O S C A

MANAGEMENT IMPLEMENTATION PLAN
OPEN SPACE CONSERVATION AREA

Highlands Ranch, Colorado

MAY 28, 2002

Credits

Prepared for Shea Homes and Highlands Ranch Community Association

Shea Homes is J.F. Shea Company's more than twenty-year old specialist in residential home construction and master-planned community development. Shea Homes, which currently owns the Highlands Ranch Open Space Conservation Area, purchased the 22,000-acre Highlands Ranch in 1997 and serves as the community's master developer. (See www.highlandsranch.com)

The Highlands Ranch Community Association provides services and facilities that protect and enhance the quality, value, desirability and attractiveness of property within Highlands Ranch, performs functions for the benefit of the community, and improves the quality of life of Highlands Ranch citizens. The HRCA is funded in part by assessment fees paid by each Highlands Ranch property owner. HRCA is the future owner of the Open Space Conservation Area. (See www.hrcaonline.org)

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Disclaimer

This plan takes an adaptive approach to managing OSCA and was developed primarily with existing mapping. Together these factors mean that more specific management actions can be devised in the future as more is learned about current and future resource conditions at OSCA. In particular, many of the actions will relate to future construction of trails, camping, and other facilities that may not be created for many years — specifically after areas are transferred from the current owners, Shea Homes, to the ultimate owners, the Highlands Ranch Community Association.

Information

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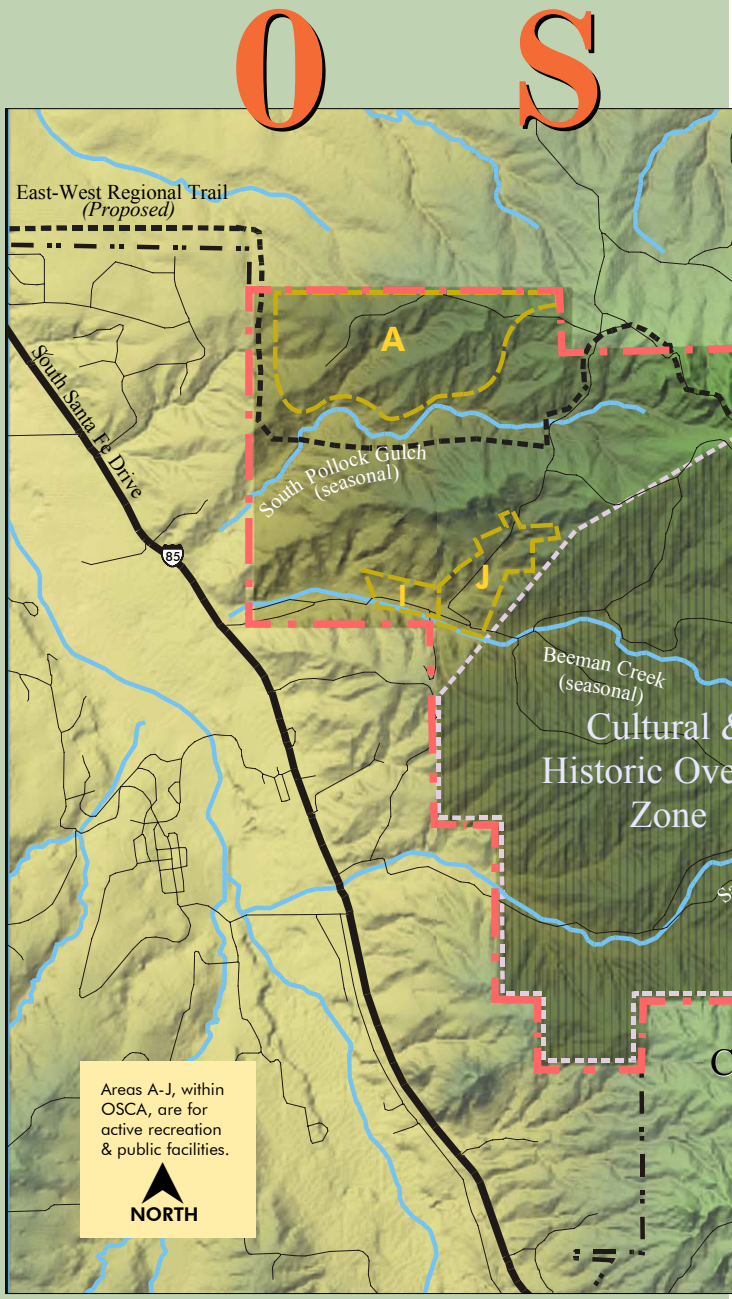
HIGHLANDS RANCH OPEN SPACE CONSERVATION AREA

Management Implementation Plan

THIS PLAN *is a guide to the future use and management of the 7,000 acres set aside for multiple use within the Highlands Ranch Open Space Conservation Area—OSCA. The plan sets the direction for managing wildlife, vegetation, recreation, noxious weeds, grazing and other aspects of OSCA. Also, the general locations and types of potential recreational use, such as trails and camping areas, are identified.*

