



Red Rock Canyon Open Space Master and Management Plan

City of Colorado Springs
Parks, Recreation and Cultural Services Department

January 2013





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Acknowledgements

In 2003 the City of Colorado Springs purchased Red Rock Canyon. Between 2009 and 2011 the City fulfilled the community's desire to acquire White Acres and Section 16 as open space. The City determined that natural resource management and public access could be most effectively balanced by managing the three properties as one open space; it was also decided that the name of the three combined properties would be Red Rock Canyon Open Space.

The Red Rock Canyon Open Space Master and Management Plan is a cooperative agreement between the community and the City of Colorado Springs. This community-created plan will guide the future of this spectacular public open space.

We acknowledge and are thankful for the committed participation and engagement of the diverse citizen participants as well as the focused participation and contributions of the Friends of Red Rock Canyon. All participants gave valuable input through many public meetings and reviews with the consultant team and the city staff. Their thoughtful ideas are incorporated into the Plan. The development of the Master and Management Plan was temporarily suspended so that the Parks, Recreation and Cultural Services Department could conduct a separate process to resolve issues and confirm agreements related to roles and responsibilities with all open space and regional parks friends and user groups. We wish to acknowledge those who participated in the Relationship Building Process and forged a path for collaborative support of the community's parks and trails.

The Red Rock Canyon Open Space Master and Management Plan was reviewed and endorsed by the Palmer Land Trust's Stewardship Committee on September 24, 2012. The Plan was recommended for approval on December 5, 2012 by the Colorado Springs Trails, Open Space and Parks (TOPS) Working Committee and approved on January 10, 2013 by the City of Colorado Springs Parks and Recreation Advisory Board. We wish to acknowledge their attentive consideration, and support of the plan.

TOPS Working Committee:

Ian Kalmanowitz, Chair

James (Jim) Rees, Vice Chair

Philip J. (PJ) Anderson, Paul Franco, Linda Hodges, Getty Nuhn, Leslie Thomas, Rick Upton, Becky Wegner

Parks and Recreation Advisory Board:

Nancy Hobbs, Chair

Andy Finn, Vice-Chair

Charles Castle, Gary Feffer, Jackie Hilaire, Scot Hume, Alex Johnson, Dan Lewis, John Maynard

Funding for the Red Rock Canyon Open Space Master and Management Plan was provided by the Trails, Open Space and Parks Program (TOPS).



Red Rock Canyon Master and Management Plan

The City of Colorado Springs Parks, Recreation and Cultural Services staff played a significant role in the development of the Red Rock Canyon Open Space Master and Management Plan. The following staff members are recognized for their contributions:

Parks, Recreation and Cultural Services Staff:

Karen Palus, Parks, Recreation and Cultural Services Director
Kurt Schroeder, Parks Operations and Development Manager
Kim King, Administration, Recreation and Cultural Services Manager
Matt Mayberry, Cultural Services Manager
Paul Smith, City Forester
Chris Lieber, Principal Planner
Scott Abbott, Regional Parks, Trails and Open Space Supervisor
Sarah Bryarly, Landscape Architect

The City was also fortunate to have a focused professional consultant team led by Tapis Associates, Inc. We are very pleased with their public engagement efforts, research, professionalism and creativity in developing this plan.

Tapis Associates, Inc. - Priscilla J Marbaker, PLA, LEED-AP
KezziahWatkins - Tweed Kezziah, Susan Watkins
ERO Resources Corporation - Bill Mangle
Mountain High Tree - Becky Wegner
Donley and Associates, Inc. - Chuck Donley

Once again, we wish to acknowledge all the citizens who committed time and effort to provide input in the public meetings and work sessions. Their feedback was extremely helpful in ensuring that we addressed the needs of property and the community.

Sincerely,

Karen Palus
City of Colorado Springs

Parks, Recreation and Cultural Services Director



Executive Summary

In 2003 the City of Colorado Springs purchased Red Rock Canyon. Between 2009 and 2011 the City fulfilled the community's desire to acquire White Acres and Section 16 as open space. Collectively Red Rock Canyon Open Space, Section 16 and White Acres form one of the most beloved open spaces within our park system. These properties contain significant natural, historical and cultural resources that merit protection and preservation. Often referred to as the local's Garden of the Gods, visitors enjoy a variety of activities including mountain biking, rock climbing, sight-seeing, hiking, picnicking, horseback riding and meditating.

The City determined that natural resource management and public access could be most effectively balanced by managing the three properties as one open space; it also decided that the name of the three combined properties would be Red Rock Canyon Open Space. The Red Rock Canyon Open Space Master and Management Plan is a cooperative agreement between the community and the City of Colorado Springs. This community-created plan will guide the future of this spectacular public open space.

Planning and Public Process

Public participation was integral to the Red Rock Canyon Master and Management Plan development. The process was designed and facilitated to surface and resolve issues and conflicts; to conduct a transparent process that is open, inviting, and comfortable for all; to provide a range of options for public participation; to create an informed public by presenting and providing access to data and findings; to develop a plan that combines the "lived" experience of residents with the technical expertise of City staff and the consultant team; and to go beyond soliciting public opinion and strive instead for developing informed public judgment through information and deliberation so that process results are responsive, responsible, and politically-supportable.

Throughout each public process step, technical evaluation and expertise was applied so that sound information could be provided to and used by planning participants as the basis for discussion and recommendations. The planning process included eight (8) public meetings to discuss the issues, challenges, opportunities and possibilities for Red Rock Canyon Open Space. With a hands-on activity during each meeting, the public participants had an opportunity to hear technical information that was presented and provide feedback on how that information was incorporated into the overall Master and Management Plan. Over 150 citizens participated during the master plan process; although not all requests could be accommodated, the planning team listened to and addressed all suggestions that were voiced within the context of the established "Givens" and "Values."





Red Rock Canyon Master and Management Plan

Master Plan

Research, data and existing conditions were collected and documented to inform the plan. A variety of methods were used by the consultant team's professional specialists to collect data including numerous site visits, stakeholder interviews, onsite surveys, web-based surveys, and review of previous resource studies.

An inventory and analysis of existing conditions was conducted as part of the planning process for Red Rock Canyon Open Space. The purpose of these investigations was to extend the body of knowledge on which planning decisions could be based. The existing conditions inventory and site assessment can be broadly grouped into three categories: Physical Resources, Biological and Cultural Resources, and Management and Social Influences. The Physical Resources series includes topography, soils and geology. The natural environment, as well as paleontological and archeological resources are covered in the Biological and Cultural Resources series. The Management and Social influences series includes ordinance, deed and policy restrictions, constructed features, and mountain backdrop views.



The master plan for Red Rock Canyon Open Space envisions an area that offers all people the opportunity to experience this unique and beautiful place. The focus is on providing access through a variety of multi-use trails and the support facilities needed to serve them. Trails throughout the site have been planned to accommodate a wide range of abilities and interests, and to offer a variety of experiences that will make multiple visits to the Red Rock Canyon Open Space worthwhile. The plan also allows for other uses in appropriate locations. Some of these that have been identified on the plan include technical rock climbing areas, a free-riding course for bicycling, an off-leash dog area, interpretive sites, and facilities for group picnics and other events. Parking areas and trailheads have also been identified around the site.

Management Plan

This Red Rock Canyon Open Space Master and Management Plan is the first time the Colorado Spring Parks, Recreation and Cultural Services Department has simultaneously completed a master plan and management plan for a property. This joint document more accurately represents the close relationship between the two plans while eliminating the duplication of background information. In addition, this management plan benefits from the public engagement process and the input gathered as part of the master and management planning process.

Guided by the Values and Themes, the Red Rock Canyon Open Space Management Plan emphasizes natural and cultural resource protection and restoration, while accommodating sustainable recreational and interpretive opportunities. The conservation easements mandate additional stewardship of the property via annual monitoring and reporting of the conservation values by the Palmer Land Trust.

The Red Rock Canyon Open Space Master and Management Plan is a cooperative agreement between the community and the City of Colorado Springs. This community-created plan will guide the future of this spectacular public open space.



Introduction

Red Rock Canyon forms part of the western edge of Colorado Springs, where it abuts Manitou Springs. It is situated at the interface between the Great Plains and the Rocky Mountains. Here, a series of hogbacks exposes layers of sedimentary rock that have been turned upward at the base of Pikes Peak. Canyons run between the hogbacks, draining north into Fountain Creek. The canyons provide shelter for a variety of plants and wildlife, while the rocks of the hogbacks form colorful backdrops of salmon, gold, and other shades. This Master and Management Plan is a cooperative agreement between the community and the City of Colorado Springs and will guide the future uses, development and management of this spectacular public open space.

Background

The location and setting of Colorado Springs distinguish it from all other cities in the world. One look at the mountain backdrop, punctuated by Pikes Peak, tells you immediately where you are. This is a landscape that is deeply embraced by the people of Colorado Springs, who cherish its beauty and majesty. Within this context lies a special and significant place known as Red Rock Canyon.

Red Rock Canyon belongs to the people of Colorado Springs, with the initial 789-acres having been acquired by the City in 2003 through the Trails, Open Space and Parks (TOPS) Program. Prior to then, Red Rock Canyon was in private ownership. Even though it was inaccessible to the public, people were well aware of its natural scenic treasures, including massive ridges of brightly-hued sandstone and hidden canyons filled with lush vegetation and abundant wildlife. As soon as the site became public property, it was crucial that a plan be developed to guide its use and protection in compliance with the conservation easement, held by the Palmer Land Trust. The public's enthusiasm for Red Rock Canyon dictated that the plan be developed in a timely fashion and address a diverse set of interests and concerns while ensuring that the development of the open space would not negatively impact the natural qualities that make it so special. To protect the natural environment and meet the needs of the public, the City of Colorado Springs launched a comprehensive master planning process in 2004 that involved



numerous public meetings and scientific evaluations. With a significant amount of community participation and the efforts of the City staff and the DesignConcepts-led consultant team, the comprehensive Master Plan for the Red Rock Canyon Open Space was developed to guide the construction of trails and visitor amenities. This process began early in 2004, and the Master Plan was approved in June of the same year. The adopted plan was well received by the community, and site development has closely followed its recommendations.

During the 2004 process, the community's strong concern over the adjacent Section 16 and White Acres properties and their potential loss to development was apparent. Although not part of the 2004 master plan or under the City of Colorado Springs' jurisdiction at that time, several of the recommendations reflected the community's interest to preserve the properties.



Reason for the 2012 Study

Between 2009 and 2011 the City fulfilled the community's desire to preserve White Acres and Section 16 as open space. The City determined that natural resource management and public access could be most effectively balanced by managing the properties as one open space; it was also decided that the name of the three combined properties would be Red Rock Canyon Open Space. The City of Colorado Springs Parks, Recreation and Cultural Services Department hired the Tapis Associates Team to prepare this Master and Management Plan. This Master Plan, with its foundation in the 2004 Red Rock Canyon Master Plan, is intended to cohesively guide future site development and expand the scope to include the White Acres and Section 16 properties. The management plan will build on the September 2004 management plan and the 2012 Relationship Building Process outcomes. Additional Relationship Building Process information can be found in *Section II: Summary of Planning and Public Process*. This Management Plan establishes recommendations for preservation and protection of sensitive resources, restoration of damaged resources, and the management of all natural resources and developed facilities.



Master and Management Plan Organizational Overview

The Red Rock Canyon Master Plan and Management Plan, while jointly developed, are organized separately to ease use and clarity.

Within the Master Plan, the extensive public participation process and resulting guiding themes and issues are fully presented in *Section 2: Summary of Planning and Public Process*. Natural Resource research findings and assessment along with cultural and social influences are documented, mapped and assessed in *Section 3: Existing Conditions and Site Assessment*. *Section 4: Master Plan Recommendations* contains recommendations for program areas, trailheads and trails, wayfinding, interpretive opportunities, educational opportunities, as well as recommendations for coordination with other agencies and groups to enhance access and connectivity. Sections 5 and 6 outline *Design Guidelines* and *Revenue and Marketing Opportunities* respectively. The master plan concludes with *Section 7: Recommended Regulations and Policies* covering special events, legal arrangements, rules of use and enforcement.

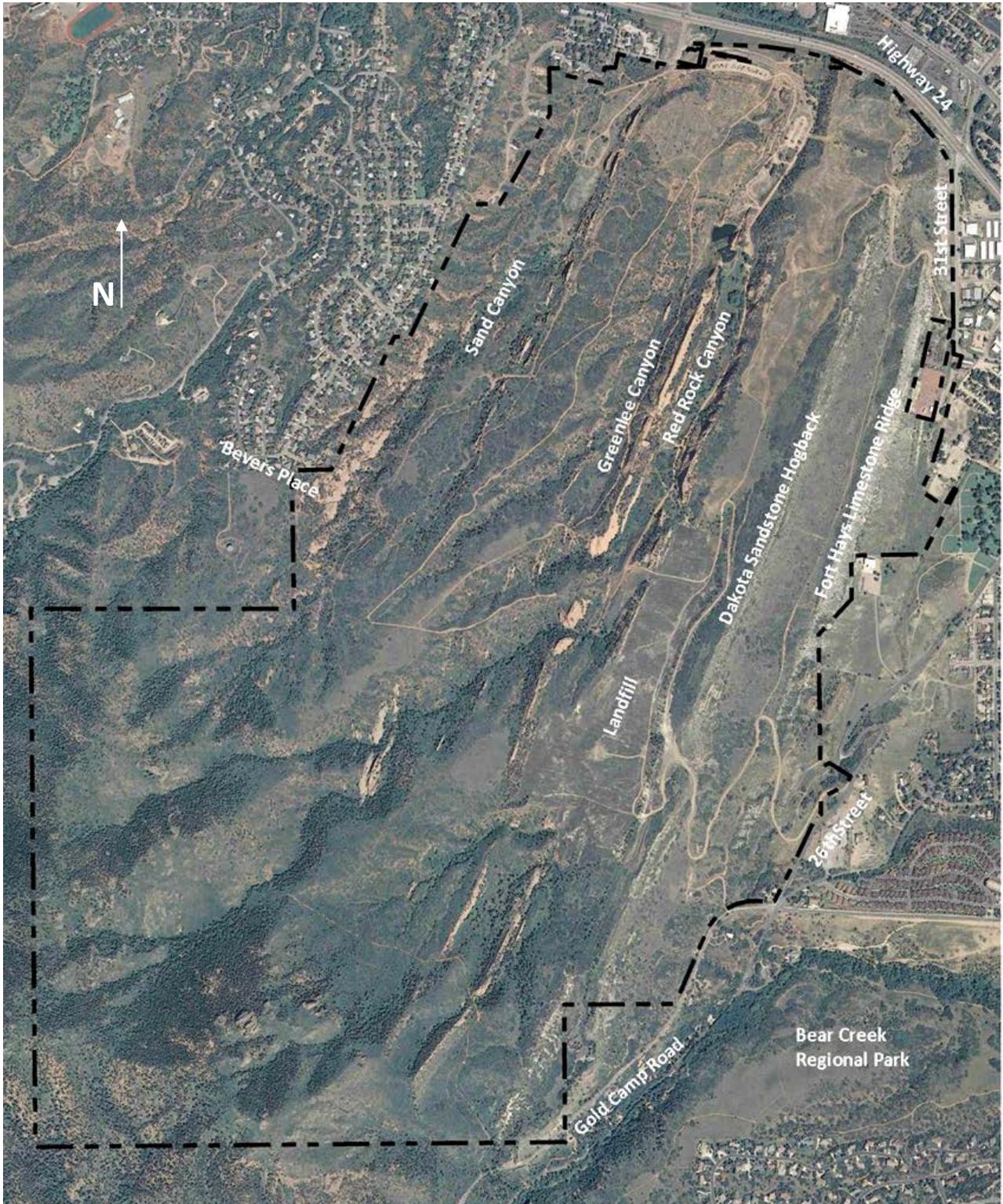
The first section of the Management Plan outlines natural, wildlife and cultural resource preservation, restoration, and management; it is titled *Section 1: Natural and Cultural Resource Management and Protection*. Wildfire and forest health are prescribed in *Section 2: Forest Health Management*. *Section 3: Open Space Development* addresses the program areas, ponds, landfill, trails and signage. *Section 4: Plan Implementation Priorities* concludes with implementation priorities, funding and staffing capacities and their influence on volunteer groups and the City responsibilities.

An Appendix, containing selected supporting documents and all public input received during this master planning process, completes this document.



Red Rock Canyon Open Space

common landmarks for orientation





Red Rock Canyon Master and Management Plan

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Summary of Planning and Public Process

Public participation played a critical role in the Red Rock Canyon Master and Management Plan development. The process was designed and facilitated to accomplish the following goals:

- To surface and resolve issues and conflicts;
- To conduct a transparent process that is open, inviting, and comfortable for all;
- To provide a range of options for public participation;
- To create an informed public by presenting and providing access to data and findings;
- To develop a plan that combines the “lived” experience of residents with the technical expertise of City staff and the consultant team; and
- To go beyond soliciting public opinion and strive instead for developing informed public judgment through information and deliberation so that process results are responsive, responsible, and politically-supportable.

The Givens

Any planning initiative must begin with determining which decisions can be influenced and whether there are parameters establishing limits on those decisions. For the Red Rock Canyon, White Acres and Section 16 Master Plan Update, a set of non-negotiable Givens was established by the City of Colorado Springs Parks, Recreation and Cultural Services Department as commitments the Department would be irresponsible not to fulfill. Those Givens served as the “fence” within which all other discussion and recommendations would fall as the planning process got underway.

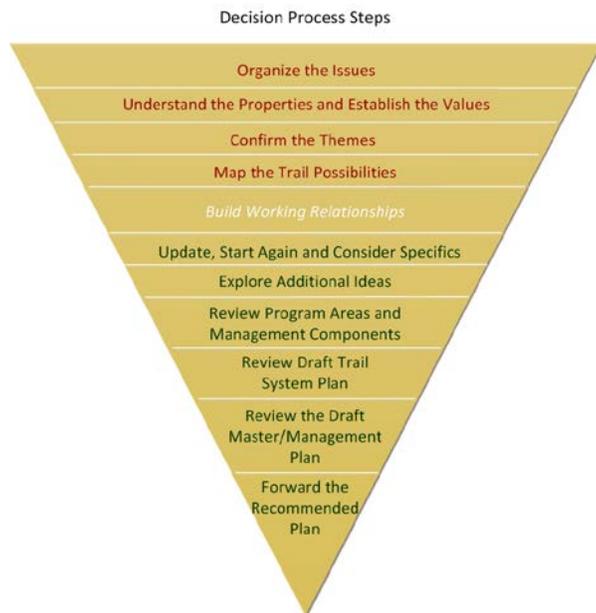
- The City’s Parks, Recreation and Cultural Services Department is legally responsible for design, maintenance, operations and resource management of the three properties.
 - The Master and Management Plan must conform to provisions in the Trails, Open Space and Parks (TOPS) Ordinance and the Colorado Springs Parks Rules and Regulations Ordinances.
 - The Plan will honor conservation easements currently in place.
- The name of the three combined properties will be Red Rock Canyon Open Space.
- Because of erosion, safety and regulatory concerns, the site of the former landfill will not be accessible to the public until authorization is received from the Colorado Department of Public Health and Environment.
- Decisions regarding the 31st Street extension and Highway 24 improvement projects are beyond the purview of this master planning process.
- The recommended Master and Management Plan will be submitted to the Parks and Recreation Advisory Board for approval.
- Implementation of the master plan will occur as funding allows.
- Many groups and individuals are interested in and encouraged to help develop the best possible Plan; all voices will be equal in the decision-making process.



Process Intent

Each step in the public process had a specific purpose and each was organized to move the decisions from broad to narrow, so that the final set of conclusions was consensus-based and founded on judgment achieved by participants. Making sure that process participants had the opportunity to move from less-informed opinion to informed judgment about the issues before

them required that full and complete information be provided for consideration. Equally important, every participant had the opportunity to offer his or her perspective and to hear the perspectives of others. With that informed judgment, people engaged in the decision process could hear and understand the range of beliefs, issues, and opinions influencing the final choices to be made.



Throughout each public process step, technical evaluation and expertise was applied so that sound information could be provided to and used by planning participants as the basis for discussion and recommendations.

The process was designed to be cumulative, moving from identifying and organizing the hopes and concerns people held for the properties into a set of issues to be addressed throughout the process steps. An important subsequent step was the participants' development of a set of values and themes based on these issues and on information about the properties. Those values and themes were intended to be used as touchstones for the many decisions ahead.

Process Steps

Organize the Issues – July - September 2011

The task of identifying issues of interest and concern related to the three properties included the following:

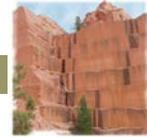
- a series of on-site educational sessions with participant questionnaires;
- personal interviews with a number of stakeholders and groups;
- surveys conducted on-site with users of the properties;
- an online survey through the City's web site; and
- Participants' responses at the initial project workshop.

Understand the Properties and Establish the Values – July - September 2011

The Tapis team gathered, analyzed and presented information about the properties for discussion and consideration:

- funding source restrictions;
- City of Colorado Springs policies impacting the properties;
- the physical resources;
- the biological and cultural resources;
- the management and social influences; and
- areas sensitive to human impact.





Process Steps - continued

■ **Confirm the Themes – October 2011**

Workshop participants reviewed and endorsed themes to serve as guiding principles in development of the Plan.

■ **Map the Trail Possibilities – October 2011**

Guided by the Values and Themes, participants:

- identified elements and uses appropriate for the properties; and
- identified preferences for trail access, alignments and connectivity.

■ **Relationship Building Process – November 2011 - summer 2012**

The development of the Master and Management Plans was temporarily suspended so that the Parks, Recreation and Cultural Services Department could conduct a separate process to resolve issues and confirm agreements related to roles and responsibilities with all open space and regional parks Friends and user groups. Rather than deal with roles and responsibilities on a property-by-property basis, this discussion was intended to create a policy and an implementation template that defines City responsibilities, as the landowner, as well as the roles and responsibilities of Friends groups and partner organizations as participants and supporters of the management and care of the regional park and open space properties across our community.

■ **Update, Start Again and Consider Specific Property Questions – August 2012**

The master planning process resumed with a fourth public workshop on August 1 focusing on a “refresher” on what had been accomplished before the November 2011 “time out.” Participants applied the Values and Themes to assess the importance of re-establishing the upper pond as a feature of the properties and received an update on the areas of agreement they had established for trails.

Prior to this and all subsequent work sessions, selected pre-draft master and management plan sections were posted on the City of Colorado Springs’ web site so that participants could review the pre-draft and arrived prepared for each meeting. Following each workshop, the unedited and summarized results of participant responses were posted as well, providing factual information and transparency throughout.

■ **Special Meeting to Consider New Ideas**

Because such a considerable amount of time had passed since people interested in the plan had been together to discuss ideas, and because several new or expanded ideas had emerged, a special meeting was held later in August to consider new thoughts and ideas. In all, seven presentations were made by workshop participants to encourage consideration by their colleagues in the planning process. Ideas forwarded included:

- a disc golf course;
- a conservation easement applied to White Acres;
- a new trail, the 8130 trail, to be built along the western edge of the Section 16 property;
- an equestrian skills area;
- ideas about social trails, benches, and the urban trail interface;
- thoughts on the existing Waterfall Trail loop; and
- a community bike park.

Once again, participants applied the Values and Themes to evaluate these new and expanded ideas that were forwarded for review and additional consideration. In response, consideration will be given to locating the community bike park, the equestrian skills park and disc golf course within the Pikes Peak region, in alliance with appropriate agencies.



Red Rock Canyon Master and Management Plan

Process Steps - continued

■ Review and Consider Program Areas and Define Management for the Properties – September 2012

At the first September workshop, people reviewed the results of the August session presenting new ideas and received information about several areas important to plan implementation and management of the property. Topics reviewed and considered included:

- Draft Program Areas;
- Rules of Use and Enforcement;
- Revenue and Sponsorship;
- Interpretation and Education, and Design Guidelines
- Forest Health and Fuels Management

■ Natural Resources and the Trails System – September 2012

At the final work session of the planning process, the two interwoven topics of natural resource management and the trails system were presented and considered. A review of sensitive areas within the property provided a foundation for consideration and discussion of the trails system as a whole as well as specific trails, trailheads, wayfinding nodes, bench locations and connectivity among trails. Participants once again were asked to apply the Values and Themes serving as plan touchstones to reach a consensus response within small working groups.



■ Review the Draft Master and Management Plan – October 2012

The draft Master and Management Plan was posted on the City's web site for public review and comment in mid October. In addition, an October 24 public Open House provided the opportunity for participants to review the draft document, to engage in dialog with the City staff and consultant team to address individual questions, and to submit written comments. The Tapis team, working with City staff, reviewed all responses and made necessary adjustments to produce the recommended Master and Management Plan.

■ Forward the Recommended Master and Management Plan – December 2012 – January 2013

The TOPS Working Committee will review the Plan at its December 5 meeting before forwarding it to the Parks and Recreation Advisory Board for review and action on January 10, 2013.



The Issues Summary

- Access
- Annexation of Section 16
- Conservation
- Conservation easement for White Acres
- Dogs
- Experience and uses
- Interpretation
- Management
- Ponds
- Process
- Trails
- Wildlife impact



The Values

- We will strive for a balance between use and conservation. The natural resources to be conserved include but are not limited to: fragile ecosystems, natural areas, scenic vistas and areas, wildlife habitats and corridors, important areas that support biodiversity, significant land formations and landmarks, and cultural, historical and archeological areas.
- We are committed to and will be guided by long-term sustainability of these properties, including the natural resources, the built environment, and the fiscal and human resources necessary to support them.
- Management of the natural, cultural and visual resources must consider both conservation of the resource and the community's recreational experience.
- Interpretive information and methods should impart a greater understanding and respect for the resource while balancing the need for education and preservation.



The Themes

The following themes were derived directly from what process participants said throughout each process step from July through September 2011.

- Restore and sustain natural resources
- Protect unique and sensitive natural and cultural resources
- Accommodate existing uses
- Maintain the back-country experience
- Enhance and connect the existing trail system without developing a new trail system
- Commit to multi-use trails unless special circumstances exist
- Improve communication about the property and its use
- Recognize the need for shared stewardship and clarity of roles and responsibilities
- Create a plan that is realistic yet stretches possibilities



Red Rock Canyon Master and Management Plan

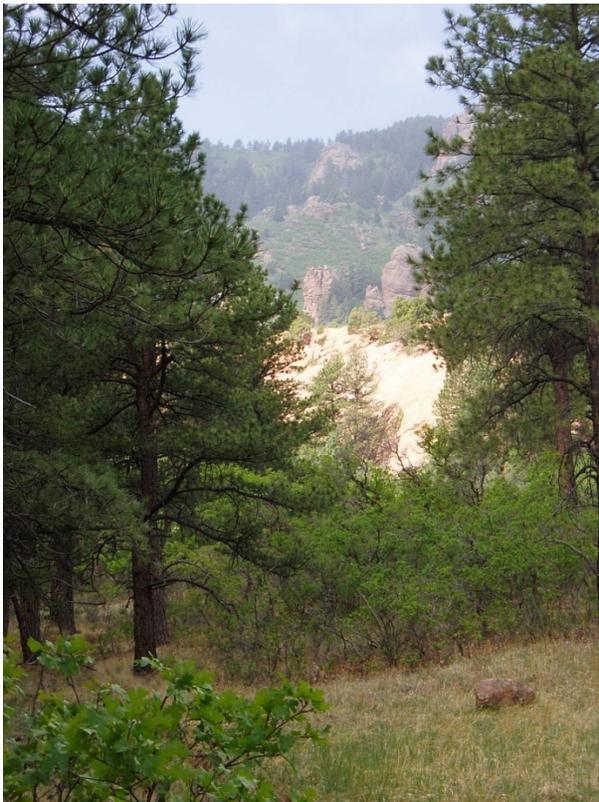
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Existing Conditions and Site Assessment

Introduction

An inventory and analysis of existing conditions was conducted as part of the planning process for Red Rock Canyon. The purpose of these investigations was to extend the body of knowledge on which planning decisions could be based. The data assembled for the Red Rock Canyon parcels in the 2004 master planning process was extended to include the White Acres and Section 16 parcels. The site analysis provides a holistic understanding of how the land came to exist in its present state and condition, as well as the historic, physical, biological, cultural, management, and social contexts in which it is situated. This information allows decisions to be made in ways that will protect the resources and preserve the conditions that make Red Rock Canyon unique and desirable as public open space.



