project.

D.2 Catalog of Available GIS Files

The following data was used in the development of project maps for the Northwest Open Space Plan.

- Flood/Drainage Information
  - Floodplains and Desert Wash Corridors
  - Streams, Lakes, and Ponds
  - Capital Improvement Projects for City of Las Vegas
- General Environmental Information
  - Wetlands
  - Soils Inventory
  - Aquifer Recharge Areas
  - Sanitary Sewer Corridors
  - Special Environmental Features such as Hazardous Sites
  - Superfund sites
- Transportation Facilities
  - Transit routes
  - Bicycle Trails and Routes
  - Walking Trails
  - Equestrian Trails
  - Railroads
- Critical Community Facilities
  - Police and Fire Stations
  - Public Parks and Golf Courses
  - Community Centers
  - Libraries
  - Schools
  - Historic Resources
- Composite maps illustrating publicly and privately held green space resources
  - Local, regional, state and federal park and public lands
  - Recreation facilities
  - Private parks, golf courses and preserves
- Natural resources inventoried for Clark County in the Multiple Species Habitat Conservation Plan and the Desert Conservation Plan for the desert tortoise.

Appendix E: Glossary of Terms Used in this Plan

E.1 Overview

The Northwest Open Space Plan addresses five categories of open space and recreational amenities. The emphasis of this plan is on trails, open space and related amenities including wayfinding systems. However, active parks and street landscaping are also addressed to the extent they support the overall planning mission. The following definitions are derived from existing City plans and standards, national standards, input at public meetings and consultant recommendations. These include:

1. Open Space
2. Trails And Non-Motorized Transportation
3. Active Parks
4. Fixtures and Furnishings
5. Wayfinding Systems

Open space is an area that provides visual, wildlife, or resource conservation benefits. It is generally not intended for active recreational use. Such areas may be present or conserved in their natural state or may be improved with landscaping. Open spaces may also include trails, trailheads/access points, overlooks, rest areas and interpretive facilities. In addition to larger open space areas, the perimeter landscaping along a development and the median strips in boulevards are examples.

Passive Recreation refers to non-programmed leisure activities, such as walking, bird watching, horseback riding on trails, bicycling, etc. Usually associated with individual-oriented rather than team-oriented sports and leisure activities.

Trails provide linear outdoor recreation and non-motorized transportation opportunities. Some trails may also serve motorized off-road recreational vehicles. Streets (where appropriate) and the sidewalk system also provide bicycle and pedestrian circulation benefits. On-street and sidewalk segments may integrate with the overall trail network. When a trail runs through an open space or landscaped corridor, such as an arroyo, it is referred to as a "greenway".

A ***Park*** is a parcel of land designated for recreational use. A park and recreational area as used in this plan are synonymous. There are two types of recreational areas: active and passive. An active recreational area is an area set aside for vigorous or energetic use such as child play and active sports. A passive recreational area is an area designed for leisure activities such as picnicking.

E.2 Other Terms Defined

Open Space

- ***Core Open Space and Conservation Areas***: Places with unique scenic quality, sensitive lands including wildlife habitat, breeding areas and routes of movement and migration, or other visual or cultural significance protected through cooperative public/ private efforts. They may be publicly (in fee or through conservation easements) or privately owned and protected through cooperative agreements or as part of subdivision land dedication. Development, while limited, may be integrated where compatible with the character of the resources. These areas are not generally accessible by the public and trails are limited or non-existent. There may be opportunities for guided visits and tours in some instances where appropriate and approved by the landowner. In some instances trails and greenways may cross a conservation area or there may be private trails open to homeowners and local residents only. A non-profit land conservancy or trust offering certain tax benefits to the landowners or developers might hold the land or easement.

- ***Greenways (Via Verdes)***: Linear parks and open space corridors that serve recreational and conservation purposes. Greenways often link larger core open spaces or other destinations ideally forming regional interconnected networks for both recreation and routes of wildlife movement. Greenways and Greenbelts may be natural or may be landscaped. They may follow natural features such as arroyos or ridgelines or be created in conjunction with the land development process. Recreational uses include multi-use trails, trailheads, and possibly other attractions such as parks, playgrounds and interpretive facilities. Though some greenways are set aside for conservation purposes and may not be accessible by the general public. Conservation and infrastructure objectives of greenways include preserving wildlife habitat and routes of wildlife circulation, protection of water, air, and scenic qualities, protection of historic and cultural values and public safety from floods. Many greenways serve both conservation and recreational purposes. Greenway land may be on both public and private property.

- ***Greenbelts***: Share the features of greenways but are larger, wider inter-connected open space areas that define the perimeter and boundaries of a city or urban area.

- ***Buffers***: Natural and undeveloped lands that separate and reduce the impacts of development. They also define the boundaries of urbanized areas, reducing urban sprawl and on-going strip development, and contribute to the quality of the local landscape. They occur along the margin of greenways, trail routes, arroyos, canals, open space reserves, agricultural lands and other open spaces. Buffers help protect natural resources, water quality, and wildlife habitat as well as reducing flood damage. They also help avoid land use conflicts and protect privacy and security of properties adjacent to open spaces. Buffers may also serve to separate various land uses such as residential areas and roadways. Buffer lands may be publicly or privately owned property.

- ***View Corridors***: Line of sight and backdrops with high aesthetic appeal and variety. They may protect or enhance the visual integrity of a scenic backdrop. These areas are generally visible, apparent, and appreciated by residents as well as visitors. Examples include Red Rock, Lone Mountain, Mt. Charleston, the Sheep Mountains, and the city skyline. These lands may be publicly or privately owned.

- ***Perimeter Landscaping and Medians***: Landscaped strips along roadways that soften the edges of development. Primarily they serve beautification functions and, generally, they are not accessible for recreation with the exception of roadside trails and sidewalks that may follow the same corridor.

Trails And Non-Motorized Transportation

- ***Regional Multi-Use***: A designated route for non-motorized use. Forms an interconnected off-street recreational and transportation right-of-way system serving a variety of non-motorized uses including biking, hiking, jogging, horseback riding, and other non-motorized uses. Multi-use trails may be paved or unpaved. Paved regional trails accommodate street (narrow tire) bicycles, as well as all-terrain bikes and in-line skates. Multi-use trails link to regional trail systems and other communities, ultimately forming a metro-wide and even a statewide or national network. They may have a crusher-fine (granular stone), asphalt, concrete or other suitable surface depending on anticipated use

(i.e. paved for skates).

- ***Equestrian***: A recreational trail designed and intended strictly for equestrians.

- ***Off Highway Vehicles (OHV)***: Trails for use by off-highway recreational vehicles. This might be a single track or two-track corridor that accommodates, off-road motorcycles, sport utility off road vehicles, and three-wheel and four wheel trail vehicles. Ideally, these trails provide links to more remote recreation areas that cater to off-highway vehicles. Dust control treatments should be used to meet air quality requirements.

- ***All-Terrain Trails***: Natural, soft surface trails designed primarily to accommodate hikers and all-track/mountain bikers (where appropriate) although equestrians and hikers may use these trails as well. This type includes mountain bike trails, interpretive and open space access trails. All-terrain trails may serve as interim trails along some corridors that may later be enhanced as the area develops or funds are raised to upgrade to a multi-use trail.

- ***Roadside Multi-Use Trails***: Facilitate bicycle and pedestrian transportation along highways, principal and minor arterial streets and collector streets where traffic speeds and volumes make it unsafe or unpleasant for on-street bicycle or pedestrian traffic. Wherever feasible, they are separated from auto traffic by a landscaped median or a delineator.

- ***On-street Routes***: Local streets, collector streets, and arterials suitable for bicycle use. They are used for bicycle transportation and may link regional and local trails and trail segments. On-street routes may have defined bike lanes or “bike route” designation. Note that design requirements for on-street bicycle usage will vary depending on traffic speed and volumes, grades, parking and other factors. Planners and engineers should consult Guide for the Development of Bicycle Facilities and A Policy on Geometric Design of Highways and Streets, both published by the American Association of State Highway and Transportation Officials (AASHTO). See also City of Las Vegas standards.

- ***Local service and Link Trails***: Meet local circulation needs, linking neighborhoods, schools, shopping, parks and other community destinations. They should also connect to and feed into multi-use trail systems. They may be paved or unpaved depending on local preference. Loop trails are trails within a park or open space area that may or may not be connected to a larger citywide system. (These trails are not shown on the plan map and should be planned on a site-by-site basis.)

- ***Sidewalks***: Paved and located along the edge of streets. They are for pedestrian use only. Ideally, they are separated from the street by a landscaped median. (Individual sidewalks are not designed in this plan, though a city-wide system is recommended.) Please see City standards.

Active Parks

- ***Regional Park***: A large park that meets the broad needs of the community. It has over 50 acres or more of land area, and serves residents within approximately eight miles. Regional parks may offer both active and passive uses including team sports, informal sports, bicycling, hiking, picnicking (including large group picnic facilities), swimming and water recreation, and feature attractions such as museums.

- ***Sports Complex***: A large multi-field facility

that primarily serves team sports competitions such as soccer, baseball and football. A sports complex may serve city-wide, region-wide and even nationwide events. A sports complex might cover 40-80 acres or more.

- ***Community Park***: A park that serves a broader purpose than neighborhood parks, It has from 25 to 50 acres or more of land area, and serves residents within three miles. Community parks typically have several active play fields for team sports, walking, biking and jogging paths, picnic facilities (including group picnic facilities, playgrounds and parking containing within the site.

- ***Neighborhood Park***: A park that serves as the recreational and social focus of a neighborhood, It has from five to ten acres of land, and serves those residents within one-half mile. It might include a team sports field for both practice and possibly games, turf areas for informal sports use and recreation, walking and jogging paths, informal picnic areas and landscaping.

- ***School Park***: A school playground and sports field that may be open for public use during times that the school is closed.

- ***Mini Park/Urban Plaza***: A park smaller than a neighborhood park. It has no more than one acre of land, and serves residents within one-quarter mile. This type of park might include benches, a small plaza, landscaping, shade structure, and informal recreation facilities such as a basketball, tennis and/or volleyball court.

- ***Special Uses***: Examples of special use park activities include: skate boarding, water recreation, model plane flying, equestrian activities, shooting range, interpretive centers and museums and rock climbing. For purposes of this plan golfing and frisbee golf are also considered special uses. Acreage requirements and service radii vary by activity.

Components, Fixtures and Furnishings
(Includes elements that provide trail access, connectivity, comfort and amenity to trail users.)

- ***Trailheads***: Two types of trailheads are recommended: multi-modal trailheads and neighborhood trailheads.

  Multi-modal Trailheads include parking (typically 20 cars); gateway/trail informational signage; drinking water and toilet facilities. Trailheads may include landscaping and parking areas may be paved in more urban areas. Multi-modal trailheads are strategically located at gateways to popular trail corridors to allow drive up access. They include access for people in wheelchairs and equestrian trailers. Multi-modal trailheads are ideally combined with parks or other activity centers (shared use such as a park and ride). Avoid placement where conflicts with adjacent properties might occur such as close to residences.

  Neighborhood Trailheads do not include parking but provide linkage to neighborhood street and sidewalk systems. They include a gateway sign and access informational signage.

- ***Shade and Storm Shelters***: Structures that provide solace from intense sun and storm events. Generally includes a solid roof or ramada-type trellis roof with benches and lightning arrestor (verify functionality with an engineer)

- ***Bridges, Tunnels and Underpasses***: Bridges and tunnels are appropriate to cross barriers

such as streams, canals, railroads and busy roadways. Bridges and tunnels should provide a minimum 10'-wide trail surface. Tunnels should have 10'-12' of headroom. Bridges should carry a minimum 10,000-pound live load. Clear-span bridges are preferred to bridges with center piers where feasible.

Tunnels should be provided where trails cross roads with high traffic volumes and/or speeds unless traffic controlled at grade crossings are provided. Tunnels should have attractive entryways, have clear visibility with no hiding spaces and adequately lit either by daylight or electric lighting. Paint tunnel interiors with light colored durable paint.