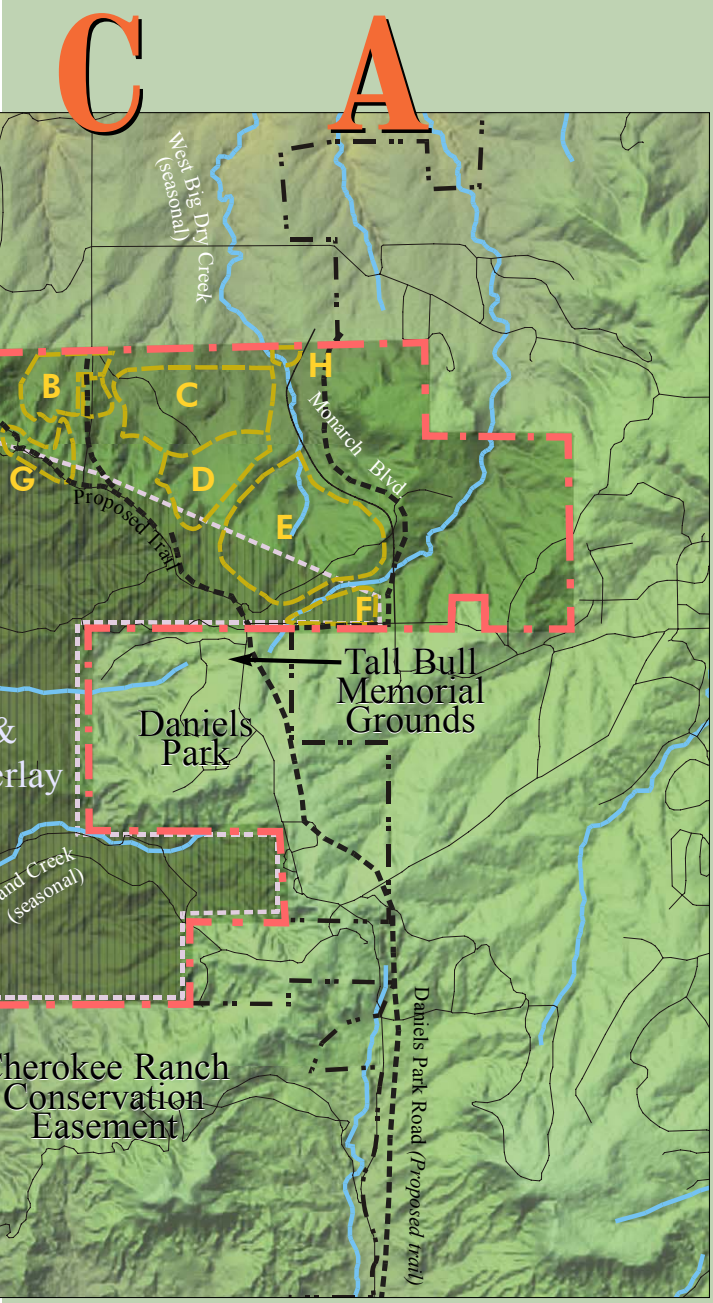


OSCA's Mission

The mission of the 7,000-acre management area within the 8,200-acre Highlands Ranch Open Space Conservation Area is to provide visitors with unprecedented opportunities to enjoy nature near where they live, while protecting and conserving natural, archaeological, historical, and cultural resources for the enjoyment of future generations. OSCA is currently owned by Shea Homes, with ultimate ownership by the Highlands Ranch Community Association. The 1,200-acre balance making up OSCA is set aside for developing recreational and community facilities, per the 2000 OSCA Plan adopted by Douglas County.

Vision for OSCA

The Highlands Ranch Open Space Conservation Area is open space for future recreation, public facilities, wildlife management, and agriculture, including cattle ranching. OSCA is



envisioned as a diverse place where, in some areas, people will be able to participate in high quality educational and recreational activities related to OSCA's natural and cultural resources. Other areas will be managed primarily for wildlife with little or no access. Some portions will also be kept as a working cattle ranch, so that future generations will be able to appreciate this important historical aspect of Highlands Ranch.

In the future, OSCA will be a place that many people will know and love because it will offer experiences with nature they can't find on a similar scale as close to home. OSCA will also mean a great deal to people just because it is there. Even if people don't visit it they will value knowing there is a large area within metropolitan Denver where nature will dominate the landscape.

While access may be very limited at some times and in some locations, visiting the Backcountry at OSCA and seeing elk, deer, raptors, and other animals and birds in a natural setting — and the possibility of seeing signs of black bear and mountain lion — will have a profound impact on many peoples' lives.

In undeveloped portions of OSCA, outside of the Backcountry, there will be trails for hiking, biking, and horseback riding, as well as informal and formal opportunities to learn about nature.

People will come to many parts of OSCA just to take in the views, both those within the site and more distant ones, such as of the Front Range and downtown Denver. Within the site they will see pine-covered hills, unusual rock outcroppings, grasslands, and meadows. Dramatic mountain views include Pikes Peak, Mount Evans, Longs Peak, as well as the rugged foothills that lie at the feet of these 14,000-foot peaks.

It will be evident that people care about OSCA as they become involved as volunteers. Some may participate in "citizen science" programs that aid OSCA managers in learning and caring for OSCA's diverse resources. Other volunteers may lead visitors on "expeditions" through the Backcountry and other parts of OSCA, when and where appropriate.

OSCA FACTS & FIGURES

SIZE: 8,200 acres total, with 7,000 acres for educational, cultural, environmental and recreational uses and 1,200 acres for active recreation and public facilities (Areas A-J on map on Pages 4-5).
ELEVATIONAL RANGE: 5,700 - 6,550 feet
PLANT COMMUNITIES: grassland, shrubland, pine woodland-shrubland, wetlands, cottonwood riparian, herbaceous
WILDLIFE: Includes elk, deer, pronghorn, mountain lion, red-tailed hawk, golden eagle, and wild turkey, among many other species.
EARLIEST USE BY HUMANS: 7,000 years ago
PREVIOUS OWNERSHIP: formerly part of the Phipps Ranch
CULTURAL & HISTORICAL PROTECTION OVERLAY ZONE: The zone covering the southern half of OSCA—south of the dashed purple line above—that acknowledges the cultural heritage of the land.
ADJACENT OPEN SPACES: Daniels Park (Denver Mountain Parks), Cherokee Ranch, Highlands Ranch parks and open space (Highlands Ranch Metro Districts), Tall Bull Memorial Grounds (at Daniels Park)
WILDCAT MOUNTAIN RESERVE: A name sometimes used for OSCA.
WATER WELLS: Distributed throughout OSCA are water wells owned by the Centennial Water and Sanitation District, that supply Highlands Ranch residents.