Methodology

The existing conditions inventory and site assessment at Red Rock Canyon can be broadly grouped into three categories: Physical Resources, Biological and Cultural Resources, and Management and Social Influences. The Physical Resources series includes topography, soils and geology. The natural environment, as well as paleontological and archeological resources are covered in the Biological and Cultural Resources series. The Management and Social influences series includes ordinance, deed and policy restrictions, constructed features, and mountain backdrop views.

The Physical Resources, Biological and Cultural Resources, and Management and Social Influences series were evaluated by the consultant team and reviewed by the Colorado Springs Parks, Recreation and Cultural Services Department staff. Each of the three series was evaluated individually since their inherent information was considered separately by the decision-makers and the public. For example, sensitive ecological resources were considered under different decision processes than property use restrictions which are mandated by funding sources. The Overlay maps compiled for each of the three categories illustrate and delineate areas that would be sensitive to or negatively impacted by human activity. Information from additional studies provided by city staff was considered during the process.

The following brief history summary provides context for the information of this section.

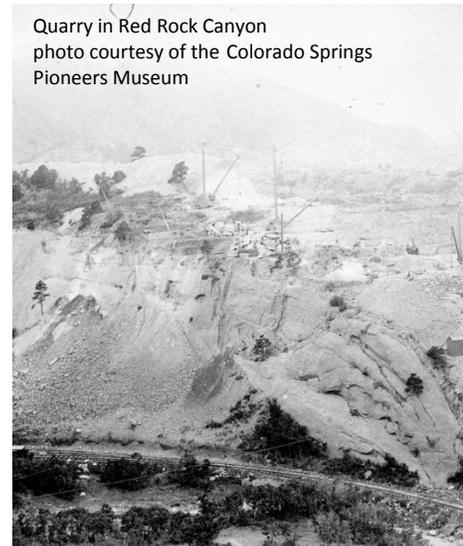


History

The Red Rock Canyon Open Space was assembled from three significant properties--the Red Rock Canyon property acquired in 2003 from the Bock family, the White Acres Property acquired in 2009-2011 and Section 16 purchased in 2010. These contiguous properties have been combined into the Red Rock Canyon Open Space; together, they preserve mountain viewshed, critical plant and animal habitat, geological and cultural history, and remarkable recreational opportunities for area residents. The history of these properties has been well documented; references providing more detail are at the end of this brief summary.

The modern history of Red Rock Canyon Open Space largely parallels and is closely entwined with the history of the surrounding natural and human communities. From the earliest human habitation—likely 7000 B.P. (before present)—to modern times, Red Rock Canyon’s topography and vegetation have provided humans with abundant wildlife, diverse and fruitful plants, shelter and raw materials. Archaeological, paleontological, and forest history findings are covered in more detail under *Biological and Cultural Resources* in this section. The Ute Indians traveled and hunted in the canyons, and some believe, resided in the canyons; this is supported by lithic scatter and various isolated artifact finds during the site investigations of this master plan.

The Pikes Peak Gold Rush in 1858 brought a surge of prospectors to the area. Colorado City (now Old Colorado City) was established in 1859 with boundaries extending to the north end of the Open Space. With short transportation distances, Red Rock Canyon was naturally tapped for the timber, quarry stone, molding sand and gravel needed to supply the growth of the new community.



Quarry in Red Rock Canyon
photo courtesy of the Colorado Springs
Pioneers Museum



Ore processing mill in Red Rock Canyon photo courtesy of the Colorado Springs Pioneers Museum

Mining and Quarrying

The canyons of Red Rock Canyon Open Space proved abundant in the raw materials needed for commerce. Gypsum was mined and stone was cut and transported by wagon and rail. The late 1800s saw many quarries and three different companies operating in the area. Stone for several area buildings including two Colorado College dorms, the Midland Railroad Roundhouse and Glen Eyrie Castle, was quarried in Red Rock Canyon. But the market for building stone played out and quarrying operations declined and had ceased by about 1910.

Ore Processing

In 1896 the Colorado-Philadelphia Reduction Company completed a mill for processing the Cripple Creek gold ore transported by the Midland Terminal Railway. By 1901 the “Standard” mill was also added further south along the hogback and their operations soon merged. Their success was short-lived. The Golden Cycle Mill, whose tailings form Gold Hill Mesa today, was completed in 1907 and rendered these mills obsolete. They closed soon after.

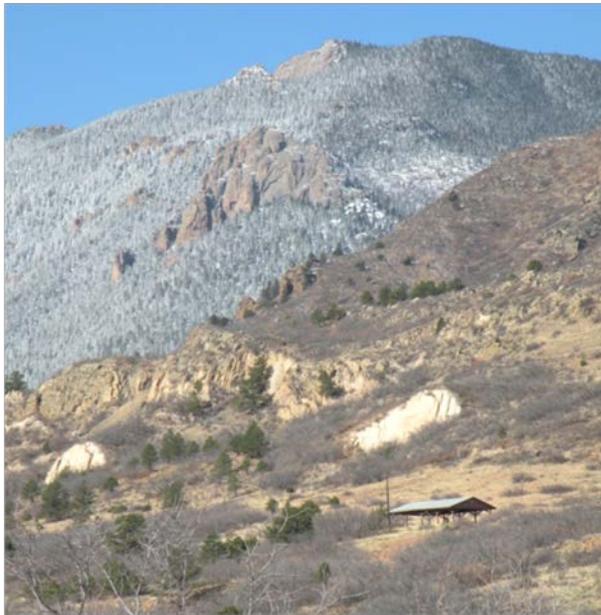


The Bock Property

Starting in the 1920s, John G. Bock began to purchase property in western Colorado Springs and Red Rock Canyon. By 1938, he had amassed about 650 acres—most of the land that was purchased by the City in 2003 as open space.

The property John G. Bock, Sr. acquired has been heavily exploited and was riddled with mines, quarries, roads, and the discard of these pursuits. Mr. Bock and his family made their homes in the canyons and set out to shape the land to fit their needs and desires. Commercial uses through the 20th century included a tourist camp, pony rides and pastures, trailer parks, gravel quarries, and a landfill operation.

While signs of historic uses abound, the land features lush and diverse vegetation in many areas and has been preserved and protected with strong public support.



White Acres

The tract became known as *White Acres* when W.C. White's heirs donated it to Bethany Baptist Church in the 1960s. Mr. White had lived on the property for about 30 years.

The church used the property for picnics and outdoor services, a picnic shelter and outdoor fireplace stood on the property when it was acquired by the City.

Signs of quarrying and access roads are found on White Acres, but years of light use and private-property protections have seen these disturbances largely return to natural vegetation.



Section 16

Section 16 was set aside during the process of Colorado Statehood in 1876 for the funding of public schools. The property had been leased from the State Land Board since 1972 for recreational purposes, first by El Paso County, and later by the City of Colorado Springs.

This land was thoroughly prospected during the Pikes Peak Gold Rush, and again during the 1950s uranium boom, but no commercially viable gold, uranium, or other minerals were found.

It is reported that the Greenlee Quarry had leased Section 16 to expand its quarry operations, but the demand dropped in the early 1900's and no expansion occurred.

Additional Historical Information

Additional history on the Red Rock Canyon properties is available from the following sources:

Colorado Springs Pioneers Museum

215 S Tejon Street, Colorado Springs. www.cspm.org

[Geologic Folio Red Rock Canyon Open Space Colorado Springs, Colorado](#) by Ken Weissenburger, Sharon Milito, Don Ellis. 2010.

[History in Stone](#) by Ruth Obee. 2012.

Old Colorado City Historical Society History Center
1 S 24th Street, Colorado Springs. www.occhs.org



Physical Resources

Slope, Aspect, Elevation, Drainages, Soils and Geology are included in the Physical Resources series. Each characteristic is inventoried and assessed under the headings What and Why.

What : Contains a description of the existing resource condition and characteristics.

Why: Explains the significance of the resource to the master and management plan.

Each characteristic was mapped using available information and field verified by the consultant team. The Physical Resources Overlay Map at the end of this section synthesizes the six characteristics which influence master plan and management plan decisions on a map unit basis.

Slope

What:

The canyons are generally steep on both sides along the rock fins or ridges; the canyon bottoms range from narrow and steep in the upper reaches to more moderate and broad in the lower reaches. The topography and slopes are directly determined by the geology. Throughout the property, previous human use has manipulated the topography. The most significant are the quarries, landfills and access roads. Also on the northern-most edge, the property is generally flat due to over lot grading during previous Highway 24 construction.

Why:

Slope influences preservation, restoration methods, trail and trailhead locations, construction methods, and forest health management strategies. Utilization of previously disturbed areas for visitor services development allows undisturbed areas to remain intact.

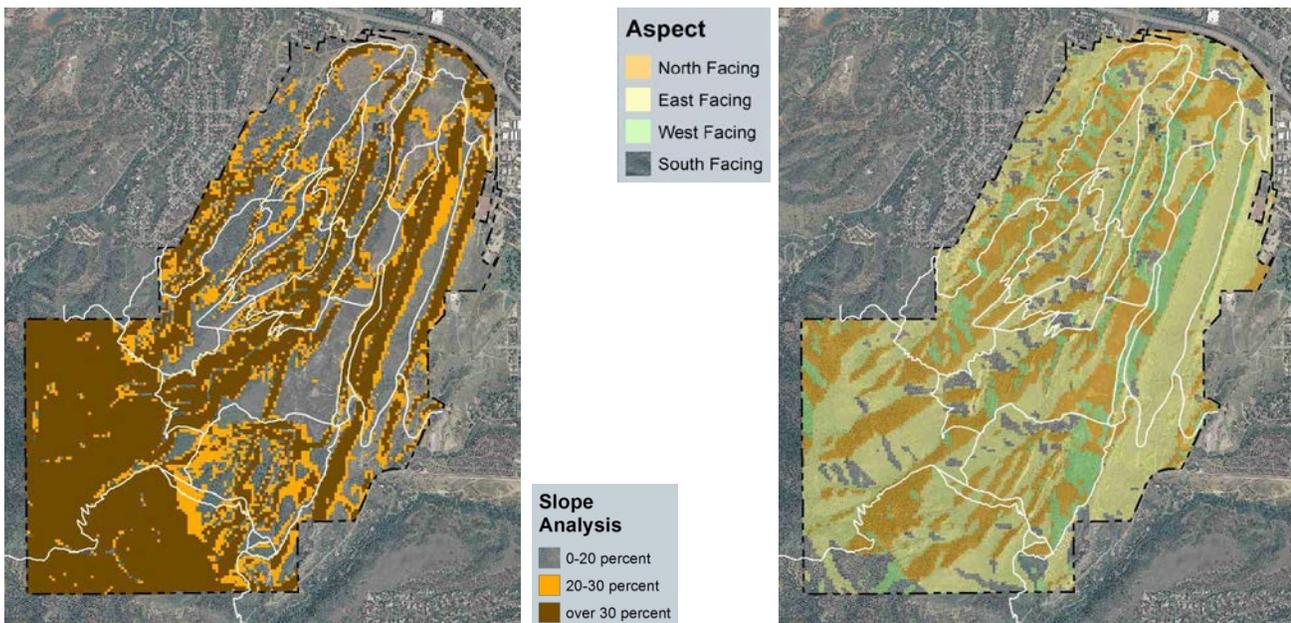
Aspect - Winter Shadows

What:

Aspect is the direction a particular piece of land faces. The many canyons and ridges create land with diverse aspect throughout Red Rock Canyon. Land having a particular aspect - facing a particular direction - is subject to the influences of that exposure. For this analysis, shadows on the north facing slopes are based on solar azimuth of 45 degrees from north.

Why:

Aspect is critical to consider. The north aspect most influences the location and appropriate grade of trails and trailheads. With regard to user experience and sustainable design, northern exposure is cool in the summer, but holds moisture, snow and ice in the winter, creating hazardous trail conditions which often lead to trail widening and braiding.





Elevation

What:

Like the slope, elevation is also directly determined by geology. From the high point of 8,012' along the southern most boundary to the low point of 6,127' along Highway 24, Red Rock Canyon Open Space ranges 1,885 vertical feet.

Why:

Elevation influences resource preservation, restoration methods, trail and trailhead locations, and construction methods. While elevation is an important consideration for site specific design, the elevation map units do not specifically influence general master and management plan decisions.

Drainage Ways

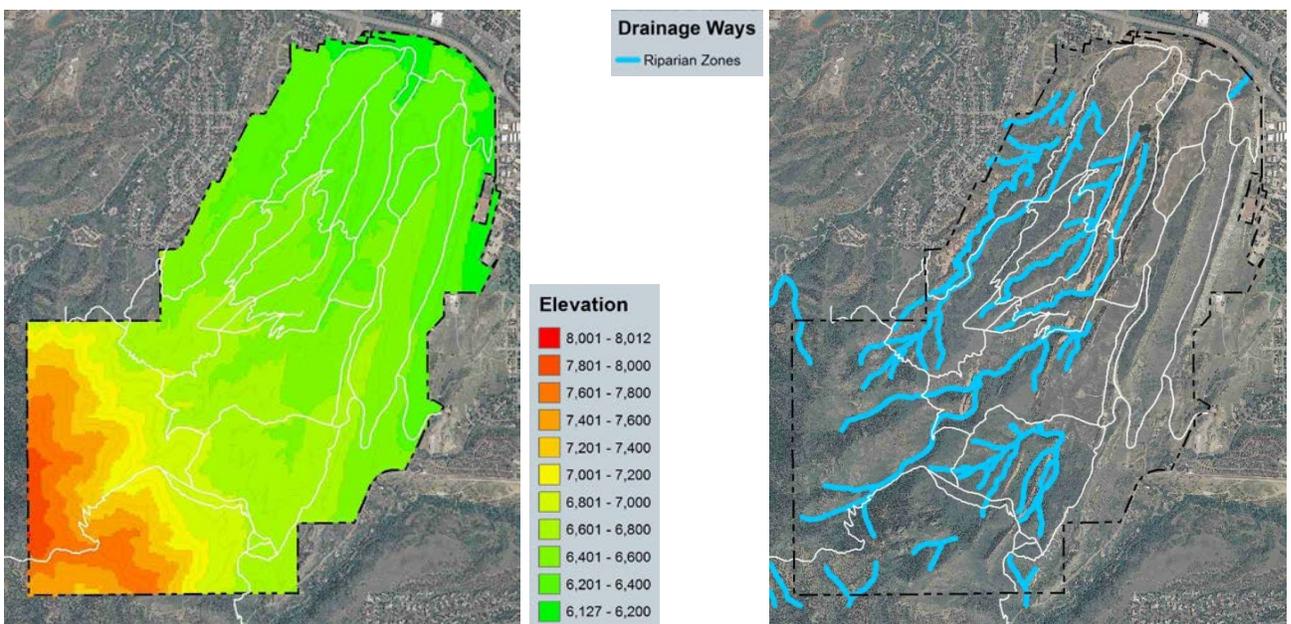
What:

The generally north south laying rock fins create a series of canyons and drainages across the property – all draining north into Fountain Creek. The surface hydrology runs in the canyon bottoms, flowing south to north. The drainage bottoms are highly erosive and sensitive to disturbance. To reflect this sensitively, for this analysis, major drainage ways are delineated with a 100' corridor buffer.

Previous owners created a series of dams and diversions in Sand, Greenlee, and Red Rock Canyons. These, along with the landfill, continue to collect and concentrate surface water flow, erode significant gullies, and interrupt the natural hydrologic flows. The 2004 Master Plan process identified the two ponds near the Red Rock Canyon Open Air Pavilion to be unique and desirable features. Information on the ponds, dams and their water source are covered in detail in *Management and Social Influences-Ponds*.

Why:

Drainage ways are sensitive to erosion and sedimentation caused by human disturbance. Restoration of natural hydrological flows throughout the property, starting at the upper reaches of the drainages, and protection of the natural drainage ways influence master plan and management decisions.





Red Rock Canyon Master and Management Plan

Soils

What:

Soil matrices represented in Red Rock Canyon include: Connerton - rock outcrop complex; Kutler-Broadmoor - rock outcrop complex; and Razor - stoney clay loam. All the soils are rated “severely limited” for trail construction due to slope, drainage characteristics and surface erosion by the USDA Natural Resource Conservation Service, El Paso County Soil Survey.

Why:

Soil characteristics are uniform throughout the site. The erosive quality of the soil should be considered during trail layout, construction and maintenance. While soils are an important consideration for site-specific design, the soil map units are not detailed enough to influence general master and management plan decisions.

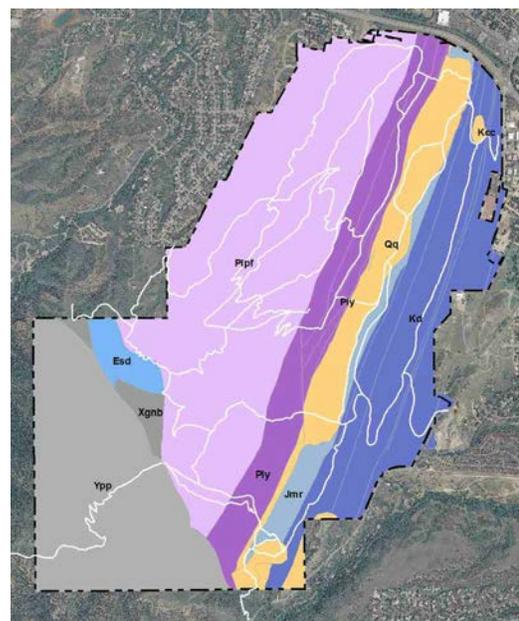
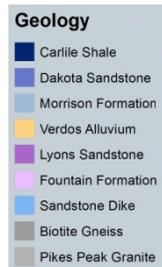
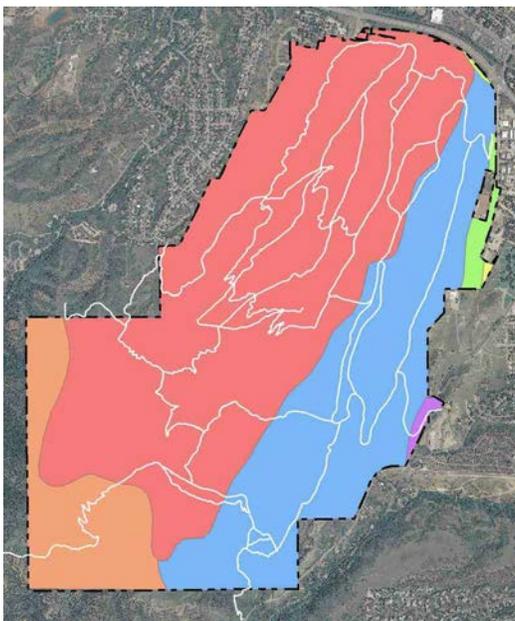
Geology

What:

Red Rock Canyon Open Spaces' most striking aspect from a distance is the long ridge of Niobrara Sandstone which forms the visual panorama well known to Colorado Springs residents. The Open Space is actually several distinct canyons, separated by ridges of Morrison, Lyons Fountain and Dakota Sandstone. Many of the formations are wildly shaped sandstone fins like those at the Garden of the Gods, although the eastern-most hogback formations are more exposed and better preserved. The canyons expose 300 million years of geologic history and hold abundant clam, ammonite and plant fossils, shark's teeth, rippled sandstone, and dinosaur bones. The main canyon is comprised of Verdos Alluvium. The Ute Pass Fault, nearly a diagonal line across the Section 16 property, delineates the transition to Pikes Peak Granite. Coupled with the geology of Pikes Peak, the area reveals one of the most extensive pictures of earth history found anywhere in the United States.

Why:

Great opportunities exist for interpretation in these minimally disturbed older formations and for a full Front Range geologic interpretation east to west through the site. Suggestions for further study include: Fossil Determination, Geomorphic Study, Mountain Building Investigation, and Weathering Type Study. Although dramatic and defining, geology informs the planning and management on a site-specific basis, not by map units.





Physical Resource Overlay

The Physical Resource Overlay map summarizes the findings that most impact master and management plan decisions. These include:

- Riparian Zones -drainages - 100' corridor (50' on each side)
- Slopes over 30%
- Aspect - north facing

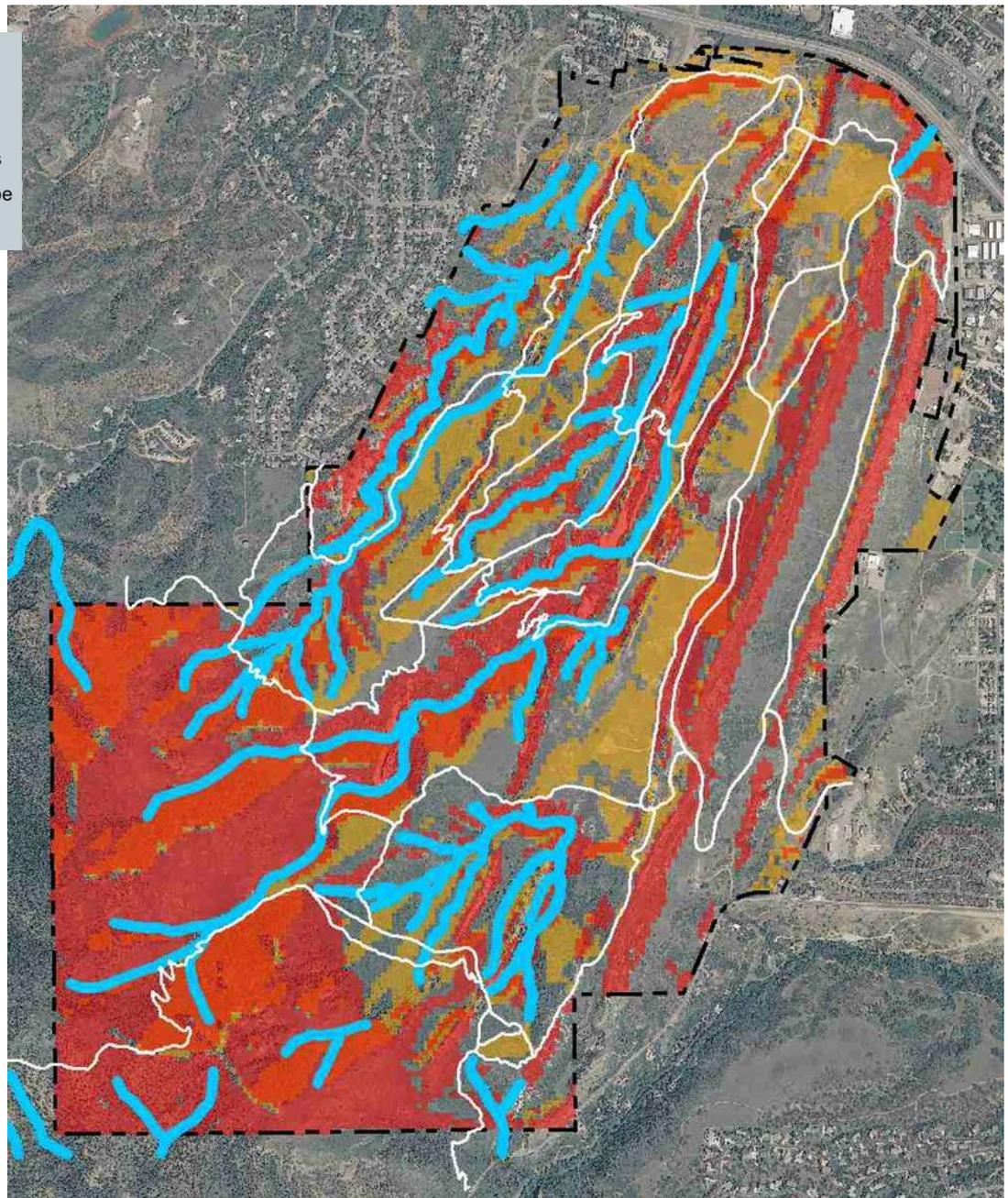
Not included in this overlay because they are not informative on a map unit basis:

- Elevation
- Soils
- Geology

This overlay, in conjunction with the Biological and Cultural Resource Overlay and the Management and Social Influences Overlay, guided decisions throughout the planning process.

Physical Resource Overlay

-  Riparian Zones
-  Over 30% Slope
-  North Facing





Biological and Cultural Resources

Vegetation, Forest Health, Wildlife and Habitat, and Paleontology and Archeology are included in the Biological and Cultural Resources series. Each characteristic is inventoried and assessed under the headings What and Why.

What : Contains a description of the existing resource condition and characteristics.

Why: Explains the significance of the resource to the master and management plan.

Each characteristic was mapped using available information, field inventory and field verified by the consultant team. The Biological and Cultural Resources Overlay Map at the end of this section synthesizes the five characteristics.

Vegetation

What:

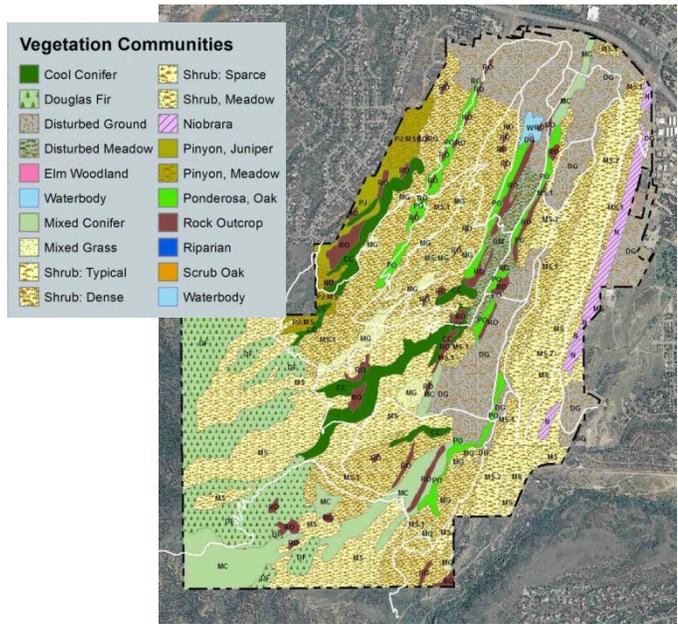
Red Rock Canyon Open Space contains a variety of vegetation communities, including disturbed and native grasslands, mountain shrublands, cool conifer and riparian canyons, and mixed conifer and Douglas fir forest. While many of these communities are typical of the Pikes Peak region, several rare, sensitive, or vulnerable habitat areas exist. The most sensitive areas are the narrowleaf cottonwood riparian habitats found in the canyons, while the mountain shrub/mountain muhly association and mixed grass meadow areas are increasingly rare. The predominant community is the general ponderosa pine/Gambel oak association.

Past disturbances have had a profound impact on lower-elevation grasslands, resulting in dispersed infestations of noxious weeds including cheatgrass, diffuse knapweed, common mullein, Dalmatian toadflax, yellow toadflax, Russian thistle, and Canada thistle. Likewise, higher elevation forests and

shrublands are generally overgrown due to a lack of fire over the past century (see Forest Condition and Health, page III.9). Sensitive riparian and meadow communities are vulnerable to both weed invasion and woody plant encroachment.

Why:

Extending from the urban interface to the upper mountain ridges, Red Rock Canyon Open Space provides a full cross-section of mountain front vegetation communities that are typical of the Pikes Peak region. In addition, the combination of geology, soils, and elevation provide a wide diversity of vegetation types in a relatively small area. The resulting vegetative diversity provides high value habitat for a variety of wildlife species, underscoring the importance of Red Rock Canyon Open Space as an important biological resource.





Forest Condition and Health

What:

The forest in Red Rock Canyon is shaped by history, the physical environment, and human impacts. This drought and fire-adapted forest varies dramatically across this diverse terrain. Native Americans played a role in shaping the pre-settlement landscape and influencing fire regimes with fire and timber cutting especially in low elevation valleys and travel routes that they frequented. During the settlement period of the latter half of the 1800's mining and railroad building impacted the forest. Much of the photographic record shows denuded slopes resulting from burning and logging, especially near mining districts and railroads.