Underpasses allow trails to pass under viaducts along rivers and streams. They should be well anchored to avoid washout, provide at least 8'6" of headroom (10'-12' for horses), be located to avoid frequent and long inundation and provide a safe alternative at-grade crossing during high water.

- ***Street and Railroad Crossings***: Where appropriate and safe, trails will cross streets and railroads at grade. All at-grade crossings must be designed according to AASHTO standards and a traffic engineer should be consulted. Trails should not cross at mid-block. Rather crossings should be at intersections with stop signs, signalization or marked crosswalks.

  Railroad crossings should be properly signalized, gated and protected per railroad, Manual of Uniform Traffic Control Devices (MUTCD) and Nevada Public Utilities standards. Trails should approach and cross tracks at a 90-degree angle with proper crossing surface such as a rubberized system preferred for durability. See also AASHTO Guide for the Development of Bicycle Facilities.

- ***Toilets, Drinking Water And Trash Facilities***: Toilet facilities and drinking water should be provided along the trail at high use areas and at multi-modal trailheads as well as every two to four miles along more remote trails.

  Durable pit-type or chemical toilets provided by a service are recommended to reduce maintenance. Toilets should be visually buffered from other land uses including residences, picnic areas, and other incompatible uses. Commercial chemical toilets can be screen and secure framed. All facilities should be accessible to people of all abilities including those in wheelchairs.

  Trash containers should be consistent with city design standards and themes. For more remote trails a "pack-in/pack-out" policy is recommended. In more heavily used areas trash containers may be located at rest areas, trailheads, parks, and restroom areas.

- ***Horse Watering Stations***: Drinking facilities for horses. Should allow refilling for each horse or group of horses to avoid cross contamination.

- ***Rest Areas***: Rest areas may include benches (benches with backs preferred) bike racks, shade and drinking water. Facilities should be offset from the trail sufficiently to avoid conflicts with through bike and pedestrian traffic.

- ***Trailside Landscaping***: Trailside landscaping should be low maintenance, drought tolerant and natural appearing. Shade tree groupings are encouraged, especially around rest areas

and trailheads. Landscaping should fit the high desert character of the area.

The edge of the trail should be groomed and under-story vegetation and thickets proximate to the trail should be trimmed to avoid hiding places to promote security. In larger open spaces, native vegetation may be mowed and shaped to in attractive sweeps. Attractive shrubs may be used to add color and variety. Landscape buffers may be used to screen incompatible adjacent land uses or promote privacy of nearby residents. The landscape plan should consider potential wildfire, weed management and pest control. Street landscaping should be similarly drought tolerant and low maintenance.

Wayfinding Systems

- ***Wayfinding Systems***: The signage and way-finding system is an attractive, distinct, uniform system of signs, displays and possibly artistic elements that guides and informs both local and out of the area users with respect to open spaces, greenways, trails, park facilities and other amenities. The system is comprehensive and citywide. The system includes: entry monuments, gateway information signs with maps, directional signs, traffic and safety signage, mile markers, interpretive signs, displays, artistic/sculptural elements and artifacts.

Right-of-Way Requirements

Right-of-way needs will vary depending on the type of greenway or trail, land ownership, and site constraints. In some cases right-of-way will be donated or dedicated as part of the subdivision process or as part of a cooperative agreement of mutual benefit such as along an irrigation canal or utility corridor. In the case of greenways and canal corridors, right-of-way should be wide enough to accomplish resource and scenic preservation objectives as discussed above.

While widths for landscaping, resource conservation, and protection of privacy for adjacent properties will vary, minimum width requirements for trails are as follows:

- ***Multi-Use Trails***: minimum 16'; preferred 22'

- ***For roadside trails***: minimum 5' setback from curb unless a railing is provided and minimum 36" setback from land uses such as parking lots or buildings. Avoid conflict with overhang from parked vehicles. Please note that these are minimum trail criteria and do not include requirements for landscape--please see City standards.

- ***Primitive Trails and All-Terrain Trails***: minimum 8'-wide, optimal 14'-wide

Executive Summary

E.1 Overview

After more than two decades of record population growth, the City of Las Vegas has determined the need to establish an open space master plan for the Northwest region to balance growth and development with conservation of native lands and rural character that is historic to this part of the city. The primary goal of the Open Space Plan is to "*Improve the quality of life and community character of northwest Las Vegas with a well planned system of interconnected open spaces, greenways, trails, parks and protected landscapes. Achieve optimal, cost effective, sustainable implementation and management of open space resources.*"

The approximately 50-square miles that makes up Northwest Las Vegas is bounded by Cheyenne Avenue to the south, Red Rock Canyon National Conservation Area to the west, Moccasin Drive to the north and the City of North Las Vegas to the east (Decatur Boulevard).

The purpose of this Open Space Plan is to protect non-programmed and programmed open space which in the future can be devoted to 1) the preservation of natural resources, 2) outdoor recreation, 3) preservation of historic and cultural property, 4) protection of scenic landscapes, and 5) protection of public health, safety and welfare. To accomplish this purpose, the City of Las Vegas needs to adopt aggressive policies and programs that balance growth with natural resource conservation. The city is in need of a stewardship program that protects valued open space before it is permanently lost to development.

E.2 Planning Process

The City of Las Vegas and the project consultant team of Greenways Incorporated, The Greenway Team, JW Zunino and Associates, ETC Institute and The Trust for Public Land, have developed this plan in cooperation with a citizens' Open Space Advisory Committee. Additionally, a Technical Working Group consisting of federal, state and local government agencies that represent land management, community development, utilities, law enforcement, stormwater management, and resource planning in the Greater Las Vegas area actively participated throughout the planning process.

E.3 Key Recommendations

The consultants for this Plan recommend that the City of Las Vegas establish a planning goal of protecting 30% of the land in the Northwest Region as future open space. This 30% goal is recommended as a minimum target based on the ecological, social, economic, and political realities of Las Vegas and is designed to ensure a quality of life in the 21st century that is progressive, sustainable, healthy and economically viable.

The open space system defined in the Plan is based on a "hub and spoke" concept that links residential neighborhoods, employment centers, open space, parks and trails that is conveniently accessible to residents of the Northwest region. There are four major components of open space identified in the plan 1) protection of natural systems, 2) active recreational landscapes, 3) historic and cultural landscapes, 4) contiguous open space corridors (such as greenways and trails).

This open space system for the Northwest region is physically located close to where people live, work, shop and go to school. In addition to this network, the plan recommends the protection and stewardship of the federal and state lands that surround the Las Vegas Valley under a system named in the plan as the Las Vegas Vias Verdes.

The plan recommends the establishment of a new "Northwest Cultural Park," that could include: 1) improvements to Floyd Lamb State Park, 2) a new equestrian park, 3) a new model railroad society park, and 4) a new archaeological park.

The trail system element of the plan recommends a network of off-road and roadside multi-use trails serving cyclists, pedestrians and equestrians. This network is logically planned to be directly accessible by residents, connect to major open space destinations and serve a non-motorized transportation function.

One of the primary goals of the plan is to better protect the native landscapes and natural infrastructure including wildlife habitat, arroyos and

washes, viewsheds and desert ecosystems. These objectives would be achieved through techniques that include promoting higher density conservation-based development, partnering with other agencies such as the Clark County Flood Control District to protect arroyos, acquiring targeted open space parcels through a partnership with private sector conservation organizations such as The Trust for Public Land, and defining opportunities for contiguous open space to be assembled in the Northwest region through the land development process.

The plan addresses both routine and long term remedial maintenance and management considerations, including specific procedures and projected costs for operations and management. The plan also includes recommendations for funding and operating the Northwest open space program.

Finally, this plan recommends establishing a Vias Verdes on the lands surrounding the Las Vegas Valley. The Vias Verdes would be a large-scale conservation strategy for the publicly and privately owned lands that surround the valley and form the mountainous visual backdrop. The lands within the proposed Vias Verdes would include Lake Mead National Recreation Area, Sheep Mountains, Sloan Canyon National Recreation Area, Desert National Wildlife Refuge, Red Rock Canyon National Conservation Area.

E.4 Next Steps

The next steps for the Open Space Plan will be to implement the recommendations provided in this Plan. There are a number of different recommendations that are called for, including policies, programs, facilities and operations. These are organized under the following short term, mid term and long term strategies.

<u>Short Term: Zero to 2 year (FY 05-06)</u>

• Revise the subdivision ordinance to promote more open space conservation

• Complete the design program for the Northwest Cultural Park

• Work with the Clark County Flood Control District to define protection strategies for arroyos and washes in the northwest region

• Apply for SNPLMA funding to pay for the open space acquisitions and facilities recommended in this Plan

• Work with partners to acquire the most highly ranked and threatened open space properties

• Build number one ranked trails, roadway crossings and trailheads

• Begin construction of the Northwest Cultural Park

• Establish the Las Vegas Valley Land Trust

• Define appropriate management roles for open space resources

<u>Mid Term: 3 to 5 year (FY 07-09)</u>

• Continue construction of the Northwest Cultural Park facilities

• Work with partners to acquire the secondarily ranked open space

• Build the number two and three ranked trails, roadway crossings and trailheads defined by this Plan

• Define operation and management agreements for lands and facilities that are part of this phase of implementation

Long Term: 6 and beyond (FY 10)

• Update this Open Space Plan, reconsider the recommendations and priorities of this Plan

• Continue construction of the Northwest Cultural Park facilities

• Work with partners to acquire outstanding open space properties

• Build the number four and five ranked trail facilities, roadway and trailheads defined by this Plan

Appendix C: Open Space and Trail Design Options

C.1 Introduction

The intent of this chapter is to establish the design guidelines, principles and options by which trails and associated open space amenities within the Northwest Open Space Plan can be designed and developed. These are standards to be followed for all design segments of the system.

The design options featured here have been tailored to meet the specific facility development needs of the City of Las Vegas. They provide a variety of trail and trail facility ideas and serve as minimum standards for facility development. These guidelines are not a substitute for a more thorough examination and detailed landscape architectural and engineering evaluation of each project segment.

The guidelines adhere to national design standards for off-road trails and greenway facilities, as defined by the American Association of State Highway Transportation Officials (AASHTO), the Americans with Disabilities Act, Designing Sidewalks and Trails for Access: Part 2 and the Manual on Uniform Traffic Control Devices. Should the national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions.

For more in-depth information and design development standards, the publications listed below should be consulted:

Greenways: A Guide to Planning, Design and Development
Charles A. Flink and Robert Searns
Published by Island Press, 1993
www.greenways.com

Trails for the Twenty-First Century
Charles A. Flink, Robert Searns & Kristine Olka
Published by Island Press, 2001
www.greenways.com

Guide to the Development of Bicycle Facilities
Updated in 2000 by the American Association of State Highway Transportation Officials (AASHTO).
Available from FHWA or AASHTO
www.aashto.org/bookstore/abs.html

Manual on Uniform Traffic Control Devices (MUTCD)
Published by the U. S. Department of Transportation, Washington, DC, 2001

Universal Access to Outdoor Recreation: A Design Guide
Published by PLAE, Inc., Berkeley, CA, 1993

Designing Sidewalks and Trails for Access: Part Two - Best Practices Design Guide
Published by U.S. Department of Transportation, Washington, DC, 2001

Other useful web sites for information include:

- Rails-to-Trails Conservancy - www.railtrails.org
- National Park Service - www.nps.org
- U.S. Department of Transportation - www.walkinginfo.org and www.bicyclinginfo.org
- Trails and Greenways Clearinghouse - www.trailsandgreenways.org
- National Bicycle and Pedestrian Clearinghouse - www.bikefed.org/clear.htm
- Greenways Incorporated - www.greenways.com
- www.americantrails.org

C.2 Trail Theme

Planning for a trail calls for close evaluation of the trail locations and the ultimate users of the trail. The overall theme is based on site conditions, natural features, goals and functions for the trail. Ideas and concepts should incorporate elements that will help the trail users identify, understand and appreciate the trail. The purpose and significance of the trail should be given careful consideration in developing a theme. These details will come together to form the foundations for design, trail programs and interpretive opportunities. In establishing a theme for the trail system, the following were considered:

- Physical fitness activities
- Water resources
- Cultural and historical resources
- Natural history
- Plant and animal life
- Access to other trails and destinations
- Conservation issues
- Seating
- Shade
- Multiple use i.e. power line corridors
- Views
- Wayfinding
- Non-motorized transportation

The Northwest Open Space Plan trail system shall have an Old Spanish Trail theme. The Old Spanish Trail often called, “the longest, crookedest, most arduous pack mule route in America,” was established in 1829. It was the link between Santa Fe and Los Angeles running 1,120 miles. Las Vegas was an important stopover offering water and refuge. Today, remnants of the trail can still be found in parts of the Las Vegas Valley. The Old Spanish Trail theme will give the trail an individual identity tied to the past and looking to it’s future. This theme will highlight the history and importance of the trail and its connection to ancient and more modern cultures. Historical and cultural concepts drawn from the Old Spanish Trail will be incorporated into the trail. In conjunction with these elements, the standard features of the trail such as interpretive signage will reflect the image of the Old Spanish Trail. Landscaping will be used to enhance the atmosphere of the trail with an appropriate desert, water conscious plant palette.

