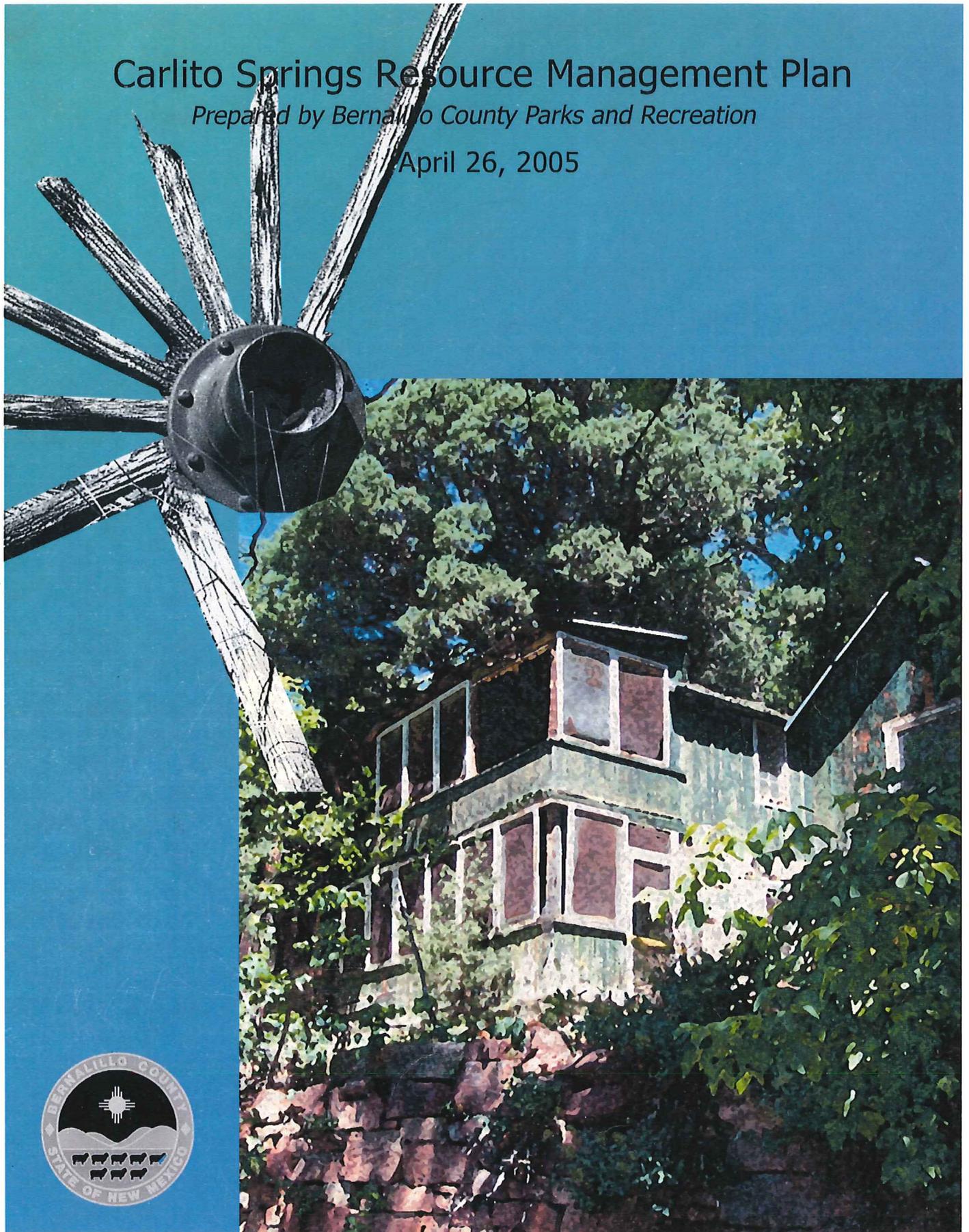


# Carlito Springs Resource Management Plan

*Prepared by Bernalillo County Parks and Recreation*

April 26, 2005





## **ACKNOWLEDGEMENTS**

### **Bernalillo County Commission**

Alan Armijo, District 1, Chair  
Tim Cummins, District 4, Vice-Chair  
Teresa Córdova, District 2  
Deanna Archuleta-Loeser, District 3  
Michael Brasher, District 5

### **Bernalillo County**

#### County Manager

Thaddeus Lucero, County Manager  
Julie Baca, Deputy County Manager for Community Services  
Parks and Recreation  
Joanne Caffrey, Director  
Carl "Chip" Berglund, Parks Administrator  
Clay Campbell, AICP, Park Planning Manager  
Adrienne Candelaria, Senior Park Planner

### **East Mountain Open Space Steering Committee**

Daniel Abram  
Mary Bernstein  
Jackie Bouker  
Nita Brenholdt  
Bill Degenhardt  
Charlie Ervin  
Phillip Feurschbach  
David Gonzales  
Macario Griego  
Linda Herrera  
Christopher Jinzo  
Robert Morrell  
Elaine Morrell  
Susan Noftsker  
John Peterson  
Ellie Robinson  
Bob Rubin  
Janet Saiers  
Brian Salem  
Bradd Schulke  
Paul and Kay Souder  
Louise Waldron  
Laurie Wearne  
Carl White



### **Interagency Technical Team Leaders**

Attila Bality, National Park Service/Rivers, Trails and Conservation Assistance Program  
Mary Bean, United States Forest Service  
Carl "Chip" Berglund, Bernalillo County Parks and Recreation  
Jim Sattler, City of Albuquerque Open Space Division

### **Interagency Technical Team Support Members**

#### Bernalillo County

Kathy Begeal, Open Space Intern, 2001, 2003  
David Mitchell, Public Works Road Maintenance Manager  
Lisa Powell, Open Space Intern, 2003-2005

#### City of Albuquerque

Jay Evans, Open Space Division  
Maggie Gould, Open Space Division  
Myrna Marquez, Open Space Division  
Al Pacile, Open Space Division Intern, 2004-2005

#### Other

Jerry Boyd, Albuquerque Amateur Radio Club  
George Duda, New Mexico Forestry Division  
Jill Cowley, National Park Service, Cultural Landscapes Program  
Susan Rich, Ciudad Soil and Water Conservation District  
Andrew Rominger, Talking Talons Youth Leadership Center

### **Bernalillo County Reviewers**

Nano Chavez, County Zoning, Building & Planning  
Tito Chavez, County Legal  
Bett Clark, County Fire  
Dwight Coleman, County Risk Management  
Mark David, County Sheriff  
Mary Murnane, County Public Works/Utilities

### **Bernalillo County Open Space Advisory Committee**

George Connor  
Barbara Harrington, Chair  
Kim Murphy  
Steve Quant



The Rivers, Trails and Conservation Assistance Program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America. Program staff work with community groups and local and state governments to conserve rivers, preserve open space, and develop trails and greenways.



## TABLE OF CONTENTS

<b>Table of Contents</b>	<b><i>i.</i></b>
<b>List of Illustrations</b>	<b><i>iv.</i></b>
<b>Executive Summary</b>	<b><i>v.</i></b>
<b>I. INTRODUCTION</b>	<b>1</b>
<b>A. Purpose</b>	<b>1</b>
<b>B. General Property Information</b>	<b>1</b>
<b>C. Legal Description</b>	<b>2</b>
<b>D. East Mountain Open Space Planning Process</b>	<b>2</b>
<i>i. East Mountain Open Space Steering Committee (EMSC)</i>	<b>4</b>
<i>ii. Public Meetings</i>	<b>5</b>
<b>E. Relevant Plans</b>	<b>5</b>
<i>i. Albuquerque/Bernalillo Comprehensive Plan</i>	<b>6</b>
<i>ii. Major Public Open Space Plan</i>	<b>6</b>
<i>iii. East Mountain Area Plan</i>	<b>6</b>
<i>iv. Bernalillo County Parks, Open Space, Trails Master Plan</i>	<b>7</b>
<i>v. Cibola National Forest Land and Resource Management Plan</i>	<b>8</b>
<b>F. Guiding Principles for all EMOS Properties</b>	<b>8</b>
<i>i. Site Improvements</i>	<b>9</b>
<i>ii. Natural and Cultural Features</i>	<b>9</b>
<i>iii. Recreational Activities</i>	<b>9</b>
<i>iv. Educational Activities</i>	<b>9</b>
<i>v. Adjacent Land Owners and/or Managers</i>	<b>9</b>
<i>vi. Long Term Stewardship</i>	<b>9</b>
<b>II. EXISTING CONDITIONS</b>	<b>9</b>
<b>A. Climate</b>	<b>9</b>
<b>B. Geology</b>	<b>10</b>
<b>C. Topography</b>	<b>10</b>
<b>D. Soil Conditions</b>	<b>10</b>
<i>i. ROF: Rock outcrop-Orthids Complex</i>	<b>10</b>
<i>ii. CAF: The Carlito Complex</i>	<b>11</b>
<i>iii. Te: Tesajo-Millett Stony Sandy Loam</i>	<b>11</b>
<b>E. Hydrology and Water Quality</b>	<b>12</b>
<i>i. Whitcomb Spring</i>	<b>12</b>
<i>ii. Carlito Spring</i>	<b>12</b>
<b>E. Plant Communities</b>	<b>14</b>
<i>i. Pinon-Juniper Woodland Community</i>	<b>14</b>
<i>ii. Riparian Community</i>	<b>14</b>



iii. Orchard Community	15
iv. Non-native Ornamental Landscape	15
<b>F. Forest Health and Fuel Load Reduction</b>	15
<b>G. Forest Pests</b>	16
<b>H. Noxious Weeds</b>	16
<b>I. Wildlife Communities</b>	17
i. Federal Threatened and Endangered Species	18
ii. State Sensitive Species	18
III. HISTORY AND CULTURE	18
IV. LAND USE	19
<b>A. On-site Activities</b>	19
<b>B. Structures</b>	19
<b>C. Resource-based Recreation</b>	21
<b>D. Education and Interpretation</b>	21
i. The Whitcomb Living Museum	22
ii. Carlito's Curiosity Camp	22
iii. Carlito Spring's Fall Harvest Festival	22
iv. Sandia Mountain Bear Watch	22
v. Talking Talons Wildlife Rehabilitation Center	22
iv. Interpretive Viewing Tubes and Frames	24
<b>E. Access and Parking</b>	24
<b>F. Fencing and Signage</b>	24
<b>G. Adjacent Land Use</b>	24
V. COMMUNITY FEEDBACK	24
VI. MANAGEMENT OBJECTIVES FOR RESOURCES, VISITORS, AND STEWARDSHIP	26
<b>A. Management Zones</b>	27
i. Historic/Cultural Zone	27
ii. Forest Zone	27
iii. Riparian/Orchard Zone	27
iv. Archeological Zone	28
<b>B. Management Objectives and Strategies</b>	28
i. Historic/Cultural Zone Management Objectives and Strategies	28
ii. Forest Zone Management Objectives and Strategies	29
iii. Riparian/Orchard Zone Management Objectives and Strategies	30
iv. Archeological Zone Management Objectives and Strategies	30
v. Visitor Management Objectives and Strategies	31
vi. Site Stewardship Management Objectives and Strategies	32
<b>C. Management Method</b>	33
<b>D. Operations and Maintenance</b>	33



VII.	INTERAGENCY COORDINATION	34
	<b>A. United States Forest Service/Cibola National Forest</b>	34
	<b>B. Bernalillo County Parks and Recreation Department, Public Works Division, and the New Mexico Department of Transportation</b>	34
	<b>C. National Park Service/Cultural Landscapes Program</b>	34
	<b>D. New Mexico Department of Game and Fish</b>	35
	<b>E. New Mexico Forestry Division</b>	35
	<b>F. Albuquerque Public Schools and Bernalillo County Community Centers</b>	35
	<b>G. Law Enforcement and Emergency Responders</b>	35
VII.	COMMUNITY PARTNERSHIPS	36
	<b>A. Open Space Stewardship</b>	36
	<b>B. Community Organizations</b>	37
	<i>i. Canyon Estates Neighborhood Association</i>	37
	<i>ii. Talking Talons Youth Leadership Center</i>	38
	<i>iii. East Mountain Historical Society (EMHS)</i>	38
	<i>iv. East Mountain Garden Society</i>	38
	<i>v. Carnuel Land Grant and the Carnuel Acequia Association</i>	38
	<i>vi. Thursday Birders/Partners in Flight</i>	38
	<i>vii. Albuquerque Amateur Radio Club</i>	38
IX.	CONCLUSION	39
XI.	REFERENCES	40

## APPENDICES

<b>Appendix A</b>	Permissive and Conditional Uses in Major Public Open Space
<b>Appendix B</b>	Rare and Endangered Plants Photos
<b>Appendix C</b>	Limits of Acceptable Change Article
<b>Appendix D</b>	Action Plan Tables
<b>Appendix E</b>	NPS Cultural Landscapes Preliminary Evaluation



## LIST OF ILLUSTRATIONS

### Maps

### Page

Map 1. East Mountain Open Space Vicinity Map

3

Map 2. Carlito Springs Site Plan

23

### Tables

Table 1. Public Outreach

5

### Photographs

House in winter

7

Rainbow

11

Carlito ponds in fall and winter (two photos)

13

Black bear cub in fruit tree at Carlito Springs

17

House renovation (top photo)

20

Cabin renovation (bottom photo)

20



## **EXECUTIVE SUMMARY**

Bernalillo County purchased Carlito Springs to preserve and protect its natural resources and environmental features as an *Open Space Facility*. The objectives and strategies contained herein were developed by the East Mountain Open Space Steering Committee through extensive community participation and a two-year, consensus-based planning approach. In addition, the management objectives and strategies are supported by a number of regional, higher-ranking plans.

This Resource Management Plan (RMP) for Carlito Springs Open Space (Carlito Springs) identifies specific objectives and strategies that will preserve the unique historic and cultural character, offer limited, resource-based recreational opportunities, and protect the abundant natural resources. These objectives and strategies are consistent with the natural and cultural resource issues that have been identified by the public and staff throughout the planning process. Most importantly, this is a working document that describes the site's complexity and provides guidance for future management and use.

The County will use management objectives to assure that all resources are available to the public, yet cared for in a manner that will sustain them over time. Early in the planning process, those involved recognized the need for balancing habitat protection with public use. These management objectives try to achieve such a balance. Zones have been developed with specific objectives and strategies in mind. Despite similarities, they may vary considerably from one zone to the next. The management objectives and strategies included in this RMP are not static and will be reviewed periodically in terms of their effectiveness. If changes are needed, they will be implemented in a timely manner to assure that damage or misuse does not continue unchecked.



## I. INTRODUCTION

### A. Purpose

This Resource Management Plan (RMP) for Carlito Springs Open Space identifies specific objectives and strategies that will help preserve its unique historic and cultural character, protect the abundant natural resources while offering limited, resource-based recreational opportunities. These objectives and strategies are consistent with the natural and cultural resource issues that have been identified by the public and staff throughout the planning process. The objectives and strategies contained herein were developed by the East Mountain Open Space Steering Committee through extensive community participation and a consensus-based planning approach. Most importantly, this is a *working* document that describes the site's complexity and provides guidance for future management and use based on a number of regional, higher-ranking plans.

### B. Property Information

Bernalillo County purchased Carlito Springs Open Space (Carlito Springs) in December of 2000 with mill levy funds from a 2000 referendum that approved ¼ mill for open space purchases. Community residents encouraged the County to purchase the property to prevent further residential development. As a result, the Bernalillo County Parks and Recreation Department oversees and manages the property.