Physical resources including geology, soils, aspect and elevation (described above) strongly influence the type and condition of forests, while disturbance factors such as fire, insects, and diseases continue to shape the forested areas on Red Rock Canyon. There is ample evidence of past fire occurrences throughout the area, and small bark beetles have become more widespread due to drought and overgrown forest conditions. Southwestern dwarf mistletoe, a leafless parasitic plant, is also present in the open space. Effects of dwarf mistletoe include growth reduction, vulnerability to other insects and diseases, and premature death.

During the inventory and site survey of the open space there were several general observations. *Ips* engraver beetles are present, but at a low population level in ponderosa pine and piñon pine. Douglas-fir beetle and pole beetle are also present. Dwarf mistletoe is present in the lower northeast portion of Section 16. Gambel oak is dense and overgrown in much of the open space and is encroaching into meadow areas. Douglas-fir has a high density in areas of the Section 16 property. Much of this is a result of fire suppression over the last 100 years and good precipitation in the later part of the 20th century.

Additional Vegetation and Forest Condition information is located in the Appendix B.

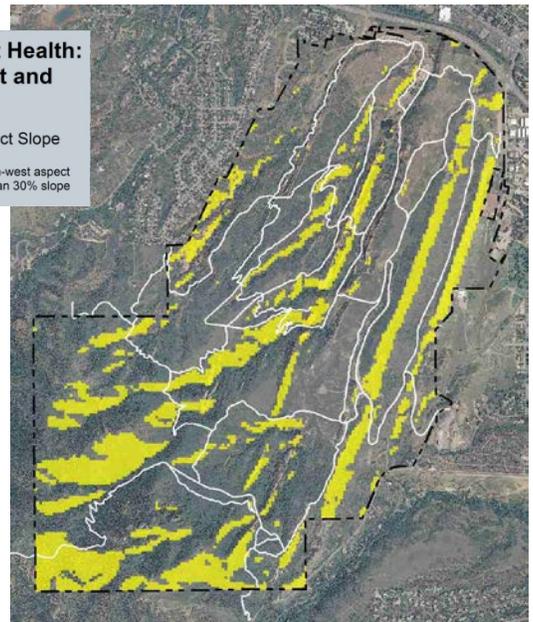
Why:

Forest health is critical to preserving the character and natural systems that the community values in this open space. Historically fire has served to maintain forest health; fire suppression in the urban interface necessitates management prescriptions to restore and maintain a healthy forest. In a more open forest, there is less competition for resources, thus remaining trees are healthier. A more open forest also supports an endangered older-age class of trees. Meadows and forest openings are important for wildlife movement and forage. Management goals and treatments for forest health across this diverse landscape will range from no interventions to actively restoring a forest to opening up a shrub land.

This information combined with vegetation type and density helps create management recommendations and priorities. Management goals are generally to restore plant communities to lower less-competitive densities, and create separations so a fire will more likely be a "healthy" ground fire.

Forest Health: Aspect and Slope

Aspect Slope
east-south-west aspect
greater than 30% slope





Wildlife and Habitat

What:

Red Rock Canyon Open Space is home to a wide variety of wildlife species that are typical of the region, including mule deer, coyote, black bear, small mammals, various reptiles and amphibians, migratory song birds, and raptors. Most of the general wildlife species are common throughout the region and thrive in areas where there are large blocks of undisturbed habitat and safe connections between adjacent habitat areas. Human disturbances (including trails, roads, constructed facilities or the presence of humans in the environment) can fragment the size or disrupt the connectivity of habitat, making it less useful for wildlife.

In addition to general wildlife habitat, Red Rock Canyon also provides several unique habitat types that support, or have the potential to support, other more sensitive wildlife species that depend on a particular habitat type to survive. Known or potential sensitive wildlife species include Mexican spotted owl, peregrine falcon, golden eagle, and prairie falcon. Sensitive habitats for these and other species include hogbacks and rock outcrops, dense conifer forests, riparian areas, and mixed grass meadows.

A landscape analysis was conducted as part of this planning process to identify both sensitive habitat areas and high quality general habitats. These areas are shown in the figure below. Sensitive habitats, shown in pink, include specific habitat components (e.g., riparian areas and rock outcrops) that are known or have the potential to support sensitive wildlife species. Undisturbed areas, shown in green, are habitat areas that are greater than 50 meters from a trail or road and have a greater value for general wildlife.

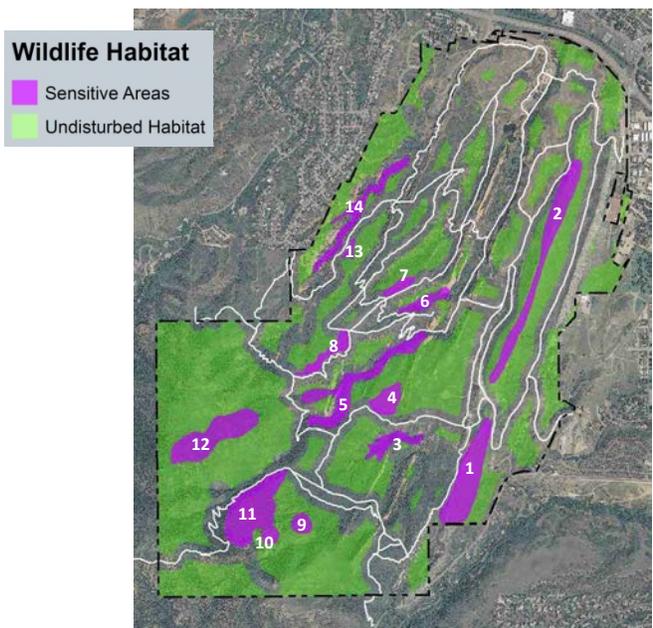


Why:

In planning for trails, facilities, uses, and management in Red Rock Canyon, it is important to understand and consider both general and sensitive wildlife habitat. For sensitive habitats, it is important to understand why areas are sensitive for certain wildlife species, and to protect those areas from human disturbance as much as possible. For general habitats, the goal is to minimize disturbance and fragmentation by protecting or restoring large, intact blocks of undisturbed habitat, and maintaining connectivity between different habitat areas. The dynamics and layout of both sensitive and general habitat areas should be understood to make informed management decisions and reasoned trade-offs when conflicting goals exist.

Sensitive

Habitat Type	Resource Values
Limestone shale soils	Supports or potentially supports rare plants - 1
Hogback ridge	Supports rare plants, raptors, and archaeological sites - 2
Canyon riparian	Unique plant communities, wetlands, and wildlife habitat - 3, 5, 6, 14
Meadow	Locally unique habitat for native prairie, birds, and other wildlife - 4, 7, 8, 13
Rock outcrops	Raptor perching/nesting and bat habitat - 9, 10
Douglas-fir forest	Supports interior forest birds, including potential Mexican spotted owl - 11, 12





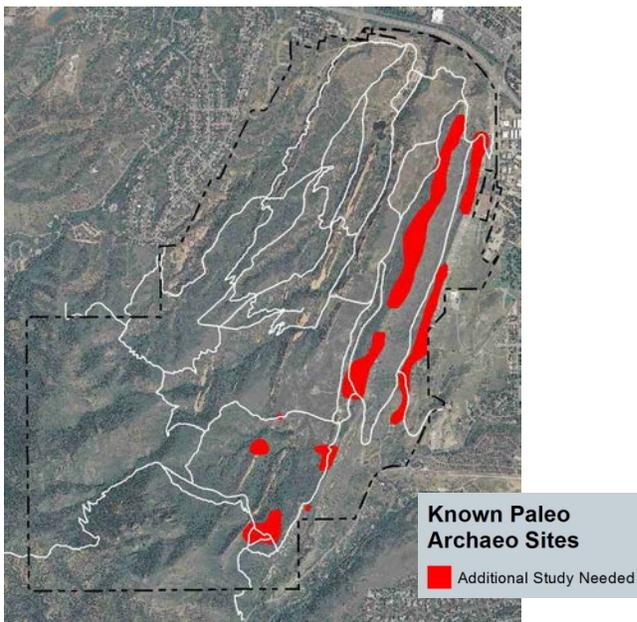
Known Archaeological & Paleontology Sites

What:

The exposed sandstone of the Dakota Formation has revealed several paleontological resources at numerous sites within Red Rock Canyon Open Space. Notable resources include dinosaur bones, marine fossils (ammonites, shark teeth, shell fragments), tree imprints, ripplemarks, and dinosaur tracks. Evidence of human use at Red Rock Canyon goes back 6,000 years, with numerous archaeological sites associated with rock outcrops and hogbacks, including projectile points, stone walls, and fortifications. More recent historic use by Native American tribes is also evident from their use of fire on the landscape and culturally modified trees. (Early use of the property by settlers of European descent is documented in the History portions at the beginning of this section). Several archaeological areas of concern have been identified along the Dakota and Niobrara formation hogbacks, where additional investigations may be necessary.

Why:

With its close proximity and ease of access to the Colorado Springs community, Red Rock Canyon provides several easily accessible opportunities to view and learn about the prehistoric environment and early historic setting. However, with this ease of access comes the greater potential for vandalism or theft of these resources. Planning for and managing public access to these areas will need to balance the importance of their protection against the value of education and interpretation on a case-by-case basis.





Biological and Cultural Resource Overlay

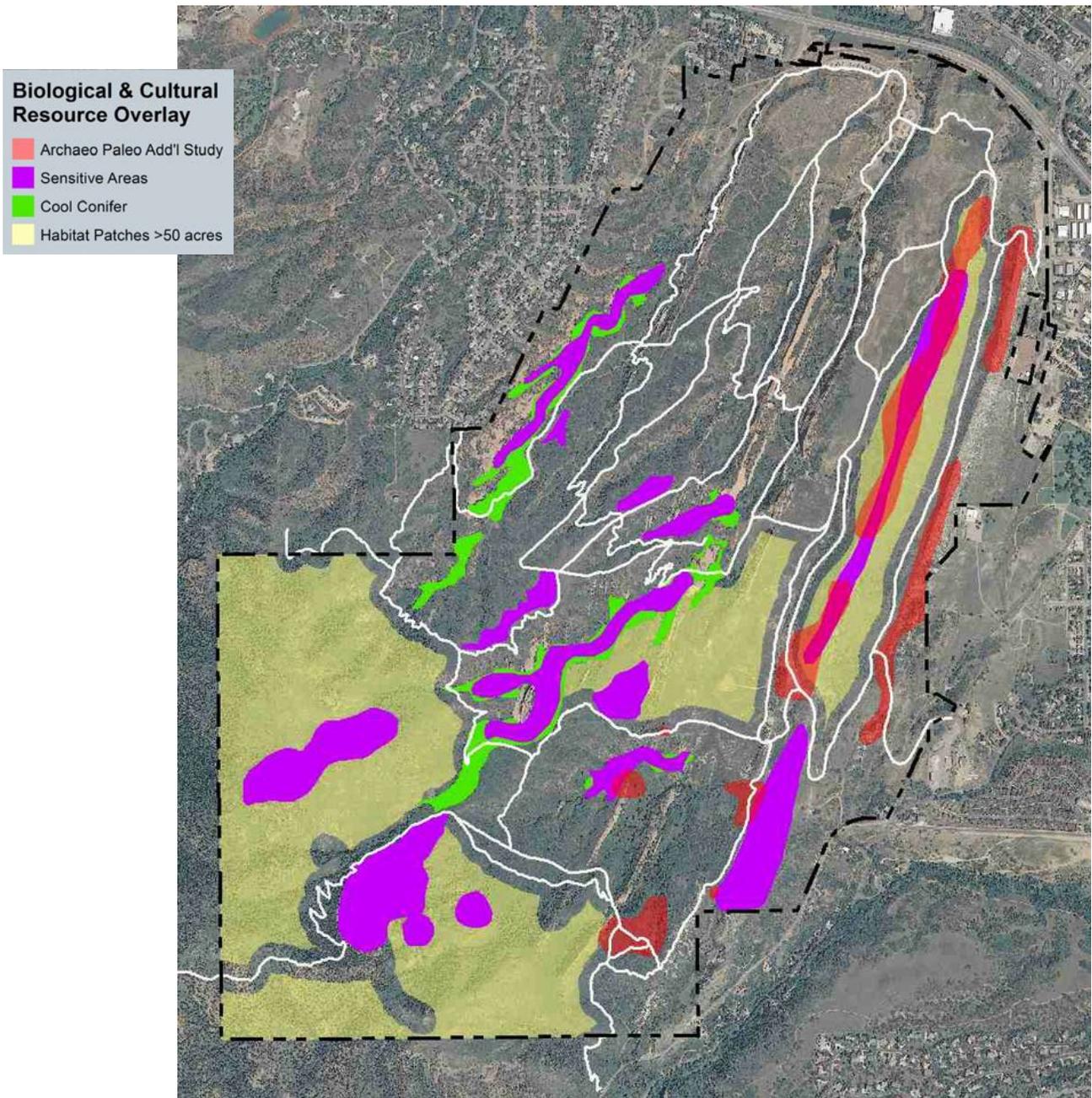
The Biological and Cultural Resource Overlay map summarizes the findings that most impact master and management plan decisions. These include:

- Archeological and Paleontological Areas of Concern
- Sensitive Wildlife and Habitat Areas
- Sensitive Cool Conifer Forest Areas
- Habitat Patches greater than 50 acres

Not included in this overlay because they are not informative on a map unit basis:

- Vegetation Communities

This overlay in conjunction with the Physical Resource Overlay and the Management and Social Influences Overlay guided decisions throughout the planning process.





Management and Social Influences

Parcel Restrictions, Departmental Practices, City Ordinances and Practices, Ponds, Landfill, Mountain Backdrop, Trailheads with Parking, Existing Trail System, and Trail System Concepts are included in the Management and Social Influences series. Each characteristic is inventoried and assessed under the headings What and Why.

What : Contains a description of the existing condition and its characteristics.

Why: Explains the significance of the condition to the master and management plan.

Each characteristic was mapped using available information and field verified by the consultant team. The Management and Social Influences Overlay Map at the end of this section synthesizes the eight characteristics.

Parcel Restrictions

What:

Red Rock Canyon Open Space was assembled by three distinct property purchases. Each purchase agreement designated specific requirements and restrictions for that property.

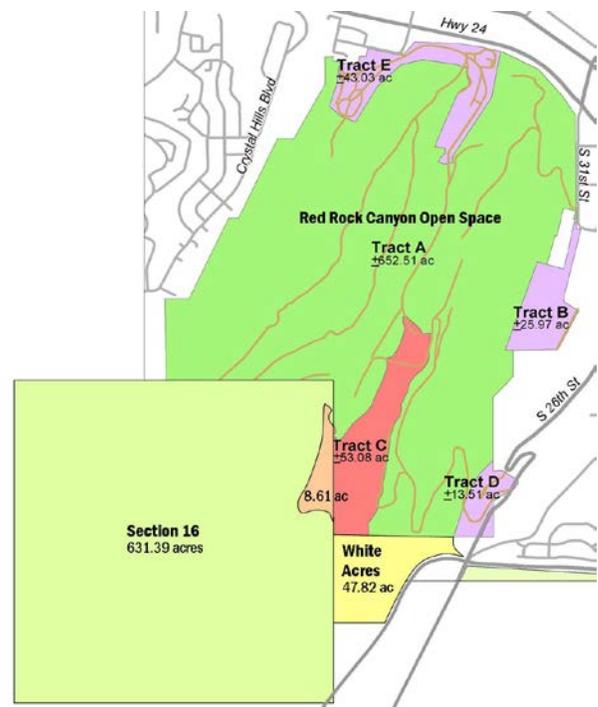
The original 789-acre purchase occurred in 2003. Purchase funds were obtained from the TOPS Program, Colorado Lottery Conservation Trust Fund (CTF), Great Outdoor Colorado (GOCO) and the City of Manitou Springs. To allow flexibility in the open space planning, the property was purchased in five separate tracts. Tract A, the largest and most pristine, at 653 acres, was purchased using funds that require the land to be preserved as open space and to comply with the GOCO-required Conservation Easement and the TOPS Ordinance in providing limited user services and only passive recreation opportunities. The remaining parcels, Tracts B-E, were funded through the CTF allowing a variety of compatible uses and activities to be considered in the master planning process. Specifically, Tract B and D were identified to accommodate the future realignment of 31st Street. This road alignment was determined by the City's Traffic Department.

The White Acres and Section 16 properties were acquired between 2009 and 2011. The 640-acre Section 16 property must comply with the same requirements as Tract A, although it is covered by a separate Conservation Easement. The 47.82-acre White Acres property, purchased with a combination of TOPS and private funding sources, must comply with the TOPS Ordinance.

Why:

Conservation easements and parcel restrictions influence preservation, conservation, restoration methods, location of facilities, and management strategies. Compliance with the stipulations of the Conservation Easements for each property are reviewed annually by the Palmer Land Trust.

A copy of the current conservation easements is in Appendix C.





Departmental Policies, Practices and Supporting Documents

What:

Red Rock Canyon Open Space is owned by the City of Colorado Springs and managed by the Parks, Recreation and Cultural Services Department. According to City Code, the Parks Director can promulgate park rules – not every rule and regulation is found in City Code. City of Colorado Spring Parks, Recreation and Cultural Services departmental policies and practices are specifically aimed to protect and manage the system's parks and open spaces.

Departmental policies and practices include: Passive Recreation Criteria, multi-use trail philosophy, and the Trail Etiquette yield protocol. Supporting documents for Red Rock Canyon Open Space include: the Interpretive Plan, the Volunteer Stewardship Plan, the Management Plan for the Open Space, the Landfill Closure Plan, and the Parks, Recreation and Trails Master Plan. The Department must also comply with federal and state regulations such as Americans with Disabilities Act (ADA) and the OPDMD-ADA (Other Powered Driven Mobility Device).

Why:

Departmental policies and practices influence trail and facility design, allowable activities, rules of use, enforcement, fundraising opportunities, and management strategies.

City Ordinances and Practices

What:

Red Rock Canyon Open Space is owned by the City of Colorado Springs and managed by the Parks Recreation and Cultural Services Department. City of Colorado Spring ordinances govern activities and behavior in the open space. These include: hours of operation, damage to park property and resources, rock climbing, non-motorized trail designation, and domestic animals. It is the practice of the City that all revenues from activities, reservations, and special event permits, that are generated and paid directly to the City on City properties, are put into the General Fund. Changes to this practice would require approval by the Department Director, Mayor and City Council.

Why:

City ordinances and policies influence rules of use, enforcement, fundraising opportunities and management strategies.





Ponds

What:

The ponds near the Red Rock Canyon Open Air Pavilion were identified as "unique and desirable features" in the 2004 Master Plan. In the years since 2004, the ongoing drought has reduced the upper pond to a fraction of its size and the lower pond to a dry bed. This changing condition, coupled with public concern, prompted the investigation into possible long term scenarios for the ponds. All scenarios must take into account that all of the surface and subsurface water is owned by Colorado Springs Utilities and other downstream entities; therefore water cannot be retained on-site and must be allowed to pass through to Fountain Creek. In addition, dam and water oversight is under the jurisdiction of separate divisions within the Colorado Department of Natural Resources. In short, the possible approaches to the water, ponds and dams require cooperation with numerous managing agencies and ultimately will require their approval.

At the time of this writing, there are two scenarios under consideration for the ponds. The first scenario would result in filling the upper pond and includes: breaching the lower dam to conform with the Colorado Department of Natural Resources' requirements while breaching it in a manner that allows it to function as a 'safety back up' for the upper dam; reworking the upper dam spillway to accommodate a 100-year storm capacity; lining the upper pond to prevent water seepage; and constructing a water service line from Highway 24 to the Red Rock Canyon Open Air Pavilion area to facilitate initial water filling and annual water replacement due to evaporation.

The second scenario is to breach both dams and restore the former pond bottoms to natural vegetation thereby enabling the passage of all surface water to downstream users.

Why:

Restoring water to the upper pond is a decision that requires approval by the Colorado Department of Natural Resources. Private fund-raising efforts are proactively being considered. These efforts are outside this master plan process and have no bearing on the master plan or state jurisdictional decisions.

Landfill

What:

The 61.69-acre landfill existed on the property at the time of original purchase by the City. The landfill operations ceased in 1986, prior to the City purchase, and the landfill was sealed. The standards, monitoring and controls (including smooth-wire fencing at the perimeter) are determined by the Colorado Department of Public Health and Environment. These requirements will remain in place until the monitoring results meet state thresholds. Vehicular access roads to the landfill must be maintained for the duration of the monitoring. The City may pursue public access across the landfill; however, any future public access across the landfill must be officially reviewed and approved by the State.

Why:

Although landfill monitoring and vehicular access need to be maintained, with the addition of the Section 16 and White Acres properties trail system continuity and connectivity would be enhanced by trail access across and along the perimeter of the landfill. All landfill access decisions will be pursued in cooperation with the Colorado Department of Public Health and Environment division.



Mountain Backdrop

What:

The location of parking and maintenance facilities should consider views to the site from the community, adjacent streets and adjacent neighborhoods. The eastern side of the Dakota sandstone hogback and the Fort Hays limestone ridge are most sensitive to development.

Why:

Colorado Springs' mountain backdrop is highly valued by the community and adjacent residents.



Trailheads with Parking

What:

Most visitors arrive at the open space by vehicle to one of the five official or unofficial parking areas: Highway 24 Main Lot, the adjoining Family Picnic Area Lot, Highway 24 overflow, Section 16 Trailhead and the Section 16 overflow just south along Gold Camp Road. A parking survey was conducted to assess the parking use patterns and potential parking needs. The survey, developed by the consultant team, was conducted in the field by the Friends of Red Rock Canyon over three summer weekends in 2011 - June 24, 25 and 26; July 15, 16 and 17; and August 12, 13 and 14. The survey included parking counts in four trailhead lots and five additional parking areas often utilized by visitors to the open space. The parking count data suggests:

- Peak usage generally occurs from 9:00 am to noon.
- The greatest need for additional parking is in the vicinity of the Section 16 property.
- The two main parking lots at Red Rock Canyon Open Space off Highway 24 are at 55% to 60% of full capacity during peak usage.
- The parking lot at the Section 16 trailhead and adjacent overflow parking areas are at 70% to 85% capacity during peak usage.

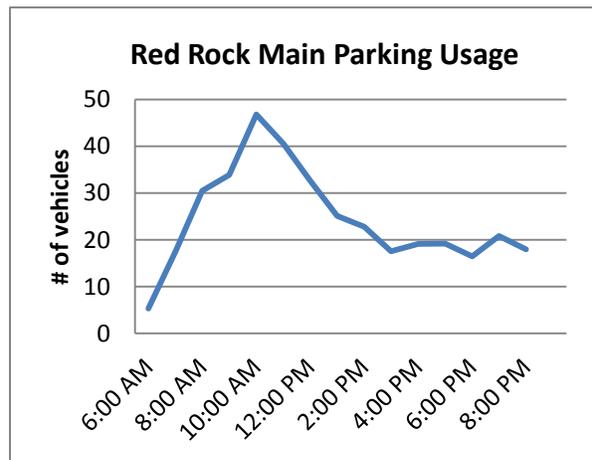
The Friends of Red Rock Canyon also conducted exit surveys via interview on the three summer weekends. This exit survey inquired about use patterns and quality of experience. Most of the use patterns and all of the quality of experience results are summarized on page III.17 in *Existing Trail System*. With the caveat that this is not a statistically accurate survey, the trailhead related use pattern data suggests:

- Visitors predominantly access the open space by vehicle and park at a designated trailhead. Three of 167 individuals interviewed entered the open space by a trail connection.
- The most frequented trailhead parking lots in order of usage are the Red Rock Canyon main lot, the Red Rock Canyon Family Picnic Area lot, and the Section 16 street side lot.

The full parking survey and exit survey results are located in the Appendix D.

Why:

Although the parking facilities are occasionally at capacity, the three-weekend parking survey determined this is not a common condition. It also identified use patterns that will guide trailhead and parking facility development. Accommodating additional parking facilities near the Section 16 trailhead or additional trailheads with parking along the 26th Street or Gold Camp Road edges of the open space could be considered.



Sample of summary (compiled average for 3 weekends) parking count graph for Red Rock Canyon main parking lot. See Appendix D for complete results.



Existing Trail System

What:

The Red Rock Canyon trail system is a highly valued and popular amenity. Two surveys evaluated the existing trail system; a user patterns and experience survey, and a physical conditions survey were both conducted in the summer of 2011.

As mentioned on page III.16, the Friends of Red Rock Canyon conducted exit surveys via interview on three summer weekends. This exit survey inquired about use patterns and quality of experience. With the caveat that this is not a statistically accurate survey, the use pattern and quality of experience data suggests:

- Visitors create loops using multiple trails during their visit. The trails most frequently used by the 167 individuals interviewed are graphed below.
- Visitors participate in a wide range of activities including, but not limited to walking, mountain biking, hiking, running, utilizing the dog park, rock climbing, seeking a quiet place, horseback riding, picnicking, and free-ride area biking.
- The majority of individuals interviewed, 98%, felt the level of interaction with other open space patrons was "about right."
- When asked, 6% of the individuals interviewed "felt crowded" in the open space and, of those that felt crowded, 17% indicated that feeling crowded lessened their experience a "great deal."
- The average length of visit was 1.64 hours.

The full interview exit survey results are located in the Appendix A.

Red Rock Canyon contains numerous multi-use trail options. Trails vary greatly in character and level of physical challenge. A field survey of the trail system's physical condition, completed by the consultant team, recorded and mapped the trail conditions. The findings and subsequent evaluation suggests:

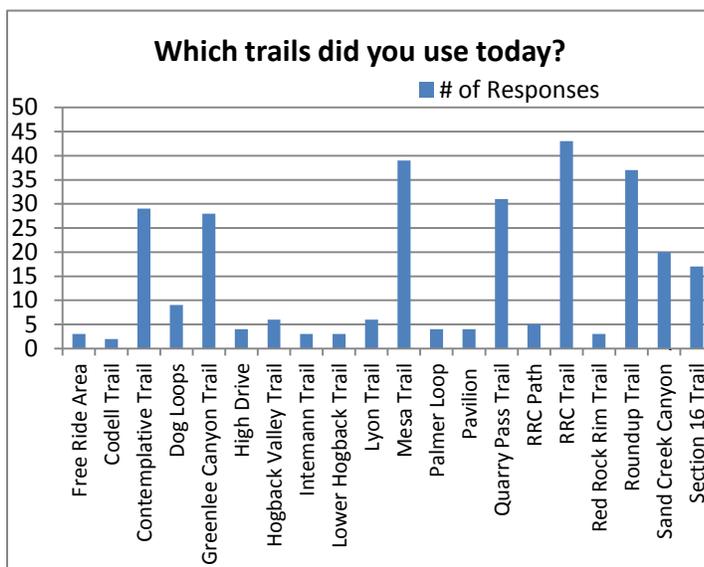
- Despite numerous trail options, unsustainable, bandit trails continue to be established. Bandit trails are easily established in many of Red Rock Canyon's fragile ecosystem by off-trail visitor's footsteps or tracks. Trail users follow the faint 'new path' and within three or four passes, a bandit trail is established. Bandit trails are a concern for ecosystem resource protection as well as trail system maintenance.
- Future maintenance solutions may be formulated to consider the effects of changes on all legitimate park users
- The field survey identified numerous trail sections exhibiting established and progressing erosion, trail entrenchment, trail widening, or trail braiding. The Existing Trails map on the following page identifies these unsustainable segments and their locations.

Why:

It is critical to establish the condition of the existing trail system in order to plan for the future ecosystem resource protection as well as preservation of the open space users' experience.

Unsustainable substandard trail conditions, including erosion, entrenchment, widening, and braiding, degrade the natural ecosystem resource as well as lessen the trail user experience. A well-designed trail system enhances resource protection by controlling habitat fragmentation, soil surface disturbance, and sedimentation. It also provides access for resource management.

A well-designed trail system also enhances trail user experience by providing access through the property's unique natural resources, providing a wayfinding and interpretive system to direct people around the property, and providing safe conditions for multiple users in keeping with the City's multi-use trail philosophy.