Q&A

BACKGROUND

What is the OSCA plan already approved for Douglas County?

In June 2000, Douglas County approved a general land-use plan for the entire 8,200 acres that make up OSCA. The current planning effort focuses on the 7,000 acres within OSCA that are set aside for educational, cultural, environmental and recreational uses. This new project is concerned with how these lands are to be used and managed.

Is OSCA publically owned open space?

No, it is privately owned. Currently Shea Homes, the developer of Highlands Ranch, is the owner, but an agreement is in place to transfer ownership of OSCA to the Highlands Ranch Community Association, the master association of property owners at Highlands Ranch.

Who will manage OSCA?

OSCA will be owned by the Highlands Ranch Community Association, and managed by HRCA in association with its partners.

When will OSCA be open to the public?

The first part of OSCA to open to the public will be a portion of Douglas County's East-West regional trail, set to open in June 2002. Other parts of OSCA will open later, as management is in place.

Why is there an historical overlay zone in OSCA?

The Cultural and Historical Protection Overlay Zone within OSCA was created out of respect for the cultural heritage of the land and the close proximity of the Tall Bull Memorial Grounds, in adjacent Daniels Park. Those grounds are used by several groups of Native Americans for important ceremonies.

What is the East-West Regional Trail?

This County-wide trail, which will run through the northern part of OSCA, is the long-envisioned regional trail connecting the Cherry Creek Trail to Plum Creek. It will be constructed and managed by Douglas County.

Will there be a formal recreational park within OSCA?

Yes, Douglas County is planning a 202-acre regional park that will include ball fields and other recreational facilities.

What are the development areas that may be created within OSCA and how do they relate to the management plan?

The approved June 2000 OSCA Plan allows up to 1,200 acres for recreation, institutions, and facilities. These are all located in the northern portion of OSCA. This management plan primarily focuses on the remaining 7,000 acres.




OSCA Management Goals

1. Help make OSCA a premier place for experience-based wildlife observation and outdoor education by managing a major portion of OSCA (the Backcountry) as a place where wildlife thrive and people can experience wildlife, native vegetation, and scenery in a natural setting.

2. Help make OSCA a premier place for outdoor education and recreation by managing a portion of OSCA (Wildcat Mountain Outdoor Education Area) so people can participate in nature-based recreation and education in an appropriate natural setting.

3. Coordinate with organizations interested in conducting environmental education programs in the Backcountry.

4. Manage OSCA to restore and protect habitat linkage areas and wildlife populations within the context of a larger ecosystem.

5. Manage OSCA to restore and maintain native plant communities through the use of Integrated Weed Management.

6. Create diverse opportunities for volunteers to aid in providing visitor programs and in monitoring and managing OSCA.

Management Areas & Actions

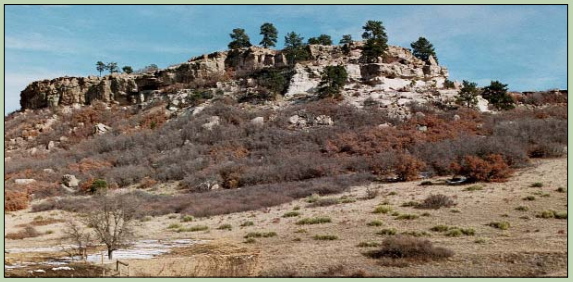
The major geographic focus of this management plan is in these areas:

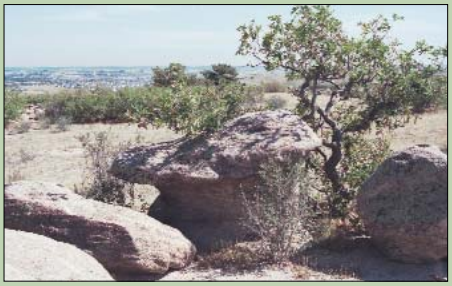
THE BACKCOUNTRY is the 3,659 acres at the southern end of OSCA, managed primarily for wildlife and nature observation. The area is recommended to be open to visitors under carefully controlled conditions. In general, all visitors will enter through the Gateway with a guide (who may be a volunteer). The Plan calls for trails designed for experiencing nature firsthand, and the area is largely managed as a place to be away from urbanization. Visitors will primarily enjoy the area on foot. Occasionally, under carefully managed conditions, mountain bicycling or horseback riding may be allowed if there are no conflicts or impacts to rare plant communities or species and sensitive or erosive soils.