Carlito Springs is located on the southeastern face of the Sandia Mountain Range, north of Interstate 40, two miles west of the Village of Tijeras and approximately 14 miles east of Albuquerque. The Cibola National Forest on the west and north borders the property; the southern and eastern boundary is private residential development. It comprises 177 acres and ranges in elevation from 6,300 to 7,000 ft. above sea level.

Carlito Springs takes its name from two permanent springs that are located on the property. The springs feed several ponds, and have created a lush riparian environment that nourish ornamental gardens and orchards planted by previous owners. For years this water source has provided critical habitat for many species of birds and animals, including black bear, mountain lion, badger, and mule deer.

Onsite buildings include a historic house made of travertine—a light-colored limestone found onsite—three wood cabins, one stone cabin (1894), several outbuildings, and numerous other antiquated structures with varying historical significance. The property has a long history of

habitation with diverse uses over the years. [See *Tijeras Canyon: Analyses of the Past*, edited by Linda S. Cordell, for a historical reference of the area.]

### **C. Legal Description**

The site is located in Bernalillo County; Zone Atlas Volume 2, pages J-27, J-28, K-27 and K-28. The property is zoned A-2, rural residential and is currently occupied by a caretaker. The property includes five different parcels, as follows: Parcel 1: SE $\frac{1}{4}$  SE $\frac{1}{4}$  Sec 15 T10N R5E (AKA "ALTA/ACSM Land Title for" Carlito Springs) 34.93 ac.; Parcel 2: T10N R5E Sec 15A Tract of Land NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  cont 2 ac.; Parcel 3: SW $\frac{1}{4}$  SW $\frac{1}{4}$  Sec 15 T10N R5E (AKA "ALTA/ACSM Land Title for" Carlito Springs) cont 35 ac.; Parcel 4: SE $\frac{1}{4}$  SW $\frac{1}{4}$  Sec 15 T10N R5E AKA "ALTA/ACSM Land Title for" Carlito Springs cont 37.060 ac.; Parcel 5: Tract of Land in Sec 22 T10N R5 in the NW $\frac{1}{4}$  NW $\frac{1}{4}$  & Tract A plat for Lands of Willingham T.

A vicinity map showing Carlito Spring's location in context to the other East Mountain Open Space properties is included on the following page.

### **D. East Mountain Open Space Planning Process**

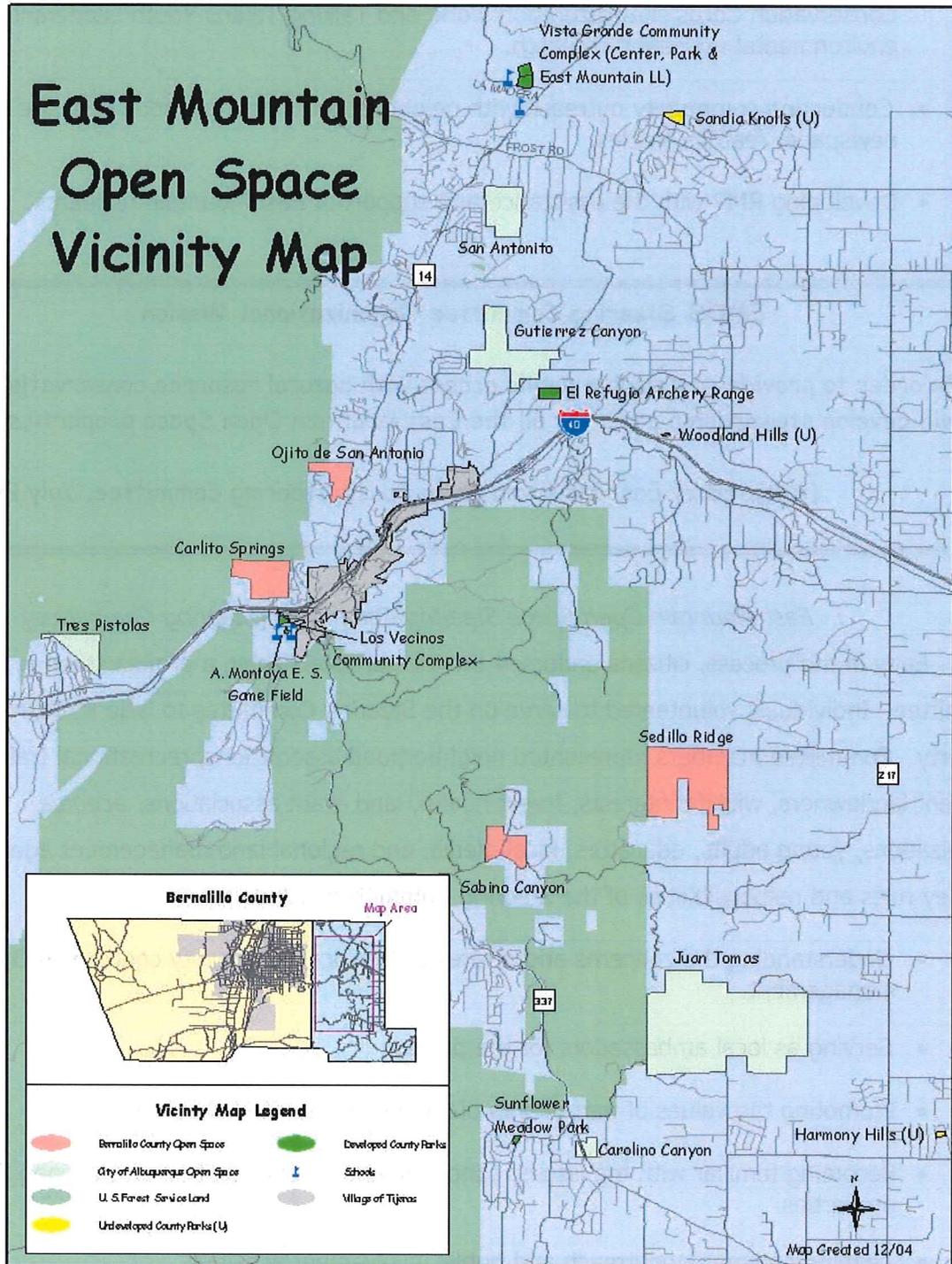
In the fall of 2001, Bernalillo County Parks & Recreation (County) applied for and received a technical assistance grant from the Rivers, Trails and Conservation Assistance Program of the National Park Service to support the County's efforts in developing RMPs for recently acquired open space properties in the East Mountains. Recognizing the benefits of partnership planning, the City of Albuquerque Open Space Division and the U.S. Forest Service Sandia Ranger District joined the East Mountain Open Space planning process.

The National Park Service facilitated a community-based planning process that made concerted efforts to involve all East Mountain residents in open space management discussions.

Key planning steps included:

- Forming steering committee with individuals representing adjacent neighborhoods, land grant associations, trail users, wildlife interests, youth groups, educators, East Mountain Historical Society members, East Mountain Garden Club members, and land management agencies.
- Organizing familiarization tours of each property to better understand site issues, unique values and characteristics, and management opportunities.
- Establishing an *East Mountain Open Space Vision*; organizational mission and resource management goals.

**Map 1. East Mountain Open Space Vicinity Map**



(Map by Adrienne Candelaria)

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Understanding of critical issues and concerns related to natural, historical, and cultural resource protection, public use, and adjacent lands.
- Developing site knowledge through trail construction training, fuel load reduction workshops, Global Positioning System (GPS) mapping of property features, Youth Conservation Corps site restoration work, and Talking Talons Youth Leadership environmental education research.
- Conducting community outreach with neighborhood meetings, additional site visits, and newspaper feature articles.
- Developing RMP with the assistance and support of East Mountain residents.

### **EMOS Steering Committee Organizational Mission**

In order to provide sustainable public access with natural resource conservation, we will develop stewardship plans for all the East Mountain Open Space properties.

(Adopted by East Mountain Open Space Steering Committee, July 2002)

#### *i. East Mountain Open Space Steering Committee (Steering Committee)*

Early in the process, citizens endorsed the idea of establishing a project steering committee. Individuals volunteered to serve on the Steering Committee to help RMPs for each property. Committee members represented neighborhood associations, recreational trail users, adjacent landowners, wildlife interests, forest health, land grant associations, *acequia* organizations, young adults, educators, local media, and regional land management agencies.

The key roles and responsibilities of the Steering Committee included:

- Understanding the concerns and desires of the local community concerning Open Space management.
- Serving as local ambassadors for the project.
- Promoting the values of partnership planning and consensus building.
- Becoming familiar with the issues, concerns, and resources at all of the Open Space properties.
- Leading community outreach and public involvement activities.
- Agreeing to work with others who may have different opinions.

CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Assisting the technical team in organizing meetings, site visits, events and other community involvement activities.
- Reviewing, developing, and commenting on planning documents.

Each open space property was represented by subcommittees that further investigated issues and opportunities associated with each site. Subcommittees also organized neighborhood meetings and additional site visits to gather more information and to develop issues and opportunities associated with each site.

*ii. Public Meetings*

In addition to monthly Steering Committee meetings that were open to the public, the County also met with neighborhood and special interest groups regarding Carlito Springs and participated in East Mountain area events. These meetings and events are listed in Table 1:

**Table 1. Public Outreach.**

<b>Meeting Type/ Location</b>	<b>Property</b>	<b>Date</b>	<b>Attendance</b>
East Mountain Pride Day/Vista Grande Community Center	All Properties	April 29, 2003	Event Booth set up to receive comments
Neighborhood: Canyon Estates /Wells Fargo Bank	Carlito Springs	May 22, 2003	10
Blessing of the Spring/ Onsite	Ojito de San Antonio	May 7, 2003	Event booth
Neighborhood/ Onsite Tour	Carlito Springs	July 22, 2003	
East Mountain Discovery Days/ Sandia Ski Area	All Properties	July 26, 2003	Event Booth
Neighborhood/ Resident Home	Sedillo Ridge	July 10, 2003	22
Neighborhood/ Cedro Campground	Sabino Canyon	Sept. 7, 2003	15
Design Charette/ Tijeras Ranger District	All properties	Nov. 19, 2003	50
East Mountain Pride Day/Los Vecinos Community Center	All Properties	April 25, 2004	Event Booth
San Antonio Acequia Association	Ojito	Nov. 16, 2004	5
San Antonio Acequia Association and the Office of the State Engineer	Ojito	Dec. 15, 2004	14

**E. Relevant Plans**

General goals and policies for County Open Space have been identified in four higher-ranking plans: Albuquerque/Bernalillo Comprehensive Plan (1988), Major Public Open Space Facility Plan (1999), East Mountain Area Plan (1992), Bernalillo County Parks, Open Space, Trails Master Plan (2003). Additional related land management strategies may be found in the Forest Service’s Cibola National Forest Land and Resource Management Plan (as amended 1990 & 1996).

*i. Albuquerque/Bernalillo Comprehensive Plan (Comprehensive Plan), 1988.*

The Comprehensive Plan gives broad direction for open space acquisition and purposes. Carlito Springs was acquired because it meets many of the purposes outlined in the Comprehensive Plan. The site conserves natural resources and environmental features, preserves archaeological resources and provides for outdoor recreation and education opportunities.

**Major Public Open Space Purposes**

1. Conservation of natural resources and environmental features
2. Provision of opportunities for outdoor education and recreation
3. Shaping of the urban form
4. Conservation of archaeological resources
5. Provision for trail corridors

Albuquerque/Bernalillo County Comprehensive Plan, 1988

*ii. Major Public Open Space Facility Plan (MPOS), 1999.*

The MPOS is more specific than the Comprehensive plan and was adopted by the County in 1999. The MPOS is the primary policy document for open space management. It establishes policies for many of the natural resource management issues and visitor use. The MPOS categorizes open space properties and their associated uses into several different categories.

**Carlito Springs is defined as an *Open Space Facility* because it contains existing structures, limited parking, and because restricted visitor access will require management to protect the water, plant and wildlife resources.** [See Appendix A, Permissive and Conditional Uses in Major Public Open Space from the MPOS, for additional information regarding the designation of public open space properties.]

*iii. East Mountain Area Plan (EMAP), 1992*

The EMAP provides direction specific to East Mountain open space conditions and goals. It also identifies priority acquisition areas in the East Mountains. The EMAP gives specific policy recommendations in two areas: (i) a mandate for Bernalillo County to work with the United States Forest Service and the City of Albuquerque on joint projects, and (ii) a mandate to develop

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

interpretive signage that explains historic, natural and archaeological features along rural and scenic roadways in the East Mountain area. The EMAP is currently being updated by County Planning staff and East Mountain residents.

### *iv. Bernalillo County Parks, Open Space, Trails Master Plan (POST), 2003*

The POST is the most recent plan (2003) and it articulates Bernalillo County's goals and objectives for the open space program. The POST establishes a Vision and Mission statement for the Bernalillo County Open Space Program. The POST also delineates action items for Bernalillo County Open Space properties, including Carlito Springs. A sampling of pertinent OSAC goals and objectives as listed in the POST follows:

- *OSAC Goal 4: Develop management plans for BCOS properties that conserve and enhance natural and cultural resources while providing opportunities for public education and recreation.*
- *OSAC Goal 5: Preserve and enhance water resources on BCOS properties.*
- *OSAC Goal 7: Form partnerships with agencies and community organizations to build BCOS capacity for land management.*



*"The house and cabins are reasons why Carlito Springs has been designated an Open Space Facility." (Photo by Jay Morrow)*

**BERNALILLO COUNTY OPEN SPACE PROGRAM, 2003**

**VISION**

Bernalillo County Open Space is a dynamic network of properties with important natural and cultural resources managed to benefit people, plants, and wildlife by protecting or enhancing view sheds, water resources, wildlife habitat, cultural/historic sites, and prime agricultural land; while providing resource-based recreation.

**MISSION**

To preserve and provide natural areas, cultural resources and resource-based recreation for Bernalillo County citizens. These lands are acquired and managed to conserve natural and cultural resources, provide opportunities for education and recreation and to shape the urban environment.

**OPEN SPACE ADVISORY COMMITTEE (OSAC) GOALS**

These goals were written and approved by the OSAC, a citizen body that advises the Bernalillo County Open Space (BCOS) program. The following goals apply to Carlito Springs:

- Develop management plans for BCOS properties that conserve and enhance natural and cultural resources while providing opportunities for public education and recreation.
- Preserve and enhance water resources on BCOS properties.
- Develop best management practices for all properties.
- Form partnerships with agencies and community organizations to build BCOS capacity for land management.

*v. Cibola National Forest Land and Resource Management Plan  
(as amended 1990 and 1996)*

Carlito Springs abuts the Sandia Mountain Wilderness along its northern and western boundaries. Because of this proximity, the United States Forest Service's Cibola National Forest Land and Forest Resources Management Plan is a document that may have beneficial resource management strategies applicable to Carlito Springs. It is mentioned here as a reference and guide for future decision-making at Carlito Springs. The shared boundary presents numerous challenges and opportunities for future use and management.

**F. Guiding Principles for all East Mountain Open Space (EMOS) Properties**

The EMOSSC has developed the following guiding principles for all nine County and City East Mountain open space properties. The purpose of these guiding principles is to establish a fundamental level of consistency among the sites leading to a more seamless visitor experience.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

### *i. Site Improvements*

Design and install appropriate site improvements by providing boundary protection, trails and other limited improvements that will support a quality visitor experience while largely maintaining the undeveloped character of the Open Space.

### *ii. Natural and Cultural Features*

Protect and enhance significant natural and cultural features by protecting existing ecosystems and developing strategies to minimize damage, protect riparian areas, re-vegetate disturbed areas and minimize the risk of fires.

### *iii. Recreational Activities*

Safely accommodate shared uses by supporting diverse recreational activities such as hiking, mountain biking, and educational activities while minimizing user conflicts and other safety hazards.