Trail System Concepts

What:

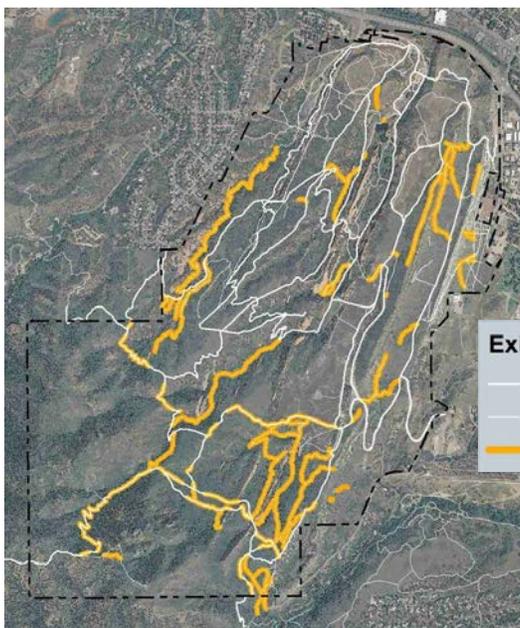
When evaluating the Red Rock Canyon Open Space trail system, it is helpful to step back and consider the big picture components that tie this trail system to this particular property and provide the basis for considering trail system options in the master plan. These existing components include: interconnected looping trail options; desirable destinations; trailheads with parking; and key trail connections within the open space and to adjoining trails and resources. These components are designed in concert with slope and soils with special consideration given to intact ecosystems, uninterrupted stands of trees, meadows, drainage ways and riparian areas.

A trail system is necessary to protect natural resources in moderate to heavily used natural areas. The proliferation of rogue trails in Red Rock Canyon supports the need for a designated trail system. With the large number of users, even the few people who disregard designated trails damage the natural resources. While the public process surfaced a few preferences to wander off-trail, a "wilderness approach" results in significant resource degradation within this open space. Red Rock Canyon Open Space is not a lightly accessed wilderness area; it is a popular, heavily used, urban-interface open space. The erosion, sediment loading, wildlife disturbance, and destruction of vegetation easily observed along multiple off-trail wandering routes are proof that the

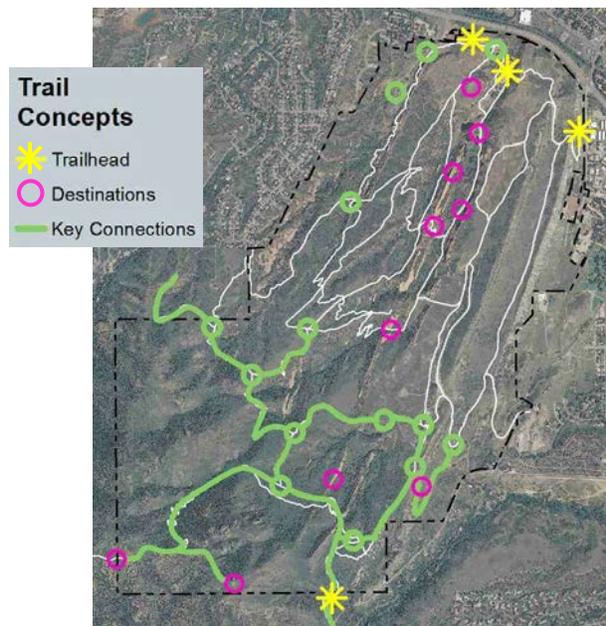
land cannot support off-trail travel at these current high visitation and use levels.

Why:

A well designed trail system balances use and conservation. Additionally, it concentrates use in resilient areas while providing sustainable, maintainable access and connectivity. Trail user experience is enhanced by this balance. Along with providing access to the property's natural beauty, this system already connects with the Intemann and Palmer Trails. It has the potential to connect with the Chamberlain Trail in Bear Creek Park. At the north end, the Chamberlain Trail converts to the Foothills Trail at Highway 24. Connection to the Chamberlain / Foothills Trail across Highway 24 will be via an at grade crossing on 31st Street. The Midland Trail, that parallels Highway 24 to the north, can easily be accessed via the Foothills Trail.



For better legibility, a larger scale version of this map is located in Appendix E





Management and Social Influences Overlay

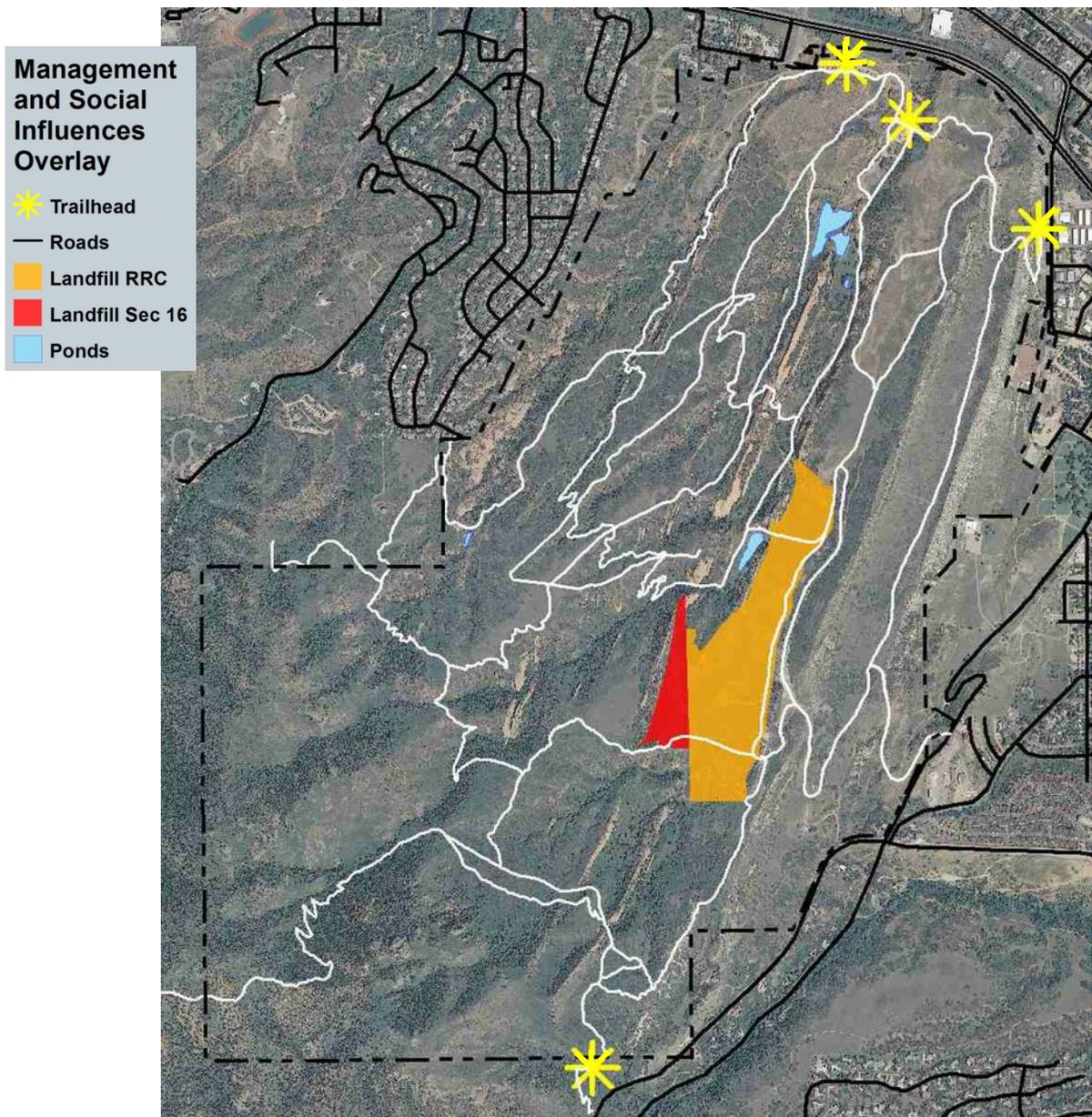
The Management and Social Influences Overlay map summarizes the findings that most impact master and management plan decisions. These include:

- Trailheads with Parking
- Roads
- Landfill
- Ponds
- Existing Trail System

Not included in this overlay because they are not informative on a map unit basis:

- Parcel Restrictions
- Departmental Policies, Practices and Supporting Documents
- City Ordinances and Practices
- Mountain Backdrop

This overlay in conjunction with the Physical Resource Overlay and the Biological and Cultural Resources Overlay guided decisions throughout the planning process.





Red Rock Canyon Master and Management Plan

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Site Development Recommendations

Introduction

The plan for Red Rock Canyon envisions an area that offers all people the opportunity to experience this unique and beautiful place. The focus is on providing access through a variety of multi-use trails and the support facilities needed to serve them. Trails throughout the site have been planned to accommodate a wide range of abilities and interests, and to offer a variety of experiences that will make multiple visits to the Red Rock Canyon Open Space worthwhile. The plan also allows for other uses in appropriate locations. Some of these that have been identified on the plan include technical rock climbing areas, a free-riding course for bicycling, an off-leash dog area, and facilities for group picnics and other events. Parking areas and trailheads have also been identified around the site.

Program Areas

Across Red Rock Canyon Open Space there are opportunities for unique uses and, in several designated parcels, concentrated uses that are not permitted within Conservation Easement protected parcels. Flexibility within these designated parcels allows several uses and their supporting facilities identified by the community. Within the Master Plan these are identified as Program Areas. The Program Area descriptions are below; their locations are indicated on the master plan map and on the [Program Area Map](#) on page IV.2.

Family Picnic Area

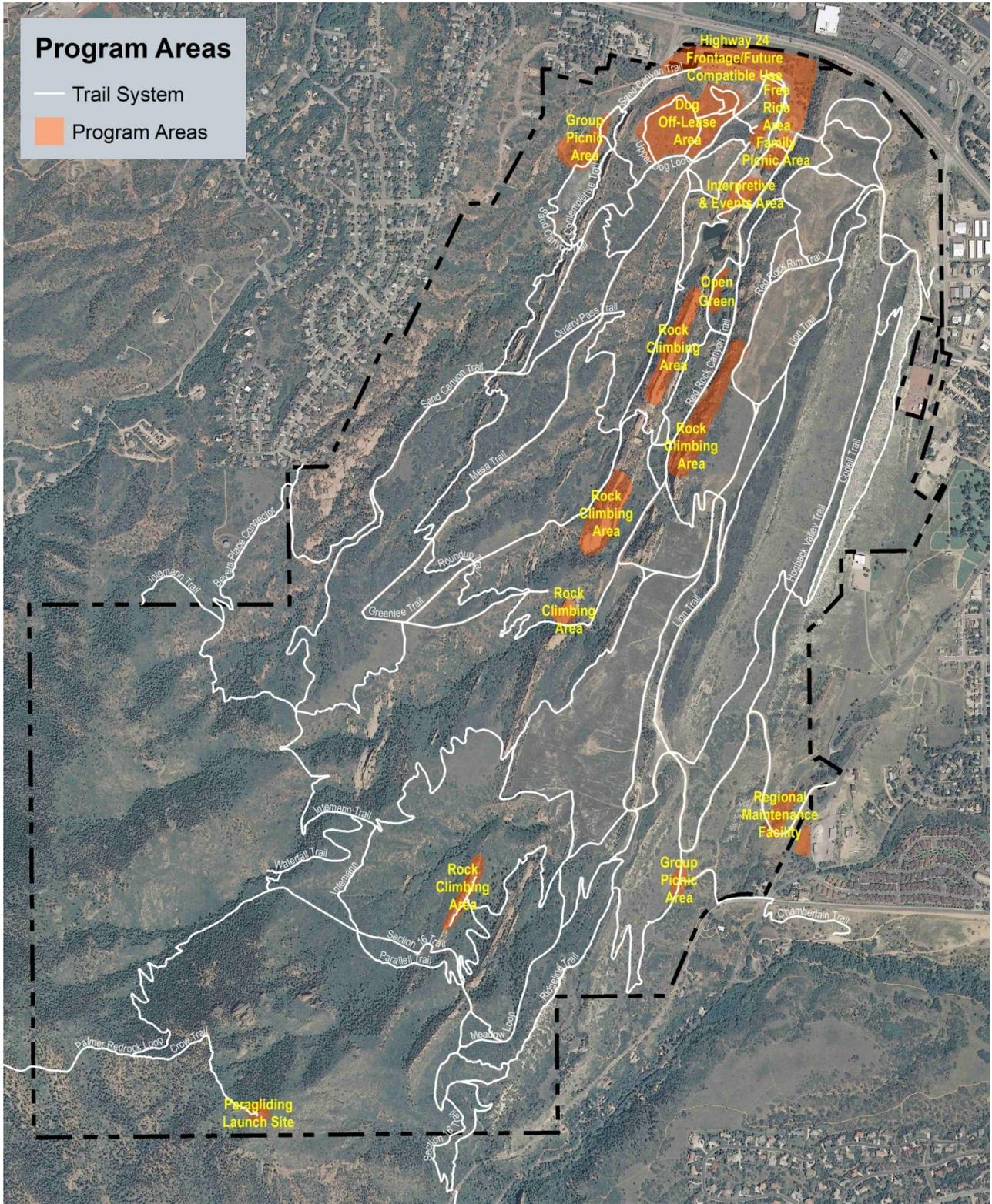
The family picnic area will remain located within the northern part of Red Rock Canyon as indicated on the master plan map. The family picnic area will be available on a first come/first served basis only. The family picnic area will be designed to accommodate users with a variety of physical abilities. Parking is located in close proximity to the picnic tables to facilitate hand carrying of picnic supplies.

The area provides rustic yet comfortable and varied picnic sites. Characteristics include: mowed and maintained access to table sites, varied distance from parking, and vegetation to provide varied sun and shade exposures. The area will continue to be implemented according to environmentally friendly design principles including: grading to maximize the harvesting of stormwater runoff, the use of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context.





Program Area Map





Group Picnic Areas

The two master planned group picnic areas provide opportunities for medium to large group gatherings. Their locations are in lower Sand Canyon and the White Acres parcel as indicated on the master plan map.

Both group picnic areas will be available on a reservation and fee basis only. Reservation hours will conform with the open space hours of operation - dawn to dusk. At all other times, the areas are to remain gated and closed to vehicular access. Facilities anticipated may include but not be limited to: ADA accessible pavilions, picnic tables, benches, restroom or port-a-let facilities, and trash receptacles. Vehicular parking should be provided in close proximity to the pavilions as well as other group recreation opportunities which may include but not be limited to: connections with the master planned trail system, trail wayfinding signage, and horseshoe courts. Facilities will be sited with consideration of community and adjacent neighbor views. The areas will be implemented according to environmentally friendly design principles including: the harvesting of stormwater runoff, the use of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context.

The Sand Canyon group picnic area is to be located at the north end of Sand Canyon and the group picnic pavilions should be designed to provide for flexibility in programming. The Sand Canyon Group Picnic Area may contain one cluster of picnic pavilions. (Maximum of three pavilions). Each pavilion may provide seating for a capacity of 75 persons. The maximum capacity of all three pavilions will be 225 persons. The group picnic area will be designed to accommodate users with a variety of physical abilities. Semi-delineated unpaved parking will be provided for approximately 175 spaces, with delineated paved parking for handicap accessible spaces. Vehicular access will be limited to the entry drive and parking area.

The existing pavilion at White Acres will be retained; the fireplace will be removed. The pavilion has been assessed for structural integrity. The assessment recommends minimal structural restoration to ensure public safety; the specific recommendation should be followed. The White Acres Group Picnic Area will contain one picnic pavilion which may provide seating for a capacity of 75 persons. The group picnic area will be designed to accommodate users with a variety of physical abilities. Semi-delineated unpaved parking will be provided for approximately 45 spaces, with delineated paved parking for handicap accessible spaces. Vehicular access will be limited to the entry drive and parking area.

Dog Off-Leash Area

This area provides open space users a place where their dogs are allowed off-leash. Dog owners should be aware that City Code requires all dogs be on a leash while in City parks and on City trails. Dogs must remain on leash in all other places within the open space.

The dog off-leash area is comprised of two trail loops. Signage to define the boundaries of the dog off-leash area is currently in place. Pet owners are expected to clean up after their pet; trash cans for pet waste disposal are provided at the trailhead parking lots. Dogs must still be kept under control in off-leash areas; specific rules and regulations requiring appropriate behavior for pets and their owners are posted. The City will endeavor to partner with local pet owner groups to assist in routine cleanup of dog waste.



The Open Green and Pond

This area will be maintained as an open meadow to be used on occasion as an informal gathering space. Use of this area must conform to the requirements of the Conservation Easement. No permanent structures shall be constructed in The Open Green.

The public process identified strong support for restoring water to the upper pond adjacent to the Open Green and the Open Air Pavilion. At the time of this writing, private fund-raising efforts are underway to initiate filling the upper pond including: breaching the lower dam to conform with the Colorado Department of Natural Resources' requirements while breaching it in a manner that allows it to function as a 'safety back up' for the upper dam; reworking the upper dam spillway to accommodate a 100-year storm capacity; lining the upper pond to prevent water seepage; and constructing a water service line from Highway 24 to the Red Rock Canyon Open Air Pavilion area to facilitate initial water filing and annual water replacement due to evaporation.

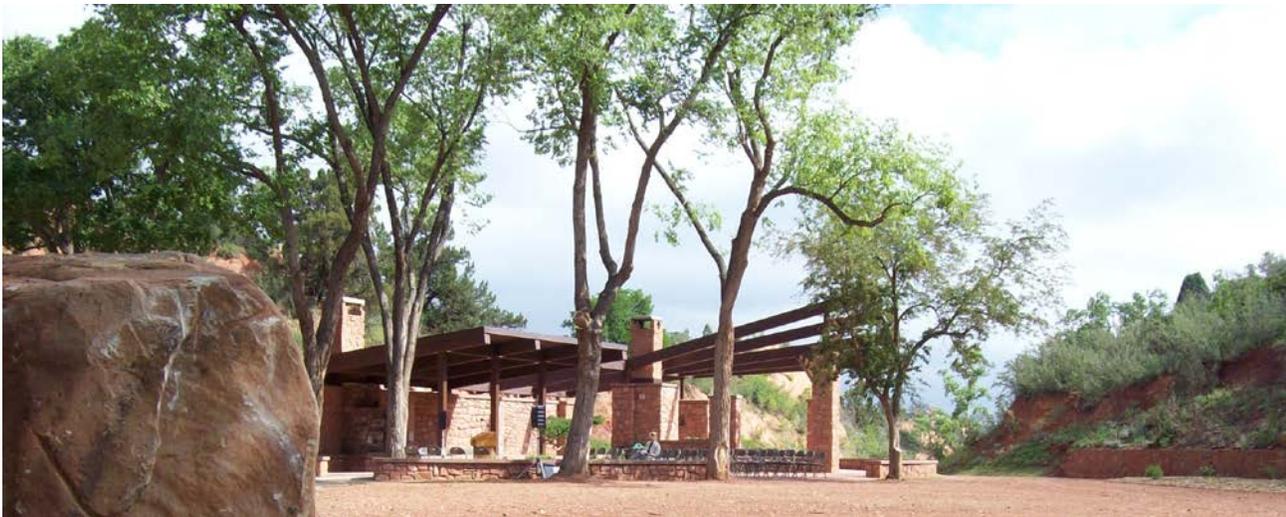
This plan recommends restoring water to the upper pond; however the final decision requires approval by the Colorado Department of Natural Resources. These efforts are outside this master plan process and have no bearing on the master plan or state jurisdictional decisions.

Interpretive and Events Area

The proposed interpretive and events area, located within Tract E north of the previously existing lower pond embankment, is intended to provide a venue for presenting information about the Red Rock Canyon Open Space. During the master plan process, several opportunities for interpretation and events were discussed including a pedestrian plaza containing an open-air interpretive display, a small interpretive center, a visitor overlook, and/or a multi-use venue that may accommodate educational events, concerts and weddings. A universally-accessible path provides access from the parking below. At the time of this master plan process, details and design criteria remain undefined due to funding constraints, and limited staffing resources.

The 2007 Red Rock Canyon Open Space Interpretive Master Plan outlines interpretive themes throughout the property. The Interpretive Master Plan should be amended to include the Interpretive and Events Area.

The area will be implemented according to environmentally friendly design principles including: the utilization of stormwater runoff, the use of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context. The interpretive and events area will be designed to accommodate users with a variety of physical abilities.





Free-Ride Area

This area is intended to provide opportunities for challenging technical mountain bike riding. The first phase of the free-ride area is completed. This phase consists of manmade features, such as teeter-totters and balancing beams. Phase II of the free-ride area will continue to be developed using the International Mountain Bike Association (IMBA) Free Ride Design Guidelines as a conceptual design guideline. These guidelines include safety measures and design guidelines to create challenges for a variety of skill levels.

Supplemental native tree planting will be implemented to replace the Siberian Elms that previously broke up the view from the main parking area. Trail access to the top of the free-ride area will be provided. This access will be delineated by a fence portal with signage warning "entering expert ride area" similar to existing fence portal at the mid-point entry.

The City will continue to partner with the local mountain bike community in the design, funding, and implementation of this area. All the components will be constructed per stamped engineered drawings. Maintenance of the free-ride area features is the responsibility of the designated volunteer group.

Rock Climbing Areas

The proposed five rock climbing areas are indicated on the master plan map with three sites flanking the main Red Rock Canyon, one new site near the south end of the main Red Rock Canyon formation and one new site on the Section 16 property. The City of Colorado Springs does not install, inspect, nor maintain the fixed protection devices. Access to the climbing routes will be via the master planned trail system. Site impacts will be monitored by the City, and addressed, if necessary, by limiting access or joint maintenance agreements with the climbing community.

Individuals interesting in utilizing the Red Rock Canyon Open Space technical rock climbing sites

must register in person at the Garden of the Gods Visitor and Nature Center and abide by the rules and regulations established by the Parks Department. Each climber's safety is his/her own responsibility. Climbing is an inherently dangerous activity; technical climbing is at one's own risk. Scrambling on any rock face is prohibited.



Paragliding Launch Site

The proposed paragliding launch site will be located at the ridge point near the southern edge of the open space border as indicated on the master plan map. This facility will consist of an aeronautical windsock maintained by the paragliding community. Access to the launch site will be via the master planned trail system. Site impacts will be monitored by the City, and addressed if needed by limiting access or joint maintenance agreements with the paragliding community.

Individuals interesting in utilizing the Red Rock Canyon Open Space launch site may do so. Each paraglider's safety is his/her own responsibility; paragliding is an inherently dangerous activity. Landing in the Red Rock Canyon Landfill is prohibited by the State of Colorado. Each paraglider is responsible for obtaining permission to land on public or private property. Paragliding or landing in Bear Creek Regional Park is prohibited without prior approval from County Parks.



Highway 24 Frontage / Future Compatible Use Area

During the public master plan process it was recognized that the area along Highway 24 (Tract E) provided opportunity and flexibility for future uses that are compatible with the overriding goals of the Red Rock Canyon Open Space. Several possible uses were discussed during the master plan process including a visitor center, regional welcome center, trees for buffering, amphitheater, connection to Midland Trail, or retain as native open area. Decisions regarding specific future use(s) were not made as part of the Red Rock Canyon Open Space Master Plan. Future land use and site design decisions will be considered with the affected stakeholders. The final designs will be presented to the Parks and Recreation Advisory Board.

Regional Maintenance Facility

To address the need for a maintenance facility that is easily accessible to the open spaces and regional parks, a future regional maintenance facility is being proposed in the Red Rock Canyon Open Space. This regional facility will allow crews to be more efficient with their time, as they travel back and forth from the various open spaces and parks to the maintenance shop. The proposed maintenance facility will be located at one of two potential sites along 26th Street. Future site design studies will determine the best location. Only one site shall be used for a maintenance facility. The final designs will be presented to the Parks and Recreation Advisory Board. At the time of this Master Plan there is no proposed funding for this facility.

This facility will consist of maintenance building(s), tool storage for volunteer groups and a small yard for equipment and storage. This facility will be designed according to environmentally friendly design principles appropriate to the open space context, and will be located to minimize visual impacts on the open space. The exterior of the facility will make use of natural earth-tones to visually fit with the open space context. Native landscape plantings will be used to provide a visual buffer from 26th Street.



Trail System

The primary recreational feature of the Red Rock Canyon Open Space is the non-motorized multi-use trail system. It is the defining and organizing element of the open space. The trail system is designed to accommodate conditions identified by the public in the master planning process and the natural systems discussed in *Section III: Existing Conditions and Site Assessment*. The considerations include:

- Balance a wide range of visitor abilities and recreational interests. Visitor recreation activities vary by individuals' physical capabilities and the intensity of the activity. They range from walkers seeking solitude, to families biking together, to recreational equestrians, to technical rock climbers, to competition-level trail runners, and to expert mountain bikers;
- Provide a variety of trail experiences;
- Preserve and protect the natural qualities and cultural resources of the land;
- Integrate interpretive opportunities;
- Facilitate access to the larger regional trail system and recreational opportunities; and
- Retain access for natural resource and forest management.

In general, the goal of the trail system is preserving the natural qualities of the land, while providing varied access through a network of non-motorized trails. With this in mind, the following recommendations emerged to organize trails into a system that serves the various (and sometimes conflicting) desires of the public while upholding the Parks, Recreation and Cultural Services Department's resource protection goals.

Key Considerations in Evaluating Trail System Alternatives

The key considerations in evaluating trail system alternatives are grounded in the Values and Themes developed and adopted by the public participants early in the master plan process. The Values serve as our agreed-upon litmus test for evaluating alternative approaches through the master planning process. The Themes provide more detail within the broader Values.

Values	Themes – What You've Said
<p>We will strive for a balance between use and conservation.</p> <p>The natural resources to be conserved include but are not limited to: fragile ecosystems, natural areas, scenic vistas and areas, wildlife habitats and corridors, important areas that support biodiversity, significant land formations and landmarks, and cultural, historical and archeological areas.</p> <p>We are committed to and will be guided by long-term sustainability of these properties, including the natural resources, the built environment, and the fiscal and human resources necessary to support them.</p> <p>Management of the natural, cultural and visual resources must consider both conservation of the resource and the community's recreational experience.</p> <p>Interpretive information and methods should impart a greater understanding and respect for the resource while balancing the need for education and preservation.</p>	<ul style="list-style-type: none"> • Restore and sustain natural resources • Protect unique and sensitive natural and cultural resources • Accommodate existing uses • Maintain the back-country experience • Enhance and connect the existing trail system without developing a new trail system • Commit to multi-use trails unless special circumstances exist • Improve communication about the property and its use • Recognize the need for shared stewardship and clarity of roles and responsibilities • Create a plan that is realistic, yet stretches possibilities



Multi-Use Trails

The concept of multi-use trails is strongly supported by the public and a key tenet in the Parks, Recreation and Cultural Services Department's philosophy. The intent of the Red Rock Canyon Open Space trail system is to remain open to all legitimate user groups. The exception is the one previously determined hiker-only use on the Contemplative Trail.

The appropriateness of a particular trail for a particular use (hiking, cycling, horse riding) is dependent on each individual's skill and experience level. Because of this, encouraging or discouraging particular uses on individual trails is not recommended. All trails will be rated by difficulty in a classification system similar to that used for skiing and discussed later in this section.

Natural and Cultural Resources

Protection and sustaining the open space's natural and cultural resources is strongly supported by the public, and mandated by the Conservation Easements and TOPS Ordinance. The site evaluation identified Sensitive Areas and the Cool-Conifer Forest ecosystem which are sensitive to disturbance. The trail system does not disturb these resources except when no alternative trail connection exists. The resource attributes of both designations are discussed in *Section III: Existing Conditions and Site Assessment*.

Trail Experience

Trail Experience is each individual trail user's subconscious interaction with the environment that thoughtful trail design enhances. This means each consideration during trail design and construction should aim to make the trail:

- Be fun and rejuvenating;
- Provide Passageway - not simply a transportation route;
- Provide Compatibility for various trail user types – hikers, cyclists, equestrians, elderly, children, and physically challenged individuals;

- Integrate with the Land, Vegetation, Sensitive ecosystems and Wildlife;
- Interact with the Environment; and
- Stimulate Inquisitiveness - with view opportunities and alignment – it is interpretation without signs along the entire corridor.