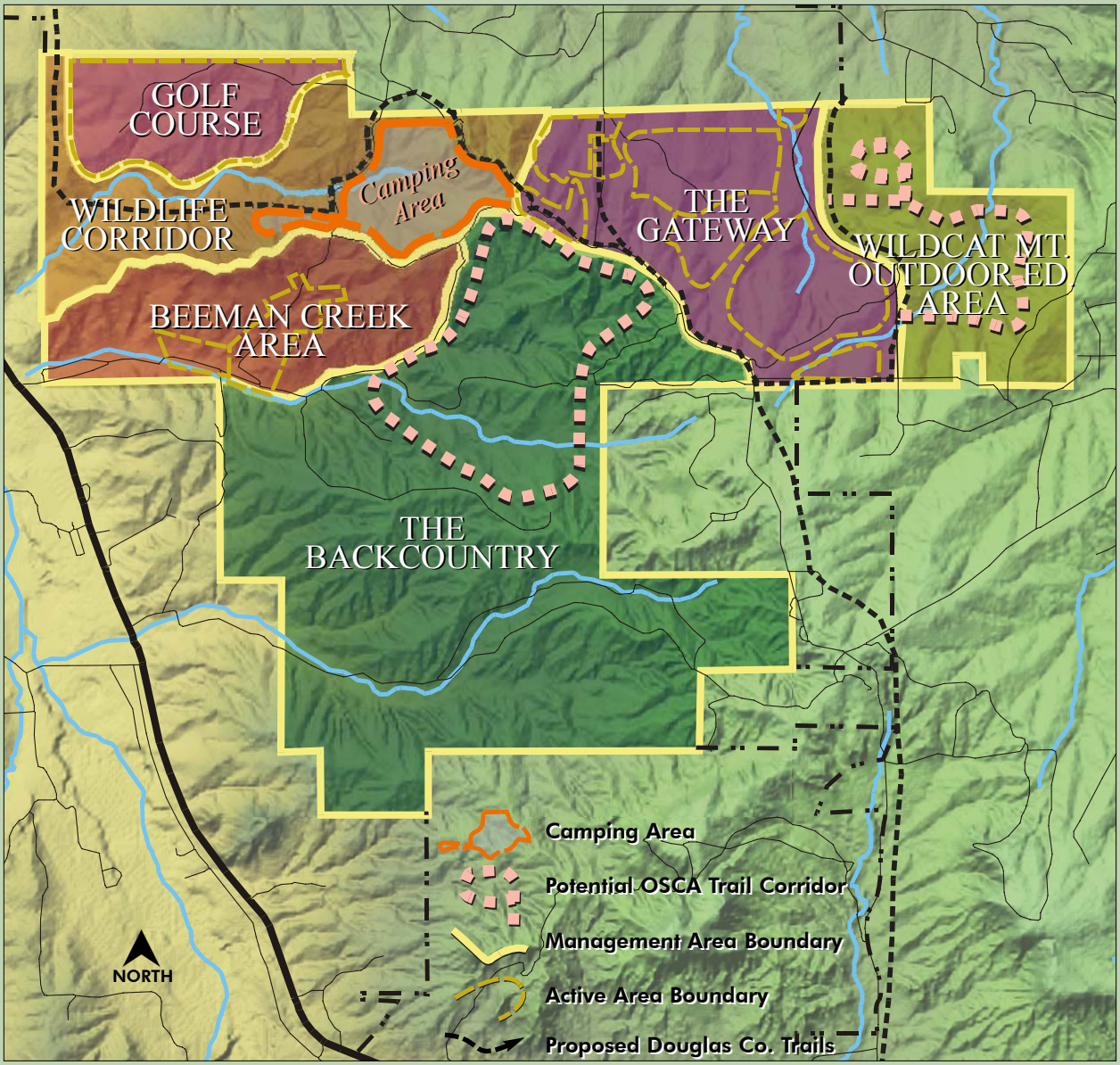
The Backcountry

WILDCAT MOUNTAIN OUTDOOR EDUCATION AREA, is 839 acres at the northeast end of OSCA, including Wildcat Mountain, and bounded by Monarch Boulevard to the west. This is a place to recreate in nature and learn outdoor skills, both informally and formally. Hiking, mountain biking, jogging, horseback riding, and nature exploration will be allowed. The area will have limited accessible from Douglas County's future East-West Trail. While carefully designed trails will take people to the northern edge of Wildcat Mountain — where there are spectacular views toward Denver and the mountains, the cliffs themselves will be off limits to visitors for safety reasons and to protect nesting raptors.

Wildcat Mountain Outdoor Education Area







OSCA Management Areas

THE WILDLIFE CORRIDOR (1,077 acres) is a broad band along the Douglas County East-West Regional Trail as it passes through the western half of OSCA. Outside of the trail right-of-way this area will be largely managed for wildlife and for scenery to be appreciated from the trail. There will be simple camping facilities here, developed for Highlands Ranch residents, and, if the local school district is interested, possibly available for their students. Individual campsites will be carefully sited within the larger zone shown as the "camping area" on the above map. Siting will be consistent with the concepts presented in this plan and in consultation with the Colorado Division of Wildlife.

THE BEEMAN CREEK AREA (876 acres) is the area around and including the 158-acre Law Enforcement Training Facility. The area outside the Training Facility will be managed for wildlife and not open to the public. This area will serve as a buffer between the more public Wildlife Corridor, with its East-West Trail, and the more sensitive Backcountry.

Other areas of OSCA will be managed through this plan until all or part of them are developed with community facilities. They are:

THE GATEWAY (1,234 acres) where the June 2000 OSCA Plan allows development of various community facilities, such as a Douglas County regional park. Most important to this plan will be what in the 2000 Plan is called "Area G" (see map on pages 4-5), which will serve as the entrance to the Backcountry. Other parts of the Gateway will remain permanently open to protect wildlife movement and natural drainages. The HRCA initiated a strategic planning process in October 2001 to determine the future uses of the areas within the Gateway areas to be developed with community and recreational facilities.

THE GOLF COURSE (515 acres) is set aside for a private course and country club.

The above mission, vision, and goals for OSCA are expressed more specifically below through the Plan's objectives and strategic actions. While OSCA's mission, vision, and goals will remain the same over the coming years, the objectives and actions will be re-evaluated periodically and revised as needed.

Q&A

MANAGEMENT

Are there areas within OSCA that will be managed exclusively for wildlife?

Yes. Because of the significance and sensitivity of the area's wildlife there will be areas, including parts of the Backcountry and the Beeman Creek Area, where access will be limited or prohibited.

Who will pay to manage OSCA?

Ultimately OSCA will be owned and managed by the Highlands Ranch Community Association, which will be responsible for funding the management of OSCA.

Will hunting be allowed in OSCA?

The Colorado Division of Wildlife is planning carefully managed hunting in OSCA for 2002. The need for hunting is because of the dramatic increase in the number of elk in the area (400-600 head) threatens to outstrip the area's resources and diminish the health of the herd. Hunting would be used as a management tool, and would happen only with the strictest regard for safety.

When will ownership of OSCA pass from Shea Homes to the HRCA?