C.3 Arroyo Buffers

An arroyo is a nearly vertically walled, flat floored stream channel that forms in fine, cohesive, easily eroded material. Arroyos cut into the valley floor, are often wide, and can be hundreds of miles long. Arroyos exist throughout the western United States, but are most common in arid and semi-arid climates in the Southwest.

Natural arroyos are rich in plant life due to the soil moisture that remains after runoff events. Dense growths of acacia, baccharis, native mesquite, and creosote line arroyo channels. Native grasses often are quite healthy along these channels also. The abundant vegetation attracts a concentration of native wildlife in search of food and shelter. Herbivores like the jackrabbit, cottontail, chipmunks, flocks of sparrows, and other birds flock to natural arroyos. Predators like the coyote, hawk, roadrunner, and a variety of snakes and lizards also frequent natural arroyos. Mountain lions use arroyo channels as migratory routes. With such a diversity of plants and wildlife, buffers are necessary to maintain this habitat. It is recommended that a minimum 30’ buffer be required from the outer perimeter of each side of the arroyo to maintain the vegetative and animal life habitats. As an alternative, arroyo buffers can be varied according to ecological features of the watershed. Each buffer width should be site specific, depending on the following characteristics:

- Slope
- Soil
- Hydrology
- Vegetation
- Water Quality
- Impervious Surface

C.4 Corridor Landscaping

Some basic guides for planting in corridors are as follows:

- Efforts should be made to eliminate non-native, invasive species such as tamarisk (*Tamarix aphylla)* from corridors
- Where vegetation is removed or harmed due to construction in the corridor, revegetation measures should be employed
- Fallen trees should not be removed unless they obstruct trails or present danger. Otherwise they should be left to decay naturally
- Flowering trees and shrubs can be used to draw attention to important intersections and entrances
- Shade trees are needed near seating areas and picnic tables
- Evergreen trees and shrubs can help separate public areas from private residences

C.5 Multi-Use Trail in Urban Areas

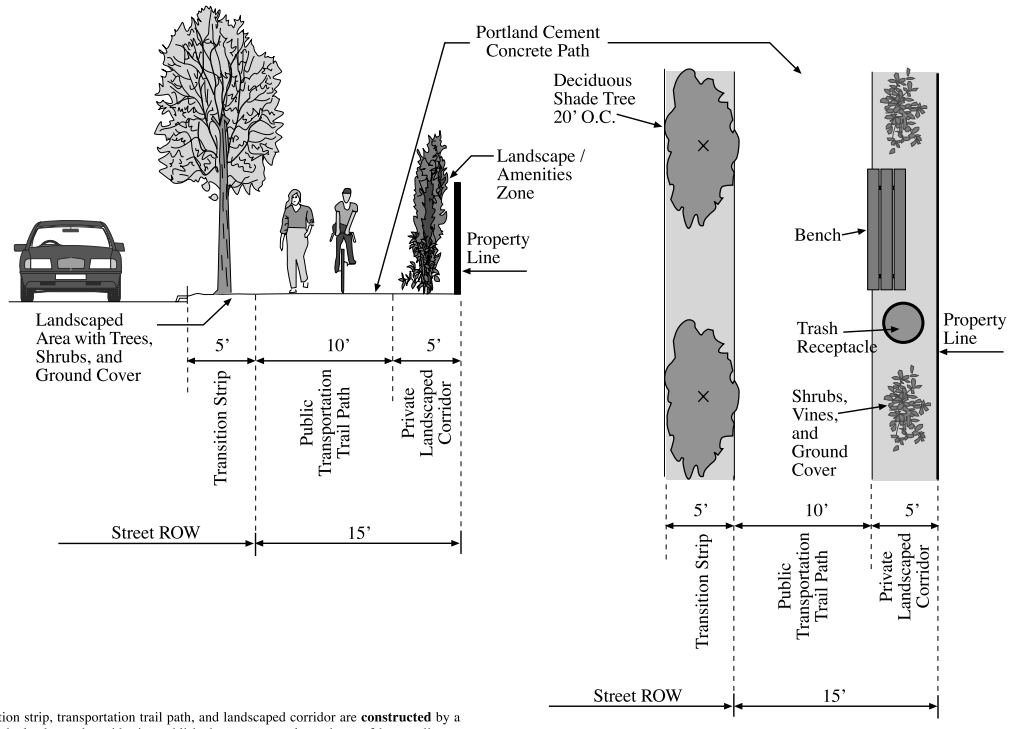
In urban areas, trail development can be restricted due to right-of way constraints. Trails in urban areas are designed to accommodate walkers, bicyclists, rollerbladers, joggers, etc. and be ADA accessible. They encourage outdoor recreation and social interaction.

Elements of Multi-Use Trails in Urban Areas:

- 10' minimum width
- Provide connections between parks, open spaces, schools, transportation and community nodes, etc.
- Provide visual distinction
- Minimize trail grades
- Where fencing is needed, open types should be used
- Provide benches, trash receptacles at regular intervals

CITY OF LAS VEGAS
Transportation
Trails Element

Exhibit 1
Multi-Use Transportation Trail



Notes:
The transition strip, transportation trail path, and landscaped corridor are **constructed** by a developer; the landscaped corridor is established as a common lot and **owned** by an adjacent property owner or homeowners association; the transportation trail path is **deeded** to the City; the transition strip, transportation trail path, and landscaped corridor are **maintained** by an adjacent maintenance or homeowners association.

Adopted January 16, 2002

• Provide enhanced landscaping and shade
• Where possible, setback the trail path from any roadways
• Provide lighting where existing lighting is not sufficient

C.6 Arroyo Trail

Arroyo trails should meander along the edge of the arroyo within the arroyo buffer. The trail path is designed to accommodate walkers, joggers, rollerbladers, bicyclists and be ADA accessible.

Elements of Arroyo Trails:

- 10-foot minimum width
- Provide connections between parks, open spaces, schools, transportation and community nodes, etc.
- Provide visual distinction
- Minimize trail grades
- Where fencing is needed, open types should be used
- Provide benches, trash receptacles at regular intervals
- Provide enhanced landscaping and shade
- Provide shade structures and picnic areas
- Provide revegetation in disturbed areas
- Provide interpretative signage where appropriate
- Where possible, setback the trail path from any roadways
- Provide lighting where existing lighting is not sufficient

C.7 Equestrian Trail

Equestrian and multi-use trails have very different design characteristics. An equestrian trail is designated solely for horse users. Combining equestrians and other users can be very dangerous for all involved.

Equestrian trails have some distinct characteristics that better support horse use. This includes a non-paved surface use (generally a crusher fine tread), adequate head clearance, and water facilities where feasible and accommodation of horse trailers at access points. In some instances where there is not adequate space for separate trail treads, all-terrain bicycles (mountain bikes) and pedestrians might be sharing the trail and appropriate signage and user courtesy information must be posted or prohibition posted and enforced.

Elements of Equestrian Trails:

- Provide enough width for a horse to turn around
- Separate equestrian use from other uses with a fence
- Provide visual distinction
- Provide soft surface material that will not injure the horses' hooves
- Provide benches, trash receptacles at regular intervals
- Provide enhanced landscaping and shade
- Provide setback of trail path from any roadways
- Provide lighting where existing lighting is not sufficient

C.8 Trail within Powerline Easements

Whenever possible, agreements should be made to incorporate trails within powerline easements. These types of partnerships enhance connectivity and add to trail opportunities. The trail can accommodate walkers, joggers, rollerbladers, bicyclists, horses, and should be ADA accessible.

Power corridors generally are an opportunity for trail placement. They provide more than adequate open space, generally 40' wide for a smaller 138 KV single pole to 170' wide for double 230 KV poles. These areas are usually free of obstructions (excluding the poles), are reasonably flat and traverse through areas for long distances.

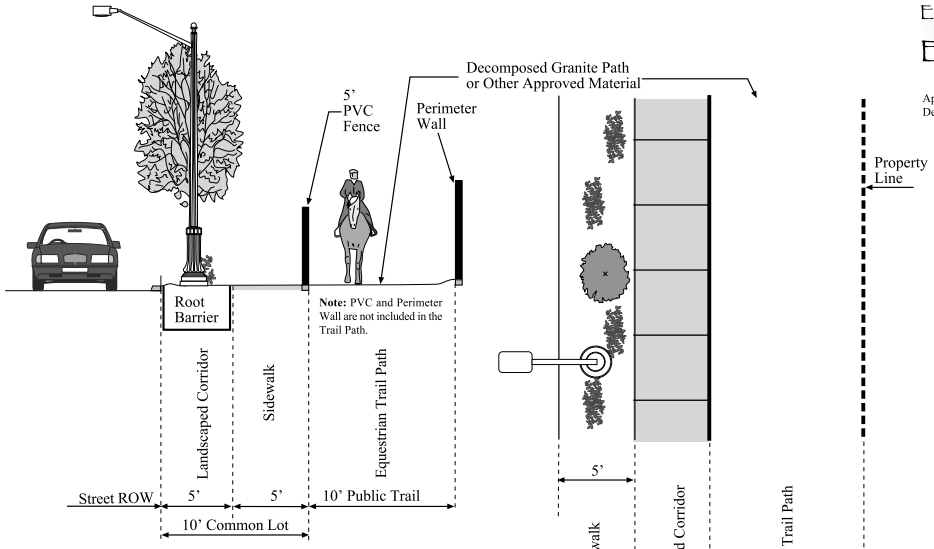
There are some restrictions placed on activity that is permitted in this corridor. Generally, structures, fences and trees can not occur within the "drip line" plus 5' of the arms of the power poles and a clear zone of 40' in diameter is required around each individual pole.

Appendix C: Design Options

CITY OF LAS VEGAS
Recreation
Trails Element

Exhibit 1
Equestrian Trail

Approved by City Council
December 1, 2004



Notes:
The landscaped corridor and sidewalk are constructed by the developer and defined as a common lot with a pedestrian walkway easement and utility easement granted over the 5-foot sidewalk on subdivision map. Public easements will be required for streetlights, fire hydrants, etc., not located in the public right-of-way. They must be situated so as not to block the sidewalk. The equestrian trail path is constructed by the developer, defined as a separate lot, and deeded to the city. All areas are owned and maintained by a homeowner's association/private property owner, except **the equestrian trail path which is maintained by the City.** City maintenance shall consist of removal of debris and surface grading once every calendar year.