### *iv. Educational Opportunities*

Provide diverse educational opportunities to a variety of open space visitors.

### *v. Landowner Cooperation*

Cooperate with adjacent landowners/managers to minimize adverse impacts and promote opportunities for interagency collaboration.

### *vi. Long-term Stewardship*

Support long-term stewardship by developing management partnerships and funding strategies that address long-term property needs.

## II. EXISTING CONDITIONS

### **A. Climate**

Temperatures within the region range from an average low of 10 degrees Fahrenheit (F) in January to 90 degrees (F) in July and August. Temperature extremes vary between -27 to 99 degrees (F).

## **B. Geology**

The bedrock types within the area include limestone, sandstone, claystone, and shale. The New Mexico Bureau of Mines and Mineral Resources Memoir 29 notes that the site sits near the Tijeras Fault. Onsite geology is typical of the East Mountain area, except where the springs are, which has created a large amount of travertine. The house and cabins are built on terraces created from travertine that was quarried onsite (Kelley 1975).

## **C. Topography**

Elevation onsite ranges from 6,300 to 7,000 feet above sea level. The house, cabins, and fish ponds are terraced, preserving the natural topography. There are widely varying slope conditions at Carlito Springs.

## **D. Soil Conditions**

The soil is intermittently moist from December through March and July through September, and driest during the months of May and June with an average soil temperature of 56-59 degrees (F). The site's soil types include Rock outcrop-Orthids complex, the Carlito Springs complex and the Tesajo-Millett Stony Sandy Loam. Terraced conditions at Carlito Springs provide a cross-section of varying soil types (Rich 2000).

### *i. ROF: Rock Outcrop-Orthids Complex*

These soils occur where bedrock materials such as limestone, schist, gneiss, or granite have been exposed at the surface. Runoff is very rapid and the potential for erosion by water is moderate. These soils are typically thin to very thin, and contain large amounts of oversized materials. This soil complex is best used for watershed, recreation, and wildlife habitat (Rich 2000).



*Southern View from Carlito Springs Open Space (photo by Jay Morrow)*

*ii. CAF: The Carlito Complex*

These soils occur along canyon walls where runoff is rapid and the potential for erosion is severe. They are found mainly in areas with 50 to 80 percent slope. These soils are typically very thin and are comprised primarily of clay and silt sized particles. They are conducive to range, wildlife habitat, recreation, and watershed uses (Rich 2000).

*iii. Te: Tesajo-Millett Stony Loam*

These soils occur upon alluvial floodplain surfaces. Runoff is medium and the potential for erosion is moderate. These soils are comprised mainly of sandy and silty gravels, with some intervals of silty sand. They are best used for watershed, wildlife habitat, community development, and range (Rich 2000).

## **E. Hydrology and Water Quality**

Groundwater depth varies from 50-200 feet deep throughout the property. Annual precipitation at the Sandia Ranger Station—the nearest gauging station—is 13.9 inches. Two springs are located on the property and they have been named for convenience and are described as follows:

### *i. Whitcomb Spring*

This spring begins on the property and flows a short distance before returning to the soil. It flows under the Grace Bridge near the old, terraced vegetable and flower gardens. In April 2002, the spring was producing approximately 1.5 gallons per minute (gpm). The riparian area is in good condition with little erosion and adequate vegetative cover and diversity. Water quality is better than the state standard of 10 at 1.6 for nitrates in milligrams per liter (mg/l) and lower than the state standard of .1 at .9 mg/l of phosphorus. Total dissolved substances measured at 283 mg/l. Benthic insects found include caddisflies, midgeflies and crane flies (BCEH,2003).

### *ii. Carlito Spring*

This spring also begins on the property and flows toward Tijeras Canyon. The spring water is piped from its source to a holding tank. It then continues down slope to several constructed ponds. The ponds range in size from 6 to 10 feet in diameter with depths ranging from 2 to 4 feet. In summer 2003, Bernalillo County partnered with Talking Talons Youth Conservation Corps to clean and repair the ponds.

This spring produced 52.9 gpm in April 2002. Nitrates were measured at 2.8 mg/l, far below the state standard and phosphorus was measured at .14 mg/l. Total dissolved substances were measured at 284 mg/l. Benthic insects found include caddisflies, riffle beetles and damselflies. Water quantities have decreased since 1963. A flow rate of 300 gpm (or 1.11 cubic feet per second [cfs]) was documented in 1963, whereas in 2002 the flow rate was measured at 50-60 gpm (.118 cfs) (BCEH 2003).

CARLITO SPRINGS RESOURCE MANAGEMENT PLAN



Carlito ponds in fall (top) and winter (bottom). [Photos by Chip Berglund (t) and Jay Morrow.]



## **F. Plant Communities**

Because of the springs and human influence, Carlito Springs is a unique combination of several plant communities. These plant typologies can be grouped into four plant communities: *piñon-juniper woodland*, *riparian*, *orchard area*, and *non-native ornamental landscape plantings*. The diversity of plants is part of what makes Carlito Springs unique. Bears feed on orchard fruit and nuts during the summer and fall, while water seeps and streams have created dense vegetative corridors and habitat for many other animals. In the spring, daffodils, iris, and tulips welcome site visitors and later, colorful displays of peony flowers add color during the early days of summer. Although these non-native landscape plantings are a small portion of the 177-acre property, they form a large part of the site's identity and contribute greatly to habitat diversity and visitor enjoyment.

### *i. Piñon-Juniper Woodland Community*

Approximately 80 percent of the site is comprised of piñon-juniper woodland. This plant community surrounds the spring, riparian, orchard and ornamental areas with native vegetation typical of the Sandia Mountain Wilderness. This association of plants is found outside of spring reaches.

There are two rare and sensitive plant species that may be found in this area. First is Gypsum Sand Verbena, *Abronia bigelovii*. This is found in both grasslands and piñon-juniper woodlands. Second is the Santa Fe Milkvetch, *Astragalus feensis*. These species have not been located at Carlito Springs, but the property will continue to be monitored for their presence. [See Appendix B for photos of above-referenced plants.]

### *ii. Riparian Community*

The riparian plant type can be characterized as *water influenced* vegetation and includes a wide variety of species. The two springs have created a ribbon of riparian vegetation that winds through the property. The riparian forest type is comprised of both native and non-native vegetation and provides habitat for many wildlife species.

There is one endangered plant species that may be found in this plant type—the Great Plains Lady Tresses Orchid, *Spiranthes magnicamporum*, primarily found in riparian areas less than 7500 feet in elevation. The Lady Tresses Orchid has not been found onsite but it could be

introduced here to expand their populations. [See Appendix B for photos of above-referenced plant.]

*iii. Orchard Community*

The fruit and nut orchards have been included in this section and can be dated back to the early 1900's. English walnut, New Mexican black walnut, nectarines, cherries, wild plums, apples, almonds, apricot, and fig trees were planted. Many of these trees still produce fruit on the property.

*iv. Non-native Ornamental Landscape Plantings*

The homesite, cabins, and surrounding areas are planted with a variety of non-native species. Previous owners, Tony and Gertrude Grenko were enthusiastic gardeners. According to Junile Willingham, daughter of the Grenkos, her father planted 250,000 bulbs around the property's paths and added several fruit and nut trees to the orchards in the late 1940's. The Grenko's greenhouse-grown flowers were award winners. Today, springtime bulbs still greet visitors with colorful blossoms.

**G. Forest Health and Fuel Load Reduction**

Because the piñon-juniper, riparian, and orchard areas grew unmanaged prior to County purchase, a fuel-loading hazard developed that threatens the forest as well as the built environment. Forest cover needs to be thinned to allow a protective buffer zone around the structures as well as prevent catastrophic fire loss of the riparian area. Some fuel-load reduction work was completed by Youth Conservation Corps crews in 2003.

According to a Bernalillo County Fire threat assessment of wildland/urban interface areas (Gober, et al., 2002), this area north of I/40 on the southeastern side of the Sandias has a *high* fire hazard rating (e.g. Casa Loma, Cañoncito, and Cedro Peak). The total number of lots, acreage, and density percentage were the primary factors considered. Prevailing drought conditions during the past six years also contributed to this determination. A Carlito Springs Forest Health Restoration Plan (CSFHRP) has been developed for Carlito Springs with the assistance of the New Mexico State Forestry Division (NMSF). As a result, fuel load reduction measures have been initiated by the County at Carlito Springs (Berglund and Haines 2002).

## **H. Forest Pests**

Forest pests are insects that can degrade the overall plant health of the forest. Signs of slow degradation throughout Carlito Springs and the watershed have been noted and an aggressive effort is being made to curtail the damage caused by these insects. Primary pests are those that attack tree species found at Carlito. Open Space management is particularly concerned about Ips Bark Beetles, Piñon Pitch Nodule Moth, Western Cedar Bore, Twig Beetles, Round headed and Fatheaded Wood Borer (Berglund and Haines 2002).

## **I. Forest Disease**

Forest diseases may affect the health of plants in the forest. Diseases include parasitic plants, fungi, and bacteria. Forest diseases may impact forest systems by degrading productivity of the forest. Open Space management is concerned with the proliferation of Dwarf Mistletoe and True Mistletoe.

## **J. Noxious Weeds**

There are three classes of noxious weeds in New Mexico (class A, B, and C weeds), as defined by the New Mexico State University cooperative extension services publication New Mexico's Invasive Weeds (Lee 1999). Class A weeds are not native to an ecosystem and have limited distribution within the state are placed in this class. Preventing new infestations and eliminating infestations is the highest priority as species in this class are not presently found in the state but are threatening to invade. Class B weeds are not native to the ecosystem and are presently limited to particular areas within the state. Preventing new infestations should be a priority for weeds in this class. Class C weeds are also not native to the state yet are widespread throughout the state. The following noxious weeds are likely found at Carlito Springs: (i) Class A: Hoary cress (*Cardaira draba*), Canada thistle (*Cirsium arvense*), and Scotch thistle (*Onopordum acanthium*); (ii) Class B: Russian knapweed (*Acroptilon repens*), and Musk thistle (*Carduus nutans*); and Class C: Field bindweed (*Convolvulus arvensis*), and Jointed goatgrass (*Aegilops cylindrica*) (Lee 1999). Noxious weeds require long-term treatment in order to effectively control their populations. The County is open to using environmentally sensitive control measures to control weed infestations.

### **K. Wildlife Communities**

Many wildlife species use food and water resources at Carlito Springs. In addition, Carlito Springs provides excellent wildlife habitat for travel and shelter. While there are no endemic species of wildlife found at the site, Mountain Short-Horned Lizards and Southern Prairie Lizards are found here as well as porcupines, deer, cougar, and bear. During autumn, an abundance of black bear frequently search the orchard for fruit. Carlito Springs provides crucial habitat for these large animals during times of drought and this minimizes potential conflicts between humans and wildlife. Carlito Springs provides valuable forage for bears when the neighboring native forest habitat is lacking. Bear visitations typically begin in August and can be a daily occurrence during September and October.

Carlito Springs also offers a unique mixture of habitat for birds because of the presence of water. The combination of riparian, piñon-juniper, and ponderosa pine-oak is an exceptional haven for a rich diversity of bird life. Bird species are abundant and observed native bird species include Stellar Jays, Scrub Jays, Golden Eagles, hawks, and owls. The observation of Juniper Titmouse, Hepatic Tanager, Spotted Towhee, Black-throated Warbler, and Warbling Vireo during breeding season surveys done in 2003 is confirmation of favorable and diverse habitat conditions at Carlito Springs. Of the observed breeding species at Carlito Springs, four are considered conservation priority species by Partners in Flight (PIF).



*Black bear cub in fruit tree at Carlito Springs.*

*i. Federal Endangered Species*

There are two endangered mammal species found in Bernalillo County—the Spotted Bat and the Meadow Jumping Mouse. Spotted Bat habitat includes all forest types found in the area although it occurs less than regularly in this area. A variety of rangeland management activities contribute to the loss of habitat for these mice. The degradation of habitat in areas where these animals live can be detrimental to their populations.

Only two bird species on the endangered list that may be present from time to time at Carlito Springs—the Peregrine Falcon and the Willow Flycatcher. The habitat for the falcon includes wooded areas on or near cliffs. The Willow Flycatchers' primary habitat is riparian woodland areas. The restoration of riparian areas is the most critical component for the recovery for this species.

*ii. State Sensitive Species*

A wildlife biology inventory will be conducted to assess habitat viability for federally listed threatened and endangered species as well as state listed and candidate species of concern. Where appropriate, site improvements will be considered to enhance the viability of the identified species at Carlito Springs. In addition to site-specific enhancements, it is recognized that encouraging wildlife corridors throughout open space properties in the East Mountains, including those owned by the City of Albuquerque, Bernalillo County, and the U.S. Forest Service, is an important consideration in the resource development of all open space properties.

### III. HISTORY AND CULTURE

Because of the incredible water source onsite, the property has a long history of habitation and diverse uses. It has dramatic geographic features—including Ross Canyon—and was a summer campsite for Ancestral Puebloan Indians. Native American archaeological sites have been located but have not been excavated.

Some area residents have said that the lower portion of the property was used as a stagecoach stop to rest and water the horses during the 1800s. Speculation is that the stagecoaches stopped and watered at the bottom of the canyon before proceeding eastward across the plains. The property also has two abandoned gold mines, dug in the early 1900s.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

The property's more recent past includes the imprint of a Union Veteran named Whitcomb who homesteaded the area in 1890 and named it Whitcomb Springs. It is said that Mr. Whitcomb built the first cabins and planted an orchard. Remnants of the old cabin are found in the orchard area.

In 1930, Carl Magee, founder and former editor of the Albuquerque Tribune purchased the property. Carl changed the name to Carlito Springs in memory of his son who had died in a plane crash in 1922. He and his wife, Grace Magee, moved to the area because she suffered from tuberculosis (TB) and she needed to be away from the city during the summer months. In 1931 the property was registered as New Mexico Resorts Inc., and rooms were rented in the cabins. Carl also diverted the stream, built the ponds, stocked them with trout, and sold them to local restaurants. During the next 40 years, the ranch was turned into a boys' home, and a TB sanitarium.

After Carl's death in 1946, Gertrude Grenko inherited the land. She and her husband, Tony Grenko, moved to the property that same year. Tony, a scientist at Sandia Laboratories, was responsible for further terracing the land and expanding the orchard to include cherry, apricot, pear, plum, walnut, hickory, currant, and almond trees. During this period, the property was also used as a retreat for scientists at Sandia National Laboratories. Their daughter, Junile Willingham, inherited the property and later sold it to Bernalillo County in 2000. [Berglund and Haines 2002.]

### IV. LAND USE

#### **A. Onsite Activities**

The County has been working with Talking Talons Youth Leadership Center (Talking Talons), the Youth Conservation Corps, and the New Mexico Forestry Division to clear trails, remove dead and downed wood, clean and reconstruct the water delivery systems and the ponds, and restore the old cabins. There is a caretaker onsite to watch over the premises and assist with maintenance duties. These improvements will help create education and resource-based opportunities and assure visitor safety.