Ownership will pass to the Highlands Ranch Community Association at some future date tied to the percentage completion of development in Highlands Ranch. Therefore the specific date of the transfer is not known, but could be within ten years. Parts of this management plan will be implemented while ownership remains with Shea Homes; other parts will happen after title of OSCA is transferred.

What will the OSCA Resources Working Group be and what will it do?

Periodic assessments of management progress will be conducted by members of this group, made up of OSCA's managers and representatives invited from Douglas County, Colorado Division of Wildlife, Natural Resources Conservation Service, Colorado State Forest Service, and others.

1. OSCA Management Implementation Planning Process

A. Purpose of this Plan

The purpose of the Highlands Ranch Open Space Conservation Area (OSCA) Management Implementation Plan is to articulate a mission and vision for the future use and long-term care of a 7,000-acre management area within OSCA's 8,200 total acres. The plan also outlines the actions needed to successfully implement specific goals and objectives. This plan is an adaptive working document that depends on periodic review to make adjustments based on additional knowledge of site conditions as it becomes available. Assisting with reviews will be a Resource Working Group, made up of OSCA's managers and representatives invited from Douglas County, Colorado Division of Wildlife, Natural Resources Conservation Service, Colorado State Forest Service, and other organizations.

OSCA's mission and vision will remain the same over the coming years, but the goals and objectives of the plan will be re-evaluated comprehensively every five years, or as necessary.

B. Partner Involvement

This plan was prepared with the input of representatives from the following agencies and organizations:

- Colorado Division of Parks & Outdoor Recreation
- Colorado Division of Wildlife
- Colorado State Forest Service
- Denver Parks & Recreation/Mountain Parks
- Douglas County Division of Open Space & Natural Resources
- Douglas County Division of Parks and Trails
- Douglas County Historic Preservation Board
- Douglas County Planning
- Douglas County School District
- Douglas County Weed Inspector
- Highlands Ranch Metro Districts
- Natural Resource Conservation Service
- Tall Bull Memorial Council
- Shea Homes
- Highlands Ranch Community Association, Inc.

Other agencies, organizations, and individuals were notified of the planning process and were asked to review a draft of the plan. They include:

- Castle Pines Home Owners Association
- Chatfield Basin Conservation Network
- Chatfield State Park
- Cherokee Ranch and Castle Foundation
- Colorado Archeological Society (Denver Chapter)
- Colorado Forest Service
- Colorado State Parks
- Colorado State Trails Program
- Concerned Citizens of Historic Douglas County
- Daniels Gate Development
- Denver Audubon Society/South Platte Group Sierra Club

- Douglas County Historic Preservation
- Douglas County Public Works
- Douglas County Schools
- Douglas County Sheriff's Office
- Douglas County Soil Conservation District Board
- Highlands Ranch Historical Society
- Koelbel and Company
- McArthur Ranch Home Owners Association / Civic Group
- Natural Resource Conservation Service
- South Platte Group Sierra Club
- South Suburban Park and Recreation District
- Surrey Ridge Home Owners Association
- Wildcat Ridge Homeowners Association

Shea Homes currently owns OSCA, but ownership will pass to the Highlands Ranch Community Association at some future date tied to the percentage completion of development in Highlands Ranch. Therefore the specific date of the transfer is not known, but could be within ten years.

Parts of this management plan will be implemented while ownership remains with Shea Homes. Because there will be no public access to areas still owned by Shea Homes, some management actions will take place only after the Highlands Ranch Community Association has become the owner.

As Shea Homes or the HRCA deems appropriate, the Resource Working Group will be invited to assist the then-current owner of OSCA in implementing this plan, and to offer advice and assistance for specific management actions.

2. Background and Conditions

This section of the plan describes the current conditions of OSCA and provides background for the management approach described later.

While OSCA is a regionally significant open space and wildlife habitat area, OSCA also serves other functions as well. It is, for example, home to wells that provide drinking water to Highlands Ranch residents and also the Law Enforcement Training Facility, where law enforcement officials train in the use of firearms. This range of uses means that management of multiple objectives must be carefully coordinated.

A. Location

OSCA is located in northwestern Douglas County, Colorado, on the edge of the Denver metropolitan area. (See Map 1.) It makes up the southern portion of the community of Highlands Ranch and lies within four townships, the legal description of which are:

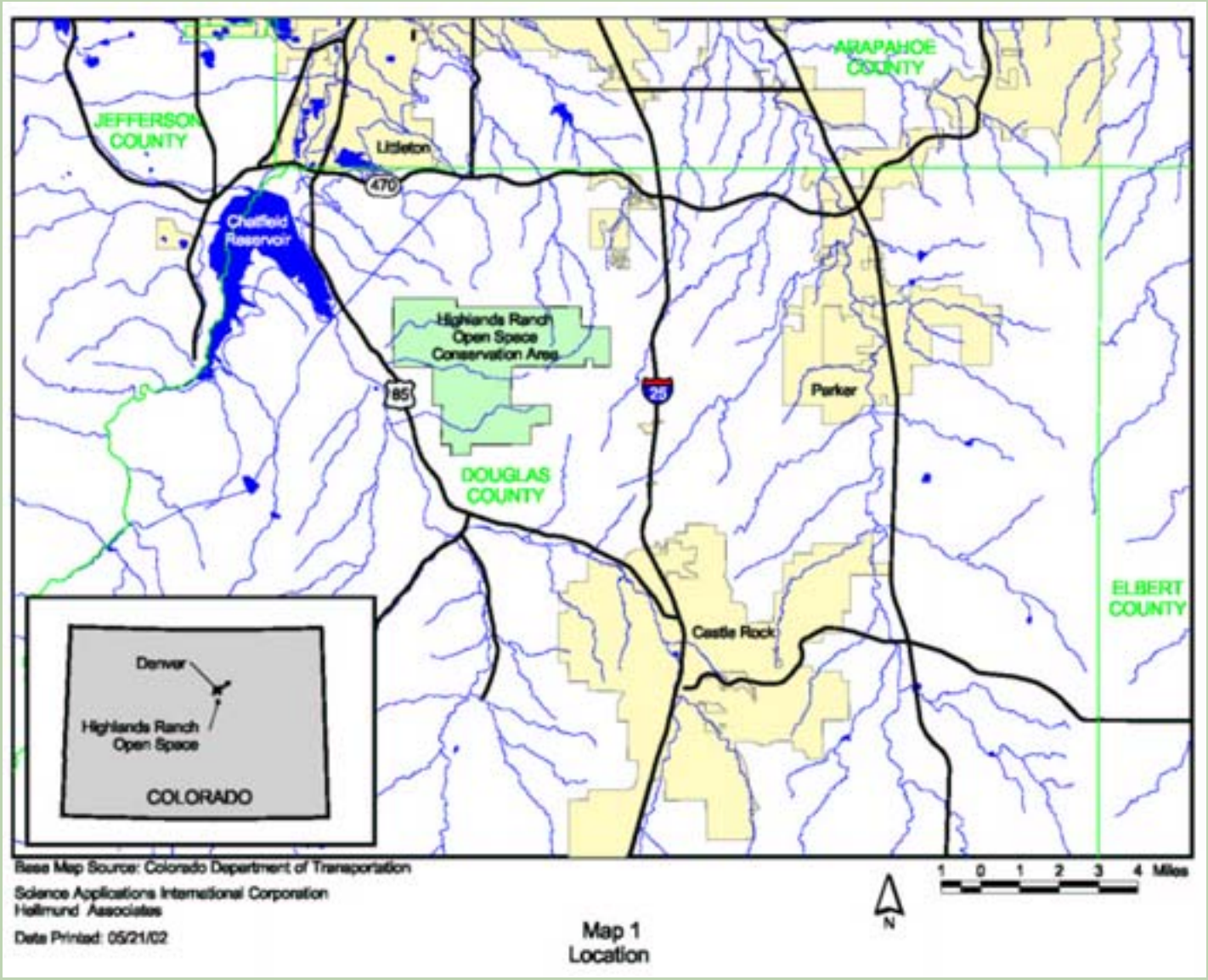
- S½ Section 19, SW¼, W½ SE¼ of Section 20, W½ Section 28, Section 29 (except for substation parcel), and Section 30, Township 6 South, Range 67 West, Sixth Principal Meridian, Colorado
- N½, SW¼ Section 6, Township 7 South, Range 67 West, Sixth Principal Meridian, Colorado
- N½ NE¼of Section 11, Section 1, E½, E½ W½, Section 2, Township 7 South, Range 68 West, Sixth Principal Meridian, Colorado
- S½, S½ N½, Section 22, S½, S½ NW¼, W½ SW¼ NE¼ Section 23, S½ Section 24, and all of Sections 25, 26, 27, 35 and 36 of Township 6 South, Range 68 West, Sixth Principal Meridian, Colorado

B. Site History

Native Americans occupied the land in and around present day Highlands Ranch for thousands of years before Euro-Americans arrived. Evidence of their long seasonal use of the region can be found today in the form of archaeological sites and through historic documentation.

Among the earliest Euro-Americans to settle in the Highlands Ranch area were Johanne and Theresa Welte and Plaziduo and Mary Gassner. In 1879, Johanne Welte and Plaziduo Gassner purchased a block of land for $700 and established a successful dairy farm known as Big Dry Creek Cheese Ranch. Their ranch was well known for its brick cheese and butter. It was in business for nearly sixty years.

In 1898, John W. Springer, began consolidating smaller ranches on the present Highlands Ranch site and became the largest landowner in the area. His holdings exceeded 23,000 acres. In 1920, Annie Springer Hughes (daughter of John Springer) sold the property to Waite Phillips of Phillips Petroleum. Phillips held the property for six years and then sold it to Frank Kistler in 1926. Kistler created a ranch for breeding cattle and changed the name to the *Diamond K*. Due to financial difficulties, the property was sold in 1937 to Lawrence C. Phipps, Jr., who renamed the property *Highlands Ranch*. By 1943, Phipps had bought the Welte property (Big Dry Creek Cheese Ranch), enlarging his already vast land holdings.



Map 1
Location

The property was sold in 1978 to Marvin Davis who started Highland Venture. Highland Venture in turn sold the property to Mission Viejo Company in 1979. Shea Homes purchased the property by merging with and succeeding Mission Viejo Company in 1997.

Although it is not yet open to visitors, the 8,200-acre OSCA is an integral part of the Highlands Ranch community. Besides being a place of abundant wildlife and dramatic scenery, OSCA also serves, through more than twenty wells, as a partial source of residents' drinking water.

C. Interrelated Resources: Patterns and Processes

OSCA is part of a complex ecosystem, with diverse groups of organisms, interacting with each another, and with their environment. To evaluate and manage wildlife and OSCA's other resources takes an understanding of the pattern and quality of vegetation in OSCA. Understanding these patterns also is important to managing wildfire. Similarly, managing water resources requires knowledge of the patterns of soils and geology. Patterns of soils will dictate vegetation pattern. The number and types of grazers (e.g., cattle and elk) in a landscape help dictate range quality and available forage resources. Most significantly, the number, placement, and activity of humans in the landscape affect virtually all resources in some way. These dynamic interconnections and interactions must be evaluated carefully in order to maximize the success of any management actions for OSCA and are one reason an adaptive approach is used

The patterns we observe in the landscape reflect and in turn influence the processes of a place. Often we look at patterns, such as those of vegetation, as a surrogate for understanding the processes of a landscape. A landscape that is closer to self-sustaining, one that requires less inputs from people (and less management cost), is one where natural processes are at work. (See Diaz, N. and D. Apostol. 1993 and Dramstad, W., J. Olson, and R.T.T. Forman. 1996.)