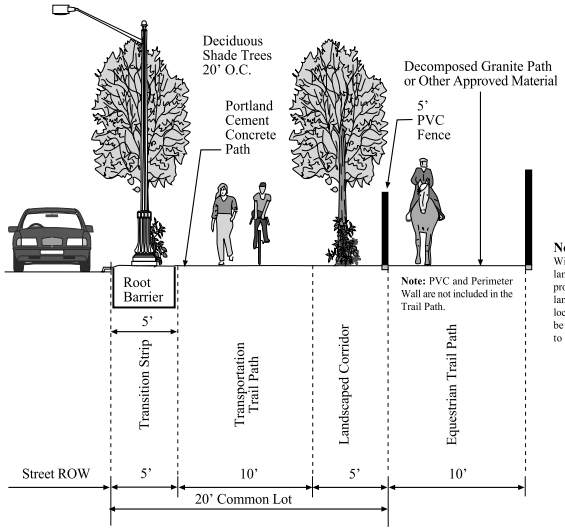
For protection from storm water, trees planted in the landscaped corridor adjacent to right-of-way must be securred by a decorative tree grate in stamped concrete.

exhibit#1\trails-rec\masterplan\frhrsd\rs\12-06-04

13

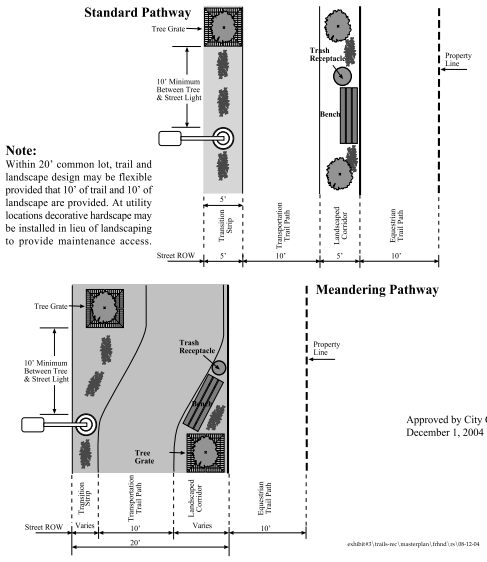
CITY OF LAS VEGAS
Recreation
Trails Element

Exhibit 3
Multi-Use Equestrian Trail



Notes:
The transition strip, transportation trail path, and landscaped corridor are constructed by the developer and defined as a common lot with a pedestrian walkway easement and utility easement granted over the 10-foot trail path on subdivision map. The equestrian trail path is constructed by the developer, defined as a separate lot, and deeded to the city. All areas are owned and maintained by a homeowner's association/private property owner, except the equestrian trail path which is maintained by the City. City maintenance shall consist of removal of debris and surface grading once every calendar year.

For protection from storm water, trees planted in the transition strip adjacent to right-of-way must be secured by a decorative tree grate in stamped concrete.



Approved by City Council
December 1, 2004

exhibit#3\trails-rec\masterplan\frhrsd\rs\08-12-04

21

The Nevada Power Company also requires a maintenance road be provided. This access road would run between the double poles so both poles can be accessed from it. This affords a very practical opportunity for an equestrian trail owing to the fact that their preferred roadway material is the natural soil. If the native material isn't adequate due to large rubble, collapsible soils or caliche out cropping then a compacted gravel or Type II is preferred. Any of these materials would make for a very practical & functional equestrian trail.

Trail heads and restrooms, although they can not occur in the drip line plus 5' zone, they can easily occur just outside this no build zone and be connected into the overall trail. These rest areas could be an attraction, and create a shaded area for relaxation and parking.

Elements of Powerline Easement Trails:

- 10-foot minimum width
- Provide connections between parks, open spaces, schools, transportation and community nodes, etc.
- Provide benches, trash receptacles at regular intervals
- No permanent structures are allowed within the easement
- Provide enhanced landscaping (within height restrictions) and shade
- Where possible, setback the trail path from any roadways

C.9 Major and Minor Trailheads

Trail heads should be installed throughout the greenway system to give the public access. These serve as points of formal public entry into the greenway system that may provide certain related public facilities such as parking, restrooms, drinking fountains, trail signage, etc. A mix of major and minor trail heads is suggested. On the next several pages, three levels of trailheads have been defined to show how different degrees of facility development can be matched with the type and amount of use that is expected at a particular site.

LEVEL I: MINIMALLY DEVELOPED

This type of trailhead provides a minimum level of facility development and should be located at minor trail connections. If the site conditions are appropriate, 4-10 parking spaces may be included. The exact number of spaces should be based on the expected use. The facilities that are provided at a level I trailhead are:

1. Accessible Parking (where warranted)
2. Trail signage
3. Waste receptacle
4. Minimal landscaping

All trailhead design criteria must comply with the following:

- The American Association of State Highway and Transportation Officials (AASHTO)
- Americans with Disabilities Act (ADA)
- Local Building Codes
- Trailhead Ingress/ Egress geometric designs compliant with the Federal Highway Administration and AASHTO

At any developed trail head, the parking lots should be placed at least 50' from an arroyo or wash to minimize runoff and pollution. All parking areas should be gravel or, if permanently surfaced, should be made of

permeable materials. Finally, the potential for flooding and the impacts of such an event should be considered when determining the location of any trailhead.

LEVEL II - MODERATELY DEVELOPED

The level II trailhead provides fewer accommodations than the level III facility, but is still designed to accommodate fairly heavy use. Level II trailheads should be located at major trail connections or intersections. The facilities that are provided at these trailhead are:

1. Permanent or portable restrooms
2. Accessible Parking (Conflict with other trail users should be minimized.)
3. Seating
4. Trail and Informational signage (i.e. wall mounted kiosk)
5. Bicycle racks
6. Shade (i.e. structures/ plant material)
7. Waste receptacles
8. Landscaping
9. ADA accessibility

LEVEL III: HIGHLY DEVELOPED

A level III trailhead is designed for placement at the beginning and end of the most highly used segments. Many portions of the Northwest trails system will not receive the level of use that warrants this degree of facility development. In general, Level III trailheads should be used on routes that connect major destination points. Level III trailheads are also desirable on routes that are likely to accommodate public events such as races or charity walks. The facilities that are provided at a level III trailhead are:

1. Restrooms.
2. Accessible Parking. (Special considerations should be given to how horses are accommodated on multi-use trails and where users may park trailers. Conflict with other trail users should be minimized.)
3. Drinking fountains and (watering device for horses on equestrian routes)
4. Telephone(s) for emergency and coordination of events
5. Seating (benches)
6. Lighting
7. Trail and Informational signage (i.e. wall mounted on freestanding kiosk)
8. Bicycle racks
9. Shade (i.e. structures/ plant material)
10. Waste receptacles
11. Landscaping
12. Overflow parking allowances
13. ADA accessibility

C.10 Restrooms

Public amenities such as phones and restrooms should be located and concentrated at the confluence of vehicular and pedestrian traffic. ADA accessible restrooms should be placed at major trail access points in order to accommodate trail users. Where possible, other uses should be incorporated into the structure, such as storage for maintenance equipment. These structures should be located adjacent to thoroughfares for security, maintenance and access to utility hookups. They should also make use of natural light and ventilation as much as possible.

Typical Restroom

Waterless Restroom Option

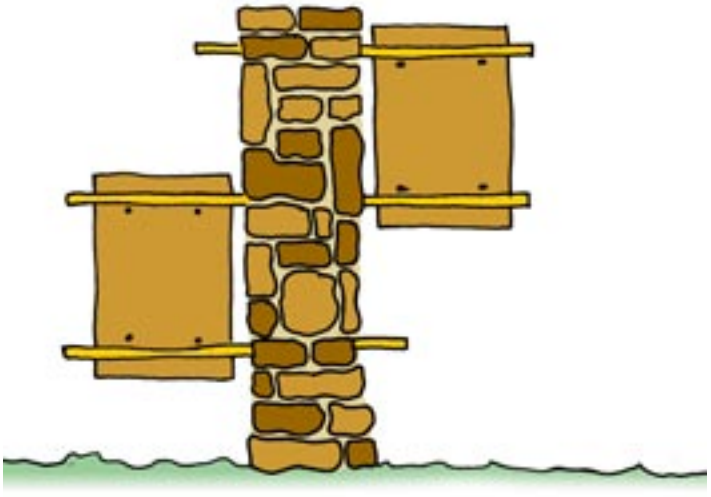
C.11 Directional Signage

Trail rules should be posted at entry points to the system. The purpose of directional signage is to guide the trail user, give directions and let them know they are still on the trail.

Where signs are located along the trails is important so that their visibility is maximized. Maintaining a certain distance from the actual tread is important for safety reasons.

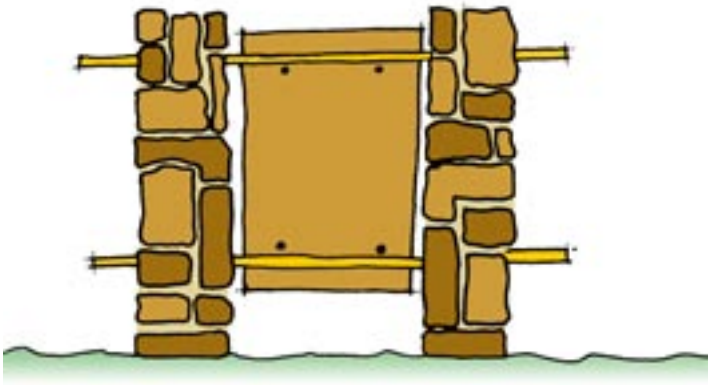
These signs should be informational and include some of the following:

- Trail direction markings, specifically at mid-street and intersection crossings
- Warnings of dangers, especially for multi-use trails
- Distance markings, time and mileage
- Safety messages related to multi-uses, crossings
- Indicate allowable uses on the trail
- Use logos to identify the trail
- Describe accepted right of way hierarchy in which for example, cyclists yield to runners and both yield to walkers and hikers
- Warn trail users that they are about to leave the trail and enter a traffic area
- Provide additional information as necessary



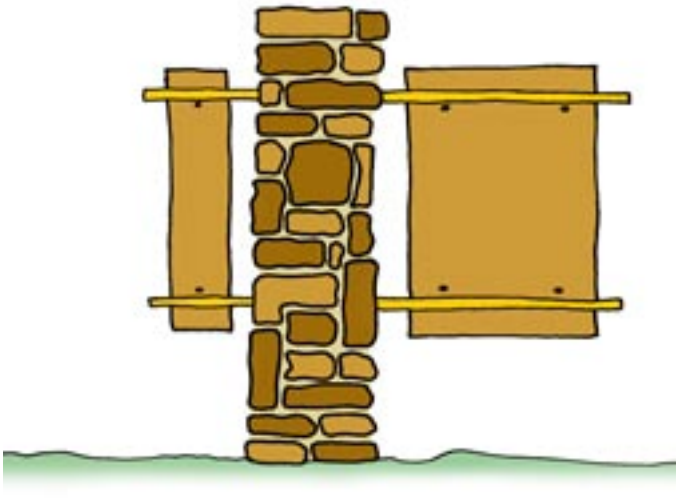
C.12 Interpretive Signage

Trails can benefit from signs that explain the natural, cultural, and historic value of a site. This sort of interpretive signage helps users understand the many values of the trail system and can be valuable tools in using the trail system as an educational tool.



C.13 Entry Signage

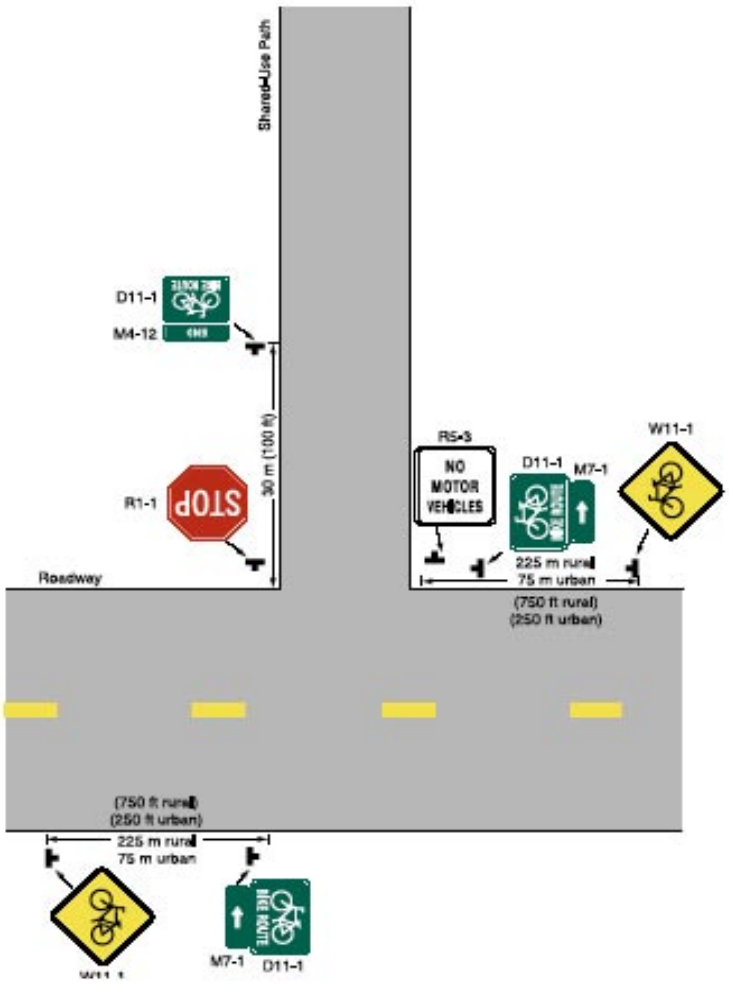
Proper trail identification at trail terminal point and major intersections is important in the development of a comprehensive trail network. Greenway entry signage may also include mileage to provide users with a reference as to how far he or she has traveled, and the remaining distance to specific destinations.