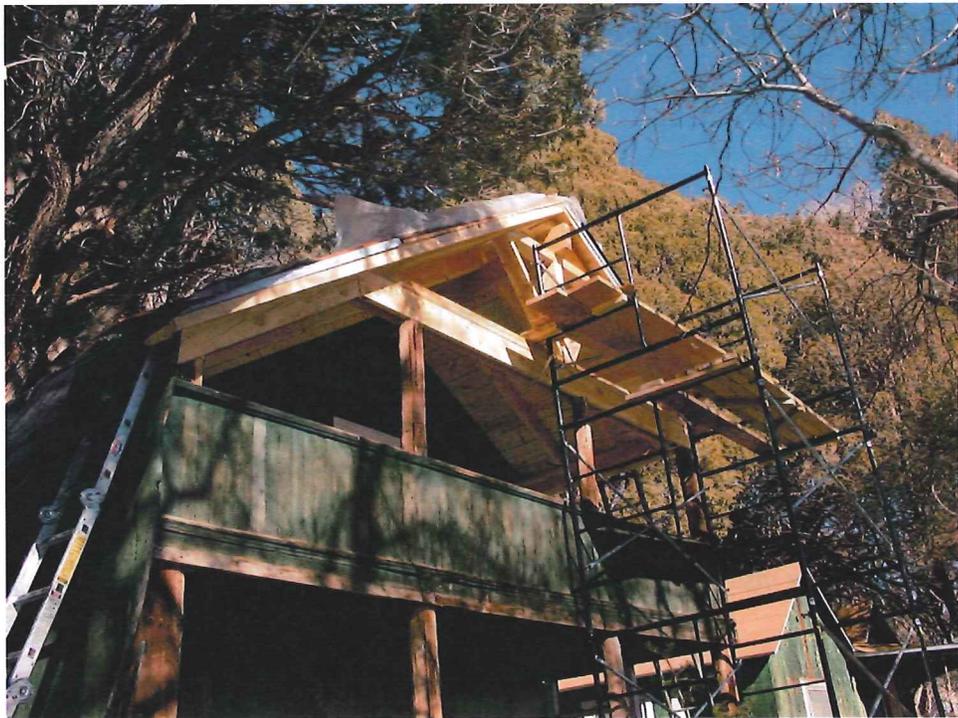
#### **B. Structures**

There are several structures onsite that tell the story of the past. The old tuberculosis sanitarium cabins are in varying condition, and a large, more modern house made of travertine sits

CARLITO SPRINGS RESOURCE MANAGEMENT PLAN



*House (above) and cabin (below) renovations at Carlito Springs (photos by Jay Morrow).*



where the original homesite used to be. The house has been upgraded to meet current code requirements and provides housing for an onsite caretaker.

The cabins require significant repairs to be useable but present many opportunities for adaptive reuse. Bernalillo County has accomplished cleanup of the structures and is now in the stabilization phase. Restoration and cabin improvements will require additional staff and financial resources.

### **C. Resource-based Recreation**

Primary recreational opportunities will be enjoying spectacular views of the Manzano Mountains and the Torrance County horizon, enjoying the stream, ponds, and riparian areas, and picnicking. Wildlife is prominent in the area including black bear and mule deer. Bird species are abundant which makes this area ideal for wildlife viewing. The riparian area also attracts numerous raptor species as well as songbirds. Encounters with rattlesnakes are common and must be considered when visiting the site.

Existing trails are a result of informal use over the years and typically wind throughout the site to access viewpoints. The access road traverses the property and ends at the main house. Secondary roads provide access to the orchard, or end at the spring source. Onsite single-track trails are used more often as wildlife paths.

Older area residents recall hiking to Sandia's South Peak from a trail that originates just below the Grace Bridge at Carlito Springs. This trail has not been formally mapped or listed by the United States Forest Service. An informal trail also exists between Forest Service lands and the trailhead in Canyon Estates. The South Peak Trail travels to the popular Travertine Falls, a seasonal waterfall that varies with annual precipitation rates. Trail construction was conducted onsite during Summer 2003 and 2004 with support from Talking Talons and the Youth Conservation Corps. Trail design and construction techniques were demonstrated by the National Park Service's Rivers, Trails and Conservation Assistance Program. A draft site plan is included on the following page to illustrate planned trail corridors and parking areas.

### **D. Education and Interpretation**

Talking Talons' Leadership Center with support from the Youth Conservation Corps conducted assessments of all nine East Mountain Open Space sites (City and County) to identify

resource based education and interpretation opportunities specific to each site's conditions. The following are their suggestions for Carlito Springs:

*i. The Whitcomb Living History Museum*

Restore one cabin to structural integrity, retaining the existing rustic feel. This cabin, along with kiosks (somewhat in the spirit of the local *Tinkertown Museum*), could display historic artifacts found onsite that speak to its history.

*ii. Carlito's Curiosity Camp*

This immersion-with-nature experience could include elements of adventure and orienteering, ropes courses, conservation practices, cultural history, creative writing, science projects, and astronomy.

*iii. Carlito Springs Fall Harvest Festival*

Area residents and visitors would be invited to this seasonal event inspired by the Carlito Springs orchards. The festival will recruit garden clubs, arborists, winemakers, bakers and more to demonstrate and teach their domestic skills through onsite workshops. Canning, fermenting, cooking, weaving, and preparing for winter are just some of the *down home* pleasures to be featured with local folk music playing in the background. Parking at A. Montoya Elementary School—at the bottom of the mountain—could easily be arranged with tractor shuttles or donkey cart rides to the house and cabins. The whole event could culminate in a pie baking and eating contest that could raise funds for museum and site maintenance or summer camp scholarships for low-income families.

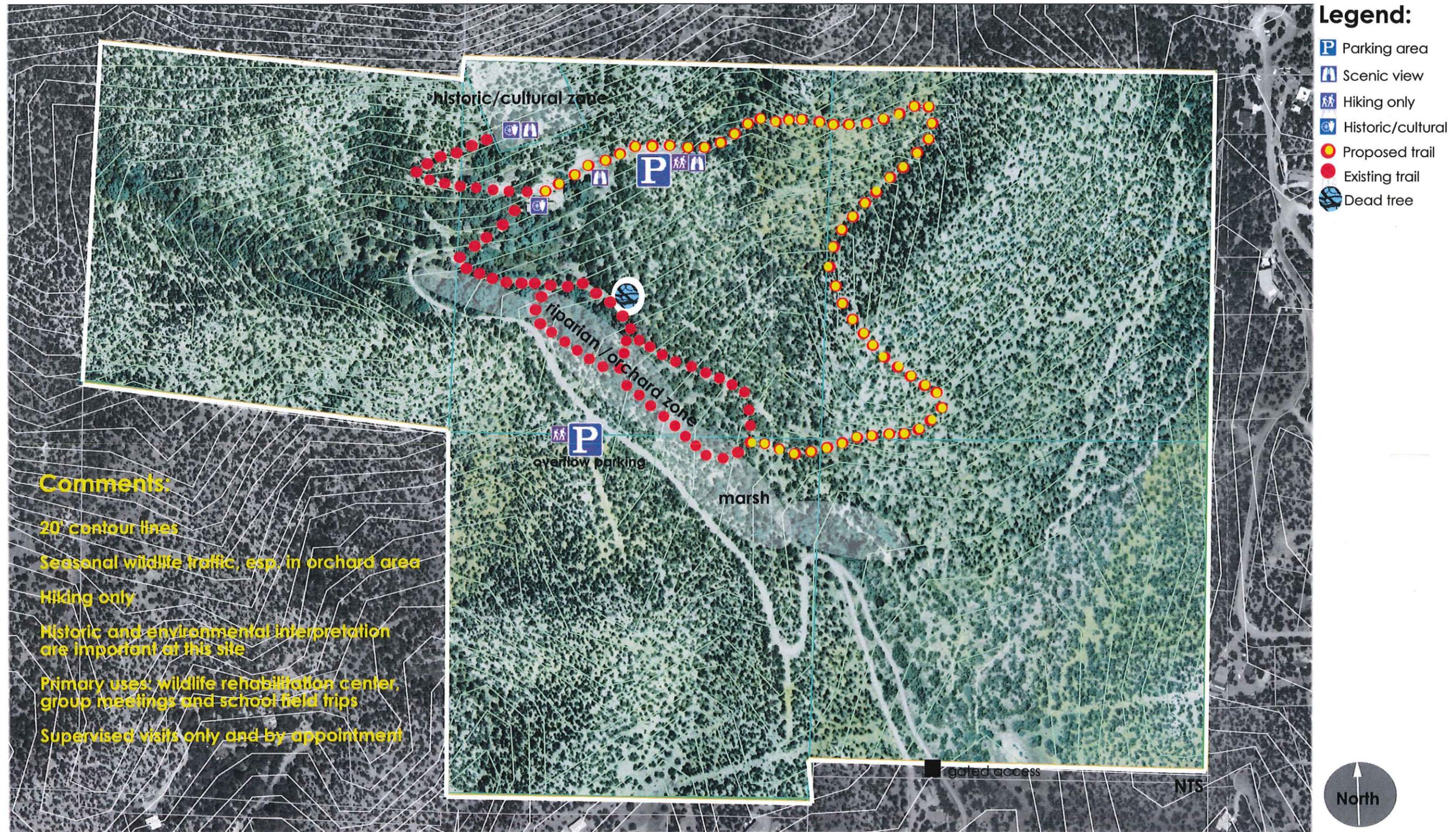
*iv. Sandia Mountain Bear Watch*

Bear Watch is a small yet consistent effort to protect the area's ursine residents through education. Volunteers are willing to provide bear education workshops at Carlito Springs.

*v. Talking Talons Wildlife Rehabilitation Center*

Because of its quiet and remote location, Carlito Springs could serve as an excellent location to facilitate a wildlife rescue and rehabilitation operation.

Map 2. Carlito Springs Site Plan



*vi. Interpretive Viewing Tubes and Frames*

At key lookout points along the trail system, welded steel or recycled timber frames will frame a portion of the vista or landscape that may hold particular geologic or cultural interest.

**E. Access & Parking**

Carlito Springs road enters the property from Route 66 and Old Schoolhouse Road and provides good access to the site. The lower portion of the road is not currently owned by Bernalillo County; however, the property upon which Carlito Springs Road is built has been nominated to the Bernalillo County Open Space Advisory Committee for purchase consideration. The winding dirt road can be difficult to travel in the winter when it snows. Bernalillo County Public Works has improved the road and a small parking area has been widened on one of the terraced areas east of the main house. This area can provide parking for several vehicles but capacity is limited due to the lack of flat land onsite. Vehicle circulation is a challenge and must be addressed as plans for the site develop.

**F. Fencing and Signage**

Fencing and signage are minimal at Carlito Springs. Some of the fencing near the orchard area appears to be the remnants of an old containment area for cattle.

**G. Adjacent Land Use**

Carlito Springs is bordered by single-family residential development to the east (Canyon Estates subdivision) and by single-family residential development to the south. The Cibola National Forest borders the property on the north and west. This portion of the Cibola National Forest was designated as the Sandia Mountain Wilderness area in 1978, and predominant uses are hiking and nature observing, with biking opportunities outside of wilderness boundaries. Recreational activities permitted within Sandia Mountain Wilderness include non-motorized and non-mechanized uses.

**V. COMMUNITY FEEDBACK**

The Steering Committee played an important role in planning efforts by participating in dialogue about management goals for Carlito. Their responses to key questions regarding values,

issues and concerns, and opportunities reflect current and future management goals at Carlito. Their responses are summarized below.

What do you think are the most important **values** at Carlito Springs?

- Delicate riparian environment
- Historical structures and significance
- Four known archeological sites (Indian and Hispanic)
- Excellent water quality and quantity
- Abundance of water for wildlife
- Plant diversity/ Bio-diversity of species
- Good infrastructure (buildings, roads, trails)
- Orchards, ornamental plantings
- Balance
- Wildlife and habitat preservation
- "Important Bird Area" designation

What are the **issues** and **concerns** that need to be addressed?

- Potential liability to County if site is available to public in its current condition
- Secluded location presents vandalism opportunities to structures and natural resources
- All of the built environment may not be salvageable. Evaluate structures accordingly.
- Fire risk
- Trash, historic or otherwise has accumulated on the site. Certain arroyos and hillsides were used as landfills and dump sites
- Non-native species
- How to manage the orchards
- Access road maintenance (level depends on public use)
- Poison Ivy
- Potential conflicts between bears and public
- Liability of human/wildlife interface due to high concentration of predators
- Seasonal closure may be necessary
- Not an appropriate area for biking

What **opportunities** are there at the site?

- Arboretum
- Environmental educational and conservation
- Preserve for wildlife
- Adaptive re-use of structures for youth and community programs
- Adaptive re-use for Talking Talons wildlife rehabilitation center
- Adaptive re-use for East Mountain Historical Society
- Use as a resource oriented research facility
- Link Carlito Springs to Ojito de San Antonio with trails
- Interpretation on Tuberculosis

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Summer Camp for kids
- Retreat facility/special events
- Wildlife Rehabilitation
- Establish area as Important Birding Area (IBA).

### What **information** exists and who has it?

- East Mountain Historical Society has information on deeds, site history, and families that resided on site.
- Talking Talons bird survey
- A book on Tijeras Canyon has information on water
- Lab of Anthropology should have relevant data
- Need a plant inventory (UNM Biology student)
- Need water quality studies

## VI. MANAGEMENT OBJECTIVES FOR RESOURCES, VISITORS, AND STEWARDSHIP

The information compiled in this section is a result of analyzing site baseline data and key issues identified through community input. This section begins with a statement that describes the desired future conditions at Carlito Springs. It is not meant to limit future site opportunities or decisions. This statement was developed with community involvement and input during the two-year planning process.

***"Carlito Springs will be a sanctuary for wildlife and a place for rejuvenation and environmental education. The land will provide water, fruit, nuts, and native habitat for bears, mountain lions and other species. People will come to the site to learn about these animals, habitat conservation, the site's remarkable human history, and to relax. The house will be used for special functions and will have a live-in caretaker. The cabins could be used for educational programming. Recreational opportunities will be compatible with wildlife conservation. Neighboring residents and community organizations will become stewards of the property helping to accomplish forest health and riparian restoration projects. The County will be able to provide leadership that leverages scarce funding and reinforces stewardship partnerships."***

The County will use management objectives to assure that all resources are available to the public, yet cared for in a manner that will sustain them over time. Early in the planning process,

those involved recognized the need for balancing habitat protection with public use. These management objectives try to achieve such a balance. Zones have been developed with specific objectives and strategies in mind. Despite similarities, they may vary considerably from one zone to the next. The management objectives and strategies included in this section are not static and will be reviewed periodically in terms of their effectiveness. If changes are needed, they will be implemented in a timely manner to assure that damage or misuse does not continue unchecked.

### **A. Management Zones**

Management objectives are identified for resource based zones, visitor use, and long-term site stewardship. Because conditions may vary significantly, management objectives may vary from one zone to the next. A description of each of the management zones follows:

#### *i. Historic/Cultural Zone*

This area includes the structures and built environment. The main house, cabins, the pond areas, the spring source, and its outflow from the cistern are all contained within this management zone.

#### *ii. Forest Zone*

The majority of the property falls within this management zone. Much of the property is steeply sloped and contains typical flora found on the rest of the south-facing slopes of the Sandia Mountains.

#### *iii. Riparian/Orchard Zone*

With the abundance of water onsite, this management zone has developed over time. Some of what is found in this area has been the result of human influence and some is more typical of what is found in other riparian environments in the state. The ribbon of deciduous vegetation that bisects the property, as well as the orchard and terraces found in the bottom of the canyon property, are included in this management zone. The riparian zone is also part of a larger watershed system. Contributing to the overall health and functioning capacity of the watershed is an integral component of all responsible resource-based development plans for the site. Watershed protection provisions could include improving existing forest conditions, continuing fuel load reduction measures, controlling invasive plant species in favor of native species, remediating substandard soil, slope, and erosive conditions, enhancing grassland capacity where

appropriate, and evaluating potential land use effects—on and offsite—for subwatershed and riparian zone impacts.

*iv. Archaeological Zone*

This zone is very site specific and will not be shown on any maps. It will be managed with the sole intention of preserving those elements of the past that may be found on the property. Because of the sensitive nature of these areas, the primary management objective will be to limit any impact that could occur on these sites.