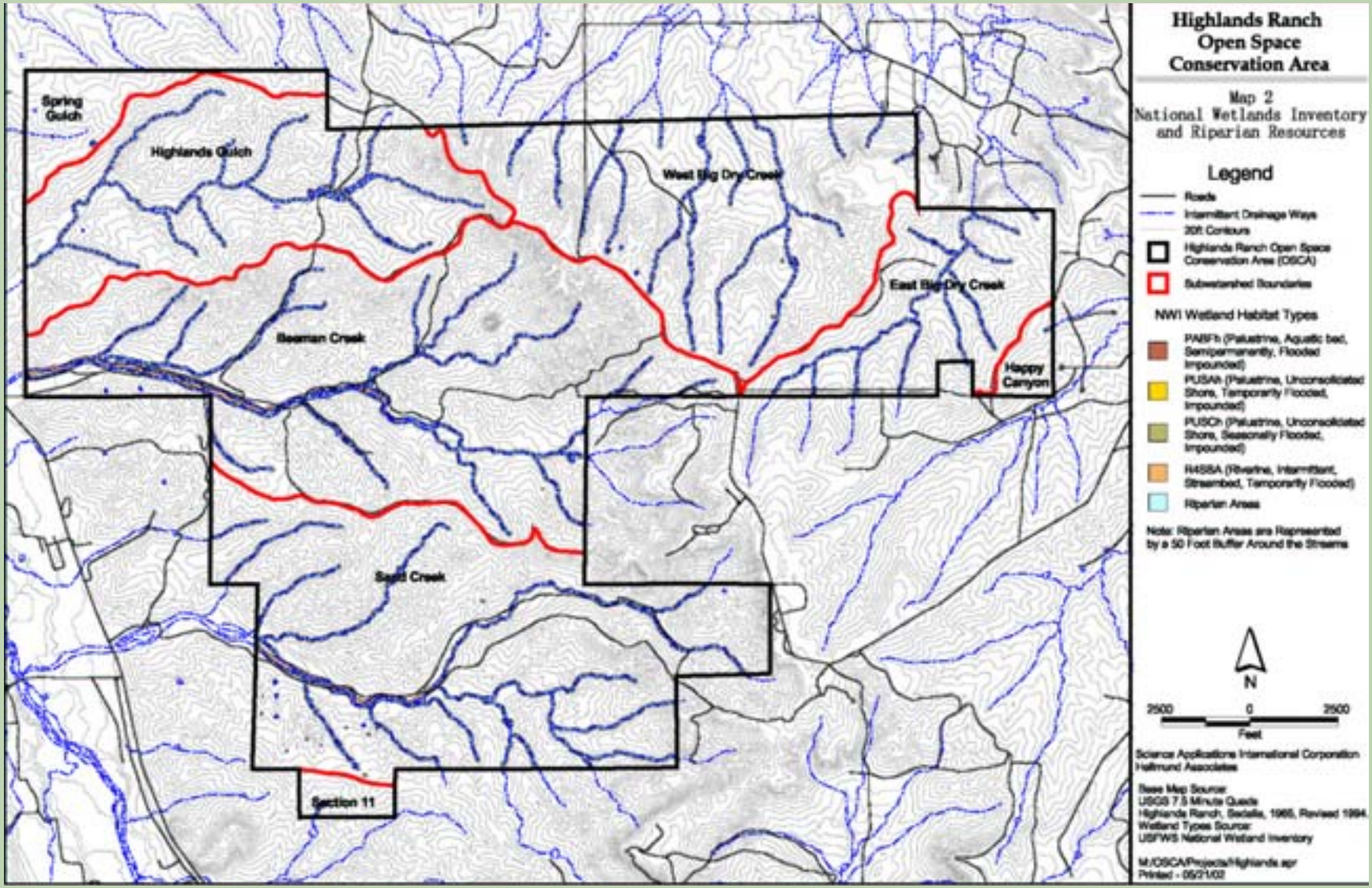
D. Topography and Drainages

OSCA's topography is generally of three basic types. (See map on Pages 4-5.)

- Gently rolling, shortgrass prairie, found primarily in the northern- and western-most portions of OSCA.
- The ridgeline (closely followed by Daniels Park Road), which cuts through OSCA in a curvilinear fashion, trending from southeast to north. This high ground features cliff bands of sandstone bedrock with predominantly west and south facing exposures. The cliffs reach vertical heights of 20-50 feet (6-15 meters).
- East-west trending ridges that extend out from the Daniels Park ridgeline. OSCA can be divided into eight subwatersheds or drainages, created by these ridgelines. These drainages are described in detail below (Table 1) and shown on Map 2.