C.14 DOT Bike Signage

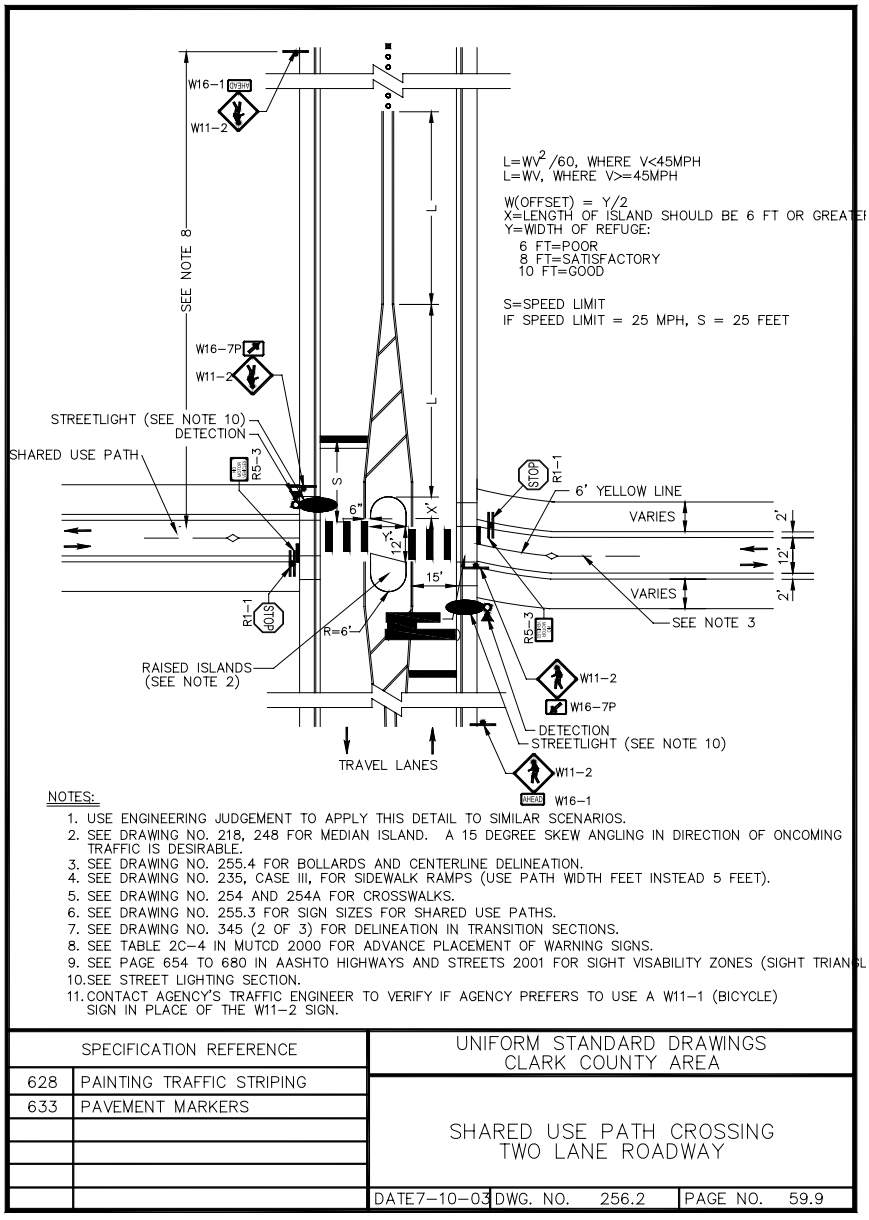
The US Department of Transportation's Manual on Uniform Traffic control Devices (MUTCD) specifies standard signage for all transportation configurations. Chapter 9 of that document is dedicated to traffic controls for Bicycle Facilitities. The entire document is available online at http://mutcd.fhwa.dot.gov/

It is recommended that this manual be consulted regularly regarding the proper placement of bicycle (and pedestrian) related traffic signage. Below is one example from the document about proper placement of bicycle related signs.



C.15 Trail Crossings

The images below present detailed specifications for the layout of intersections between trail corridors and roadways. Signage rules for these sorts of intersections is available in the MUTCD as well.



NOTES:

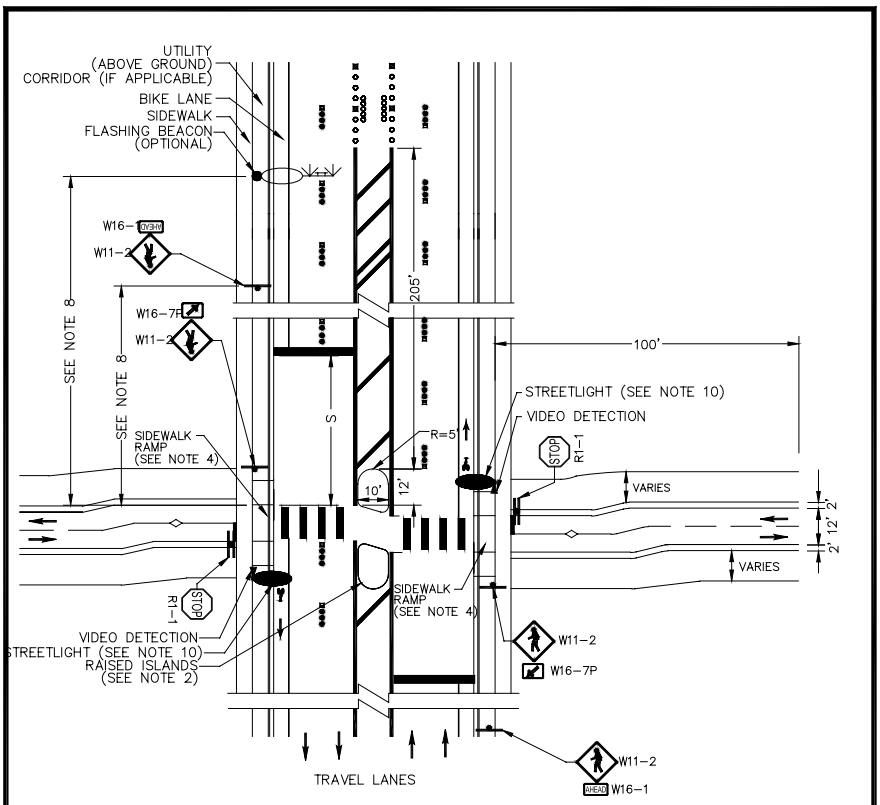
1. USE ENGINEERING JUDGEMENT TO APPLY THIS DETAIL TO SIMILAR SCENARIOS.
2. SEE DRAWING NO. 218, 248 FOR MEDIAN ISLAND. A 15 DEGREE SKEW ANGLING IN DIRECTION OF ONCOMING TRAFFIC IS DESIRABLE.
3. SEE DRAWING NO. 255.4 FOR BOLLARDS AND CENTERLINE DELINEATION.
4. SEE DRAWING NO. 235, CASE III, FOR SIDEWALK RAMPS (USE PATH WIDTH FEET INSTEAD 5 FEET).
5. SEE DRAWING NO. 254 AND 254A FOR CROSSWALKS.
6. SEE DRAWING NO. 255.3 FOR SIGN SIZES FOR SHARED USE PATHS.
7. SEE DRAWING NO. 345 (2 OF 3) FOR DELINEATION IN TRANSITION SECTIONS.
8. SEE TABLE 2C-4 IN MUTCD 2000 FOR ADVANCE PLACEMENT OF WARNING SIGNS.
9. SEE PAGE 654 TO 680 IN AASHTO HIGHWAYS AND STREETS 2001 FOR SIGHT VISABILITY ZONES (SIGHT TRIANGL
10. SEE STREET LIGHTING SECTION.
11. CONTACT AGENCY'S TRAFFIC ENGINEER TO VERIFY IF AGENCY PREFERS TO USE A W11-1 (BICYCLE) SIGN IN PLACE OF THE W11-2 SIGN.

SPECIFICATION REFERENCE	
628	PAINTING TRAFFIC STRIPING
633	PAVEMENT MARKERS

UNIFORM STANDARD DRAWINGS
CLARK COUNTY AREA

SHARED USE PATH CROSSING
TWO LANE ROADWAY

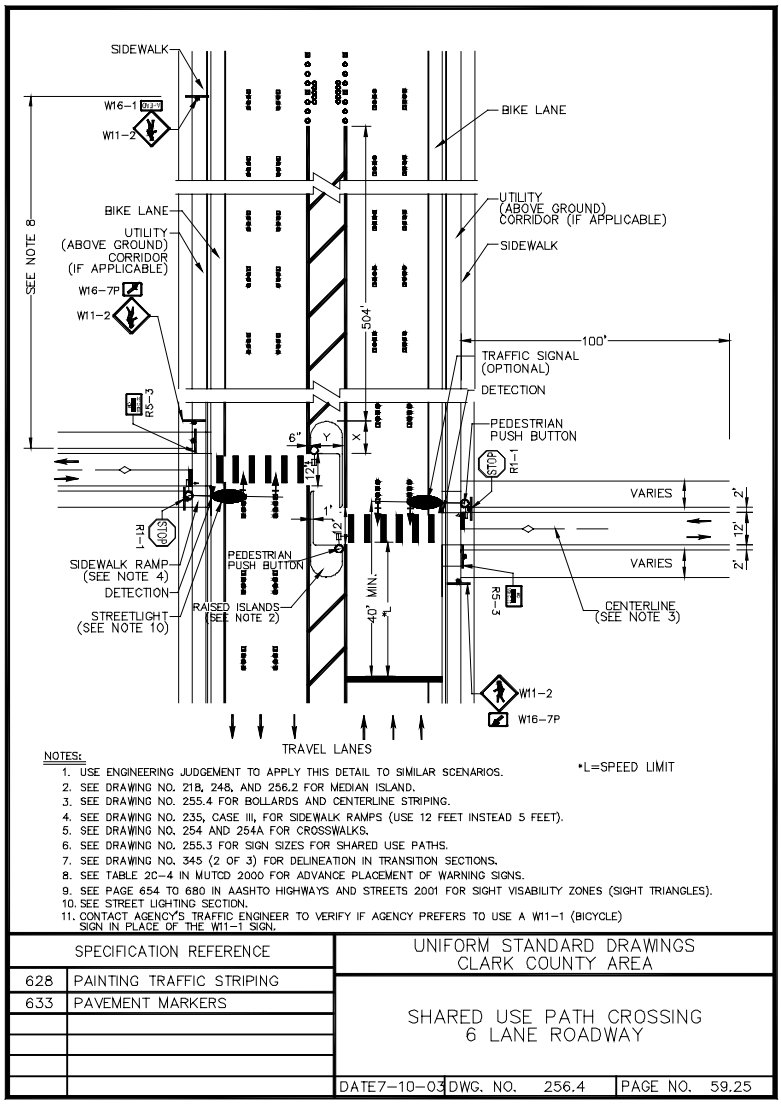
DATE 7-10-03 | DWG. NO. 256.2 | PAGE NO. 59.9



NOTES:

1. USE ENGINEERING JUDGEMENT TO APPLY THIS DETAIL TO SIMILAR SCENARIOS.
2. SEE DRAWING NO. 218, 248, AND 256.2 FOR MEDIAN ISLAND.
3. SEE DRAWING NO. 255.4 FOR BOLLARDS AND CENTERLINE STRIPING.
4. SEE DRAWING NO. 235, CASE III, FOR SIDEWALK RAMPS (USE 12 FEET INSTEAD 5 FEET).
5. SEE DRAWING NO. 254 AND 254A FOR CROSSWALKS.
6. SEE DRAWING NO. 255.3 FOR SIGN SIZES FOR SHARED USE PATHS.
7. SEE DRAWING NO. 345 (2 OF 3) FOR DELINEATION IN TRANSITION SECTIONS.
8. SEE TABLE 2C-4 IN MUTCD 2000 FOR ADVANCE PLACEMENT OF WARNING SIGNS.
9. SEE PAGE 654 TO 680 IN AASHTO HIGHWAYS AND STREETS 2001 FOR SIGHT VISABILITY ZONES (SIGHT TRIANGLES).
10. SEE STREET LIGHTING SECTION.
11. CONTACT AGENCY'S TRAFFIC ENGINEER TO VERIFY IF AGENCY PREFERS TO USE A W11-1 (BICYCLE) SIGN IN PLACE OF THE W11-1 SIGN.