**B. Management Objectives and Strategies**

*i. Historic/Cultural Zone Management Objectives and Strategies*

- Trail standards should accommodate the highest-level public access. Less fuel loading adjacent to such trails is appropriate.
- Determine which structures have adaptive re-use possibilities and pursue restoration
  - Restoration work shall be compatible with existing architecture and materials
  - Recycled materials shall be used when possible to maintain the historic integrity of the structures
  - Stabilize cabin(s) for interpretive opportunities.
- Investigate feasibility for a non-profit group to maintain structures and provide public education on themes such as bear, East Mountain history, wildlife rehabilitation, and Carlito Springs history
  - Conduct needs assessment and feasibility study surrounding implementation of a wildlife rehabilitation facility.
- Maintain ornamental gardens for visitor enjoyment and wildlife habitat
  - Continue spring source irrigation
  - Coordinate activities with on-site caretaker.
- Complete a Cultural Landscape Study of the Carlito Springs property.
- Identify and protect archeological sites
  - Minimize visitor impacts and access to archeological sites
  - Enter sites into NM Archeological Records Management Service.
- Protect the Carlito Springs from contamination
  - Monitor water quality and quantity for adverse changes
  - Maintain water flow to ponds and subsequent delivery to Carnuel Creek
  - Limit direct public access to spring source.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Preserve ornamental exotic tree species planted throughout historical/cultural zone
  - Control invasive species.
- Create defensible space from wildfire around all structures
  - Existing corridors and the areas surrounding the built environment should act as firebreaks. Any additional construction and/or maintenance of these areas shall include a fire suppression component.

### *ii. Forest Zone Management Objectives and Strategies*

- Vehicular corridors providing access to the site should act as firebreaks. Any maintenance of these areas shall include a fire suppression component.
  - Remove dead wood from watershed.
- Trail design shall follow accepted backcountry trail standards by USFS or IMBA. Less disturbance and more fuel loading adjacent to such trails is appropriate.
- Re-establish healthy forest conditions throughout the property
  - Implement the Forest Health Restoration Plan
  - Heavily wooded areas should be thinned from the current stocking levels of up to 160 square feet (trunk area) per acre to 40–60 square feet (trunk area) per acre. The trees to be selected to keep are as follows (listed in priority):
    - Alligator Juniper
    - Ponderosa Pine
    - Piñon Pine
    - Rocky Mountain Juniper (Local Priority)
    - One Seed Juniper
  - Appropriate thinning will have the greatest impact on ensuring a healthy forest that is aesthetically pleasing and relatively safe from catastrophic fires
  - Re-growth should be allowed to develop over time. Annual removal of deadwood could augment any annual firewood needs over an extended period of habitation
  - Maintain the rural nature of this area with special attention given to ensuring a healthy balance of forest resources coupled with appropriate fire suppression.
- Inform emergency responders
  - Primary emergency fire response provided by East Mountain Volunteer Fire Crew
  - Inform responders as to open space accessibility
  - Inform responders as to general fuel load conditions onsite
  - Organize interagency workshop to coordinate cooperation response in case of a major fire event.
- Enhance and maintain wildlife habitat
  - Designate and separate wildlife habitat corridors from visitor use
  - Designate the site as an Important Bird Area
  - Complete an inventory of wildlife species
  - Monitor wildlife behavior and activity
  - Encourage wildlife access at key water points.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Inventory plant species on the property
  - Inventory and monitor presence of invasive species
  - Implement volunteer plant removal projects
  - Monitor for possible presence of sensitive plant species
  - Complete inventory of ornamental plant species.

### *iii. Riparian/Orchard Zone Management Objectives and Strategies*

- Existing corridors and access to this area should act as firebreaks. Any maintenance of these areas shall include a fire suppression component.
- Trail design shall not adversely affect water movement or animal migration through the riparian area.
- Rehabilitate historic orchards for wildlife benefit
  - Implement tree pruning to strengthen trees and support bear accessibility
  - Maintain spring irrigation to orchards
  - Propagate additional orchard plantings and consider grafting from existing trees.
- Enhance riparian corridor
  - Maintain water supply to riparian vegetation
  - Enhance riparian vegetation with additional native plantings
  - Monitor and prevent additional site erosion
  - Explore opportunities for growing the Lady Tresses Orchid, an endangered species.
- Develop visitor management programs that protect bird nesting activities and fall wildlife forage activities
  - Some areas shall be closed to the public during certain periods of the year for bird nesting and breeding and during intense bear foraging activity
  - All group activities in this area shall be supervised and monitored to assure that damage to the resources does not occur.
- Invasive species such as sumac and Siberian elm shall be controlled primarily in the riparian and orchard zones.
  - Monitor and prevent over-infestation of invasive species.

### *iv. Archaeological Zone Management Objectives and Strategies*

- No person shall damage, injure, collect, remove or disturb any object of paleontological, archaeological, or historical interest or value located on these lands.
- Existing corridors in these areas shall be eliminated. Any activities in these areas shall have minimal resource impact and include a fire suppression component.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Identify and protect archeological sites
  - Minimize visitor impacts and access to archeological sites
  - Enter sites into NM Archeological Records Management Service.
- Complete a cultural landscape study of the Carlito Springs property according to the National Park Service's Cultural Landscapes Program. This includes defining a site's appropriate landscape typology in addition to an evaluation of the site's integrity and overall ability to convey the story of its development and the condition in which the property endures. [See Appendix E for a list of cultural landscape definitions and typologies.]

### *v. Visitor Management Objectives and Strategies*

Carlito Springs is a natural draw for people seeking quiet refuge from the urban environment. Public access to Carlito Springs is important because it fulfills a goal of the *Major Public Open Space Facility Plan (MPOS)*. Carlito Springs' role as critical habitat for bears and other species requires that recreational use be balanced with natural and cultural resource conservation. This balance means that not all types of recreation are appropriate at Carlito. Appropriate recreational activities include hiking, picnicking, nature walks, research, and other educational activities. Resource appropriate management objectives and strategies include:

- Balance recreational and educational uses with conservation of wildlife habitat and cultural resources
  - Determine the site's natural resource, ecological, physical, facility, and social carrying capacity (Shelby and Heberlein, 1986).
  - Develop baseline standards for monitoring impacts and change at Carlito Springs using LAC models
  - Implement corrective action
  - Minimize human and wildlife conflicts through trail location and design, signage, and education
  - Educate visitors and enforce Bernalillo County Open Space Rules and Regulations
  - Request amendment to Bernalillo County ordinance to strengthen these rules and regulations.
- Provide adequate parking, trails and other facilities as needed for visitor activities
  - Maintain access road as single lane with turn-around on terrace
  - The access road shall serve as a firebreak
  - Post regulations at information kiosk
  - Explore site access and trail development opportunities appropriate for use by disabled visitor.
- Develop an internal trail system that provides recreational and educational opportunities while protecting sensitive site resources
  - Adopt Open Space trail standards for different uses and/or intensities.

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

- Develop interpretive programs and exhibits that explore the site's unique characteristics, history and culture
  - Offer day camp opportunities
  - Plan bear interpretation events
  - Investigate potential for Fall Harvest Festival
  - Develop public art such as bronze bear sculptures.
- Adopt site-specific rules and regulations for visitor use.
- Add signage that says: "No person shall damage, injure, collect, remove or disturb any object of paleontological, archaeological, or historical interest or value located on these lands."
- Pets shall not be allowed at Carlito Springs due to the sensitive nature of the environment and the concentration of activities.  
No
  - No person shall smoke in this area
  - No fireworks are allowed in this area
  - No person shall damage, injure, collect, remove or disturb any object of paleontological, archaeological, or historical interest or value located on these lands
  - Bicycles and equestrian uses are not appropriate in this area due to the sensitive nature of the environment
  - No trapping, hunting, or fishing shall be allowed in this area.
  - There shall be no games or miscellaneous activities in this area without written approval from the Parks and Recreation Department.

### *vi. Site Stewardship Management Objectives and Strategies*

Volunteers have played an important role at Carlito Springs since its purchase in 2000. Many organizations have donated their time to help inventory resources and begin improvements for natural resource restoration and public safety needs. Site stewardship is critical for the continued success of the County's Open Space program. These following objectives will help to assure the success of a sustainable stewardship program.

- Organize a cadre of East Mountain Open Space volunteers
  - Broaden the scope of existing open space organizations to support East Mountain projects
  - Develop consistent communication tools among volunteers, organizations, and land managers.
- Support volunteer initiatives at Carlito Springs in a timely manner
  - Improve efficiency of Bernalillo County response to volunteer requests
  - Identify primary contacts for Carlito Springs and Bernalillo County
  - Collaboratively develop annual work plans considering staff, equipment, and budget needs.

- Develop stewardship projects that significantly improve Carlito Springs and also provide benefits to adjacent landowners.

### **C. Management Method**

The *Limits of Acceptable Change* (LAC) is a management tool that identifies recreational carrying capacity standards for a specific land area. Principally, the LAC process is a means of resolving conflict. It may be thought of as a method for land managers to resolve conflicts between "*managing visitors to provide for the experiences they seek and to deal with the problems of their social and biophysical impacts*" (McCool 1996). The LAC process is most beneficial in situations where (1) stakeholders are willing to establish a hierarchy of natural resource goals, (2) where two or more established goals are in conflict, and (3) where all goals may be compromised to some extent as long as they meet or exceed established standards (Cole and McCool, 1998). Where these conditions can be established, Bernalillo County intends to use the LAC method as a useful strategy for continued planning and implementation of resource-based recreational activities at Carlito Springs. [See Appendix C for more LAC information.]

#### **b. Operations and Maintenance**

The operation and maintenance of Carlito Springs depends heavily on County staff working with community organizations and residents on stewardship projects. Several organizations have expressed an interest in helping the County manage the property. Effective administration of these partnerships will require County staff time.

Maintenance needs for the site range from staff to coordinate forestry-thinning projects, to cabin restoration, structural improvements, and ornamental garden and orchard maintenance. Recognizing the need for increased funding to support operations and management activities at all County open space properties, the County will request a mill levy renewal and increase during the 2006 election cycle. [Estimates for site maintenance are included in Appendix D Action Work Plan.]

## VII. INTERAGENCY COORDINATION

Carlito Springs will benefit from interagency coordination in several ways. Key coordinating partners and issues are listed below.

### **A. United States Forest Service/ Cibola National Forest**

Carlito Springs is bordered by the Cibola National Forest on the north and west sides. The site has potential to provide connector trails to existing social trails in the Cibola National Forest.

Potential trail connections to be evaluated in conjunction with the USFS include:

- Arrowhead Canyon Trailhead to Carlito Springs/ Travertine Falls to Carlito Springs.
- Carlito Springs to old Sandia South Peak trail.
- Connector trails from Carlito Springs to Ojito de San Antonio.
- Carlito Springs to Tres Pistolas (Bernalillo County and City of Albuquerque Open Space property).

### **B. Bernalillo County Parks and Recreation Department, Public Works Division, and the New Mexico Department of Transportation**

Bernalillo County Parks and Recreation (BCPR) and Public Works Division (BCPW) have prepared an East Mountain Trails and Bikeways Master Plan. Adoption of this plan is concurrent with approval of the RMPs in the spring of 2005. The Trails and Bikeways Master Plan attempts to link County- and City-owned open space properties, residential areas, commercial nodes, and lands of the Sandia Ranger District. This will be accomplished through a system of suitable shoulder improvements on State of New Mexico and County roads and hard and soft surface trails either within public rights-of-way or on private properties. The Trails and Bikeways Master Plan has incorporated all County and City open space properties and their respective access points and trailheads identified in each RMP. Continued coordination with BCPR and BCPW shall be maintained as the Trails and Bikeways Master Plan and each RMP are implemented.

### **C. National Park Service/Cultural Landscapes Program**

The Cultural Landscapes Program of the National Park Service could assist with a cultural landscape evaluation of Carlito Springs and help further identify resource analysis priorities, appropriate uses, and potential eligibility of the property for the National Register of Historic Places. This analysis process may show that Carlito Springs has precious and sensitive cultural

landscape qualities that provide a record of how communities and individuals have, over time, adapted to and modified landscapes in the East Mountains.

#### **D. New Mexico Department of Game and Fish**

The New Mexico Department of Game and Fish could provide biological reviews, habitat assessments, wildlife inventories, and baseline studies at all four County EMOS properties. These types of wildlife evaluations may expand our appreciation for the role that any future development—including simple fencing projects—may play in enhancing or degrading wildlife viability at Carlito Springs.

#### **E. New Mexico Forestry Division**

The New Mexico State Forestry Division may be able to offer assistance with determining basal area calculations of the piñon-juniper plant community at Carlito Springs. Basal area is defined as the cross sectional area of the tree at breast height. For example, a tree 16 inches in diameter would have a basal area of 1 square foot. Basal area is calculated to show how trees are distributed on a site. A larger basal area number means that trees are growing closer together, which has a variety of effects on forest health, including higher fire risk, decreased water infiltration, and additional susceptibility to plant and insect diseases.

#### **F. Albuquerque Public Schools and Bernalillo County Community Centers**

Both entities are potential partners for a variety of educational and stewardship projects. A common thread throughout the planning process has been community desire for *educational opportunities* at Carlito Springs. Bernalillo County should form partnerships with both APS School staff and County Community Center staff to initiate curriculum development, student field trips, community events and other educational activities. APS facilities (such as A. Montoya Elementary School) may allow *parking* for large events at Carlito Springs, such as a Harvest Festival. Certain events at Carlito Springs will be dependent on off-site parking due to limited parking capacity onsite and the need to lessen vehicle impacts.

#### **G. Law Enforcement and Emergency Responders**

Trespassing, vandalism, and illegal fishing and hunting have been identified as primary law enforcement issues at Carlito Springs. Currently, the Bernalillo County Sheriff's Department is responsible for responding to emergency calls at all nine East Mountain Open Space properties

(City and County). City of Albuquerque Open Space rules and regulations have been adopted by Bernalillo County as the governing ordinance for its open space properties. As a result, it could be mutually beneficial for the City and the County to cooperatively fund open space ranger personnel dedicated to the East Mountain area. Although funding is currently not allocated to fill such positions, open space planners from the City and the County should begin a collaborative training effort to assist fire, emergency medical personnel, and law enforcement agencies by preparing detailed response plans that predict public use at the properties during the next 5 to 10 years. These response plans should be presented in an interagency workshop format. The following is a list of items to be included in the response plans along with suggestions for improving the implementation of the plans:

- Compile briefing packets that include detailed maps, sites plans, boundary information, aerial photos, and driving directions to all nine Open Space properties.
- Include copies of all relevant City/County Open Space ordinances and USFS rules and regulations.
- Distribute briefing packets to appropriate Bernalillo County Sheriff's deputies, management, and support staff as soon as possible.
- Request City and County information technology departments to enter open space property descriptions and pertinent Global Information Systems information into Map Quest for patrol unit referencing.
- Train site stewards (including neighborhood association and Crime Watch volunteers) in incident report preparation.
- Distribute a comprehensive list of interagency personnel contact information and emergency response telephone numbers.

## VIII. COMMUNITY PARTNERSHIPS

### **A. Open Space Stewardship**

A guiding principle of this Plan is to develop sustainable stewardship practices for East Mountain Open Space. Bernalillo County Open Space does not have the staff or financial resources to develop all of the recommendations identified in this RMP. A key finding and result of this planning process is the need for neighborhood associations, community organizations, trail user groups, business community members, and schools to take an active part in Open Space

stewardship. To successfully administer volunteer activities, the County will need to add an Open Space Coordinator to its staff.