Two key components effect trail user experience. The first is *trail flow and rhythm*.

Together, flow and rhythm, are key components for trails popular with runners, cyclists and equestrians. The experience of travelling along a trail where one turn leads to the next, oncoming obstacles and trail traffic are visible, and one rise leads to a similar descent not only create enjoyable trail, but also creates a more durable trail while reducing excessive cyclist speeds and associated conflict with other trail users. The Red Rock Canyon Open Space terrain presents opportunities for physically and technically challenging trails. How each user group navigates these challenging trails - differences in speed, preferences for up or down hill travel, users eye level and its impact on seeing other trail users ahead - all need to be taken into consideration during trail design and maintenance.

The second component is *visual separation*. Trail users should be able to enjoy the natural environment and natural vistas without viewing the surrounding development or nearby trails. While trail users anticipate interacting with cars, signage, and support facilities at trailheads and major crossings, the backcountry experience is compromised when trail users are continually exposed to residences, utilities and signage. The property lends itself to a reclusive escape into Red Rock Canyon and the foothills - this is both its beauty and its uniqueness.

Both trail design components, trail flow and visual separation, are typically accommodated by thoughtful trail design and maintenance. The physical and topographical diversity of this property allow both of these trail experience components to be achieved.



Sustainable Trails

Trail sustainability includes consideration and attention to protection of the natural and cultural resources, trail safety, sustainability, construction cost, structural integrity and maintenance. Compliance with and proper execution of consistent design and construction standards that reduce entrenching, braiding, erosion and sediment loading, will best ensure durable, safe, sustainable trails. This is the recommended approach for the majority of the trail system.

Red Rock Canyon Open Space trails are recommended to remain at a slope of less than 33% of the existing cross slope with a maximum slope of 10% - preferably less than 8% - (except for designated Challenging Trails) with the proper outslope to facilitate drainage. Coupled with proper alignment, aspect orientation, grade reversals, and construction techniques, the majority of the trails will be sustainable for generations.

In contrast, the planning process revealed strong public desire to retain several existing steep and challenging trail segments for the unique trail experiences they provide. Only challenging trails with limited impact on the natural and cultural resources identified in *Section III: Existing Conditions and Site Assessment* are retained. The retention of these steep challenging segments will initially require a significant number of stabilization structures; the retention also commits the department to continual, ongoing maintenance of those structures into the future. Challenging trail segments are included in both the Blue or Black trail categories in the master plan.

Red Rock Canyon Open Space is divided by numerous old unpaved roads. Some of these date from the time of pioneers and early settlers and others from more recent activities by prior owners. For these early users, the objective was to get from point A to Point B as quickly as possible. At the time of construction, long term sustainability under heavy recreational use was not a consideration. For this reason utilizing old

road beds for new recreational trails is not recommended in Red Rock Canyon Open Space. While old roads appear to offer trail corridors that ease construction, their steepness in relation to cross-slope and their poor drainage result in unsustainable trails requiring continual long term maintenance; over the long-term, these conditions provide a less desirable user experience. This is evident in many portions of the Section 16, Hogback Valley, Parallel, Lion Mesa, and Greenlee Trails. Old road recommendations are included on page IV.19. If emergency and service access is no longer needed and resources for full closure and restoration of the old road alignments is available, some existing trails on old roads may be rerouted to sustainable single-track trail alignments. The Interpretive Plan identifies cultural resources throughout the property but has not yet identified any of the old roads as culturally significant. It is recommended that if interpretive opportunities are identified in the future, sustainable trail be constructed to access the old road bed.

A less often considered component of trail sustainability are fiscal, knowledge and manpower resources. This consideration often becomes a "pay now," with a big effort to install a sustainable trail design, or "pay later" incrementally and continually into the future with ongoing maintenance. Individual volunteer groups are getting their members out for an after-work trail effort, these tend to focus on incremental maintenance or re-construction. Collaborative projects, pooling numerous groups' knowledge and manpower resources, have the potential to make the leap to physically sustainable solutions and resolving challenging areas.





Non-System Trail Closure

The Red Rock Canyon Open Space trail system is designed considering and balancing many factors including physical resources, natural and cultural resources, management and social influences and the public input during this master planning process. The development and acceptance of non-system, rogue, trails undermine this process. All trails (social/rogue or otherwise) not in the approved trail system are recommended to be closed.

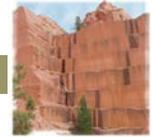
To be successful, intentional trail closure techniques are recommended in this heavily used open space. The photo to the right shows the lack of success of traditional techniques. The following techniques should be used for closing rogue trails and when closing system trails that are rerouted. Intentional trail closure techniques include:

- Observe and collect information about why the rogue trail is occurring. If conditions on alternative routes are the cause correct them.
- Observe conditions on the rogue trail.
- When appropriate and within the trails master plan, strategically plan and construct reroutes concurrent with the closing of old trails.
- Construct substantial check dams and other structures to stabilize the rogue tread by stopping water flow and encourage sediment build up. This stable ground surface will encourage native plants to re-seed. The goal is to obliterate the closed trail tread.
- Install fencing to enforce the closure. Fencing must extend fully between two site obstacles such as a large rock outcrop or dense vegetation. Buck and Rail type fencing should be used as it creates a formidable obstacle that is difficult to climb over and is easy for volunteers to install as it does not require fence post holes. Split rail fencing has not proven overwhelmingly successful in Colorado Springs open spaces.

- When rerouting system trails make the commitment to solve the whole problem area. For the closure of the original trail to be successful, it is essential to provide a smooth transition between existing and new trail sections. Align to discourage future rogue trails.

Successful trail closure and the resulting resource protection require the commitment of resources, knowledge and manpower. Unsustainable trail sections and recommended trail reroutes are found in the *Management Plan Chapter IV: Trail System Sustainability and Management*.





Trail System Components - Trailheads, Trails and Wayfinding Nodes

Trailheads with parking, trails and wayfinding nodes make up the Red Rock Canyon trail system. Each is described in detail below.

Trailheads with Parking

The public master plan process identified and located multiple trailheads with parking locations. From the data and input gathered, improving facilities at all trailheads, and additional trailhead parking and facilities on the open spaces' eastern edge near the White Acres and Section 16 properties are recommended. Within the Red Rock Canyon Open Space Master Plan the term trailhead will be limited to "trailheads with parking," access points to the open space via the regional trail system (without parking facilities) are discussed within the *Trails* portion below.

Trailheads are a visitors first experience at the open space and should reflect the qualities of the Red Rock Canyon Open Space while providing facilities to enhance each visitor's experience. All trailhead areas are to be implemented according to environmentally friendly design principles. Parking areas are to be un-paved with semi-delineated spaces to maximize parking lot efficiency while minimizing parking lot size. Design principles include the harvesting of storm water runoff and native landscape plantings that integrate the trailhead parking areas into the surrounding open space context. All parking areas will be designed to encourage pedestrian

and bicycle movements. Each trailhead shall be designed to provide ADA access to the trail system.

The trailheads are indicated on the master plan map and the recommended trailhead visitor support facilities are indicated in the table below.

Trails

To accommodate the variety of experiences, the trail system is designed to address all the conditions listed at the beginning of this section. The trail design offers a range of trail difficulty levels interconnected into a series of loops wherever possible. While visitors primarily access the open space from the trailheads with parking, several connections to the regional trail system are indicated. Connections to the Midland, Chamberlain, Stephanie's, and Palmer Trails are included in the plan. Several out-and-back trails provide access to paragliding and climbing areas, as well as one to an overlook. Recommendations for a trail design process and additional regional connections are included below in *Additional Trail System Recommendations*.

Trailhead location	parking facilities	waste and restrooms*	recycling	pet waste station	rules of use and map	seating	interpretive signage
Highway 24							
Main Entrance	195 spaces	X	X	X	X	X	X
31st Street	20 spaces RV & bus spaces equestrian facilities**	X	X	X	X	-	-
26th Street	17 spaces	X	X	X	X	-	-
Section 16	40 spaces	X	X	X	X	X	-

* Restrooms may be port-a-let facilities, public full service restrooms or composting toilet facilities.

** Equestrian Facilities may include horse trailer pull-thru parking spaces that accommodate staging, hitching posts, manure disposal area, and, if possible, water.



The overall trail organization is based upon two classification schemes:

1. Classification of trails by degree of difficulty
2. Themed Trail categories

Classifications by Degree of Difficulty

For the first categorization, a system similar to that used for skiing has been adopted. Coloradoans are familiar with this system and understand it intuitively. Trails were classified as easy, intermediate, difficult or ADA accessible. A color designation for each class was adopted that matches the system used for ski slopes: green for easy, blue for intermediate, and black for difficult. The color white was assigned for the ADA accessible trails. The specific criteria for each type of trail are on the following pages.

Green - Easy Trails

13.4 miles

These are trails that offer narrow to wide widths and smooth surfaces at relatively low grades.

- Sustained slopes less than 5% with short sections up to 10%
- Typical width from 3' to 8'
- Smooth surface without obstructions



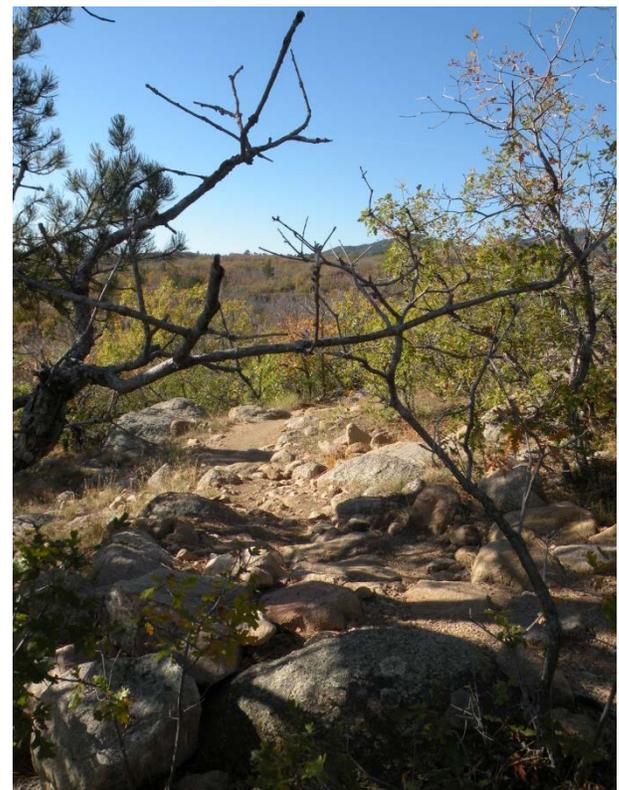
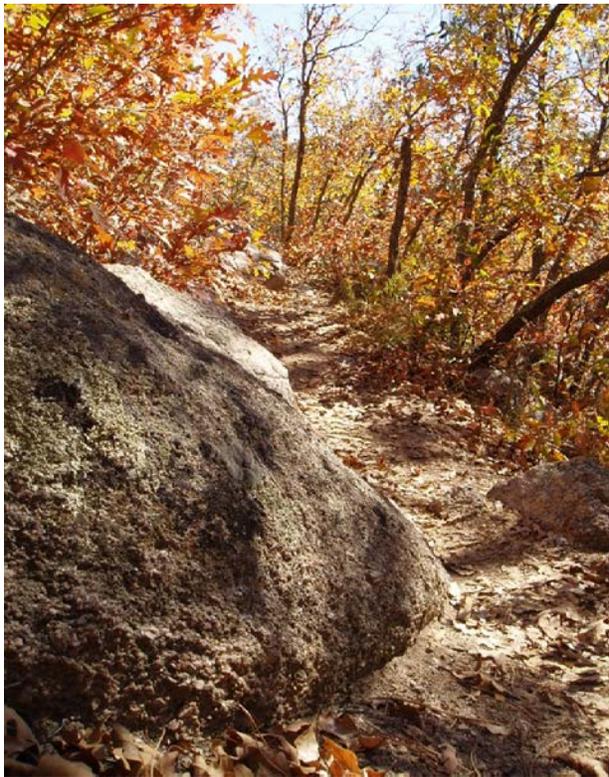


Blue - Intermediate Trails

13.5 miles

Intermediate trails are narrower than the easy trails and may have frequent challenges. Qualifiers, obstacles consistent with the blue-intermediate designation, should be designed into the trails at every connection with a Green-easy trail classification.

- Sustained slopes range from 0 – 10%. Sustained grades on intermediate trails should not exceed 10%, except for short distances up to 12%.
- Typical width from 18" to 3'
- Variable surface – Occasional obstacles including steps, water diversions, roots, rocks, etc.



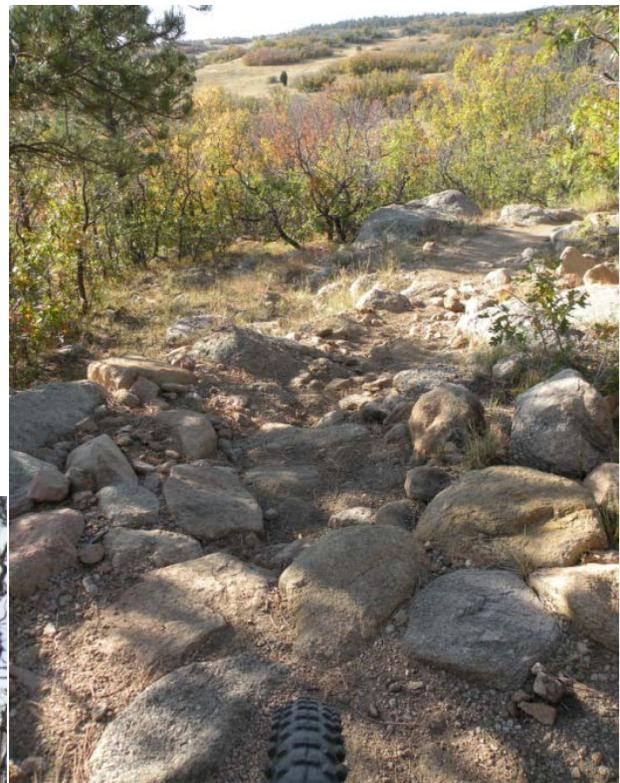


Black - Difficult Trails

4.8 miles

Difficult trails provide a more challenging experience, including steeper grades, rougher surfaces, more frequent challenges and narrow widths. Trails contain frequent water diversions, steps, switchbacks, and roots or exposed rocks on their surface. Qualifiers, obstacles consistent with the difficult designation, should be designed into the trails at every connection with a green-easy or blue-intermediate trail classification.

- Sustained slopes range from 0-12% except for short distances up to 15%
- Typical width from 12"-3'
- Rough to variable surface – Frequent obstacles including steps, water diversions, roots, rocks, etc.





White - ADA Accessible Trails 1.3 miles
Americans With Disabilities Act (ADA) accessible trails are trails that offer wide widths and smooth surfaces at relatively low degrees of slope. These trails meet the requirements of the ADA, and will not contain steps or other obstacles.

- Sustained slopes less than 5% and up to 8% with required landing/rest areas or as designated by the Architectural and Transportation Barriers Compliance Board's Regulatory Negotiations Committee on Accessibility Guidelines for Outdoor Developed Areas , most recent report
- Typical width from 5' to 8'
- Smooth surface without obstructions



Themed Trails

Themed Trail categories are detailed in the following pages under *Interpretative and Educational Opportunities*.



Wayfinding Nodes

The Red Rock Canyon Open Space trail system offers a range of trail difficulty levels on numerous interconnected trails over varied terrain. The extensive system can be challenging to navigate for frequent users and overwhelming for new visitors. For this reason, Wayfinding Nodes are proposed at key trail intersections. Wayfinding nodes may include a trail system map and a bench. Optimally, trail maps should contain a "you are here" notation, trail names and the trail etiquette triangle; node signs may possibly include additional etiquette notation such as "Trails are intended to be enjoyed by all users. Trail users are expected to be in control at all times, which means properly yielding to slower uses and users." Signs and benches will conform to *Section V: Design Guidelines*. Wayfinding node locations are designated on the master plan.

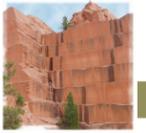
The Red Rock Canyon Open Space Interpretive Plan, several historical books, and the Friends of Red Rock Canyon studies provide good references when selecting names for the new trails in this master plan.



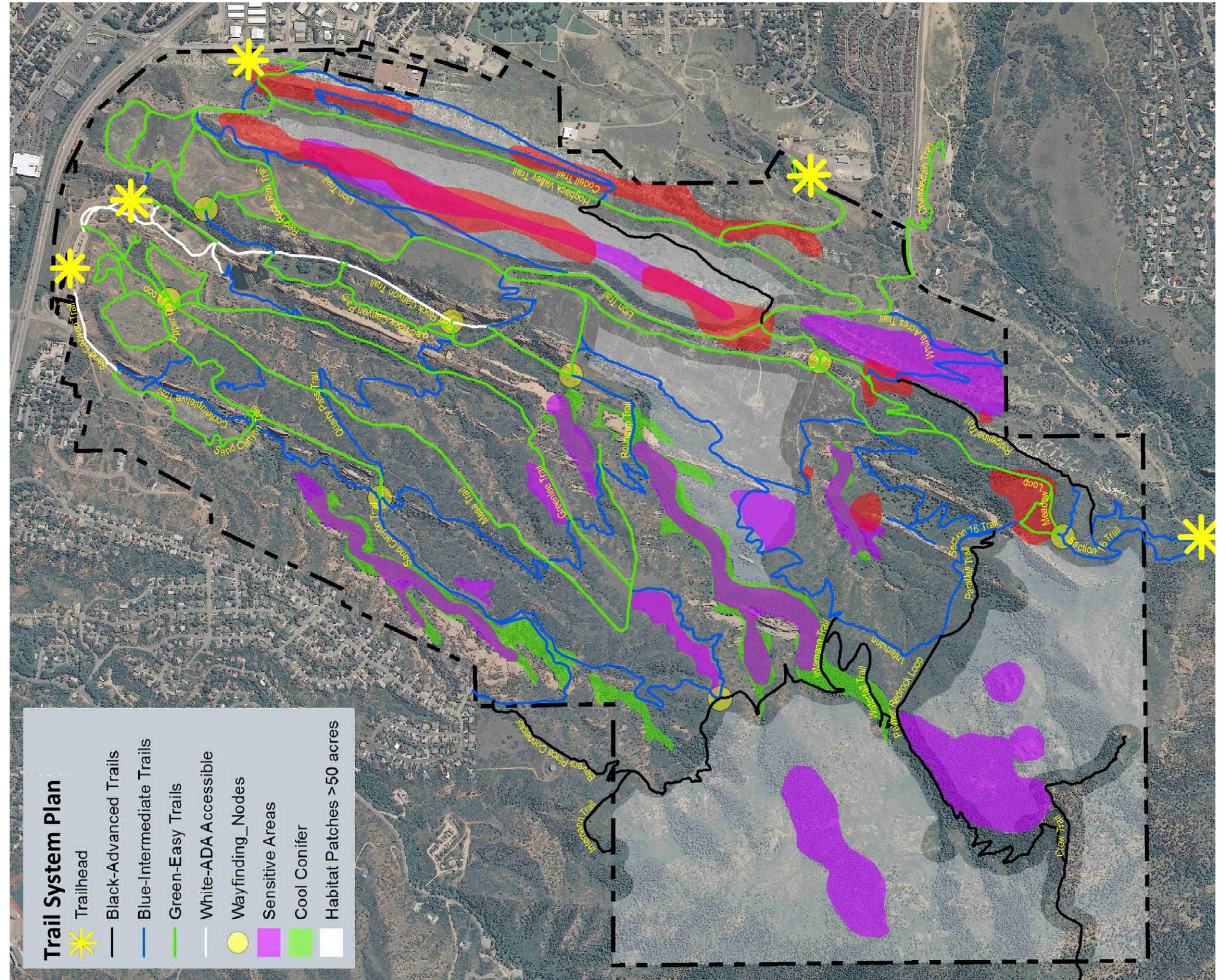


Red Rock Canyon Master and Management Plan

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Trail System Plan





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Additional Trail System Recommendations

The following recommendations, resulting from the public process, reflect how Red Rock Canyon Open Space is currently used and will influence the way it is preserved and enjoyed in the future. They include recommendations for negotiating future trail access, regional connectivity, and management recommendations involving coordination with volunteer groups and other agencies.

- **Regional Connectivity**

- Pursue safe trail connections with CDOT and Colorado Springs Public Works to the Midland Trail at Ridge Road and to the Chamberlain Trail at 31st Street and onward north to Garden of the Gods.
- Pursue safe Chamberlain Trail connections with El Paso County at the 26th Street/Gold Camp Road intersection and along Lower Gold Camp Road onward east to Bear Creek Park and the Bear Creek Nature Center.
- Consider public access to Red Rock Canyon Open Space on the east boundary near the cemetery and the electrical switch facility.
- Consider public access to Red Rock Canyon Open Space on the west boundary as Manitou Springs identifies public access easements from the Crystal Hills neighborhood.
- Continue coordination with public transportation providers on improved connectivity.

- **Trails and Wayfinding Nodes**

- Reduce trail/access road width to 8' on access roads requiring vehicle traffic for emergency access, landfill monitoring or utility maintenance. Remove debris.
- Reduce trail/old road width to 4' on trail/old roads no longer requiring vehicle traffic. Meander tread within old roadbed. Remove debris.
- Relocate the Forrest Allen bench on a designated donor bench location.



- **Trail Standards**

- Continue annual review of potential projects with volunteer groups to identify problem areas and reroutes, and to set priorities.
- Continue monitoring activity impact on park resources in partnership with volunteer groups to identify changes needed to conserve resources.
- Pursue system-wide singletrack trail standards by a stakeholder involved process consistent with the findings of the Parks, Recreation and Cultural Services Department's Relationship Building Process completed in 2012. These standards should consider but not be limited to: general intent, design parameters, trail design process, construction details, and trail maintenance.
- Future maintenance solutions should consider the effects of changes on all legitimate park users. Any changes affecting these legitimate uses should be properly communicated to the public.
- The following well-tested trail construction standards will guide Red Rock Canyon Open Space trail system construction and maintenance until system wide standards are adopted.
 - City of Colorado Springs Parks, Recreation and Cultural Services Urban Trails Parks, Recreation and Trails 2000-2010 Master Plan Chapter 5. <http://www.springsgov.com/Page.aspx?navid=3593>
 - Volunteers for Outdoor Colorado (VOC) Trail Design Handbook, most recent edition
 - Trail Solutions: IMBA's Guide to Building Sweet Singletrack, IMBA <http://www.imba.com/catalog/book-trail-solutions>
 - USDA Trail Construction and Maintenance Notebook, 2007 edition <http://www.fs.fed.us/t-d/pubs/pdfpubs/pdf07232806/pdf07232806dpi72.pdf>
 - Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, USFS & USDOT <http://www.fhwa.dot.gov/environment/fspubs/07232816/index.htm>
 - Trail Construction and Maintenance Notebook, USFS and USDOT <http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm>



Interpretative and Educational Opportunities

Red Rock Canyon Open Space contains unique natural and cultural resources. These are opportunities for interpretation, educational programs and research. The Red Rock Canyon Open Space Interpretive Master Plan, developed in 2007, included an extensive, well-attended public process. This master plan recommends that a similar process be initiated to expand the 2007 Red Rock Canyon Open Space Interpretive Master Plan to include the parcels of Section 16 and White Acres.

During the public discourse of this master plan process, attention often turned towards interpretative and educational opportunities. Below are the ideas and concepts discussed. Many of these will serve as information for a future amendment of the 2007 Interpretive Plan.

Interpretative Opportunities and Suggestions

- Provide access, interpretive signage and protection of historic inscriptions, geologic features, and significant cultural, paleontological and archeological sites.
- Provide interpretive signage about sensitive areas.
- Provide interpretive signage at the ponds.
- Provide information on ADA access.
- Educate visitors about non-system, social, rogue trail closures. Content may include: graphic illustrations, resource values, resource damage caused by a foot fall, and direction to and advantages of the alternative route.
- Provide educational signage addressing Leave No Trace Outdoor Ethic.
- Provide interpretive signage addressing ongoing natural resource restoration, forest history; forest health.
- Expand interpretive signage and map guides for the themed trails: geology, history and natural resource management.
- Consider adding a Natural Resource Management Trail once several parts of this work commence.
- Amend the 2007 Red Rock Canyon Open Space Interpretive Master Plan to include the parcels of Section 16 and White Acres and the Interpretive and Events Area.

Educational Opportunities and Suggestions

- Provide docents and guided hikes.
- Provide park rangers with the dual responsibilities of resource information and rule enforcement.
- Build Interpretive Center that includes artifacts relevant to the site.
- Engage The Humane Society to provide education to owners regarding leashed dogs.

Themed Trails

Thematic trail classifications include geology, history and a future natural resource management trail (this future loop shall be within designated trail system). Loop trails are designated so that visitors are taken on a journey through the open space to explore the theme. Interpretive signs, direct observation, and other techniques will be used to convey information to the visitor, who can complete the loop and return to the starting point. The loops cross and interlock so that many different combinations are possible.



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Design Guidelines

The images of Red Rock Canyon Open Space vary from east to west and as the elevation rises. The dominant image is one of dramatic rock outcrops jutting out of the ground. Although the stone occurs in multiple colors throughout the site, the most striking and memorable is the terracotta sandstone that forms large, smooth ridges, narrow fins, and rugged spires. This material erodes to form soils of the same color that serve as a canvas upon which plants in a variety of greens, grays, and earth tones are painted across the site. Dark green pines and scrub oak provide complementary color to the red hues of the rocks, and sage-colored grasses and forbs highlight the spaces in between the trees in the summer. In the winter, shades of gray, tan, and gold take over, accenting the deep green pines and junipers. The upper elevations, primarily in the Section 16 parcel, are characterized by the dark green mixed conifer forest punctuated by rugged rock outcroppings in shades from dark-grey to brown. The eastern edge of the open space reveals a cream and gold colored limestone escarpment. These limestone formations support a variety of green and grey plants with a few clusters of blue-green mountain mahogany and dark green scrub oak.



Materials and Themes

At Red Rock Canyon, natural elements seem to reach toward the vertical. The rocks jut almost straight up, accented by ascending junipers, cottonwoods, pines, and spruces. Human elements seem to contrast with this by emphasizing the horizontal, as in the roofs of the quarries, fences, roads, and the surface of the man-made ponds. The Open Air Pavilion designed to incorporate stone features of the Bock house reflects these characteristics. The historic development in Red Rock Canyon reflect a mid-20th century modernist style that is unique within this natural setting. It also reflects a period during which Colorado Springs became internationally known for the modern style reflected in places such as the Air Force Academy and the Fine Arts Center. This suggests a style that borrows from the combination of natural features and modernist style for new features in the open space.



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The combination of natural features that rise vertically and man-made features that contrast horizontally offers a basis for forming new features within the open space. Signs, structures, and other features can be designed to reflect a combination of vertical “natural” elements and horizontal introduced “man-made” ones. The materials and colors of these forms can also draw upon the natural and man-made materials found there, such as stone, wood, and metal. The following sections provide examples and suggestions of how this might be represented.

Site and Feature Guidelines

Open Space Entry

The Red Rock Canyon Open Space entry sign is complete at the time on this Master Plan.



Signage

Signage should conform with the Parks, Recreation and Cultural Services standard sign guidelines. Signage is anticipated to be located primarily at open space perimeter trailheads and program areas designated in this master plan. Maps may be set to compliment signage at Wayfinding Nodes designated in the Master Plan. It is recommended that the Department pursue a cohesive signage standard to address recognition of partners and funding sources on appropriate signage.