SPECIFICATION REFERENCE		UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA		
628	PAINTING TRAFFIC STRIPING	SHARED USE PATH CROSSING 4 LANE ROADWAY		
633	PAVEMENT MARKERS			
		DATE 7-10-03	DWG. NO. 256.3	PAGE NO. 59.15



NOTES:

1. USE ENGINEERING JUDGEMENT TO APPLY THIS DETAIL TO SIMILAR SCENARIOS.
2. SEE DRAWING NO. 218, 248, AND 256.2 FOR MEDIAN ISLAND.
3. SEE DRAWING NO. 255.4 FOR BOLLARDS AND CENTERLINE STRIPING.
4. SEE DRAWING NO. 235, CASE III, FOR SIDEWALK RAMPS (USE 12 FEET INSTEAD 5 FEET).
5. SEE DRAWING NO. 254 AND 254A FOR CROSSWALKS.
6. SEE DRAWING NO. 255.3 FOR SIGN SIZES FOR SHARED USE PATHS.
7. SEE DRAWING NO. 345 (2 OF 3) FOR DELINEATION IN TRANSITION SECTIONS.
8. SEE TABLE 2C-4 IN MUTCD 2000 FOR ADVANCE PLACEMENT OF WARNING SIGNS.
9. SEE PAGE 654 TO 680 IN AASHTO HIGHWAYS AND STREETS 2001 FOR SIGHT VISABILITY ZONES (SIGHT TRIANGLES).
10. SEE STREET LIGHTING SECTION.
11. CONTACT AGENCY'S TRAFFIC ENGINEER TO VERIFY IF AGENCY PREFERS TO USE A W11-1 (BICYCLE) SIGN IN PLACE OF THE W11-1 SIGN.

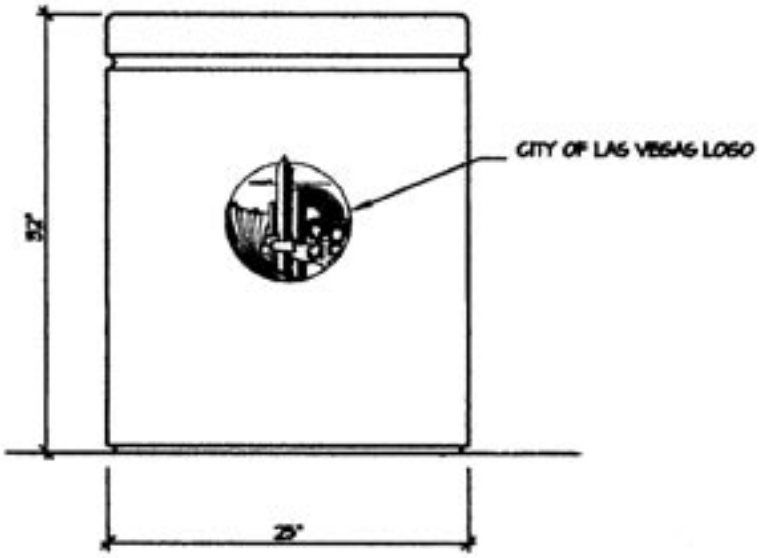
*L=SPEED LIMIT

SPECIFICATION REFERENCE		UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA		
628	PAINTING TRAFFIC STRIPING	SHARED USE PATH CROSSING 6 LANE ROADWAY		
633	PAVEMENT MARKERS			
		DATE 7-10-03	DWG. NO. 256.4	PAGE NO. 59.25

C.16 Trash Receptacles

Trash receptacles should be located at each entranceway and at each bench seating area. They should be set back 3’ from the edge of the trail.

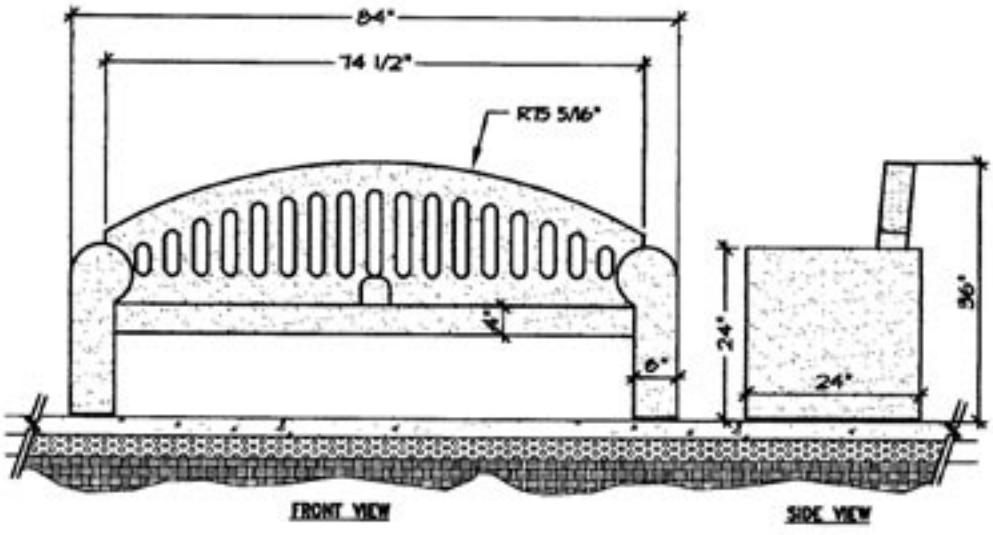
Model: #QS-PS2532W-A21 or #TF1025, WZA-WO2A waste containers w/ steel lid, cable, assembly, levelers, and liners.
Steel Top Color: Brown
Concrete Color: L.M. Scofield ‘Summer Beige” # 5234
Concrete Texture: Weatherstone
Sealer: Standard gloss sealer, City of Las Vegas (one side)



C.17 Benches

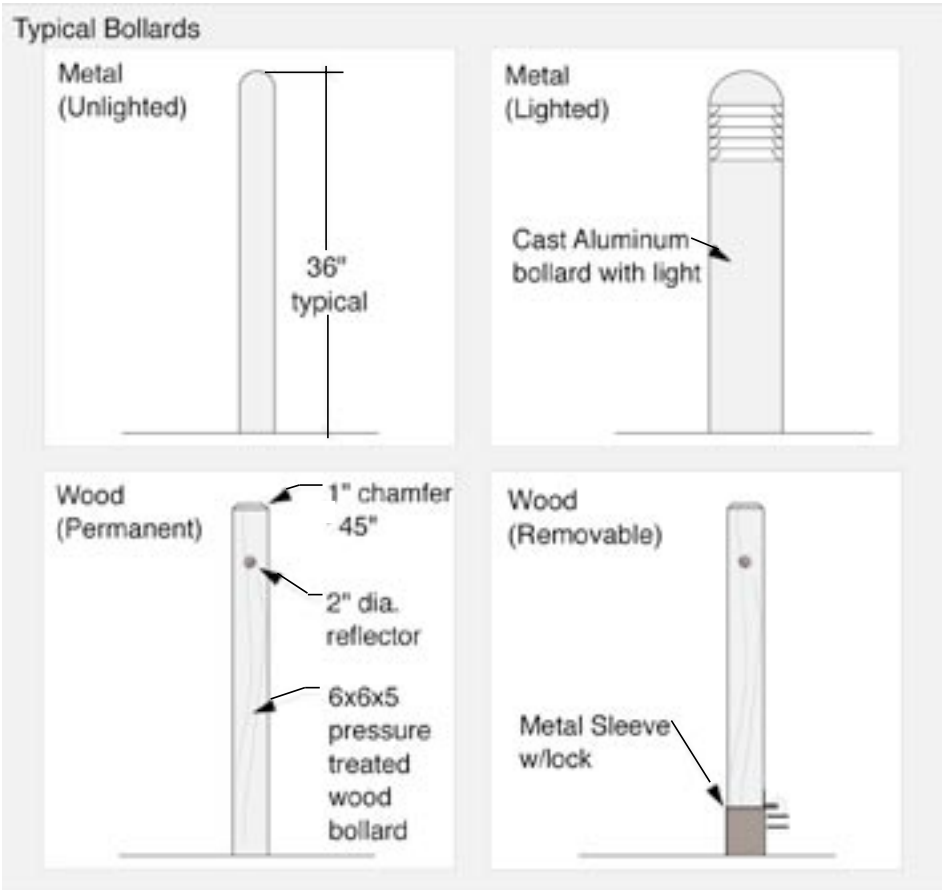
Benches along trails allow users to rest, congregate or contemplate. They should be located at the primary and secondary entrances to the trail and at regular intervals, and should be set back 3’ from the trail edge.

Model: #QI-VIC-84B
Size: 84”L x 24”W x 36”H
Concrete Color: L.M. Scofield ‘Summer Beige’ #5234
Concrete Texture: TI Smooth
Finish Sealer: Standard Gloss Sealer



C.18 Bollards

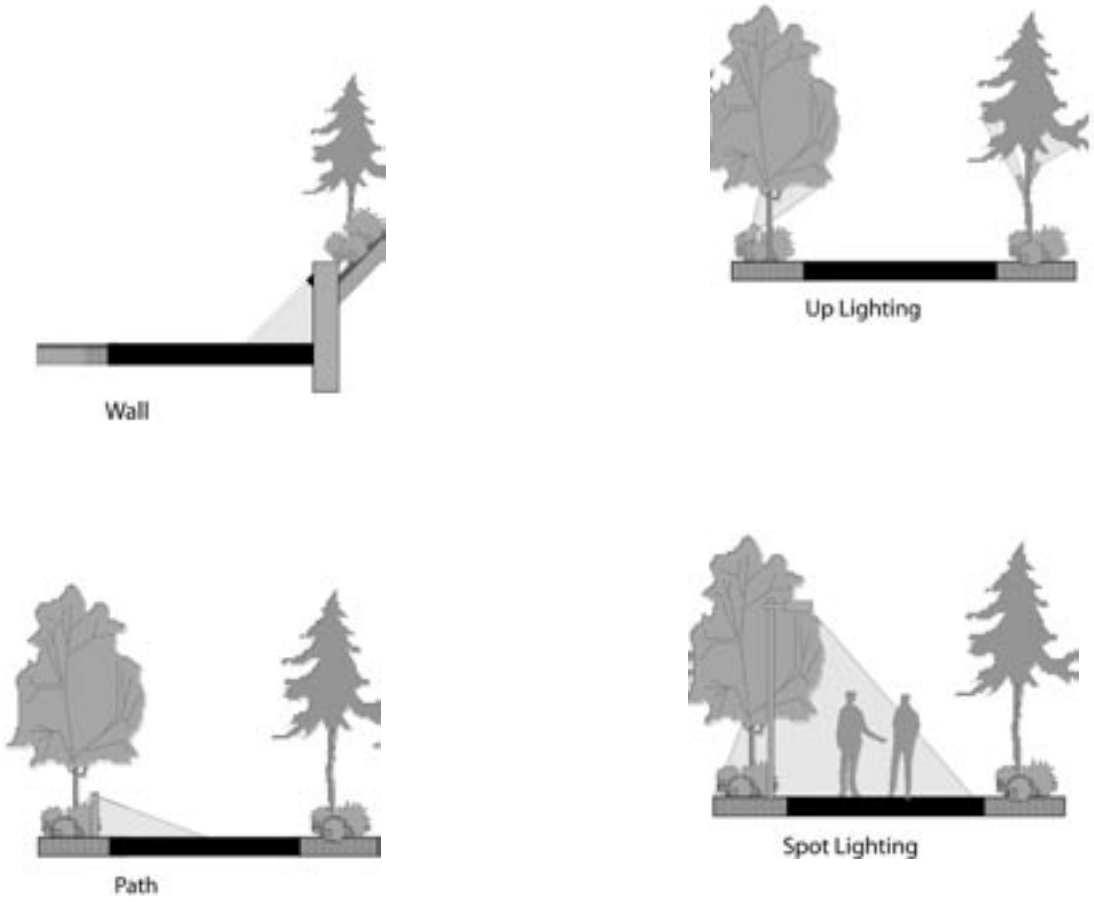
Bollards are intended to provide separation between vehicles and trail users. They are available in a variety of shapes, sizes, and colors and come with a variety of features. Lighted bollards are intended to provide visitors with minimum levels of safety and security along trails which are open after dark. Bollards should be chosen according to the specific needs of the site and should be similar in style to the surrounding elements. Typical construction materials for bollards include painted steel or aluminum, with halogen or metal halide lights in weather tight casings. Removable bollards can be installed to provide trail access for emergency and maintenance vehicles.