Some community stewardship is already occurring. Examples include Trail Partners performing trail maintenance, East Mountain High School and the Intermountain Conservation Trust addressing watershed restoration concerns, the Carnuel Land Grant Association tackling forest health issues, Talking Talons Youth Leadership committing to environmental education programs, neighbors training as Trail Watch volunteers, the Albuquerque Radio Orienteering Club providing detailed maps, and the *San Antonio Acequia* Association protecting the ditches and historic orchards at Ojito de San Antonio Open Space. These activities should continue with better coordination between land management agencies.

Demonstration projects have been completed that illustrate neighbors and community groups can organize and complete Open Space resource management projects. In March 2003, more than 25 volunteers attended a trail construction and maintenance workshop giving them skills to assess and improve Open Space property trails. In December 2003, more than 25 volunteers learned fuel-load reduction techniques and applied that knowledge on land at San Antonio Open Space. Additional training workshops in orchard trimming, invasive species removal, historical and cultural site preservation, wildlife monitoring, erosion control, forest restoration and other topics will provide Open Space land managers with a cadre of volunteers who can assist with land management and take home skills to better manage their own land. On-going training and support of volunteers is critical for a sustainable stewardship program. Stewardship goals and strategies for East Mountain Open Space are being developed.

## **B. Community Organizations**

Several community organizations have been involved with Carlito Springs and they have contributed technical assistance and volunteer labor to accomplish several projects. Continued coordination with the following organizations will be helpful to the County as it develops capacity for providing recreational and educational activities at Carlito Springs. Neighborhood associations that are close to the site are also listed, as they provide local oversight of the property.

### *i. Canyon Estates Neighborhood Association*

Continue to partner with the neighborhood association. Neighbors may be interested in participating in site stewardship projects, such as an *Adopt a Trail* program.

*ii. Talking Talons (TT) Youth Leadership Program*

Continue to partner with TT Youth Conservation Corps program to accomplish various projects. TT is interested in using site structures for education and wildlife rehabilitation centers. Feasibility of this type of use should be carefully analyzed. The development of a site stewardship program wherein Talking Talons provides organizational leadership and acts a liaison between the community and the County is being considered. Ideally, a minimum of two volunteer oriented stewardship activities should be conducted every year.

*iii. East Mountain Historical Society (EMHS)*

EMHS has collected oral histories about the property's past. The County should continue to work with EMHS on a variety of projects and possibly establish a permanent display of community history in the main house.

*iv. East Mountain Garden Society*

Garden Society members have helped identify plants onsite and may be willing to help the County develop a guided interpretive walk that highlights the property's diversity of plants. Other potential projects include orchard care and ornamental landscape restoration and maintenance.

*v. Carnuel Land Grant and the Carnuel Acequia Association*

Both of these groups have a vested interest in the property because of their past and current relationship to the land. The springs drain to Tijeras Canyon and this feeds the Carnuel *acequia*.

*vi. Thursday Birders/ Partners In Flight*

This group can provide assistance for conducting bird species inventories and helping to create management decisions that sustain bird habitat.

*vii. Albuquerque Amateur Radio Club*

The Albuquerque Amateur Radio Club assisted Bernalillo County's site mapping efforts by producing a detailed site map for Sedillo Ridge using GPS technology in 2003. The remaining County-owned EMOS properties also need to be mapped at this level. It may be possible to procure these services from the Albuquerque Amateur Radio in exchange for access to these sites for Club sponsored events.

IX. CONCLUSION

Bernalillo County purchased Carlito Springs to preserve and protect its natural resources and environmental features as an *Open Space Facility*. In addition, the purchase of the property was intended to preserve archeological resources and to provide outdoor recreation and education opportunities for residents and visitors to Bernalillo County. The purpose of this Resource Management Plan is to provide a roadmap to achieve these original goals in addition to the management objectives and strategies agreed to by community stakeholders during the two-year, comprehensive planning effort.

Bernalillo County Parks & Recreation and its Open Space staff would like to offer a sincere and well-deserved *thank you* to all of the concerned citizens who have generously participated throughout this process. In addition, it wishes to extend an open invitation to all Bernalillo County residents—especially those living in the East Mountains—to actively engage in the implementation of this RMP. The County, along with the local community, can now move forward to the next phase of planning and implementation at Carlito Springs with renewed commitment and a common vision.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Carl "Chip" Berglund, Park Administrator  
Bernalillo County Parks & Recreation Division  
111 Union Square  
Albuquerque, New Mexico 87102  
Telephone: (505) 314-0400

## CARLITO SPRINGS RESOURCE MANAGEMENT PLAN

### REFERENCES

- Cordell, Linda S., Editor. 1980. Tijeras Canyon: Analyses of the Past. (Albuquerque, New Mexico, The University of New Mexico Press).
- Kelley, V. C., and S. A. Northrop. 1975, reprinted 1982, 1995. *Geology of Sandia Mountains and vicinity, New Mexico*. (Socorro, New Mexico, New Mexico Bureau of Geology and Mineral Resources).
- Rich, Susan, Editor. 2000. Soils of the Greater Albuquerque Metropolitan Area. (Albuquerque, New Mexico, Ciudad Soil and Water Conservation District).
- Bernalillo County Environmental Health Department, Internal Report, 2003.
- Gober, Chris, Frank Barka, and Karen Lightfoot. Wildland Urban Interface Area Inventory Assessment. New Mexico. 2002.
- Berglund, Carl, and Todd Haines. 2002. *Carlito Springs Forest Health Restoration Plan*. (Albuquerque, New Mexico).
- Lee, Richard. 1999. *New Mexico's Invasive Weeds*. (Las Cruces, New Mexico, New Mexico State University Cooperative Extension Service.)
- Shelby, Bo, and Thomas A. Heberlein. 1986. *Carrying Capacity in Recreation Settings*. (Corvallis, Oregon, Oregon State University).
- McCool, Stephen F. 1996. *Limits of Acceptable Change: A Framework for Managing National Protected Areas: Experiences from the United States*. (Paper presented at Workshop on Impact Management in Marine Parks, sponsored by Maritime Institute of Malaysia, August 13-14, 1996, Kuala Lumpur, Malaysia).
- Cole, David N. and McCool, Stephen F. 1998. *Limits of Acceptable Change and Natural Resources Planning: When is LAC Useful, When is it Not?* (Proceedings—Limits of Acceptable Change and related planning processes: progress and future directions, May 20-22, 1997, Missoula, Montana).



## APPENDIX A



TABLE 2-3.  
PERMISSIVE AND CONDITIONAL USES IN MAJOR PUBLIC OPEN SPACE

Purpose	Open Space Preserve	Protected, Undeveloped Open Space	Open Space Facility	Open Space Trail	Special Use Area
<p><b>Permissive Uses</b></p> <p>Protection of critical habitat and cultural resources from impact of human development; scientific study and education.</p> <p>Fencing up to 6' high</p> <p>Active management for benefit of wildlife and vegetation.</p> <p>Primitive trails</p> <p>Drainage structures necessary for resource protection, management of on-site or historic flows.</p>	<p>Protection of natural resources while providing back country recreational experience.</p> <p>Fencing up to 6' high</p> <p>Active management for benefit of wildlife and vegetation.</p> <p>Primitive trails</p> <p>Trails - Unpaved</p> <p>Hiking, equestrian and mountain biking</p> <p>Wheelchair accessible</p> <p>Unimproved service roads</p> <p>Max. 25 space parking lot</p> <p>Paved access to parking</p> <p>Bus stop shelters, Bike shelters</p> <p>Drainage structures necessary for resource protection, management of on-site or historic flows.</p>	<p>Serves regional need for environmental education and informal recreation in a natural setting; provides access areas in a open space. Protects resources by concentrating use.</p> <p>Fencing up to 6' high</p> <p>Active management for benefit of wildlife and vegetation.</p> <p>Primitive trails</p> <p>Trails - Unpaved</p> <p>Hiking, equestrian and mountain biking</p> <p>Wheelchair accessible</p> <p>Trails - Paved</p> <p>Bicycle, wheelchair accessible</p> <p>Interpretive Trail</p> <p>Picnic areas (Tables)</p> <p>Drinking water, restrooms</p> <p>Trash receptacles</p> <p>Max. 25 space parking lot</p> <p>Paved access to parking</p> <p>Bus stop shelters, Bike shelters</p> <p>Drainage structures necessary for resource protection, management of on-site or historic flows.</p>	<p>Links to urban hiking, bike and equestrian trail system; linear open space.</p> <p>Fencing up to 6' high</p> <p>Active management for benefit of wildlife and vegetation.</p> <p>Primitive trails</p> <p>Trails - Unpaved</p> <p>Hiking, equestrian and mountain biking</p> <p>Wheelchair accessible</p> <p>Trails - Paved</p> <p>Bicycle, wheelchair accessible</p> <p>Interpretive trail</p> <p>Max. 25 space parking lot, Paved access to parking</p> <p>Picnic areas</p> <p>Bus stop shelters, Bike shelters</p> <p>Drainage structures necessary for resource protection, management of on-site or historic flows.</p>	<p>Unique function within network</p> <p>None</p>	
<p><b>Conditional Uses Requiring Site Development Plan Approval</b></p>	<p>Public utility structure, existing utility easement pursuant to an approved Resource Management Plan, Master Development Plan and/or Site Development Plan.</p> <p>Roads other than unimproved service roads.</p> <p>Drainage structures other than those necessary for resource protection.</p>	<p>Natural amphitheater</p> <p>Visitor center</p> <p>Interpretive center</p> <p>Public utility structure, pursuant to an approved Resource Management plan and site development plan.</p> <p>Parking lot with more than 25 spaces.</p> <p>Non-permissive uses defined in Resource Management Plans, Master Development Plans and/or Site Development Plans.</p> <p>Drainage structures other than those necessary for resource protection.</p>	<p>Interpretive center</p>	<p>Uses defined in Resource Management Plans, Master Development Plans and/or Site Development Plans.</p>	

\* Conditional uses that are not related to an MPOS purpose are considered to remove land from the MPOS Network. To mitigate this loss, the requesting agency must replace the land lost to the MPOS Network with land equal in area to that removed from the network. Land to replace lands acquired through the National Recreation Public Purposes Act and the Land and Water Conservation Fund are subject to Federal requirements. All other replacement lands must be approved by the OSAB and planning commissions as part of site development plan approval.



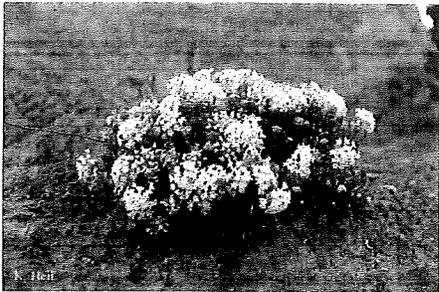
## APPENDIX B



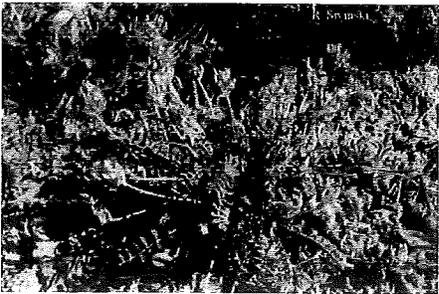
## RARE AND ENDANGERED PLANTS



Great Plains Lady Tresses Orchid, *Spiranthes magnicamporum*



Santa Fe Milkvetch, *Astragalus feensis*



Gypsum Sand Verbena, *Abronia bigelovii*



## APPENDIX C



# Limits of Acceptable Change and Natural Resources Planning: When is LAC Useful, When is it Not?

David N. Cole  
Stephen F. McCool

**Abstract**—Limits of Acceptable Change (LAC) was originally formulated to deal with the issue of recreation carrying capacity in wilderness. Enthusiasm for the process has led to questions about its applicability to a broad range of natural resource issues—both within and outside of protected areas. This paper uses a generic version of the LAC process to identify situations where LAC can usefully be applied and situations where it cannot. LAC's primary usefulness is in situations where management goals are in conflict, where it is possible to compromise all goals somewhat, and where planners are willing to establish a hierarchy among goals. In addition, it is necessary to write standards for the most important (constraining) goals—standards that are measurable, attainable, and useful for judging the acceptability of future conditions.

Limits of Acceptable Change (LAC) and related processes have been widely embraced as innovative and useful frameworks for dealing with recreation management issues in wilderness (McCoy and others 1995). Consequently, there has been considerable enthusiasm expressed about applying these systems outside wilderness and to issues other than recreation. The utility of LAC-like frameworks outside wilderness has already been demonstrated. Development of the VERP process demonstrated that LAC concepts can be applied in the frontcountry of National Parks (Hof and Lime, this proceedings). LAC-type processes have also been used to deal with issues other than recreation, although these processes are seldom referred to as a LAC process.

Given that LAC has been extended beyond recreational carrying capacity issues in wilderness, the question to address is under what conditions is the LAC framework useful and under what conditions is it not useful? To answer this question, it is critical to define the LAC process in more generic terms than Stankey and others (1985) did in their original formulation of the process. The workshop participants agreed that the generic process described in Cole and Stankey (this proceedings) represented the LAC process conceptually.

In: McCool, Stephen F.; Cole, David N., comps. 1998. Proceedings—Limits of Acceptable Change and related planning processes: progress and future directions; 1997 May 20-22; Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

David N. Cole is Research Biologist, Rocky Mountain Research Station, P.O. Box 8089, Missoula, MT 59807. Stephen F. McCool is Professor, School of Forestry, The University of Montana, Missoula, MT 59812.

## A Generic LAC Process

In brief, the LAC process involves the following six steps. Refer to Cole and Stankey (this proceedings) for more detail and an illustration of how this six step process was used to deal with the recreation carrying capacity issue.

Step 1. Agree that two or more goals are in conflict. The LAC process is fundamentally a means of resolving conflict. Goals conflict whenever it is impossible to simultaneously optimize conditions for all management goals.

Step 2. Establish that all goals must be compromised to some extent.

Step 3. Decide which conflicting goal(s) will ultimately constrain the other goal(s). In other words, a hierarchy of goals must be established. If there are multiple constraining goals, either these constraining goals cannot conflict with each other or it must be possible to establish a hierarchy among the constraining goals.

Step 4. Write indicators and standards, as well as monitor the ultimately constraining goal(s). Indicators must be measurable and standards must be attainable. They also must be useful for judging the acceptability of future conditions. It is important to develop monitoring protocols and field test them to make certain that indicators can be measured.

Step 5. Allow the ultimately constraining goal(s) to be compromised until the standard is reached. The process of balancing conflicting goals begins by allowing the most important goal(s)—the one(s) for which standards have been written—to be compromised somewhat. Standards define the maximum amount of compromise that will be tolerated.

Step 6. Compromise the other goal(s) so standards are never violated.

## Situations in Which LAC is Useful

By understanding the details of the process just outlined, it becomes easier to assess what conditions must apply if the LAC process is to be useful. By working through the six steps, it is possible to assess whether or not LAC is likely to apply in any given situation. As an example of a situation where LAC was useful, consider the approach adopted by local government in Missoula, MT, to deal with concern about pollution from wood burning stoves. The approach developed is fundamentally a LAC process, although it was not referred to as such and it deals with an issue other than recreation on lands outside wilderness.



In Missoula, wood burning stoves are a popular method of heating houses. However, in the winter the city is prone to temperature inversions that trap cold air in the valley bottom. Pollution, in the form of excessive particulate matter, is a common problem when this occurs. Local government used a LAC-like process to deal with this situation. The six steps can be used as a framework for describing what they did.

Step 1. The two goals that are in conflict are (1) allowing Missoulians to heat their homes with wood and (2) maintaining healthy air quality. Neither goal can be optimized without compromising the other goal.