Rules and Map signs in center - Interpretive signs at sides



Pursue Department standard for diverse trailhead signage and facility needs

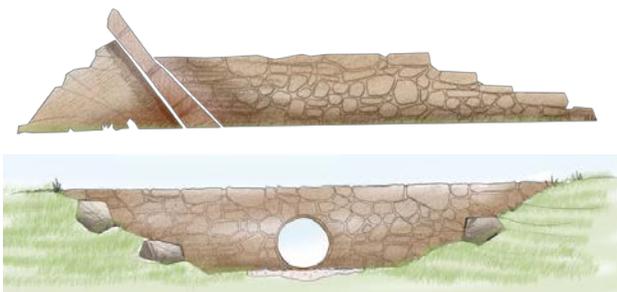


Interpretive sign



Walls and Culverts

Walls will be needed in areas of steep slope and road cuts, or where erosion problems may occur. Walls should be similar to those found at the Open Air Pavilion, consisting of mortared pieces of random-sized stone. Walls may terminate at end/slab boulders or in a stepped-down form. Stone color should reflect the adjacent in-situ rock; this may be red, cream/gold or dark grey/brown depending on the location.



Culvert crossings will have an endwall of variable sized stone. The endwalls may terminate into grade. Pre-fabricated metal or concrete end sections should not be used on culverts, except in situations where they will not be visible to the visiting public. Stone color should reflect the adjacent in-situ rock; this may be red, cream/gold or dark grey/brown depending on the location.

Family Picnic, Group Picnic and Parking Areas

Picnic table sites for individual “family” picnics should be easily accessible from park roads; these may be single tables or grouped around a few parking spaces. Group Picnic areas should be accessible to all users from designated parking areas. Group picnic areas may include the structures delineated in *Chapter 4: Site Development Recommendations - Program Areas*.

Barriers should be used to control traffic and keep automobiles restricted to appropriate parking spaces. Optimally these barriers should be constructed of stone as shown in the photo below or colored curb and gutter to match the red rock. If used, barriers should be spaced frequently and close enough together to form an effective barrier to cars yet allow pedestrians to pass through.





Benches and Furnishings

Informal park seating may consist of local quarried block stone in areas adjacent to stone formations and peeled logs in forested or open meadow areas.

The stone benches should be constructed in the style shown in the photograph upper right. The peeled log benches should be constructed to blend with the natural surroundings and may be constructed with or without backs as shown in the photographs lower right. All bench seats should range between 16-20" in height. Benches in open meadows should be backless so as not to disrupt the open view. Multiple benches may be appropriate at trailheads; trailhead benches will be located by the Parks and Recreation design staff. Locations for single benches at major trail system intersections (wayfinding nodes) and along the Contemplative Trail are shown on the master plan. As interpretive sites are implemented along the Themed Trails, opportunities for a bench or benches at each interpretive site may be considered.

All donation benches shall conform to the designs shown in the photographs to the right and be sited at designated trailheads or the locations indicated in this master plan. All specific positioning of donor benches will be determined on-site by park staff. All donor bench plaque language must be approved by park staff.

Other site furnishings shall be located in close proximity to trailheads and may include picnic tables, trash receptacles, bike racks, and other objects. Whenever possible, these should incorporate stone into the design; however, it will not be feasible to do this in all instances. These features can be constructed of metal, painted to match the metal elements of the site structures.

Forest green, sage-green and rusty-brown may be used as accent colors, representing the vegetation on the site, and serving as a complement to the red, cream and dark grey hues found in the stone. However, these colors should be used consistently, meaning that all of the forest greens should be the same color. "Near matches" of these colors should not be used.





Structures

Numerous possibilities exist to create kiosks, shade shelters, and pavilions; all should be similar to the Open Air Pavilion that was inspired by the lines and materials of the original Bock House. The basis for the design should include vertical elements that suggest the rocks and other natural vertical features within the site, and horizontal elements that suggest the manmade aspects of Red Rock Canyon. The use of stone representing the nearest in-situ rock, either sandstone, limestone, gneiss or granite, whether in large slabs or laid up in walls, is encouraged. Horizontal elements should be in the earth-tone rust to brown color.

Planting in Program Areas

This section addresses supplemental planting in the designated program areas only; the Management Plan contains plant materials and methodologies for ecosystem restoration and management.

In most cases, only plants that are native to Red Rock Canyon Open Space should be used in revegetation and landscaping in the designated Program Areas of the site.

Soil structure is always disturbed and often destroyed by previous or new construction or by other related disturbances. Best management practices (BMPs) should be followed during construction to minimize weed establishment. Understanding the soils and hydrology of the site, and their impacts on selecting suitable plant species is essential. Site preparation is key, including the removal of weed species, grading, drainage and soil preparation/amendments to promote the growth of seeds and plants.

Plants should be used to replicate existing natural conditions; supplemental watering may be needed to assure success in heavy-use areas such as parking lots and picnic grounds. This means that plants normally found in the lowlands and canyon bottoms should be used for the parking and picnic areas in the lower end of Red Rock Canyon.



Cottonwoods, Three-leaf Sumac, Gambel Oak and Ponderosa Pine are examples of these species. Upland areas, such as the Interpretive and Events Area, the Free-Riding Area, and the parking lots along the eastern edges of the site should be planted with species normally found in those locations, such as Gambel Oak, Mountain Mahogany, and mixed grasses. Trees such as Ponderosa Pine, Pinyon Pine, One-seed Juniper, and Douglas Fir should be used only in locations where they would be naturally found, and not in open areas where grasslands predominate. Additional plant varieties are listed in the appendices.

Trail Design

Trail design recommendations are found in *Chapter IV: Site Development Recommendations - Trail System*.



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Revenue and Marketing Opportunities

Colorado Springs' current social-economic climate has changed the Parks, Recreation and Cultural Services Department's previously held capital and operational practices. General fund resources dedicated to parks has been reduced due to economic conditions since the 2004 Red Rock Canyon Open Space Master Plan. Because of this, more reliance is being placed on citizen groups to fund capital improvements, contribute to operational budgets and to collaborate in maintaining the City's parks and open spaces.

The financial resources to fully support improvements and services identified by the public during this master plan process are not currently allocated in the general fund. These improvements and services include: restrooms, restroom maintenance, interpretive signage, educational programs, trail development, trail maintenance, group picnic area development, forest health management, natural resource management and ranger presence for education and enforcement.

Revenue and Marketing Opportunities for Red Rock Canyon Open Space

The following potential revenue opportunities have been identified through research and personal contact as a starting point for funding improvements and operations of Red Rock Canyon Open Space. Other opportunities may also be available and should be pursued. Revenue sources and potential grant values will vary based on the project defined for each application and the granting agencies resources.

City General Fund

The current economic conditions will continue to present ongoing funding challenges for the Parks, Recreation and Cultural Services Department's capital and operational budgets. Citizen advocacy will be essential to persuade policy-makers to preserve current funding levels and restore funding to levels to sustain the parks and open space system.

Other Municipal Support

Includes existing tax and other sources for which Red Rock Canyon Open Space may be eligible; use for matching funds when appropriate.

Colorado Springs

- In-kind capital and operational value that can be used as match for other grant funding
- TOPS (Trails, Open Space and Parks Sales Tax)
- Conservation Trust Funds (Lottery)
- City Fire Department for fuels management
- Other funding when available in the future



Citizen Advocacy and Fundraising Group

The City of Colorado Springs currently maintains and preserves the Red Rock Canyon Open Space in partnership with the Friends of Red Rock Canyon (FoRCC) and other partner organizations. FoRCC was originally created to advocate for the acquisition and protection of Red Rock Canyon, Section 16 and White Acres, now all part of the Red Rock Canyon Open Space. The FoRCC's current mission includes enhancing recreational, educational and interpretive programs and providing materials and services to promote understanding and appreciation of Red Rock Canyon Open Space.

To meet current and future stewardship challenges, additional opportunities for partnerships are expected to arise. The City should actively seek partnerships to fulfill these needs. FoRCC could choose to expand their mission to provide leadership, manpower and a mechanism to attract and pursue additional funding specifically dedicated for the Red Rock Canyon Open Space.

The following objectives are recommended for the long term sustainability of the open space:

- Pursue both capital and operational funding through partnership with Colorado Springs and possibly Manitou Springs through grants, capital campaigns and donations by individuals and groups.
- Pursue partnerships and sponsorships to promote eco-tourism and recreation focused on revenue generating activities, economic development and tourism.
- Continue FoRCC and other volunteer group partnerships with the City.

The public identified potential fundraising options during the master plan process. All fundraising and revenue generating activities and sponsorships must comply with the Conservation Easements, funding source restrictions and City code and policy. Although not intended to limit future fundraising opportunities, the options voiced during the process are listed below.

Donations

- Outright contributions for support of Red Rock Canyon renovations and operations.
- Matching funds program.
- Internship opportunities with statewide colleges - forestry, landscape architecture, wildlife, biology.

Donations for Use

- Voluntary use donations – suggested donation for one time and frequent user.

Impact Fee for Use

- Mandatory impact fee for special events and use permits.

Potential Sponsorship and Retail Sales/Marketing

- Non-intrusive advertising sponsorship in character with Red Rock Canyon.
- Revenue generation from complementary services as governed by Conservation Easements, funding source restrictions and City code and policy.
- Commission from Red Rock Canyon logo t-shirts, socks or other items.
- Tourism promotion focused on revenue producing activities.
- Fundraising events or activities.

Potential Grant Opportunities for Red Rock Canyon Open Space

These potential state, private, corporate, and federal grant opportunities provide a foundation for compiling a comprehensive list of relevant grants for Red Rock Canyon Open Space. A list of potential grant opportunities is in Appendix F.



Regulation and Policy Recommendations

Red Rock Canyon Open Space is owned by the City of Colorado Springs and managed by the Parks Recreation and Cultural Services Department. City of Colorado Springs City Code and the Parks, Recreation and Cultural Services Departmental policies and practices are specifically aimed to protect and manage the system's parks and open spaces. The master plan process aimed to identify areas of concern and solicit specific recommendations to refine the City regulations and policies to further protect the natural resource and visitor experience at Red Rock Canyon Open Space.

Conservation Easements and Legal Arrangements

Red Rock Canyon Open Space was assembled by three distinct property purchases. Each purchase agreement assigned specific requirements and restrictions for each parcel. The recommendations of this master plan comply with the existing requirements of the funding sources TOPS Program, Colorado Lottery Conservation Trust Fund (CTF), Great Outdoor Colorado (GOCO), and the conservation easements for the Section 16 parcel and Tract A defined in the 2003 Red Rock Canyon purchase.

Recommendations:

- Pursue modifications to Conservation Easements to allow fund raising and special events on the Red Rock Canyon Open Space property. Current departmental policies, including the Passive Recreation Criteria for special events, remain in effect as noted on page VII.2.
- Pursue a Conservation Easement for the White Acres Parcel.

The public process revealed strong support for pursuing a Conservation Easement for the White Acres parcel. This is envisioned to be similar to the adjoining Section 16 and Tract A Conservation Easements with The Palmer Land Trust.

City Ordinances and Practices

City of Colorado Spring ordinances govern activities and behavior in the open space. These include: hours of operation, damage to park property and resources, rock climbing, non-motorized trail designation, and domestic animals. These can be viewed at <http://www.springsgov.com> under City Code. Code pertaining to open space is contained in Chapter 4 and Chapter 9, Article 9.

Recommendations:

- Pursue modification to *City Code 9.9.104: Climbing on Property Article B.4* to include Red Rock Canyon. At the time of city code modification the department may consider wording to include future City park and open space properties that may allow technical rock climbing in their master plans.



Departmental Policies, Practices and Supporting Documents

According to City Code, the Parks, Recreation and Cultural Services Director can promulgate park rules – not every rule and regulation must be found in City Code. Departmental policies and practices are specifically aimed to protect and manage the system's parks and open spaces.

Departmental policies and practices include: Passive Recreation Criteria for special events, multi-use trail philosophy, and the Trail Etiquette yield protocol. Supporting documents include: Red Rock Canyon Interpretive Plan, Red Rock Canyon Volunteer Stewardship Plan, Landfill Closure Plan, and Parks, Recreation and Trails Master Plan. The Department must also comply with federal and state regulations such as Americans with Disabilities Act (ADA) and Other-Powered Driven Mobility Device (OPDMD-ADA).

Several areas that would benefit from Departmental guidance were identified in the Master Plan process. They are listed in the recommendations below.

Recommendations:

- Develop a written, multi-use trail philosophy to guide future master plans.
- Pursue developing system-wide trail design and maintenance standards as determined during the Relationship Building Process during summer 2012.
- Update *Red Rock Canyon Open Space Interpretive Plan 2007* to include Section 16 and White Acres parcels.
- Develop departmental administration guidelines for paragliding.

Administrative guidelines should include but not be limited to: use of designated access route to launch site, limiting launch site access to USHPA rated pilots (insurance implications), no landing on landfill as prohibited by the State of Colorado, and responsibility of pilot for obtaining landowner permission at appropriate landing sites.
- Work with user groups to develop and install signage to communicate administrative guidelines for paragliding.
- Develop departmental criteria defining donation bench qualifications, locations and materials (i.e. guided by master plan), on-site locating, installation, costs, funding, etc.

This master plan identifies donation bench locations, number of benches and site appropriate materials.
- The City will continue to partner with the local climbing community on maintaining routes and access trails, updating "Rules for Technical Climbing." and facilitating guided climbs, with the aim for better compliance and more effective resource protection.

Guidelines should include a time period for mapping routes and adding protection in the newly designated climbing areas and required practices to prevent degradation of climbing routes when wet and incising where top ropes rub on rock faces.
- Modify rock climbing registration to reflect findings of peer review.
- Pursue removal of protection bolts in areas not designated for rock climbing in the master plan.



Enforcement

Although adequate and appropriate rules of use are in place, the natural resources and visitor experience are degraded by non-compliant visitors. The key is consistent enforcement. It is recognized that appropriate, fiscally sustainable and implementable recommendations will require a collaborative intra-departmental and funding approach. With this in mind, the public identified the areas of enforcement concern and possible enforcement solutions listed below.

Areas of Enforcement Concern

- After-hours use
- Fire rings**
- Litter**
- Motorcycles on trail**
- Parking lot security*
- Widespread use of RRC as an unleashed dog property*
- Dog waste*
- Trail closures ignored
- Gunfire
- Defacing rocks**
- Camping/homeless encampments
- Damaging archeological, paleontological and historic sites**
- Widespread white chalk use by climbers
- Solo climbing
- Alcohol consumption
- Off- trail travel*
- Off-trail use posing a hazard to rock climbers
- Lack of on-site enforcement*

* areas of greatest enforcement concern prioritized by the public

** areas of enforcement concern prioritized by the public

Possible Enforcement Solutions

- Educate visitors about rogue/social trail closures. Content may include: graphic illustrations, resource values, resource damage caused by a foot fall, and directional signs to the alternative route describing its advantages.
- Provide educational signage addressing Leave No Trace Outdoor Ethic.
- Engage The Humane Society to address the unleashed dog problem. The Humane Society has a free public service card from the American Dog Owners Association: "Ten reasons for leashing your dog."
- Empower rangers to issue citations. Give Park Rangers the training and power to inform, encourage/discourage, and enforce.
- Pursue sustainable allocation of limited funds for consistent ranger or enforcement officer presence.
- Provide in-park enforcement on weekdays, weekends and other times of peak visitation.

Recommendations:

- Work collaboratively with the Colorado Springs Police Department to enforce rules and regulations within the open space.
- Pursue implementable strategies resulting in consistent rule enforcement in Red Rock Canyon Open Space.



Red Rock Canyon Master and Management Plan

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Introduction to the Management Plan

This Red Rock Canyon Open Space Master and Management Plan is the first time the Colorado Spring Parks, Recreation and Cultural Services Department has simultaneously completed the master plan and management plan for a property. This joint document more accurately represents the close relationship between the two plans while eliminating the duplication of background information. In addition, this management plan benefits from the public engagement process and the input gathered as part of the master and management planning process.

Key Considerations in developing the Management Plan

The management plan is grounded in the Values and Themes developed and adopted by the public participants early in the planning process. The Values serve as our agreed-upon litmus test for evaluating alternative approaches through the planning process. The Themes provide more detail within the broader Values.

Values

We will strive for a **balance** between use and conservation.

The natural resources to be conserved include but are not limited to: fragile ecosystems, natural areas, scenic vistas and areas, wildlife habitats and corridors, important areas that support biodiversity, significant land formations and landmarks, and cultural, historical and archeological areas.

We are committed to and will be guided by long-term **sustainability** of these properties, including the natural resources, the built environment, and the fiscal and human resources necessary to support them.

Management of the natural, cultural and visual resources must consider both conservation of the resource and the community's recreational experience.

Interpretive information and methods should impart a greater understanding and respect for the resource while balancing the need for education and preservation.

Themes – What You've Said

- Restore and sustain natural resources
- Protect unique and sensitive natural and cultural resources
- Accommodate existing uses
- Maintain the back-country experience
- Enhance and connect the existing trail system without developing a new trail system
- Commit to multi-use trails unless special circumstances exist
- Improve communication about the property and its use
- Recognize the need for shared stewardship and clarity of roles and responsibilities
- Create a plan that is realistic, yet stretches possibilities

Guided by the Values and Themes, the Red Rock Canyon Open Space Management Plan emphasizes natural and cultural resource protection and restoration, while accommodating sustainable recreational and interpretive opportunities. The conservation easements mandate additional stewardship of the property via annual monitoring and reporting of the conservation values by the Palmer Land Trust; copies of the conservation easements are in Appendix C.

Ultimately, the Red Rock Canyon Open Space Master and Management Plan aims to protect the property for future generations.



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Natural and Cultural Resource Management and Protection

Vegetation Management

The objectives for native vegetation management within the Red Rock Canyon Open Space are to protect existing patches of native vegetation and to improve the condition of degraded plant communities in order to promote biological diversity, wildlife habitat, and preserve a natural open space aesthetic for visitors. Restoration and weed management are important tools to achieve these objectives.

Restoration

The primary purposes of restoration are to promote native vegetation communities, enhance habitat, prevent weed infestation, stabilize soil and control erosion, and improve visual aesthetics. Before restoration efforts are initiated, it is important to understand the physical characteristics of the landscape (e.g., slope, aspect, soil texture, organic material content, and depth of water table) and ensure that these conditions will provide a suitable planting medium for the desired vegetative community. The investment of time and money into site preparation is essential to restoration success.

Active restoration of degraded areas has been and continues to be a priority at Red Rock Canyon. Over the past decade, the revegetated landfill and sand quarry landfill areas have and continue to show signs of success with the establishment of native species in many areas. Now, the main entry into Red Rock Canyon around the parking, picnic, pavilion and pond areas and the Red Rock Canyon Trail are a greater priority for active and strategic restoration. These areas have been heavily disturbed and invaded by Russian thistle and other weeds. Restoration of the native mixed grass in these areas is recommended as a priority for implementation. Restoration efforts now will set the ecological conditions so the land can truly evolve through the stages of natural plant succession.

Key guidelines for grassland restoration include the following:

- Understand the soils and hydrology of the site, and select plant species suitable to these conditions.
- Site preparation is key, including the removal of weed species and soil bed preparation. Determine if slow-release organic soil amendments are needed to promote the growth of the selected native seedlings.
- Initiate grassland revegetation with early successional grass species (those that grow quickly on recently disturbed sites), supplemented by perennial and annual forbs and late successional species.
- Biodegradable revegetation mats, wattles, or weed-free mulch can help encourage revegetation by reducing erosion, retaining soil moisture, and protecting seedlings – particularly on steeper slopes or in high-traffic areas.
- Once grasses are established, mowing, or managed grazing are management tools that can be used to stimulate growth and manage weeds. Mowing should be timed to cut down weeds but allow desired native forbs and grasses to flower.
- Continue volunteer group partnerships to monitor park resources and activity impact, and to make recommendations and implement changes needed to conserve park resources.



Weed Management

Red Rock Canyon has a long history of disturbance from past land uses including quarrying and landfill operations. Exotic, invasive and noxious plants have invaded the native ecosystem taking root in disturbed areas. An invasive plant has the ability to thrive and spread outside its natural range, and may have an ecological advantage since insects and disease that would naturally control it in its native range are not present. Many invasive plants become naturalized, a process by which a non-native plant spreads into the wild and its reproduction is sufficient to maintain a population. A noxious weed is a species that has been designated as such by a county or state because of its impacts to agriculture, horticulture or natural ecosystems.

Approach to Weed Management

Prioritization of weed management efforts is based on several factors. Attempting to control all the non-native species present within Red Rock Canyon Open Space is impractical and unlikely to succeed, so it is important to develop a strategy to ensure an efficient use of resources. Prioritization of weed management efforts considers weed species present, the size and location of infestations, and legal mandates.

In Colorado, the authority and responsibility of the state to formulate and implement a noxious weed management program comes from Colorado Revised Statutes Title 35 Article 5.5 or the Colorado Noxious Weed Act, which classifies noxious weeds into three lists: A List species are designated for eradication, B List species directs management efforts stop their continued spread, and C List species directs more effective weed management efforts based on local government priorities. Eight noxious weeds species are known to occur within Red Rock Canyon Open Space.

State of Colorado’s “A” List

- Myrtle Spurge
(*Euphorbia myrsinites*)

State of Colorado’s “B” List

- Canada thistle
(*Cirsium arvense*)
- diffuse knapweed
(*Centaurea diffusa*)
- tamarisk (*Tamarix chinensis*)
- Russian olive
(*Elaeagnus angustifolia*)
- Dalmatian toadflax
(*Linaria dalmaticai*)

State of Colorado’s “C” List

- cheatgrass
(*Bromus tectorum*)
- common mullein
(*Verbascum thapsus*)

An integrated weed management program will strategically utilize any combination of the following tools:

Approach	Description
Mechanical	Physical removal by mowing, mulching, tilling, grazing or hand pulling
Cultural	Enhancement of the native plant community using fertility management or re-vegetation
Biological	Releasing a weed’s native natural enemies using insects, grazing animals or disease
Chemical	Destroying weeds using herbicides that do not adversely affect the desired plant community



Proactive prevention of weed establishment is the most successful and cost-effective weed management tool. Vigorous and consistent prevention reduces the opportunities for dispersal of noxious weeds which, in turn, minimizes the need for future control actions. Important principles to prevent weed establishment include the following:

- Minimize new disturbances from trails and facilities
- Actively restore and revegetate closed trails and unused disturbance sites
- Wash construction or maintenance equipment before moving from weedy areas to weed-free areas
- Monitor both new disturbances and restored areas for new weed infestations

Weed Management Priorities

Recognizing that limited resources are available to control weeds, a strategic approach to prioritizing weed management should focus on long-term prevention and reduction of weeds in Red Rock Canyon Open Space.

High priorities for weed management include:

- Areas within or adjacent to sensitive areas (e.g., Canada thistle in wetlands or riparian canyons)
- Visitor interface areas including trails, road shoulders, parking areas or other areas of disturbance (where visitor use can spread weed seeds)
- Small, isolated infestations that are less established and are easier to eradicate
- Weed species that are new to the property, or the region or are high priority on County and State weed lists
- Outer edges of large weed infestations

Lower priorities for weed management include:

- Large, well established infestations.
- Sporadic and widely-distributed weed occurrences (e.g., cheatgrass or dispersed toadflax)
- Naturalized species that are not aggressive or provide secondary wildlife habitat (e.g., Siberian elm)
- Species confined to disturbed areas
- Species that are easier to control relative to others

Routine monitoring of weeds is a critical component of a long-term weed management plan. Monitoring should focus on trails and roads, closed trails or reclaimed sites, restoration areas, and sensitive habitats.



Wildlife and Habitat Protection

Outdoor recreation activities provide a broad range of community and individual benefits that are gained by interacting with the natural world. These benefits include the enjoyment of solitude and natural quiet, opportunities for exercise and physical challenge, opportunities to observe wildlife and learn about the environment, and opportunities to enjoy the outdoors with friends and family. However, all forms of outdoor recreation in the natural environment inherently result in localized impacts to wildlife due to human disturbance, habitat fragmentation, and the potential introduction of non-native species and predators (e.g., dogs). It is the objective of this plan and the ongoing management of Red Rock Canyon Open Space to provide meaningful and diverse opportunities for outdoor recreation while minimizing the impacts of those activities on wildlife and habitat.

Impacts of Trails and Recreation

The following general concepts about trail impacts can be drawn from scientific studies on the impacts of trails and recreation on wildlife (including Miller et al. 2001; Taylor and Knight 2003; Cassirer et al. 1992; Sisk 1989; Germaine et al. 2006, George and Crooks 2006):

- Trails and recreation sites have a “zone of influence” within which human disturbance may alter the behavior. The effects vary by species and individual animal, and can range from no effect, interruption of activity, flight, to abandonment of nesting or foraging sites.
- The zone of influence can range from between 30 and 100 meters or more – it is generally greater in open terrain than in wooded areas.
- In urbanized or high-use areas, some animals may become habituated to predictable and recurrent use of trail corridors, reducing their sensitivity to human use.
- There is little difference in wildlife response between hikers and mountain bikers.

For this planning process, a zone of influence of 50 meters is assumed based on the terrain, vegetation, and existing uses (see Section III: Existing Conditions and Site Assessment).

Recommendations

Sensitive Habitat

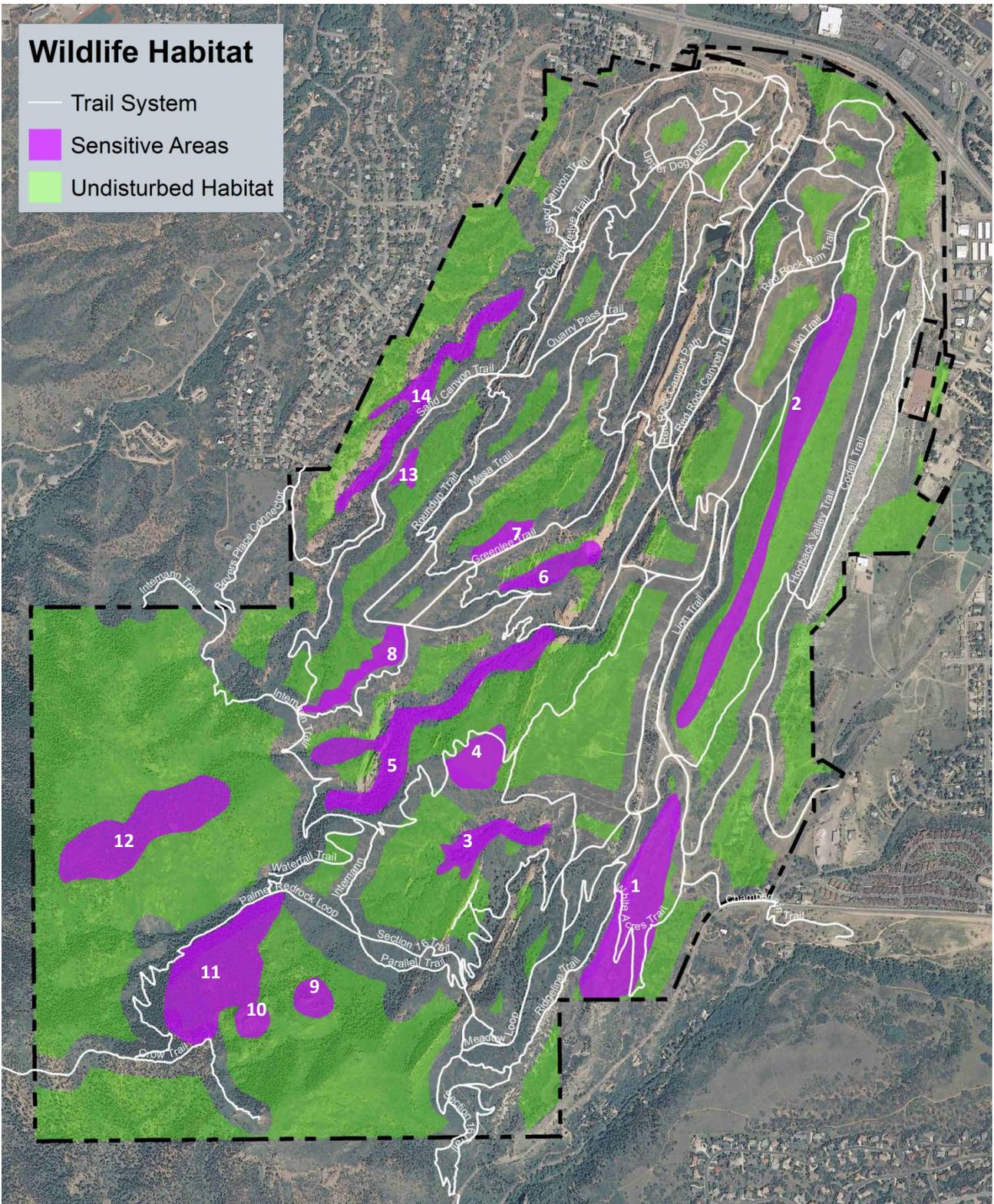
Sensitive areas have been identified based on specific resource values that may be vulnerable to disturbance. These are described in Section III: Existing Conditions and Site Assessment; for convenient reference, the resource map is repeated on the following page.