Typical Bollard Details

C.19 Trail Lighting

Particularly during winter months when trips to and from work are made in the dark, adequate lighting can make the difference in a person's choice to bicycle or walk. Lighting for multi-use trails should be considered on a case-by-case basis in areas where 24-hour activity is expected, with full consideration of the maintenance commitment lighting requires. Poorly maintained lights can lead to a number of serious safety issues. If lights are installed, they MUST be well maintained.



Various Lighting Types

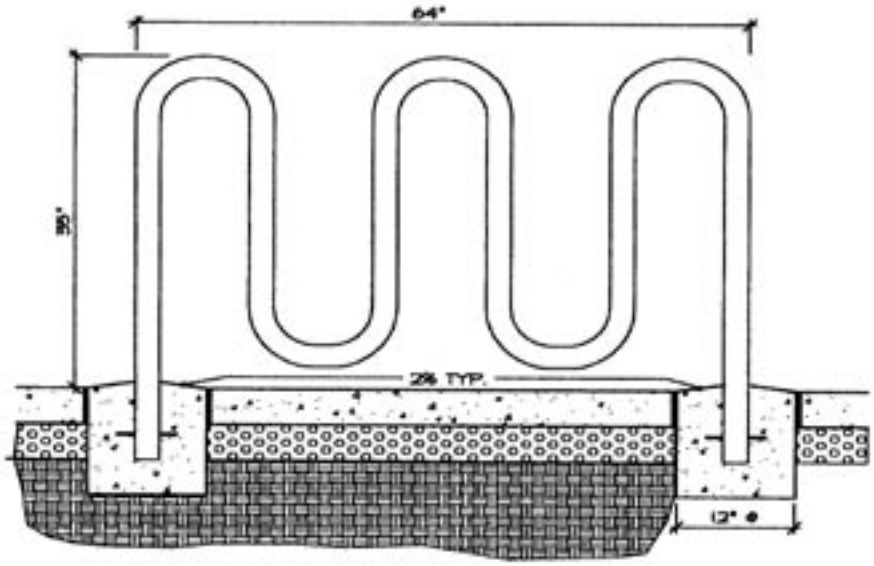
C.20 Bike Rack

It is important to choose a bicycle rack design that is simple for cyclists to operate. Bicycle racks should be designed to allow use of a variety of lock types. It may be difficult initially to determine the number of bicycle parking spaces needed. Therefore, bike racks should be situated on-site so that more can be added if bicycle usage increases.

The design shown below has proven popular and effective in numerous communities. It is inexpensive to fabricate locally, easy to install, vandal resistant and works well with popular high-security locks. In addition, it can be installed as a single unit, on a sidewalk, or in quantity, at major recreation nodes.

Location Criteria:

- Racks should be located within 50' of building entrances, where bicyclists would naturally transition into pedestrian mode
- Racks should be installed in a public area within easy viewing distance from a main pedestrian walkway, usually on a wide sidewalk with five or more feet of clear space remaining, a minimum of 24" clear space from parallel wall and 30" from a perpendicular wall
- Racks are placed to avoid conflicts with pedestrians. They are usually installed near the curb and at a reasonable distance from building entrances and crosswalks
- Racks can be installed at bus stops and at loading zones, only if they do not interfere with boarding or loading patterns and there are no alternatives



C.21 Bridges

Bridges are an important element of almost any trail project. The bridges for the Northwest Las Vegas trail system shall be multi-use and capable of providing emergency and maintenance access. These bridges should be designed to handle a minimum of 10,000 pound loads safely and be at least 14’ wide to allow for vehicle passage.

Note: Prefabricated span bridges are ordered directly from the manufacturer. Approximate cost is $100/foot.

C.22 Underpass

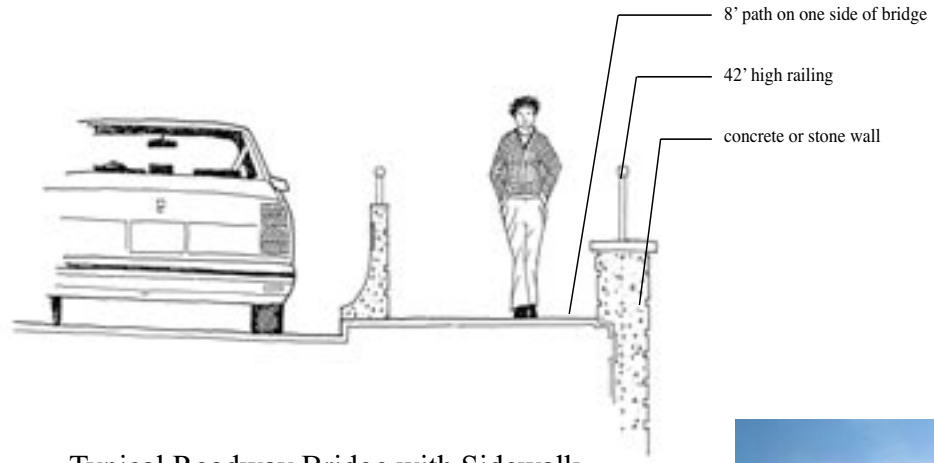
Trail underpasses and overpasses can be used to avoid undesirable at-grade intersections of trails and freeways or high volume arterial highways. However, they should be used sparingly in suburban, fringe or rural areas. Underpasses typically utilize existing overhead roadway bridges adjacent to a stream or culverts under the roadway that are large enough to accommodate trail users. There are several key issues that must be addressed in the design of the roadway underpass:

1. The vertical clearance of the underpass must be at least 10 feet
2. The width of the underpass must be at least 12 feet
3. Proper drainage must be established to avoid pooling of stormwater inside the underpass
4. It is recommended that underpasses be lighted for safety

C.23 Overpass

Trail overpasses can be used in high traffic volume areas where underpasses are not possible. Overpass options include sidewalks on bridges, freestanding pedestrian/bike bridges or lanes attached to an existing bridge. The American Association of State Highway Transportation Officials (AASHTO) requires that bridges be a minimum of 36" wide, but prefers that they are at least as wide as the trail. Railing is required to be 42" high. A fenced cover, as shown below, provides a safer environment over highways and busy streets. The Nevada DOT should be referenced for height requirements, which vary depending on the type of road. Ramp specification should meet ADA requirements.

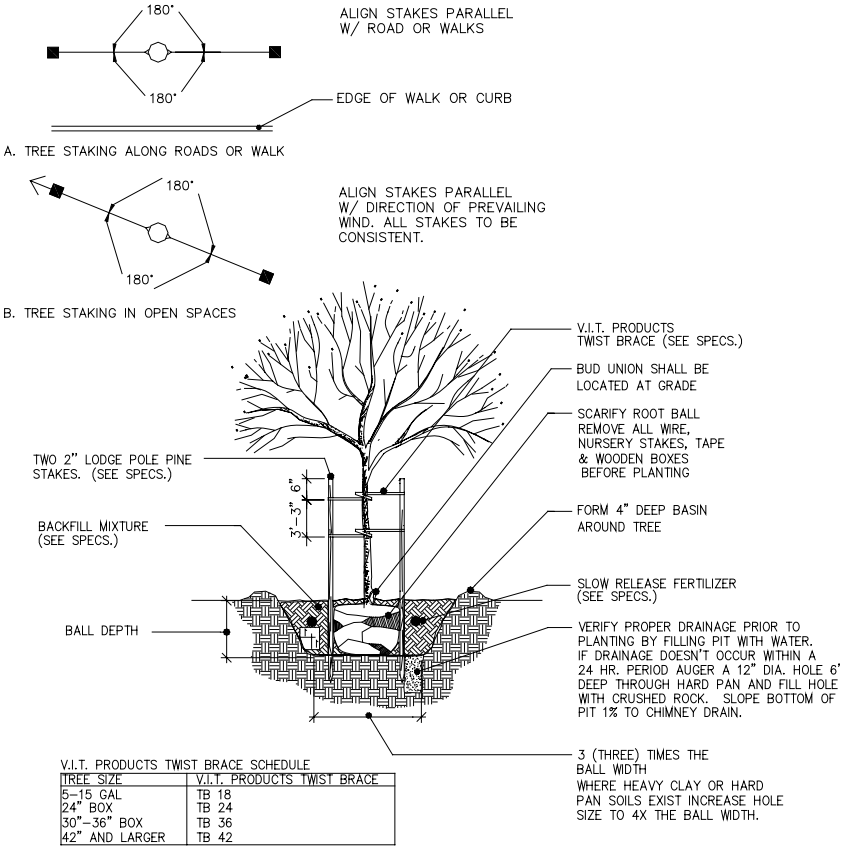
It is important to remember that pedestrians and cyclists will opt not to use an overpass or an underpass if it takes more than twice the time as crossing the street at-grade. For this reason, at-grade fencing might be a better alternative in some instances.



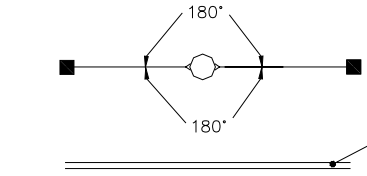
Typical Roadway Bridge with Sidewalk

C.24 Tree Plantings

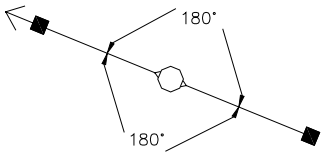
Trees are important to trails for both aesthetic and environmental reasons. Not only do they contribute to the appearance of a trail, their shade cools the environment for trail users and provides habitat for birds and wildlife. When choosing trees and shrubs for trail corridors, it is recommended that indigenous and well-adapted species be used. This will reduce the need for chemical and water applications as a part of long term maintenance. The following graphics represent common installation practices used for several different types of plant material.