Step 2. The decision was made to compromise each goal to some extent. Alternatively, wood stoves could have been banned entirely (optimizing the air quality goal) or it could have been decided that wood burning would be allowed regardless of air quality (optimizing the goal of being free to use wood stoves). If either of these decisions had been made, a LAC-type process would not have been necessary.

Step 3. The decision was made that maintaining healthy air quality would ultimately constrain freedom to use wood stoves. If such a goal hierarchy had not been established (if the goals of healthy air and freedom to use wood stoves were considered equally important), a LAC-type process would not have worked. Some other means of compromising between goals would have been necessary.

Step 4. The indicator selected was amount of particulate matter in the air and a quantitative standard was written that prescribes a maximum acceptable level of particulate matter in the air. This indicator is measurable and the standard is attainable.

Step 5. Missoula residents are allowed to use their wood stoves—and degrade air quality—as long as the particulate matter standard is not exceeded.

Step 6. When the particulate matter standard is exceeded, or in danger of being exceeded, use of wood stoves is prohibited.

This illustrates how the LAC framework is applicable to a number of issues other than recreation management. The first four steps of the generic LAC process suggest four conditions that must apply if the LAC process is to be useful. First, there must be at least two conflicting goals. Second, there must be a willingness to compromise all conflicting goals. Third, there must be a willingness to consider one or more of the conflicting goals to ultimately constrain other goals. Fourth, it must be possible to write measurable and attainable standards that quantify the minimally acceptable state of the ultimately constraining goal(s).

Another requirement of standards—if LAC is to be used—is that they must be useful for judging the acceptability of future conditions. This should be possible in situations where the preferred conditions of the attribute for which the standard is being written is either unchangeable or subject to direct measurement. For example, in the case of concern about the invasion of exotic species in protected areas, the desired state of “no exotic species” will be as applicable in the future as it is today. Because this desired state is unchangeable, it provides a meaningful reference for any standard written to accept a limited degree of exotic invasion. A standard, such as “no more than 10 percent of the area occupied by exotic species,” is measurable, presumably attainable, and a meaningful basis for judging acceptability

in the future. For many issues of concern, preferred conditions are relatively unchangeable.

When the preferred conditions of an attribute changes over time, LAC standards can still be written as a maximum deviation between existing and desired conditions, if those conditions can be measured both now and in the future. For example, consider the case of standards to address recreation impact on vegetation at campsites. A meaningful standard cannot be written for vegetation cover on campsites, because the preferred vegetation cover is variable from year to year, as well as from site to site. Instead, a LAC standard can be written as “no more than 50 percent vegetation loss on any campsite.” This can be assessed by measuring vegetation cover on both campsites and neighboring undisturbed sites (indicative of conditions on the campsite prior to use). Although vegetation cover changes over time, the acceptable deviation between existing and desired conditions is constant. Such a standard will provide a meaningful measure for judging future acceptability. Standards based on deviations between impacted places and undisturbed reference sites should be possible to develop wherever impacts are localized, leaving some places undisturbed.

## Situations in Which LAC is Not Useful

---

The first four steps of the generic LAC process are also useful in identifying situations in which LAC is not useful.

Step 1. If there is no conflict between goals, there is no need for a LAC process. In many recreation areas, for example, a common management goal is to have high quality interpretive displays. Attempts to maximize the quality of interpretive displays are not likely to conflict substantially with other goals of the recreation area. Consequently, LAC concepts do not help with that portion of recreation planning that deals with interpretive displays. For many aspects of recreation planning (for example, trail maintenance, sign policies, provision of toilets, and so on) there is little conflict between goals and, therefore, no need for LAC. The same is undoubtedly true of many nonrecreational situations.

Where there is no conflict, planners should simply define desired conditions and implement management actions to progress toward that desired state. It might also be worthwhile to monitor progress and even to write a standard that defines minimally acceptable progress toward the desired state. However, such a standard is not a LAC standard. It is a management performance standard—not a standard defining a compromise between goals. Consequently, once minimally acceptable conditions are met, there is no reason not to implement actions to progress further toward the desired state.

Step 2. If there is conflict between goals, but one of the goals cannot be compromised, a LAC process is not appropriate. For example, there may be situations where recreation use threatens prehistoric sites and there is zero tolerance of disturbance at these sites. In this case, the goals of allowing recreational access to prehistoric sites and avoiding disturbance of those sites are in conflict, but the site disturbance goal cannot be compromised. Many other examples exist—both in recreation planning and planning for issues other than recreation—where there is zero tolerance or ability to



compromise and, therefore, LAC is an inappropriate planning framework. In these situations, managers should state the desired condition for the goal not subject to compromise and do whatever is necessary to avoid compromising that goal.

Step 3. If managers cannot establish a hierarchy of goals, in which some goals constrain others, LAC will not work. This hierarchy of goals is necessary because standards must be written for the constraining goal(s)—and this goal only. If standards were written for all conflicting goals it would create situations where one or the other set of standards would be violated and could not be brought back into compliance without violating the other standard.

This is the reason standards were not written for managerial conditions in the original application of LAC to wilderness recreation, even though “unconfined” experiences are important in wilderness. Although it might be desirable for visitors to remote, near-pristine places to never contact a ranger patrol, it might be necessary for rangers to patrol these areas to keep them near pristine. If standards were written that prescribed both near-pristine conditions and lack of ranger contact, management would have to decide which standard to violate. In the original application of LAC to recreation management in wilderness, it was assumed that preservation of conditions should constrain managerial conditions as well as freedom of access and freedom from restrictions. Consequently, standards were only written for this most important goal—the preservation of natural conditions and solitude in wilderness.

Step 4. Even for management issues for which there is conflict, room for compromise, and a hierarchy of goals, the LAC process can only be applied if it is possible to write measurable and attainable standards that quantify the minimally acceptable state of the ultimately constraining goal. Qualitative standards may suffice but only if it is possible for different individuals to agree on whether or not standards are being violated. We simply do not have the experience to judge whether qualitative standards are totally unacceptable or merely inferior to quantitative standards.

As noted earlier, LAC standards do not appear to be useful in situations where the desired state of the attribute for which standards are to be written is both changeable and impossible to measure. This is a common situation where the issue of concern is the effect of a pervasive (as opposed to localized) threat on natural ecosystems. For example, we might wish to limit the adverse effects of air pollution on tree growth rates by writing a LAC standard limiting declines in tree growth rates. However, we know that desired tree growth rates in the future will differ unpredictably from those that exist today, due to natural climatic oscillations. Moreover, desired growth rates (those occurring in the absence of air pollution) will be impossible to measure because all trees will be affected by air pollution in the future. This leaves us with a few options for developing standards, but all options have drawbacks. Refer to Merigliano and others (this proceedings) for further discussion of these options.

## Conclusions

---

We conclude that the LAC process has widespread applicability to issues other than recreation management and in places other than protected areas. In protected areas, LAC can be useful in dealing with management of a range of threats to resource conditions that can be considered either desirable or acceptable as long as they do not cause *too much* impact. LAC may be even more widely applicable outside protected areas than within protected areas. Outside protected areas, naturalness is not such a critical goal. Consequently, it is more acceptable to define standards in static terms and be content to achieve those conditions. However, because there may be much less agreement about goals and their relative importance (Brunson, this proceedings), LAC may be more difficult to implement outside protected areas.

We also conclude that the LAC process is not a useful framework for dealing with all of the issues that must be dealt with in wilderness and park recreation management planning. Many recreation management and visitor experience quality issues do not involve conflict or compromise. Examples include the quality of interpretive displays, trail maintenance levels, or the effects of intentional exotic species introductions. Other issues, such as the impacts of recreation on wildlife, do involve conflict and compromise, but the utility of LAC is limited by the apparent impossibility of writing meaningful quantitative standards.

The LAC process should be thought of as a framework for dealing with certain issues that are frequently confronted in the planning and management process. Those issues to which it applies are the particularly sticky issues that require conflict resolution. The LAC process provides a framework for working collaboratively to explicitly define a compromise between conflicting goals. In attempting to decide whether LAC is an appropriate process to use, it might be helpful to answer the following questions:

1. Am I attempting to resolve conflict between several goals?
2. Am I willing to compromise all goals to some extent?
3. Am I willing to establish a hierarchy of goals—decide that some goals will constrain other goals?
4. Is it possible to write measurable and attainable standards that can be useful for assessing acceptability in the future?

The LAC framework, as currently formulated, should be useful if—and only if—all four questions can be answered in the affirmative.

## References

---

- McCoy, K. Lynn; Krumpel, Edwin E.; Allen, Stewart. 1995. Limits of acceptable change: evaluating implementation by the U.S. Forest Service. *International Journal of Wilderness*. 1(2): 18-22.
- Stankey, George H.; Cole, David N.; Lucas, Robert C.; Petersen, Margaret E.; Frissell, Sidney S. 1985. The limits of acceptable change (LAC) system for wilderness planning. Gen. Tech. Rep. INT-176. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 37 p.



## APPENDIX D



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

 **WATER RESOURCES**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE					COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14	
Separate and protect spring source with retention area	BCOS Staff/ TT YCC	\$600	X					Cost will vary depending on design and volunteer availability
Develop educational materials to prevent recreation impacts near spring source	BCOS/ OSD/ Partnerships	\$2000	X	X				Partner with CABQ OSD and other agencies to develop materials.
Monitor water quality and quantity	BC Environmental Health, Partnerships		X	X	X	X	X	Partner with other agencies for additional monitoring and research.
Create wildlife watering area apart from spring source.	BCOS/ TT YCC	\$800	X					Coordinate with YCC or volunteers to construct
Designate high wildlife use areas near water and limit visitor use in these areas	BCOS		X	X	X	X	X	Cost dependent on site design needs to separate visitors and wildlife.
Limit visitor use near sensitive riparian areas	BCOS	\$?	X	X				Cost dependent on site design needs
Develop educational activities around water resources	BCOS & Partners	\$5000	X	X	X			Collaborate with other organizations for design and programming. May require additional staff



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

**WILDLIFE COMMUNITIES**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE						COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14		
Designate wildlife corridors separate from visitor use	BCOS		X	X					Costs depend on site design needs
Enhance buffer areas with maintenance	BCOS Partners	\$3000	X	X					Use native plants in buffers. Design for multiple species use & solicit plant donations
Construct and install bird and bat houses	BCOS Volunteers	\$500	X						Talking Talons YCC may make this a project
Monitor wildlife use of area and compile data on use patterns	BCOS/ Partners		X	X	X	X		X	Coordinate with USFS, UNM Biology and other partners to accomplish
Develop interpretive exhibits and educational materials that focus on the site's wildlife	BCOS/ Partners	\$40000	X	X	X	X		X	Requires staff time to coordinate. Budget is for additional staff, exhibits and learning materials.



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

**PLANT COMMUNITIES**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE					COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14	
Use native plants, such as poison ivy for barriers to sensitive areas	BCOS		X	X	X	X	X	Use to separate human and wildlife use, riparian area where needed
Reduce fuel-loads around structures and onsite according to NMSFD Forest Health Plan for Carlito Springs	BCOS NMSFD Ciudad SWCD	\$15,000	X	X	X	X	X	Complete and adopt Forest Health Plan. Use YCC crews for thinning work.
Control State and County noxious weeds using IPM methods, annually	BCOS, volunteers	\$1000	X	X	X	X	X	Monitor noxious weeds and control species that seriously threaten favorable habitat
Monitor and control Siberian Elm on property and remove all but large habitat trees	BCOS Volunteers	\$500/ year	X	X	X	X	X	Retain large trees and prevent wide propagation
Use fuel-load reduction projects as community outreach and stewardship opportunities	BCOS Volunteers	\$1000	X	X				Build site stewards and community ownership through hands-on projects
Inventory plant species, monitoring for threatened or endangered species	BCOS Volunteers		X	X	X	X	X	Inventory and monitoring results should shape management decisions
Plant native shrubs and trees to increase bird habitat	BCOS Volunteers	\$2000	X	X	X			Work with Thursday Birders and IBA group.



## 10 YEAR ACTION PLAN

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

## HISTORICAL AND CULTURAL RESOURCES

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE					COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14	
Protect archaeological sites by minimizing visitor impacts (includes ruins and other historical sites)	BCOS		X	X	X			Route visitor trails around sensitive sites. Use educational signage and interpretive exhibits at points of interest.
Restore one cabin to original conditions for interpretive use	BCOS Volunteers	\$5000	X					Use cabin as part of "Living History" education
Assess use of onsite structures for interpretive uses	BCOS	Staff time	X					Use of structures should help provide educational programming and site maintenance needs
Develop interpretive exhibits that emphasize the site's history and culture	BCOS Volunteers	Cost included in figure above	X					Coordinate with other groups, e.g. USFS, Talking Talons, to develop exhibits
Use onsite historical materials to construct site gateway and interpretive exhibits	BCOS Volunteers	\$1000	X					Coordinate with other groups and residents as a stewardship project
Document site history by partnering with East Mountain Historical Society and other community members	BCOS Volunteers	\$1000	X					Record site history for interpretive use
Partner with other organizations to secure funding for structural repairs and cultural site conservation	BCOS Partners		X					



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

**RESOURCE-BASED RECREATION**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE					COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14	
Allow appropriate recreation use	BCOS	Cost shown for signage below	X	X	X	X	X	Defined by MPOS Facility Plan and EMOS Planning Process
Determine carrying capacity for visitors and group visits	BCOS	Cost shown in visitor infrastructure	X					Determine group size based on parking capacity and wildlife needs
Provide parking lot facility	BCOS	\$5,000-\$10,000 for gravel lot	X	X				Estimates for paved lot with handicapped spaces are \$50K
Construct and install gateway to site, entry kiosk, trailhead markers and boundary markers.	BCOS Contract	\$600-gateway \$600-trail signs \$1,600-kiosk	X	X				Replacement of vandalized signs may be continual need. (boundary markers already owned)
Install fencing	Contract with CABQ ODS	?	X					BCOS has MOA for fencing with COA OSD
Provide viewshed and wildlife viewing areas	BCOS Contract or Volunteers	Cost dependent on design	X	X	X			



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

** RESOURCE-BASED RECREATION  (continued)**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE						COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14		
Produce and distribute site brochures that emphasize visitor safety and habitat conservation	BCOS	\$500/annual	X	X	X	X	X	Coordinate with neighborhood and community centers for distribution	
Designate recreation trails and maintain. Eliminate "social trails."	BCOS Trail Partners	?	X	X	X	X	X	Use trail location to avoid visitor and wildlife conflicts. Restore duplicate "social" trails.	
Work with East Mountain Open Space Stewardship Committee to care for property and monitor recreation impacts	BCOS NPS EMOS	Staff time Costs	X	X	X	X	X	Provide staff liaison to EMOS as they develop organizational capacity	
Work with adjacent neighborhoods and homeowners to promote responsible recreation			X	X	X	X	X	Begin a Site Steward program with EMOS committee	



**10 YEAR ACTION PLAN**

(Subject to change annually based on availability of work force, funding and changing site priorities)

Action tasks correspond to management objectives identified in the RMP, and have been crafted to address key issues. Action tasks are priority needs identified by the Bernalillo County Open Space Advisory Committee and the Parks Open Space Trails Plan.