The following management guidelines should be considered:

- Not all areas have the same values or sensitivities. Understand the particular ecological dynamics and threats to sensitive species/habitats (e.g., human disturbance, erosion, noxious weeds). These are listed below.
- Tailor management and protection measures to address the specific values of and threats to each area.
- Protect habitat areas that are currently known to support rare or sensitive species, as well as those that have the potential to support them in the future.
- Continue volunteer group partnerships to monitor park resources and activity impact, and to make recommendations and implement changes needed to conserve park resources.



Wildlife Habitat Resource Map





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Sensitive habitat types and their primary resource threats are described in the following table. Management and protection recommendations for each of these habitat types are described below.

Sensitive Habitat Type	Map ID	Resource Values	Threats
Limestone shale soils	1	Rare plant habitat	New soil disturbance, trampling, erosion, noxious weeds
Hogback ridge	2	Rare plants, raptors, archaeological sites	Plant disturbance/trampling; disturbance to raptors; destruction or vandalism of archaeological sites
Canyon riparian	3, 5, 6, 14	Sensitive plant communities, wetlands, wildlife habitat	Plant disturbance/trampling, social trails, noxious weeds, wildlife disturbance
Meadow	4, 7, 8, 13	Unique and important wildlife habitat	Trampling, social trails, noxious weeds, wildlife disturbance
Rock outcrops	9, 10	Raptor perching/nesting; bat roosting	Disturbance to raptors and bats
Douglas-fir forest	11, 12	Sensitive bird habitat	Disturbance to forest-dependent birds

Sensitive Habitat Management and Protection Recommendations:

- Limestone shale soils (Map ID 1).** Minimize any new disturbances. Trails and public access can be permitted, but should be sited primarily along existing disturbance corridors (i.e., roads and social trails). Where new trails or facilities deviate from disturbed sites, conduct site-specific rare plant surveys prior to construction. If found, reroute trail or site facility to avoid direct impacts to rare plant populations, as well as potential secondary impacts from erosion, off-trail use, etc.
- Hogback ridge (Map ID 2).** No new trails or access along crest of ridge. Provide suitable and enjoyable trail access along base of ridge, and manage additional social trails and access. Conduct periodic raptor surveys to track use, and continue to identify and protect archeological resources.
- Canyon riparian (Map ID 3, 5, 6).** No new trails in or through canyons. Aggressively close and monitor existing social trails. Where access or connections are desired, establish high-quality reroutes and overlooks in appropriate locations.
- Meadow (Map ID 4, 7, 8, 13).** No new trails through center of meadows, and close and monitor existing social trails. New trails may be routed along the periphery of meadows, but should be thoughtful about minimizing disturbance to wildlife (i.e., vegetation screening) and reducing the temptation for visitors to create shortcuts and social trails.
- Rock outcrops (Map ID 9, 10).** Minimize new human disturbance to rock outcrops. Conduct periodic raptor and bat surveys to track nesting, roosting, or use and restrict new climbing routes on outcrops used by wildlife. Locate new trails to minimize human disturbance from nearby areas.
- Douglas-fir forest (Map ID 11, 12).** Trails and public access can be permitted, but should be limited to designated routes. Reroutes of the Section 16 Trail should include aggressive closure of old trails and social trails, while any new trails in these areas should avoid fragmenting the center of the forest patches. Well-planned trails along the periphery or briefly crossing through dense forest areas are appropriate.



General Habitat

As described above and in the Existing Conditions and Site Assessment section, general wildlife species are those that are common in the region, but still need adequate habitat and security to thrive. Examples include mule deer, black bear, small mammals, and various bird species. Many species of wildlife depend on large, intact blocks of habitat as well as connectivity between adjacent habitat types (such as riparian corridors). Human disturbances and their zone of influence can fragment the size or disrupt the connectivity of habitat, making it less useful or secure for wildlife.

Based on the existing wildlife and habitat resources in Red Rock Canyon, and our understanding about the impacts of trails and recreation on wildlife, the following guidelines should be considered:

- Provide reasonable and enjoyable trail experiences and connections in appropriate locations to minimize the proliferation of unplanned social trails
- Avoid new fragmentation of large, undisturbed blocks of habitat
- Retain a variety of undisturbed habitat types to provide a refuge for a variety of wildlife species
- Use thoughtful and creative planning to minimize redundant and unnecessary trails
- Maintain visual or physical barriers (e.g., thick vegetation or rock outcrops) between trail corridors and habitat areas
- Understand that there are frequently trade-offs between competing habitat values (e.g., new habitat disturbances may be necessary to avoid more sensitive areas), or between habitat values and other management priorities (e.g., new disturbances to make existing trails more sustainable or functional). Each situation should be evaluated on a case-by-case basis.

These trail and habitat planning guidelines were integrated into the trail design process for this plan, seeking to find a balance between establishing desired trail connections and experiences, while minimizing additional habitat disturbance and fragmentation. These guidelines should also be integrated into long-term planning and management of Red Rock Canyon Open Space.

Wildlife Conservation and Management

The management and conservation of wildlife primarily occurs through the management of their habitat, as described in the previous sections. However, the following issues and recommendations directly related to wildlife species warrant specific consideration.

Mexican spotted owl

The Mexican spotted owl is a federally-listed threatened species under the Endangered Species Act, and has been known to occur in the foothills forests in the Pikes Peak Region. Much of the area, including most of the property, has been designated to be Critical Habitat for the species. A habitat assessment conducted in 2011 found that the quality of habitat for the owl is limited in Red Rock Canyon Open Space, and is not likely to support the species (ERO 2012). The U.S. Fish and Wildlife Service concurred with this assessment, finding that Mexican spotted owl surveys will not be required for the implementation of this plan (USFWS 2012).

Raptor protection guidelines

The hogback ridges and rock outcrops of Red Rock Canyon Open Space provide habitat for several raptor species, including common species (red-tailed hawk) and less common cliff-nesting species (peregrine falcon, prairie falcon, and golden eagle). While no cliff-nesting raptors are known to occur on the property, the planning and management of new trails and recreation activities (e.g., rock climbing) should be planned to protect suitable nesting habitat (rock outcrops).



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If nesting does occur on the property, seasonal buffers or restrictions may be needed if those sites are vulnerable to human disturbance. Colorado Parks and Wildlife published raptor protection guidelines in 2008 which call for protection buffers and seasonal restrictions of up to ½ mile from active nests during the breeding season (CPW 2008). Considering the long-established pattern of human use throughout the property, these buffer guidelines may not be practical or appropriate. Instead, if active nests are found on the property, seasonal closures and buffer zones can be established based on existing trail corridors, topography, nest location, and species. These site-specific programs to protect cliff-nesting raptors (with closures ranging from 50 to 400 meters from nest sites) have been effective in other locations (Richardson and Miller 1997).

Migratory bird protection

The Migratory Bird Treaty Act (MBTA) protects migratory birds, including raptors, and active nest sites for most of the bird species found in Colorado. The MBTA prohibits the removal or destruction of active bird nests, nestlings, or eggs. Habitat disturbing activities (e.g., tree removal, grubbing, grading) should be conducted in the non-breeding season (August through February) to avoid impacts to migratory bird nests, including ground-nesting species. Similar to the MBTA, the Bald and Golden Eagle Protection Act includes several additional prohibitions, including molestation or disturbance to those species.

Wildlife Monitoring

Management recommendations in this plan focus on the protection and enhancement of habitat, rather than a singular focus on any particular wildlife species. If suitable and secure habitat continues to exist, then wildlife will continue to thrive at Red Rock Canyon Open Space. However, additional and ongoing monitoring of wildlife use and activity is also valuable in protecting sensitive species, establishing an understanding of long-term trends, or recognizing and responding to wildlife management issues as they arise. Some of the following wildlife monitoring programs should be considered:

1. Raptor monitoring. Routinely monitor rock outcrops and other habitat areas for raptor nesting or use.
2. Bird surveys. Ongoing and routine bird counts and census surveys can provide an indication of what species are using the property, and where. While these surveys may be irregular and opportunistic, this information can be useful in tracking long-term trends or responses to change.
3. Photo monitoring. Installation of motion-sensitive wildlife cameras can be useful in tracking nocturnal activity by predators and large mammals, use of movement corridors, and responses to trails or development.
4. Wildlife observations. General surveys of wildlife use (including snow track count surveys, observational surveys, or visitor reports), while opportunistic, can be useful in tracking long-term trends.

Most of these wildlife monitoring activities can be conducted by trained volunteers.



Archaeological and Paleontological Resource Protection

Red Rock Canyon Open Space contains many archaeological and paleontological resources that are valued by both the scientific community and open space visitors. These resources include dinosaur bones and tracks, marine fossils, prehistoric projectile points, and fortifications. While these resources are important for scientific research, education, and interpretation, they are also vulnerable to degradation, vandalism, and theft. The management objective for these resources is striking an appropriate balance between public access and education and resource protection. The balance is defined on a site-by-site basis and each site should be evaluated individually.

The following guidelines should guide each archaeological and paleontological site evaluation:

- Identify a few key sites for public viewing and interpretation that are adjacent to trails or roads, visible from nearby areas, safe, and accessible to maintenance and law enforcement personnel.
- Identify secondary sites that are appropriate for research and learning, including school or college-based groups, and are reasonably accessible, safe, and resilient to that type of use.
- Identify sites where, due to their location or vulnerability, any type of public access should be prevented or discouraged.
- At each site, identify fencing, signs, or other infrastructure necessary to protect the resource. In some areas, it may be best to not draw undue attention to the site.
- Allow and encourage ongoing research by qualified scientists to further identify and better understand the resources, their management, and their protection.
- Monitor all known sites on a routine basis to identify resource degradation, vandalism, or new opportunities. Continue volunteer group partnerships to monitor park resources and activity impact, and to make recommendations and implement changes needed to conserve park resources.

More specific management and protection recommendations for various sites or types of sites are described below.

Archaeological Sites

Hogbacks

Many of the known pre-historic finds are associated with the Dakota Hogback formation on the eastern side of the property. Some secure sites adjacent to existing or proposed trails may be suitable for education or interpretive opportunities. Overall, however, these resources should remain undisturbed and intact with minimal human disturbance. This is one of the reasons that a previously-proposed trail along the spine of the hogback is no longer recommended.

Archaeological Areas of Concern

Several areas, primarily associated with the hogbacks, have been identified as areas of concern, where additional study is needed to identify archaeological resources. In these areas, new ground-disturbing activities should be minimized. Where trail reroutes are recommended, qualified archeologists should be available to document findings and minimize impacts.

Additional Research

Additional study of cultural and archaeological resources can improve both interpretation and protection of these resources. While no pressing need for comprehensive surveys currently exists, ongoing partnerships with qualified archaeologists can be helpful in telling the story of Red Rock Canyon Open Space.



Paleontological Sites

Inventory Reports

Encourage continued research and discovery to improve interpretation and protection of known paleontological resources.

Interpretive Opportunities

Several sites in the White Acres portion of the property provide good opportunities for public viewing and education. These include Niobrara/Codell ridge exposure, Codell Sandstone/Fort Hays Limestone outcrop, and northern Dakota Hogback resources. These resources include ammonites, ripple walls, dinosaur tracks, and tree imprints. Given the proximity to the proposed trail in this area, and its visibility from the proposed trailhead and Gold Camp Road, this area provides an excellent opportunity for the establishment of an interpretive site, with informational panels, spur trail access, and fencing to minimize resource damage.

Secondary Education and Research Sites

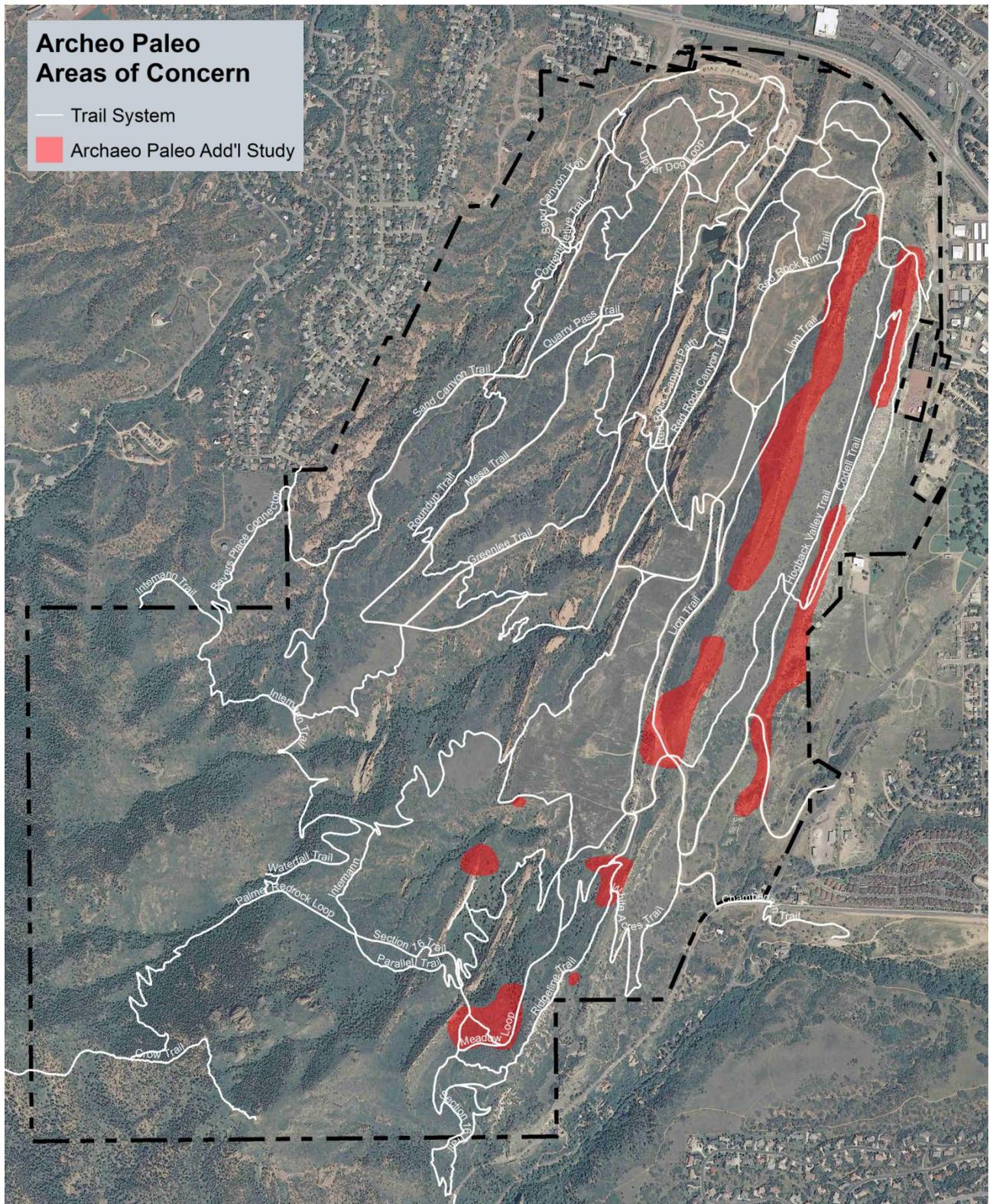
Several other sites that are appropriate for public viewing and educational use exist on the property. One example is the outcrop expression near Gold Camp Road which has historically provided an easily-accessible learning site for students of geology. This and other “secondary sites” should be identified. In these areas educational access should be encouraged; interested parties are required to work with the Parks, Recreation and Cultural Services staff to obtain a permit prior to visiting any site. Management intervention should be minimal except for necessary measures to minimize resource damage.

Protected Sites

Identify, monitor, and protect fragile or otherwise vulnerable sites identified in the inventory reports. In some cases fencing, signs, and enforcement may be necessary to limit public access, while in many cases simple avoidance with trails and minimal attention will keep the sites safe.



Archaeological and Paleontological Areas of Concern Map





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Forest Health Management

Introduction

Red Rock Canyon Open Space is a valuable community resource with multiple assets and resources to protect from natural events such as catastrophic fire, erosion, and insect/disease outbreaks. Broad desired outcomes of forest management in Red Rock Canyon Open Space are an improved forest health through restoration of the landscape and a reduced risk of high intensity, large-scale catastrophic fire. A healthy forest is one that sustains productive trees, resists or recovers from disturbance, maintains equilibrium between supply and demand of essential resources (i.e. water, nutrients, light) and has a diversity of seral stages and structure to provide habitat for many species.

The broader landscape of Red Rock Canyon Open Space is very diverse with a wide elevation range, multiple soil types, slopes and aspects that define a mosaic of unique plant communities; rock outcrops and canyon walls break up the landscape further. These canyons also protect a unique cool moist plant community and many very old trees. The forest and other plant communities have evolved to survive both periods of drought and periodic fire. Fire at some level has always been part of the ecosystem; the physical and forest structure of the open space are inherently resistant to broad-scale fire.





Forest Management Background

Forest management often calls for restoration to natural conditions, where the term natural is based on a historically referenced condition. Reference conditions occur over a range of temporal and spatial scales, and are determined through detailed study of historical and ecological data, including fire history. Historical references or changes over periods of time help to manage forests for the future. Current scientific thought of how forests change over time is more based on disturbance ecology where there is no assumption of long-term site stability. Forest and vegetation change is the result of repeated, relatively frequent disturbance. This means that continuous change in forest vegetation is normal.

Natural Fire Regime

An understanding of the natural fire regime and historical conditions for an area help in designing forest prescriptions and understanding the risk of wildfire. Colorado forests are prone to burn due to flammable vegetation, dry summers, and the prevalence of multi-year drought. Most fire-adapted ecosystems have a natural range of variability. Landscapes that have altered fire regimes and forest structures out of the historical range are at risk of losing key fire-adapted ecosystem components.

Lower elevation woodland types such as piñon-juniper and ponderosa pine ecosystems generally developed with frequent low intensity fires where as a higher elevation ponderosa pine/Douglas-fir have developed with mixed-severity fires, including surface burning with significant areas of crown mortality. Red Rock Canyon Open Space includes both these ecosystems. Management strategies are often designed to mirror what natural events would have done.

Drought

Drought has the single biggest impact on vegetation and wildfire. During drought, live fuel moistures, normally around 50 percent, can drop below 10 percent or similar to that of kiln dried wood, making forests very flammable. In drought years there is a higher probability of stand-replacing burns. Drought also affects vegetation. Some vegetation does not get enough moisture to survive. Other trees and shrubs decline, dieback, shed much of their foliage and become more susceptible to bark beetles and other diseases. Ponderosa pine, Gambel oak and to some extent lower elevation Douglas-fir have adapted to periodic dry years.

Forest Management within Community Context

Forest management is framed within a historical, physical, ecological, climatic and community context. The natural environment is continually in a state of flux based on human and natural interactions. American Indians played a role in shaping the pre-settlement landscape and influenced fire regimes especially in low elevation valleys and travel routes. Railroad building, mining and logging in the early settlement period have had long lasting effects on the landscape. Based on historical accounts, observations and data collection, similar events impacted the Red Rock Canyon area as well.

How we manage forests is shaped and modified by the community. The citizens of Colorado Springs have defined protecting the unique natural and cultural resources, a sustainable trail network, recreation and a “wilderness” experience as important values. The community and users of the open space are key components and advocates in education and volunteer efforts supporting forest health management.





Management Strategies

This section presents forest management prescriptions, treatments and methods to manage Red Rock Canyon Open Space toward desired conditions. These strategies factor in a multi-use philosophy, sensitive areas, and an active user group. Recommended treatments and methods are designed to be sensitive to natural and cultural resources on the property.

Red Rock Canyon Open Space has not always been as heavily forested as it is today. Many of the unique ecosystems in Red Rock Canyon Open Space are threatened because of the lack of fire resulting in an overgrown forest, yet today's forest is an indispensable resource for recreation, and environmental and aesthetic benefits. For these reasons, historical reference conditions are important but not the only factor in determining management strategies.

Prescriptions

Prescriptions are broad strategies to achieve a desired condition, designed to improve the forest health, enhance ecosystems and reduce fuel loading. Treatments and methods are ways to achieve these broader prescriptions. Policy decisions defined by the community shape all three. These prescriptions should be viewed as a long-term, continuous process.

Several key prescriptions emerged from the process. First is restoring ecosystems whether it is an open grown ponderosa pine forest or a meadow. Ecological restoration is the management of an ecosystem toward an historical reference point with a natural complement of species and natural functions or ecological processes occurring. In ponderosa pine and Douglas-fir, two of the primary forest types in the open space, treatments are designed to restore or maintain a more open or scattered forest that was historically maintained by periodic fire. Treatment principals are to retain larger trees and thin a defined percentage of younger understory trees, and overtopped and suppressed trees. Where feasible, fire is reintroduced and usually preceded by some level of pruning and removal prior to burning. Basal area, a measure of planar measurement of square feet per acre occupied by trees, is a good indicator of stand density and a guideline for designing prescriptions. For example ponderosa pine stands in the Southern Front Range historically exhibited basal areas from 30 to 50 square feet per acre.

Part of ecological restoration is building a diverse age class structure including management for an old-growth class. This is done through eliminating competition around older trees and protecting them through removal of ground fuels, low branches and understory vegetation when fire is used. Snags and downed woody debris are other important ecological components of a forest. Habitat for birds is improved with just 2 to 4 snags per acre. A good snag is generally a tree greater than 12 inches in diameter. When bark beetles are at an endemic level, these beetle-killed trees make excellent snags. Leaving a percentage of fallen logs and other debris on the forest floor is important for biological processes to occur. Downed woody material and constant decomposition recycles nutrients back into the soil.

Another prescriptive goal is to mitigate the risk of wildfire through reducing fuels. Creating separations and managing vegetation are key strategies in mitigating wildfire risk through removal and thinning of understory vegetation, pruning lower branches on trees, thinning and separating tree canopies and enhancing natural separations and openings. A result of managing for a healthy forest is a reduced risk of fire.



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There are several forest types and plant communities in the open space identified to protect including the cool conifer community in the canyons and the large intact undisturbed Douglas-fir forest on the western side.

Following are specific prescriptive goals that emerged for Red Rock Canyon Open Space.

- Reduce competition in overcrowded stands of piñon-juniper, ponderosa pine, Douglas-fir and Gambel oak
- Enhance meadows
- Protect the oldest class of trees
- Create separations and reduce fuel loading
- Manage dwarf mistletoe
- Control noxious and invasive plants
- Build sustainable trails that support protection of key ecosystems



Treatments

A mix of treatments is recommended focusing on accessible areas near road and trail corridors and adjacent to neighborhoods, but not limited to these areas. Treatments and the methods used should enhance natural openings, leave buffer vegetation near trails and not open up corridors or avenues for short cutting or social trails.

Stand Thinning

Thinning to reduce understory vegetation or open up a dense over-competitive stand is the primary treatment recommendation. When thinning a stand, choices will have to be made as to what trees are removed. It is generally desirable to leave trees that display a diversity of characteristics for their respective species, leaving a broad variety in both size and form. Trees that are overtopped, suppressed or weakened would be the first selected to remove. In some cases there is an upper limit on size of tree to remove based on ecosystem or community requirements.

Quantity of trees to cut is dependent on the age and size structure of a given stand. Stand density information for each forest type helps define thinning treatments. Broadly, density targets in even age or irregular even age stands range from 40 to 80 square feet of basal area per acre. This basal area density range is equivalent to about 120 to 240 8-inch trees per acre or 50 to 100 12-inch trees per acre.

Patch Cuts

Small clear cuts or patch cuts create breaks in the vegetation and additional advantage is these opening are utilized by wildlife. Patch cuts are often created by removing a pocket of dead trees, enhancing a natural opening, and can be used for regeneration of aspen. Aspen is very intolerant of shade and requires full sunlight to thrive. To initiate the root sucker response, a disturbance such as fire, disease or logging is needed. Choosing the right technique for a given aspen stand depends upon its age, vigor, stocking, other vegetation, and the abundance of other aspen in the landscape. Removing all the aspen and competitive conifers in a stand at once best meets the requirements of aspen regeneration. Cutting in the winter is often best when carbohydrate reserves are highest in the roots to promote regeneration and minimize disease problems.



Methods

The following methods are options for accomplishing the recommended treatments. In many cases it will require a blend or mix of methods. Each has different costs, impacts and results.

Hand Cutting

Hand cutting can be a very effective way to thin a forest or create a patch cut. It can be less damaging to the forest and is very selective in what is cut. It is more costly than many of the other methods because it is very labor intensive. Managing the logs and debris can be difficult if on an inaccessible site.



Mechanical equipment

There are some compact pieces of mechanized equipment including track chippers and masticators that can effectively thin a forest through chipping whole trees and scattering the chips in the forest. They can work on flat to moderate slopes. A disadvantage is they can disturb soils and understory vegetation so care needs to be taken in selection and use of equipment. The use of mechanical equipment should be minimized on slopes greater than 30 percent. Too much wood chip has been negatively correlated with soil nitrogen.

Transplants

Small trees that are encroaching into meadow areas could be transplanted in restoration efforts elsewhere in the open space.

Goats

Goat herds are becoming more available and popular for weed control and forest management. Their advantage is that they will eat many plants, they can access areas untreatable by other methods, and if managed correctly can be cost effective. Grass is not their preference. They will eat saplings, oak leaves and young oak stems and twigs. A disadvantage is that they are non-selective and if not managed correctly can “overgraze” an area. How they are moved through an area depends on the treatment goal. Time of year also makes a difference in what plants they prefer.

Prescribed Fire

There are areas of the open space where the reintroduction of fire might be feasible. Prescribed fire will thin out the smaller vegetation and some of the larger trees, as well as return nutrients back to the forest ecosystem. The decision to include fire in restoration of a forest is difficult, but has many benefits including reducing high levels of accumulated organic material, conifer seedlings and saplings, and stimulation of shrubs and herbaceous plants.

Besides its ecological benefits, using fire can be very cost effective in thinning a stand. There are many constraints as well including weather, fuel moisture and smoke. Fuel moistures need to be low enough to burn but high enough that fire behavior won’t become uncontrollable.

Preparation work prior to burning including raising limb levels and raking fine fuels away from the bases of trees intended to retain can further control fire behavior. This will keep much of the material to be burned compacted and near the ground surface. Silvicultural cuttings are generally the first treatment method in many stands being managed with prescribed fire.



Slash Management

When treating a forest there is often a lot of woody material to handle; this is one of the more challenging parts of managing a forest. Some can be left for erosion mitigation. The downed woody materials retain some moisture, slow the impact of precipitation on ground, and decrease sheeting erosion. In any event, larger logs or 1,000-hour fuels rarely burn because of their higher moisture content. Following are some methods to manage the remaining wood and debris from forest thinning.

Chip

Where it's feasible to get a wheeled or track chipper into the forest, limbs and logs can be chipped. Some can be chipped back on to the forest floor, but this can become excessive with a lot of thinning.

Lop and Scatter

On steep or inaccessible slopes lopping trees and scattering the branches and logs is an option.

Skid

Logs can be skidded to chipping or pickup locations by a wheeled skidder attached to an All Terrain Vehicle or traditional horse skidders can be used.

Pile Burn

For small diameter logs and limbs pile burning can often be effective. Piles should be no more than about 5 feet high and 8 feet in diameter to minimize over-burning ground vegetation. Piles should be placed at least 20 feet from other vegetation. Piles require several months to dry but shouldn't be left too long at the risk of a buildup of *Ips* engraver beetles. Winter with snow cover is a good time to burn. Again, smoke is a constraint. This is a good option for inaccessible but flatter areas.