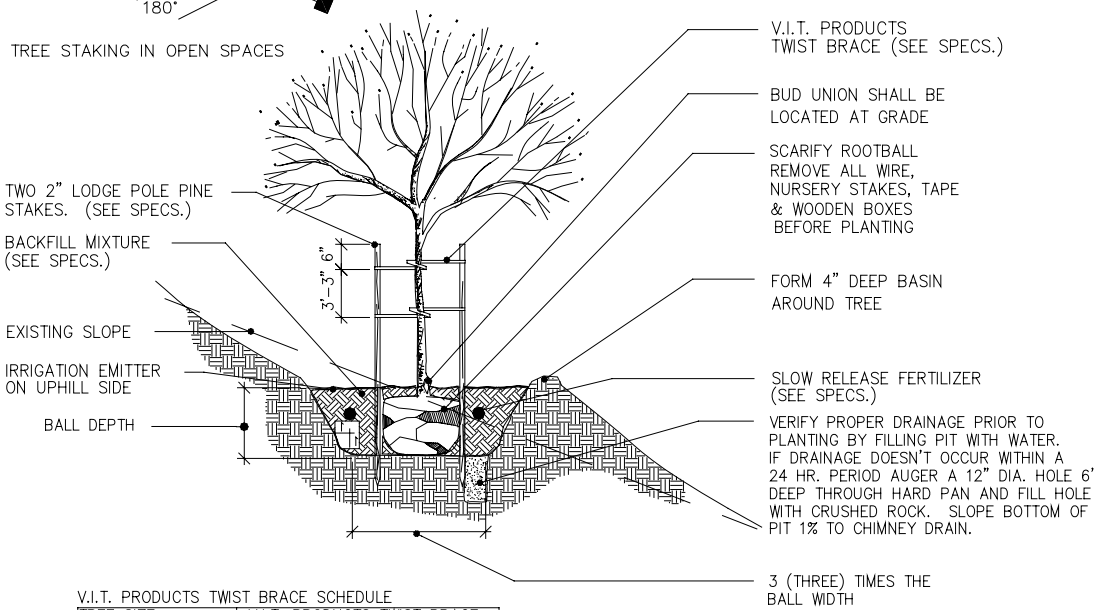
TREE PLANTING AND STAKING



A. TREE STAKING ALONG ROADS OR WALK



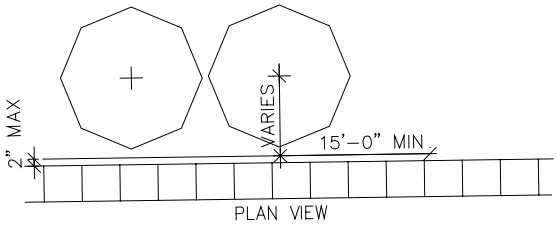
B. TREE STAKING IN OPEN SPACES



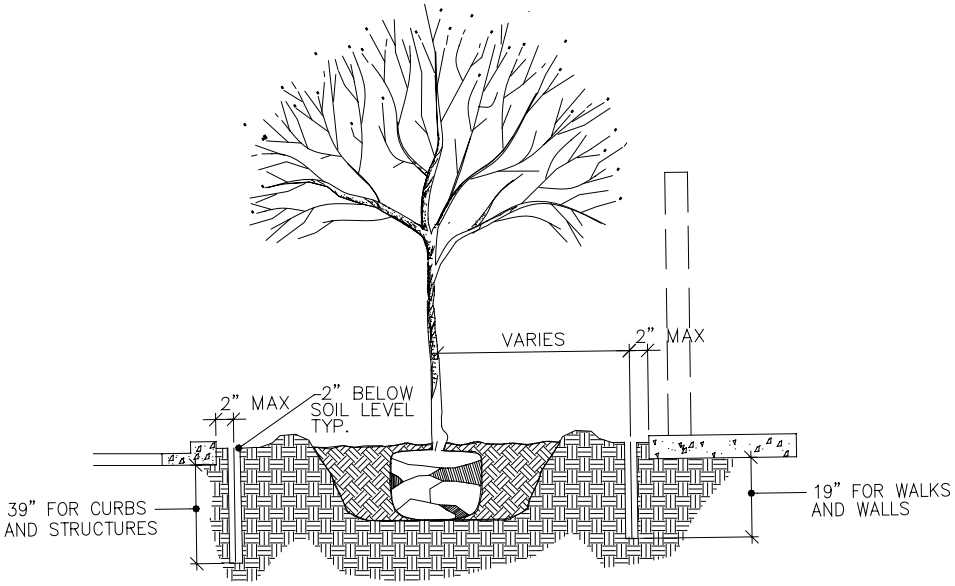
V.I.T. PRODUCTS TWIST BRACE SCHEDULE

TREE SIZE	V.I.T. PRODUCTS TWIST BRACE
5–15 GAL	TB 18
24" BOX	TB 24
30"–36" BOX	TB 36
42" AND LARGER	TB 42

SLOPE TREE PLANTING



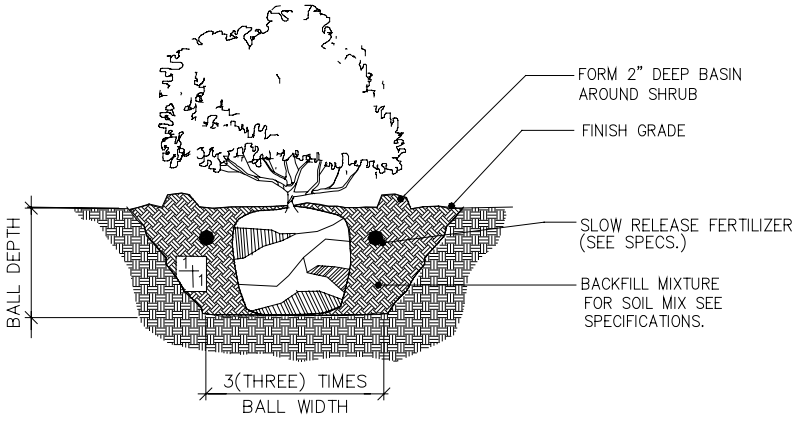
BIO BARRIER TO BE ADJACENT TO ALL
SIDEWALKS, CURBS, WALLS, ETC.
INSTALL AS PER MANUFACTURERS SPECIFICATIONS.
SUPPLIER 1-800-382-8467



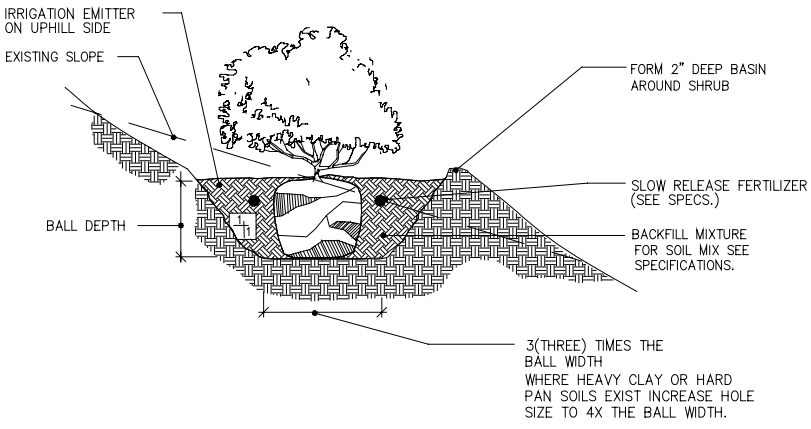
ROOT BARRIER

C.25 Shrub Plantings

The amount of planting needed will vary depending on the project. While some projects will require little or no planting, others may require it for vegetative screening, habitat restoration, erosion control or aesthetics. The graphics below illustrate planting techniques for shrub planting at grade and shrub planting on slopes.



SHRUB PLANTING



SLOPE SHRUB PLANTING

C.26 Suggested Plant List

Trees

Acacia greggii	Cat Claw Acacia
Chilopsis linearis	Desert Willow
Chilopsis linearis 'Lucretia Hamilton'	Desert Willow
Fraxinus velutina 'Rio Grande'	Fan-Tex Ash
Prosopis chilensis	Chilean Mesquite
Prosopis pubescens	Screwbean Mesquite
Prosopis glandulosa 'Torryana'	Western Honey Mesquite
Quercus virginiana 'Heritage'	Heritage Live Oak
Ulmus parviflora 'Drake'	Drake Elm
Vitex agnus-castus	Chaste Tree

Shrubs

Ambrosia dumosa	White Bursage
Artemisia schmidtiana	Angel's Hair
Atriplex canescens	Four-wing Saltbush
Atriplex hymenelytra	Desert Holly
Atriplex lentiformis	Quail Bush
Baccharis sarothroides	Male Baccharis
Cassia nemophila	Desert Cassia
Cassia spp. 'Outback'	Outback Cassia
Cercocarpus betuloides	Mountain Mahogany
Chrysactinia mexicana	Damianita
Cupressus glabra	Arizona Cypress
Dalea frutescens 'Sierra Negra'	Sierra Negra Dalea
Eleagnus ebbingei	Ebbing's Silverberry
Encelia farinose	Brittlebush
Ephedra nevadensis	Mormon Tea
Eremophilla spp. 'Valentine'	Valentine Bush
Ericameria laricifolia	Turpentine Bush
Euonymus fortunei 'Colorata'	Purple Winter Creeper
Euonymus japonica	Evergreen Euonymus
Fallugia paradoxa	Apache Plume
Genesta hispanica	Spanish Broom
Hymenoclea salsola	Cheesebush
Ilex cornuta 'Burfordii'	Burford Holly
Ilex vomitoria 'Nana'	Dwarf Yaupon
Larrea tridentata	Creosote Bush
Leucophyllum candidum 'Thunder Cloud'	Thunder Coud Ranger
L. frutescens 'Green Cloud'	Green Cloud Ranger

L. laevegatum	Chihuahuan Sage
L. langmaniae 'Rio Bravo'	Rio Bravo Ranger
L. pruinosum 'Sierra Bouquet'	Sierra Bouquet Ranger
L. zygophyllum 'Cimarron'	Blue Ranger
Mahonia aquifolium	Oregon Grape
Nandina domestica	Heavenly Bamboo
Pittosporum tobira	Mock Orange
Pittosporum tobira 'Variegata'	Variegated Mock Orange
Raphiolepis indica 'Ballerina'	Dwarf Indian Hawthorn
Raphiolepis indica 'Jack Evans'	Jack Evans Hawthorn
Rhamnus californica 'Eva Case'	Coffeebush
Rosmarinus officinalis 'Tuscan Blue'	Upright Rosemary
Salvia chamaedryoides	Mexican Blue Sage
Salvia greggii 'Sierra Linda'	Autumn Sage
Salvia greggii 'Cherry Red'	Cherry Red Sage
Vauquelinia californica	Arizona Rosewood
Viburnum tinus	Viburnum
Xylosma congestum 'Compacta'	Compact Xylosma

Ground Covers

Baccharis hybrid 'Starn Thompson'	Starn Thompson Broom
Convolvulus cneorum	Bush Morning Glory
Dalea capitata 'Sierra Gold'	Sierra Gold Dalea
Lantana spp. 'New Gold'	New Gold Lantana
Nandina domestica 'El Dorado'	Dwarf Heavenly Bamboo
Psilostrophe cooperi	Paper Flower
Pyracantha coccinea 'Santa Cruz'	Santa Cruz Firethorn
Rosmarinus o. 'Huntington Carpet'	Carpet Rosemary
Teucrium chameadrys	Germander
Pittosporum tobira 'Wheeler's Dwarf'	Dwarf Mock Orange
Trachelospermum jasminoides	Star Jasmine

Accents

Agave parryi	Parry's Agave
Asclepias subulata	Desert Milkweed
Caesalpinia gilliesii	Desert Bird of Paradise
Caesalpinia mexicana	Mexican Bird of Paradise
Dasylirion wheeleri	Desert Spoon
Dasylirion longissimum	Green Toothless Desert Spoon
Ferocactus acanthodes	Compass Barrel Cactus
Hesperaloe parviflora	Red Yucca
Hesperaloe parviflora 'Yellow'	Yellow Yucca

Muhlenbergia capillaries 'Regal Mist'	Regal Mist Grass
Opuntia basilaris	Beavertail Cactus
Penstemon eatonii	Firecracker Penstemon
Penstemon parryi	Parry's Penstemon
Tecoma spp. 'Orange Jubilee'	O.J. Trumpet Flower
Yucca brevifolia	Joshua Tree

Perennial Forbs

Achillea tomentosa	Wooly Yarrow
Berlaniera lyrata	Chocolate Flower
Baileya multiradiata	Desert Marigold
Bulbine frutescens	Bulbine
Coreopsis lanceolata	Coreopsis
Dyssodia pentachaeta	Dyssodia
Hymenoxys acaulis	Angelita Daisy
Sphaearlcea ambigua	Globe Mallow