**☺ INTERPRETIVE EDUCATION ☺**

ACTION ITEM (Meets Management Objectives in Section VI)	WHO DOES WORK	ESTIMATED COSTS	PROPOSED IMPLEMENTATION SCHEDULE					COMMENTS
			'05-'06	'07-'08	'09-'10	'11-'12	'13-'14	
Coordinate with Partners to secure funding for interpretive education programs	BCOS Partners	?	X	X	X	X	X	
Provide interpretive educational signage at several points: entry to the property, cabin/history interpretation, wildlife, and plants	BCOS Volunteers	Costs included in other categories above	X	X				Interpretive exhibits dependent on educational interest and visitor educational needs
Provide self-guided tours onsite that compliment the above signage	BCOS Volunteers	\$2000	X					Tours should compliment or accomplish educational objectives
Design a "Sabino" curriculum in collaboration with Talking Talons, public schools, and community centers	BCOS Partners	\$2000 plus staff time	X	X				
Coordinate with local schools and other groups interested in using the property for education	BCOS	?	X	X	X	X	X	Contact Albuquerque Public Schools, Talking Talons, and Bernco Community Centers





# United States Department of the Interior

## NATIONAL PARK SERVICE

INTERMOUNTAIN REGION

Intermountain Support Office - Santa Fe

P. O. Box 728

Santa Fe, New Mexico 87504-0728

In Reply Refer to:

H2217(IMSFCNR)

SEP 10 2002

### Memorandum

To: Attila Bality, Rivers and Trails Program

From: Jill Cowley, Cultural Landscapes Program

Subject: Trip Report / Cultural Landscapes Preliminary Evaluation  
East Mountain Open Space Planning – Carlito Springs and Los Manzanares

Thank you for inviting me to join the group of Open Space Advisory council members, country planning staff, UNM students, community representatives and others on the August 28 site visits to Carlito Springs and Los Manzanares, two recently acquired Bernalillo County open space areas in the East Mountains near Albuquerque. Included in this trip report are preliminary evaluation of cultural landscape resources and potential eligibility to the National Register of Historic Places, information on the National Park Service (NPS) Cultural Landscapes Program analysis and evaluation processes, and preliminary thoughts on resource analysis priorities and potential uses.

### Summary

Both areas visited are precious and sensitive cultural landscapes that provide a record of how communities and individuals have, over time, adapted to and modified landscapes in the East Mountains. The history and existing conditions of both landscapes show how the natural environments in which people settle and the structures and plantings added by settlers are interrelated and in some cases interdependent. The key resource is water in both cases. The springs and surface water are the reasons for development of these rare riparian environments and the magnets for use by humans and wildlife. In addition to being critical wildlife habitat, both landscapes are potentially eligible for the National Register of Historic Places, and Determinations of Eligibility (DOE) and preparation and submittal of National Register nomination forms is warranted for both. Given the known and potential sensitivities of resources within these landscapes, resource values (natural and cultural) may take precedence over accommodating outdoor recreation.

### Terms

Various types of cultural landscapes have been identified. I have attached the NPS Cultural Landscapes Program typology definitions for reference. The four types are: historic designed



landscape, historic vernacular landscape, ethnographic landscape, and historic site. The majority of cultural landscapes are a combination of at least two types.

Integrity refers to the ability of the landscape to tell its story, that is, how many landscape patterns and features remain from the period of significance. Condition refers to the state of maintenance or repair of landscape features. A landscape can have high integrity but be in poor condition, and, alternately, a landscape can have low integrity but what features do remain may be in good condition.

### Carlito Springs

The Carlito Springs open space area is a combination historic designed, historic vernacular and ethnographic landscape. Level of significance (national, state, local), degree of historic integrity, and landscape condition need to be determined through analysis and evaluation. This landscape tells the story of how a steep and arid area (the whole open space property) has been developed into a rural "estate". Naturally occurring water has been used to develop a decorative, functional, and horticulturally significant designed landscape, and living areas have been developed to take advantage of natural views. This landscape may provide an example of a thriving riparian community that includes non-native plants.

Additional resource surveys can be completed to supplement existing information. As with all cultural landscapes, I recommend an integrated approach to resource surveys where all natural and cultural resources are considered in relation to each other and in the context of the whole. Rather than working on one kind of resource at a time (e.g., doing a detailed archeological survey, then a detailed plant survey, etc.), this approach takes a broad overview look at how all resources relate together, then focuses on different landscape systems, patterns and features in more detail, as needed. A landscape history is prepared, looking at what changes have occurred in different time periods and describing the evolution of landscape character. Analysis of types of landscape elements (e.g., natural systems, circulation patterns, vegetation, archeological sites, structures, views, cultural traditions) follows, and this analysis identifies what tangible and intangible landscape elements need to be preserved in order to retain significance and integrity. Degree of sensitivity and condition of landscape elements is also defined. I have attached, along with the landscape typology, a handout that shows the different landscape elements, or characteristics, that are considered within the NPS Cultural Landscapes Program. Within this process, especially sensitive resources (e.g., springs, water quality, wildlife) or immediately threatened resources can be given priority as needed within the detailed survey stage. Survey results may indicate the need for certain levels of protection and preservation for different resources.

Likely significant (contributing) landscape elements include: springs and surface water; riparian ecosystem; landform and views; native vegetation and non-invasive introduced plant species; wildlife; stone walls and terracing; systems of water features including trout ponds; orchard; archeological sites; remains of gold mines; roads and paths; structures associated with the period of significance; and small-scale features.

A logical approach to incorporating resource surveys into the overall planning process might be:

- address hazards (e.g., hazardous materials, structural instability of buildings, safety of mine areas, slope stability)
- document existing conditions (e.g., photo survey keyed to site plan)
- resource surveys as described above, with certain resources given priority as needed.



- determine National Register eligibility, and other resource classifications (e.g., T&E species, classified wetlands).
- use resource information in the planning process (e.g., whether to restore the landscape to a previous historic period or preserve and maintain the landscape in its evolved state can be considered along with potential adaptive uses).

As discussed among the group on-site, there are many potential adaptive uses for Carlito Springs. In addition to level of acceptable impact to the riparian ecosystem and wildlife, circulation issues, and other factors, consideration needs to be given to overall landscape character. At present, the rambling, somewhat overgrown and weathered character of the Carlito Springs ranch landscape has value for affording certain kinds of experiences (e.g., a sense of discovery, especially within the historic orchard; a sense of living in a slower, more rural environment) and may be rare in comparison with other historic areas in the Albuquerque area. Care needs to be taken in determining what future landscape character is desired, that is, how much to change existing conditions. Existing and potential hazards definitely need to be addressed, but some thought needs to be given to how much the area is cleaned up, and at what stage cleaning up might take away from the life and specialness of the place. If resource survey and cultural landscape analysis indicates that the area looked much different during the period of historic significance, advantages and disadvantages of restoration can be considered.

#### Los Manzanares

The Los Manzanares open space area is a combination historic vernacular and ethnographic landscape. As with Carlito Springs, survey and analysis are needed to determine level of significance, integrity, and condition. This landscape provides opportunities for continuing and interpreting traditional uses and land management associated with the acequia and orchard, and tells the story of how an area at the edge of wilderness has been adapted to support nearby settlements.

Comments above regarding integrated resource survey, potential application of a cultural landscapes approach to resource survey, importance of overall landscape character, and integration of resource information into the planning process also apply to Los Manzanares. As with Carlito Springs, management of the acequia and orchards would be led by the Community Ditch Association. Collecting oral histories from Community Ditch Association members, community members, and others associated with Los Manzanares would be a valuable research effort here, as it also would be for Carlito Springs.

Likely significant (contributing) cultural landscape elements include: springs, surface water and acequia system; acequia pool interpretive feature; acequia route, character, and traditional management techniques; riparian ecotone, marsh, and meadows; orchard trees and traditional management techniques; archeological sites; wildlife, especially birds; circulation systems including wildlife paths; natural vegetation and non-invasive introduced plants; and any structural remains that have historic or ethnographic significance.

As discussed on-site among the group, there is potential for overuse and inappropriate uses of this landscape due to easy access from nearby roads. While encouraging recreational use within Los Manzanares may be consistent with the history and traditions of this landscape, the need for restrictions on recreational use to minimize disturbance to wildlife and the role of interpretive programs in encouraging appropriate use can be discussed during the planning process. Right now, Los Manzanares has an undeveloped and wildlife-friendly character, and

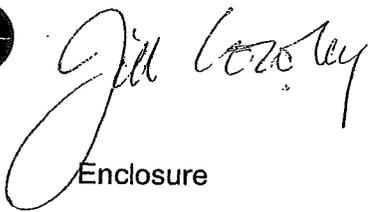


care needs to be taken in considering the addition of any structural elements within this landscape, including interpretive signs.

#### Potential activities for site stewards, and closing thoughts

There are many opportunities for site steward involvement in the survey and planning process. The UNM student group will be working on setting up a resource survey and site analysis process, and stewards can follow on within this process by completing supplemental research and resource documentation. Members of traditionally associated communities may be interested in conducting oral histories of community members and historical document research on landownership and acequia management history. Stewards with specific subject area expertise can lead subcommittees addressing issues such as particular resource sensitivities, adjacent neighborhood association interests and coordination, and National Register nomination. If there is interest in pursuing National Register nomination for either or both of these landscapes, the primary contact would be the State Historic Preservation Office, and I could provide additional guidance and materials on nominating these areas as cultural landscapes. If the county or UNM student group has not already done so, they might want to contact the State Historic Preservation Office for input on potential National Register eligibility of these two landscapes.

Feel free to contact me if you have any questions on the above comments, and I would be happy to provide more information on the NPS Cultural Landscapes Program processes and tools, and on the National Register nomination process for cultural landscapes.



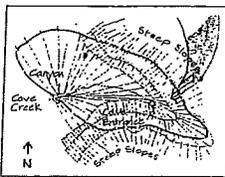
Jill Crowley

Enclosure

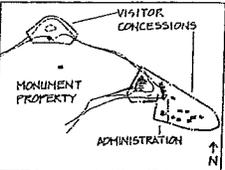


## OVERVIEW OF LANDSCAPE CHARACTERISTICS

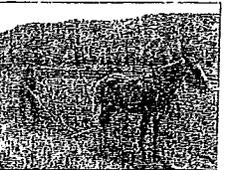
Landscape characteristics include tangible and intangible aspects of a landscape from the historic period(s); these aspects individually and collectively give a landscape its historic character and aid in the understanding of its cultural importance. Landscape characteristics range from large-scale patterns and relationships to site details and materials. The characteristics are categories under which individual associated features can be grouped. For example, the landscape characteristic, vegetation, may include such features as a specimen tree, hedgerow, woodlot, and perennial bed. Not all characteristics are always present in any one landscape. The following landscape characteristics may be documented in a CLR.



**Natural Systems and Features**  
Natural aspects that often influence the development and resultant form of a landscape.



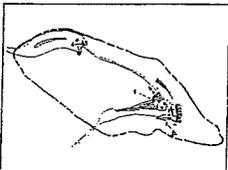
**Spatial Organization**  
Arrangement of elements creating the ground, vertical, and overhead planes that define and create spaces.



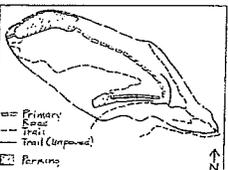
**Land Use**  
Organization, form, and shape of the landscape in response to land use.



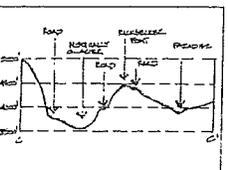
**Cultural Traditions**  
Practices that influence land use, patterns of division, building forms, and the use of materials.



**Cluster Arrangement**  
The location of buildings and structures in the landscape.



**Circulation**  
Spaces, features, and materials that constitute systems of movement.



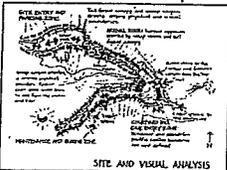
**Topography**  
Three-dimensional configuration of the landscape surface characterized by features and orientation.



**Vegetation**  
Indigenous or introduced trees, shrubs, vines, ground covers, and herbaceous materials.



**Buildings and Structures**  
Three-dimensional constructs such as houses, barns, garages, stables, bridges, and memorials.



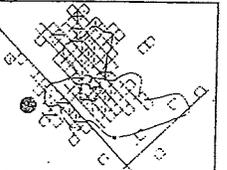
**Views and Vistas**  
Features that create or allow a range of vision which can be natural or designed and controlled.



**Constructed Water Features**  
The built features and elements that utilize water for aesthetic or utilitarian functions.



**Small-Scale Features**  
Elements that provide detail and diversity combined with function and aesthetics.



**Archeological Sites**  
Sites containing surface and subsurface remnants related to historic or prehistoric land use.

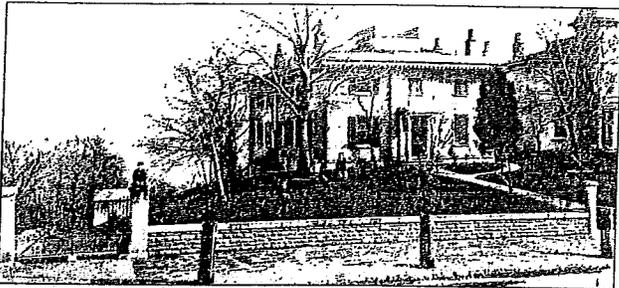


---

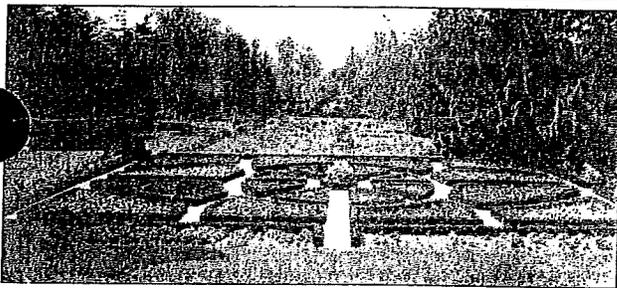
## CULTURAL LANDSCAPE DEFINITIONS

---

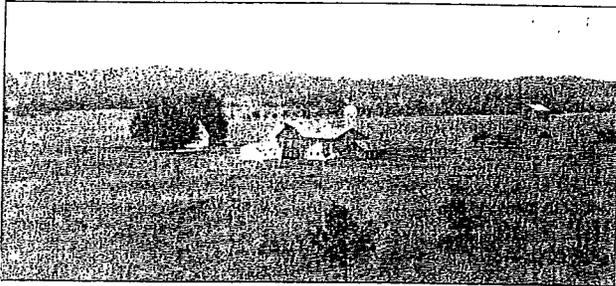
**Cultural landscape:** a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibit other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.



**Historic site:** a landscape significant for its association with a historic event, activity, or person.



**Historic designed landscape:** a landscape significant as a design or work of art; was consciously designed and laid out either by a master gardener, landscape architect, architect, or horticulturist to a design principle, or by an owner or other amateur according to a recognized style or tradition; has a historical association with a significant person, trend, or movement in landscape gardening or architecture, or a significant relationship to the theory or practice of landscape architecture.



**Historic vernacular landscape:** a landscape whose use, construction, or physical layout reflects endemic traditions, customs, beliefs, or values; expresses cultural values, social behavior, and individual actions over time; is manifested in physical features and materials and their interrelationships, including patterns of spatial organization, land use, circulation, vegetation, structures, and objects. It is a landscape whose physical, biological, and cultural features reflect the customs and everyday lives of people.



**Ethnographic landscape:** a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, such as the Martin Luther King, Jr. National Historic Site; New Orleans neighborhoods; the Timbisha Shoshone community at Death Valley; and massive geological formations, such as Devil's Tower. Small plant communities, animals, subsistence grounds, and ceremonial grounds are included.

Photos from top to bottom: William Howard Taft's home, William Howard Taft National Historic Site. (NPS, 1868) The Box Garden on the upper terrace Hampton National Historic Site, published in "House & Garden," vol. 3, January, 1903. Klett Farm, Sleeping Ute National Lakeshore. (John McWilliams, HABS, NPS, 1990) Canyon de Chelly, Canyon de Chelly National Monument. Photograph courtesy of Russell Bodnar, 1988)