Vegetation Treatment for Red Rock Canyon Open Space

There are several treatment types identified for the Red Rock Canyon Open Space. Priority areas are identified on the Vegetation Treatments Map but not limited to these areas. Protection and enhancement of meadows is a focus in all these treatments.

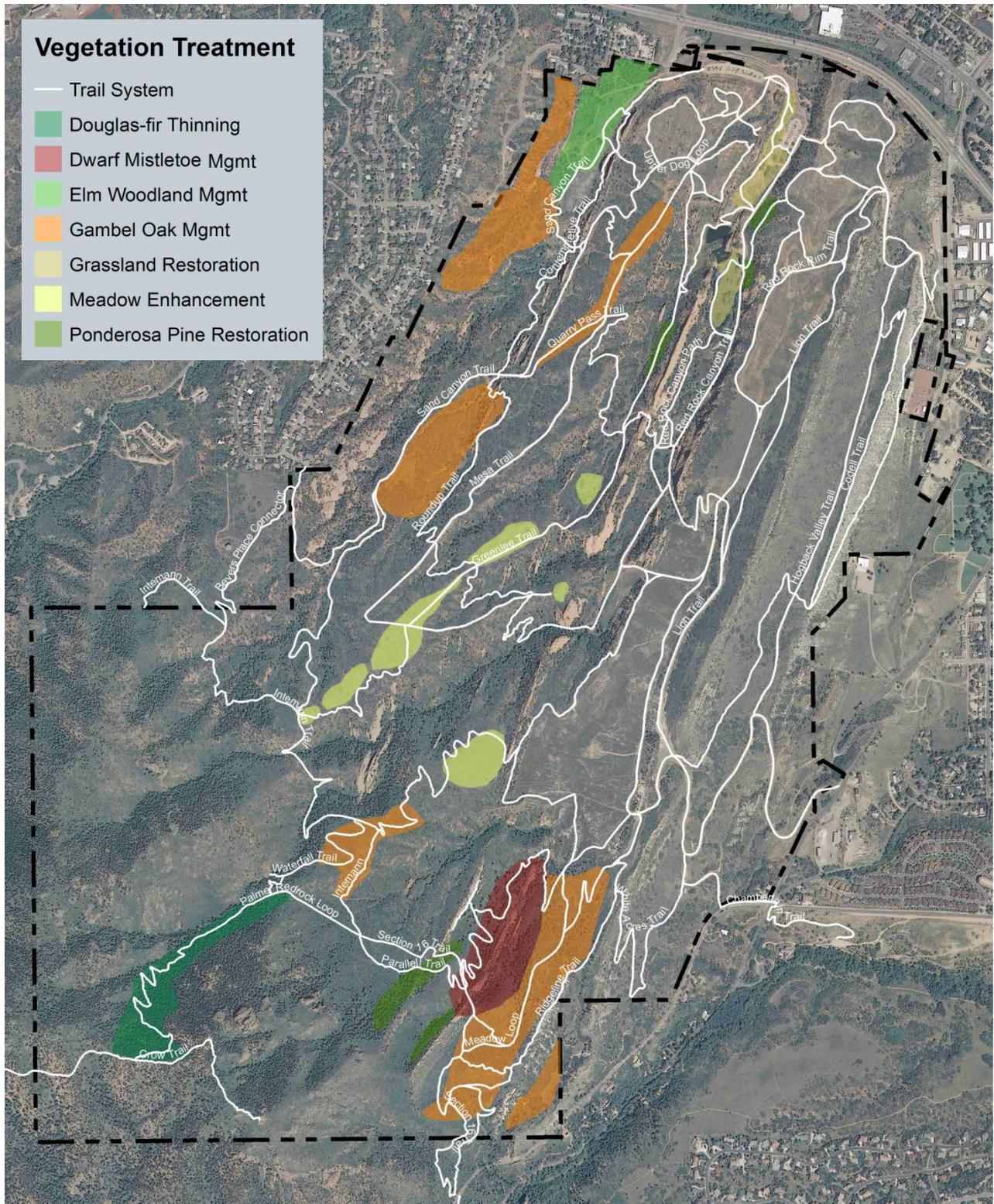
- Gambel oak management 89.5 acres
- Dwarf mistletoe management 20.1 acres
- Meadow enhancement 19.9 acres
- Douglas-fir thinning 16.4 acres
- Elm management 12.6 acres
- Ponderosa pine restoration 9.5 acres
- Grassland restoration 7.9 acres

Refer to *Section mll: Natural and Cultural Resource Management and Protection* for grassland restoration recommendations





Vegetation Treatment Map





Gambel Oak Management

Gambel oak is a significant component of the open space. This fire-evolved tree associates well with ponderosa pine. Douglas-fir, Rocky Mountain juniper, piñon pine and mountain mahogany are also associated with Gambel oak in Red Rock Canyon Open Space. This oak does well on lesser-developed soils such as those found on slopes, ridges and where erosion is commonplace. It is a persistent seral species that exhibits early dominance after a disturbance due to its extensive root networks. Pre-settlement fire-return intervals in Gambel oak were as low as 6 years. Without regular fire or thinning, the species begins to overcrowd itself and limit growth. In this dense form the stands increase the risk of fire across a landscape.

Red Rock Canyon Open Space has large contiguous and solid stands of Gambel oak. The dense mountain shrub community covers approximately 23 percent of the property. Periods of drought in the last decade have caused significant dieback regionally in scrub oak and in the Red Rock Canyon Open Space. Up to 20 percent of the oak across the landscape is decadent or has significant dead.

Gambel Oak Treatment Recommendations

- Treatable Acres: 89.5 acres
- Key areas identified for treatment are a large area on the west side buffering the Crystal Hills neighborhood and a large area near the Section 16 trail entry area off Gold Camp Road. Additional areas border the old quarry roads in Red Rock Canyon Open Space.

Gambel Oak Treatment Specifications

- Remove or thin dead oak groups that are greater than 50% dead
- Remove oak encroaching into meadow areas
- Create maximum patch sizes of about 30 feet with at least 10 feet of separation in between
- Maintain larger oak in a tree form
- Separate oak from conifers through removal under tree canopies and raising the limb level of the conifers
- Avoid treatment during spring and early summer nesting periods
- Follow-up removal of re-sprouting every 5 to 8 years
- Hand cutting and mechanized equipment possible methods





Dwarf Mistletoe Management

Southwestern dwarf mistletoe in ponderosa pine is present in the Section 16 portion of Red Rock Canyon Open Space. The level and distribution of dwarf mistletoe is the key for most treatment recommendations. Because of increasing forest densities dwarf mistletoes are more abundant than in the 1800's. Historically, the spread of this plant was controlled by fire and an open stand structure. Because they have evolved with the forest they are part of the ecosystem providing food storage and resting sites for insects, birds, and mammals. As forest management becomes more ecologically based, management of dwarf mistletoe is recognizing these ecological and beneficial aspects of dwarf mistletoe.

Dwarf mistletoe is isolated in a few locations in the open space. They are in mixed stands of ponderosa pine and Douglas-fir at a moderate infestation level. Individual infestations in trees are light to moderate, or 0 to 4 using the standard 6-point rating system used to evaluate trees.

Dwarf Mistletoe Treatment Recommendations

- Treatable Acres: 20.1 acres
- The Red Rock Meadow Loop trail area is a priority area for management of dwarf mistletoe. Evaluation and some treatment could also be done on the ridge above White Acres.

Dwarf Mistletoe Treatment Specifications

- Based on a moderately infested stand, create an irregular spacing of remaining trees or leave trees and tend toward a clumpy, groupy stand structure
- Remove as much mistletoe as possible without removing the best trees
- Prune low heavily "broomed" branches
- Remove small scrubby heavily infested trees
- Create buffers at least 30 feet wide from nearby stands that have no mistletoe
- Avoid treatment during spring and early summer nesting periods
- Implement with trail improvements of the Red Rock Meadow Loop
- Hand cutting, track chipper, lop and scatter, pile burning, volunteers possible methods





Ponderosa Pine Restoration and Management

The ponderosa pine ecosystem is an important interface for wildlife and recreation. Some animal species like the Abert squirrel and hummingbird are dependent upon a healthy ponderosa pine forest. Developing a more open stand structure and protecting an old-growth class are key for a healthy ponderosa pine ecosystem. Restoring these forests through thinning the understory and protecting the old-growth components that remain is important. Restoring fire into these forests is an effect management tool.

Ponderosa pine is associated with Douglas-fir in the mixed conifer community and with Gambel oak in the ponderosa/oak community. These two communities cover approximately 8 percent of the Red Rock Canyon Open Space landscape. Dwarf mistletoe and bark beetles are present. Fire has occurred in both communities. One large snag, well over 200 years old, exhibits at least two fire scars; the approximate fire dates are ± 55 years ago (± 1957) and ± 158 years ago (± 1854). Current basal areas in these types range from 30 in the original Red Rock Canyon parcel to 90 in the Section 16 parcel.

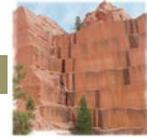
Ponderosa Pine Treatment Recommendations

- Treatable Acres: 9.5 acres or up to 20 to 30 acres depending on methods selected and priority within the open space.
- Areas along the Red Rock Canyon Trail, Contemplative Trail, Greenlee Trail and the eastern end of the Parallel Trail are recommended treatment areas.

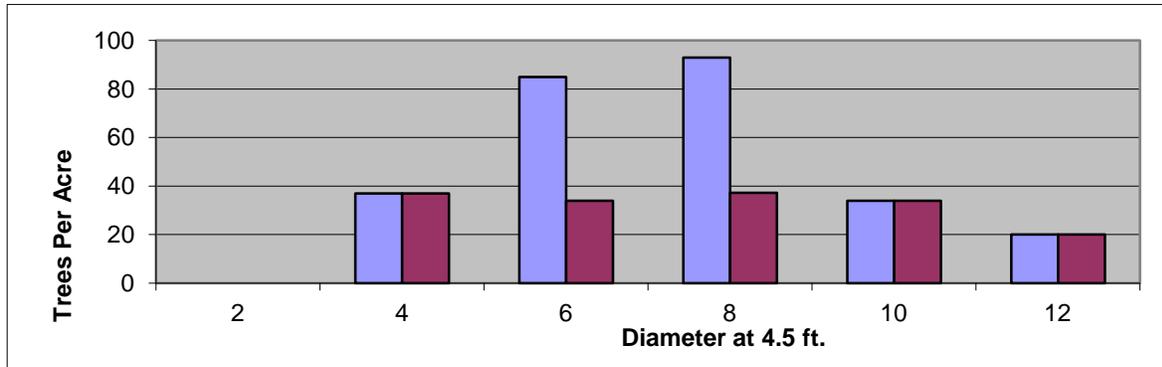
Ponderosa Pine Treatment Specifications

- Thin stands to a basal area of 30 to 60 and slightly more where Douglas-fir is present
- Leave 20% downed woody debris
- Design cut for a diversity of age classes including an old growth class
- Remove 60 percent small understory trees focusing on Douglas-fir
- Establish approximately 3 large snags per acre (14" or greater beetle-killed)
- Remove competing trees and other vegetation around key older trees. This work may extend into the canyon areas
- Avoid treatment during spring and early summer nesting periods
- Implement with trail improvements, changes or closures in mind
- Hand cutting, track chipper, lop and scatter, pile burning, volunteers are all possible methods



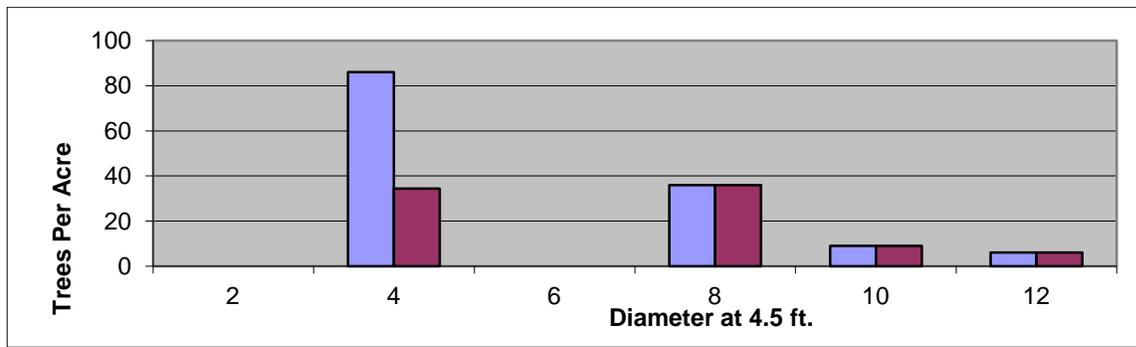


The following graph depicts the current ponderosa pine forest structure in the Section 16 parcel with a Douglas-fir component and density (blue) and the structure and density after treatment (red). The chart provides actual number of trees per acre and the number of trees to cut to achieve the desired basal area.



Diameter Class	2	4	6	8	10	12	14	16	Total
<i>Current: 86 BA</i>									
Stems/Acre (TPA)	0	37	85	93	34	20	0	0	269
Cu. Vol.	0	31	183	422	243	222	0	0	1101
<i>Prescription: 57 BA</i>									
Stems/Acre (TPA)	0	0	51	56	0	0	0	0	107
Cu. Vol.	0	0	110	253	0	0	0	0	363
<i>Difference (residual):</i>									
Stems/Acre	0	37	34	37	34	20	0	0	162

The following graph depicts the current ponderosa pine forest structure in Red Rock Canyon Open Space with a Gambel oak component and density (blue) and the structure and density after treatment (red). The chart provides actual number of trees per acre and the number of trees to cut to achieve the desired basal area.



Diameter Class	2	4	6	8	10	12	14	16	Total
<i>Current: 30 BA</i>									
Stems/Acre (TPA)	0	86	0	36	9	6	0	0	137
Cu. Vol.	0	54	0	93	45	44	0	0	236
<i>Prescription: 30 BA</i>									
Stems/Acre (TPA)	0	52	0	0	0	0	0	0	52
Cu. Vol.	0	32	0	0	0	0	0	0	32
<i>Difference (residual):</i>									
Stems/Acre	0	34	0	36	9	6	0	0	85



Douglas-fir Thinning and Management

Douglas-fir is present on north and east-facing slopes and is shade tolerant. Its adaptation to shaded environments gives it a competitive edge in dense stands. Some stands and mature trees can survive on very xeric sites. It is commonly associated with ponderosa pine, white fir, aspen, and Gambel oak. Historically, the Douglas-fir community exhibited moderated fire intervals of 40 to 50 years.

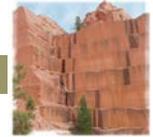
The Douglas-fir community is approximately 10 percent of the Red Rock Canyon Open Space, most of that falling within the Section 16 parcel. This forest is overgrown, yet relatively healthy and intact. Current stand structure is relatively even-aged with a basal area of 120. There is a stand of older Douglas-fir in an area east of the intermitted waterfall. There are several large specimen Douglas-fir protected within the canyons.

Douglas-fir Treatment Recommendations

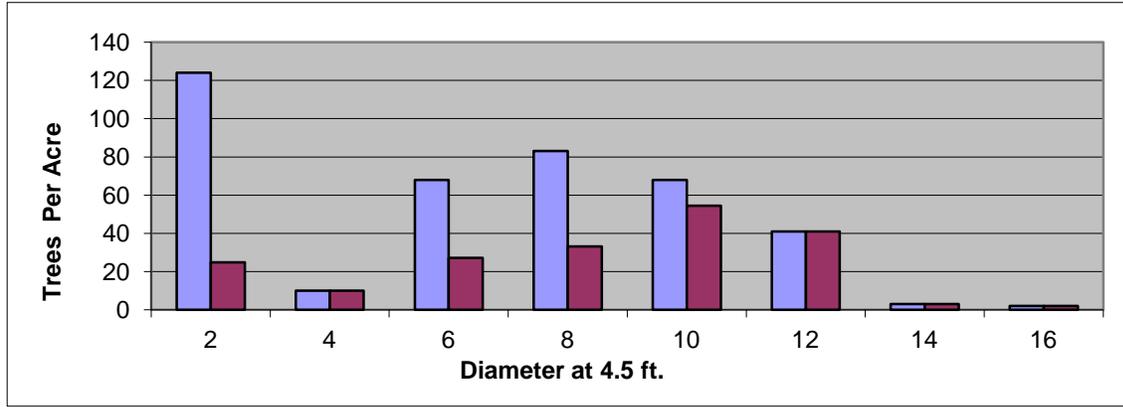
- Treatable Acres: 16.4 acres
- The area identified for treatment surrounds the Section 16 Trail. This treatment should be designed with any new trail alignment and closures.

Douglas-fir Treatment Specifications

- Thin stands to a basal area of 70 to 90
- Maximum tree size to remove is 9 inches (based on recommendations for Mexican spotted owl habitat)
- Leave 20% downed woody debris
- Design cut for a diversity of age classes including an old growth class
- Remove 60 percent small understory trees and regeneration
- Thin heavy fir regeneration along the trail
- Establish approximately 3 large snags per acre (14" or greater beetle-killed)
- Remove competing trees and other vegetation around key older trees. Extending work into the canyon areas
- Avoid treatment during spring and early summer nesting periods
- Implement with new trail alignment of the Section 16 Trail
- Hand cutting, lop and scatter, volunteers are possible methods



The following graph depicts the current Douglas-fir forest structure and density (blue) and the structure and density after treatment (red). The chart provides actual number of trees per acre and the number of trees to cut to achieve the desired basal area.



Diameter Class	2	4	6	8	10	12	14	16	Total
Current: 120 BA									
Stems/Acre (TPA)	124	10	68	83	68	41	3	2	399
Cu. Vol.	33	10	171	439	641	591	46	63	1984
Prescription: 85 BA									
Stems/Acre (TPA)	99	0	41	50	13	0	0	0	203
Cu. Vol.	0	0	10	449	373	0	0	0	831
Difference (residual):									
Stems/Acre	25	10	27	33	55	41	3	2	196





Elm Management

Siberian elm is an invasive plant present in woodland groupings and scattered throughout the more disturbed parts of the Red Rock Canyon Open Space. This tree, a native to Northern China, eastern Siberia, Manchuria and Korea was introduced to the United States in the 1860's. It is currently distributed throughout most of North America. It is a very hardy elm and tolerates a wide range of growing conditions. Dry to mesic prairies and stream banks can be invaded by this elm. It can survive under conditions not easily tolerated by other species, allowing it to take advantage of open ground. It can overtake native vegetation, especially shade intolerant species. This can also lead to invasion by additional weedy species.

Siberian elm is not classified as a noxious weed in Colorado and has become naturalized in the Red Rock Canyon Open Space. Volunteer projects have been very effective to reduce the number of elms and the large seed source. There are some disturbed areas where these naturalized elms are beneficial for wildlife, shade, soil stabilization and screening. It is recommended to leave some areas of elms intact until an entire site can be restored. Actively controlling Siberian elms from invading the more native ecosystems in the canyons and meadows of the southern part of Red Rock Canyon Open Space is recommended.

Siberian Elm Treatment Recommendations

- Treatable Acres: 12.6 acres
- There are several groups of elms on the west side of Red Rock Canyon Open Space near the lower Sand Canyon Trail that might be retained for screening and cover.

Siberian Elm Treatment Specifications

- Actively control in canyons
- Manual-girdling trees in late spring to midsummer is the preferred management technique
- During the growing season, seedlings can be hand pulled
- Use cut stump treatment with glyphosate or basal bark treatment with triclopyr. Follow label directions.
- A regular regime of prescribed burning in fire-adapted communities will kill seedlings
- Hand pulling, girdling, goats, volunteers possible methods

Meadow Enhancement

- The native intact meadows in Red Rock Canyon Open Space are an important component of the ecosystem. Several of the key meadows in the open space are indicated on the Vegetation Treatments Map. With the lack of historical fire and grazing, woody plants such as Gambel oak, ponderosa pine, piñon, juniper and mountain mahogany are encroaching into many of the meadow areas. Removal of encroaching trees and shrubs is a treatment component when restoring ponderosa pine or managing Gambel oak. It can also be a planned treatment on its own. Hand cutting, goats and fire are all methods that can be used to remove encroaching woody plants. Treatable Acres: 19.9 acres.

Grassland Restoration

- Refer to *Section mll: Natural and Cultural Resource Management and Protection* pages mll.1 - 3 for recommendations. Treatable Acres: 7.9 acres



Trail System Sustainability and Management

Sustainability may be simply defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” A more explicit definition of sustainability is “a condition of existence which enables the present generation of humans and other species to enjoy social wellbeing, a vibrant economy, and a healthy environment, and to experience fulfillment, beauty and joy, without compromising the ability of future generations of humans and other species to enjoy the same.”¹

Land stewards and managers of the Red Rock Canyon Open Space want to be careful that efforts do not have unintended consequences on the very things those efforts aim to protect. The following list of considerations is intended for use by the Parks, Recreation and Cultural Services Department and user groups representatives to guide long-term and short-term sustainable trail system management decisions.

Recommended considerations leading to sustainable trail system decisions:

- Follow the Values that serve as the foundation of this master and management plan.
- Consider prioritizing closures, reroutes and trail stabilization on system and rogue trails crossing natural or cultural resource areas mapped as part of this master plan. All trails (social/rogue or otherwise) not in the approved trail system are recommended to be closed.
- Consider the benefits of trail work dispersed throughout the property versus annual focus on one defined area.
- Pursue construction of new trails or trail re-routes only when the associated intentional trail closure manpower and resource commitment is in place and closure/restoration work is scheduled. This will avoid extensive resource disruption and the construction of new trails (resource disruption) without the associated resource restoration.
- Comply with the procedures identified during the "Relationship Building Process" in early 2012 for establishing shared goals between the City and user group representatives.
- Utilize buck-and-rail style fencing to establish and maintain some closures. Locate long sections that extend from natural barrier to natural barrier (stone, topography or dense vegetation). Specific situations when fencing is appropriate include to block access that is: unsafe (along road), unlawful (across landfill), along well established rogue trails, in open areas with little topography, and to protect identified sensitive areas, cultural resources and cool conifer forest habitat.
- The Trail System Assessment Map is a tool for use when making trail system decisions. It identifies unsustainable trail sections and recommends fencing sections to protect natural resources. The assessment map reflects the trail system conditions at the time of this master plan; it is recognized that the system conditions will continue to evolve over time.

Values

We will strive for a **balance** between use and conservation.

The natural resources to be conserved include but are not limited to: fragile ecosystems, natural areas, scenic vistas and areas, wildlife habitats and corridors, important areas that support biodiversity, significant land formations and landmarks, and cultural, historical and archeological areas.

We are committed to and will be guided by long-term **sustainability** of these properties, including the natural resources, the built environment, and the fiscal and human resources necessary to support them.

Management of the natural, cultural and visual resources must consider both conservation of the resource and the community's recreational experience.

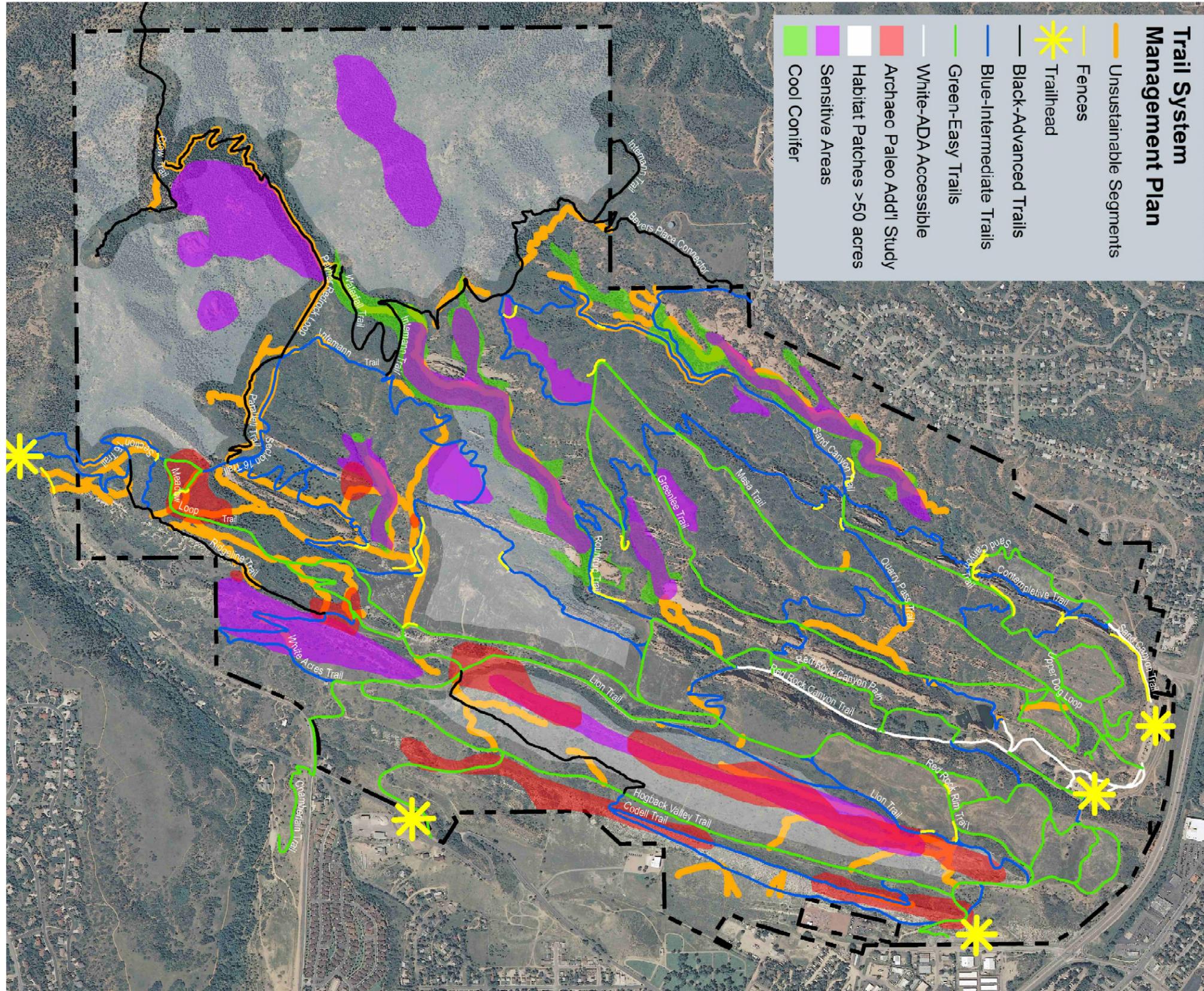
Interpretive information and methods should impart a greater understanding and respect for the resource while balancing the need for education and preservation.

¹ Arizona Policy Choices, "Sustainability For Arizona, The Issue of Our Age" (Morrison Institute for Public Policy, 2007)



Red Rock Canyon Master and Management Plan

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Trail System Assessment Map with Resources



Implementation Priorities

The Parks, Recreation and Cultural Services Department needs to maintain flexibility with master plan implementation priorities. This approach allows the Department to take advantage of funding and partnering opportunities as they arise.

As the master and management plan is implemented, land stewards and managers of the Red Rock Canyon Open Space must be careful that efforts do not have unintended consequences on the very things those efforts aim to protect. The following list of considerations is intended for use by the Parks, Recreation and Cultural Services Department and user groups representatives to guide long-term and short-term implementation priority decisions.

Recommended considerations for determining implementation priorities:

- Follow the Values that serve as the foundation of this master and management plan.
- Consider prioritizing work that protects natural or cultural resource areas mapped as part of this master plan.
- Remain flexible with annual and long-term priorities in order to optimize resource or partnering opportunities that may arise.
- Consider the benefits of work dispersed throughout the property versus an annual focus on one defined area.
- Pursue construction of new facilities only when the associated manpower and resource commitment is in place for resource protection, further study (if needed) and associated restoration.
- Consider recommendations from the conservation easements' annual assessment reports by the Palmer Land Trust for implementation priority.
- Comply with the procedures identified during the "Relationship Building Process" in early 2012 for establishing shared annual priorities between the City and user group representatives. Consider expanding this to longer-term implementation priorities.

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Red Rock Canyon Master and Management Plan

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