TABLE 1: SUBWATERSHEDS WITHIN OSCA

Drainage	Description
Spring Gulch	The Spring Gulch drainage lies in the northwest corner of OSCA. It occupies approximately 233 acres. There are 227 acres of grassland and 6 acres of shrubland in this area.
Highlands Gulch	The Highlands Gulch drainage is immediately south of the Spring Gulch unit. It covers approximately 1,285 acres. Grassland habitat comprises 644 acres, with 641 acres of shrubland habitat.
Beeman Creek	The Beeman Creek drainage lies near the center of OSCA and is defined by the major westerly drainage of Beeman Creek. This creek is intermittent, flowing in response to precipitation events and from spring flow. This area covers approximately 2,365 acres, or roughly 30% of the overall open space. Approximately 34 acres of the unit are abandoned cropland or polo fields, 588 acres are grassland habitat, 265 acres are pine woodland/shrubland, 1,424 acres are shrubland, 54 acres are riparian habitat associated with Beeman Creek. The law enforcement and proposed driver training areas lie within this drainage. This area has more roads and human activity currently than most of the other drainages.
West Big Dry Creek	The West Big Dry Creek drainage comprises approximately 1,432 acres of land. It is located on the northeast side of OSCA. The habitat of the unit ranges from 938 acres of grassland, to 494 acres of shrubland.
East Big Dry Creek	The East Big Dry Creek drainage lies southeast of the West Big Dry Creek. It covers 649 acres of land. Approximately 347 acres are grassland habitat and 302 acres are shrubland.
Happy Canyon	The Happy Canyon drainage is a small unit that drains towards Happy Canyon on the east side of OSCA. It comprises only 73 acres, of which 21 acres are grassland, and the balance of 52 acres are shrubland.
Sand Creek	The Sand Creek drainage lies in the south-central portion of OSCA. It covers approximately 2,093 acres of land. This management unit is dominated by 1,259 acres of shrubland, followed by 455 acres of grasslands, 354 acres of pine woodland/shrubland habitat, and 25 acres of riparian ground along Sand Creek. This unit appears to be in the best condition of all those surveyed in OSCA. There is less human activity, fewer roads, and better habitat quality and quantity here than in any other unit.
Section 11	The Section 11 drainage is a very small area, covering only 70 acres of land. The unit slopes to the southwest, draining toward the Plum Creek riparian corridor. The unit contains approximately 24 acres of grassland habitat and 46 acres of shrubland.


Spring Gulch
Highlands Gulch
West Big Dry Creek
East Big Dry Creek
Happy Canyon
Beaman Creek
Sand Creek
Section 11
Highlands Ranch Open Space Conservation Area
Map 2
National Wetlands Inventory and Riparian Resources
Legend
Roads
Intermittent Drainage Ways
20ft Contours
Highlands Ranch Open Space Conservation Area (OSCA)
Subwatershed Boundaries
NWI Wetland Habitat Types
PABFh (Palustrine, Aquatic bed, Semipermanently, Flooded Impounded)
PUSAh (Palustrine, Unconsolidated Shore, Temporarily Flooded, Impounded)
PUSCh (Palustrine, Unconsolidated Shore, Seasonally Flooded, Impounded)
R4SBA (Riverine, Intermittent, Streambed, Temporarily Flooded)
Riparian Areas
Note: Riparian Areas are Represented by a 50 Foot Buffer Around the Streams
N
2500
0
2500
Feet
Science Applications International Corporation
Hallmund Associates
Base Map Source:
USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994
Wetland Types Source:
USFWS National Wetland Inventory
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E. Connections with adjacent lands (landscape linkages)

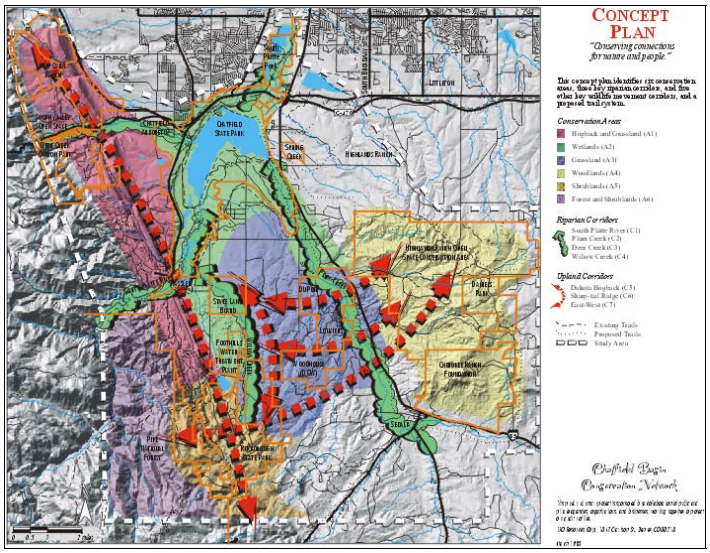
Ecologically speaking, OSCA is not an island, but an integral part of the larger landscape, across which wildlife and other natural features flow. It is connected to other open space, such as Daniels Park and Cherokee Ranch. Elk and other wildlife routinely move between OSCA and these other places.

West of OSCA and across US Highway 85 is another very important area of habitat of regional significance: the Plum Creek corridor. This riparian zone is not conserved land, but is critical to the north/south movement of wildlife in the Chatfield Basin. Viable linkages to the Plum Creek corridor from OSCA are vital if wildlife are to take advantage of all the resources scattered across the larger landscape such as those located west of Plum Creek.

Important areas that conserve biological diversity in the area include the Woodhouse State Wildlife Area, Sharptail Ridge State Wildlife Area, the Lambert Ranch conservation easement, Roxborough State Park, and the Pike National Forest. Northwest of OSCA is Chatfield State Park, where Plum Creek flows. Directly north of OSCA are open space and parks managed by the Highlands Ranch Metro Districts and north of those, the properties of South Suburban Parks and Recreation District, including the South Platte riparian corridor. Also located north of OSCA is the High Line Canal, which serves as habitat and a movement corridor for wildlife.

Linkages between OSCA and nearby natural areas are important in order to maintain the diversity, quality, and quantity of wildlife and wildlife habitat found inside OSCA. If these landscape linkages are severed, decline in the diversity of wildlife within OSCA is likely. These connections and relationships are the reasons why collaborative management is fundamental to the sustainability of the overall biological diversity in the region, and formed the basis for the creation of the Chatfield Basin Conservation Network. (See Map 3.) The Network is an informal collaboration of more than fifty public and private, federal, state, and local agencies, organizations, and corporations, all concerned with conserving connections for wildlife and people in the 140-square mile Chatfield Basin (see www.chatfieldbasin.org).

MAP 3: CONCEPT PLAN, CHATFIELD BASIN CONSERVATION NETWORK



E. Baseline Survey Data

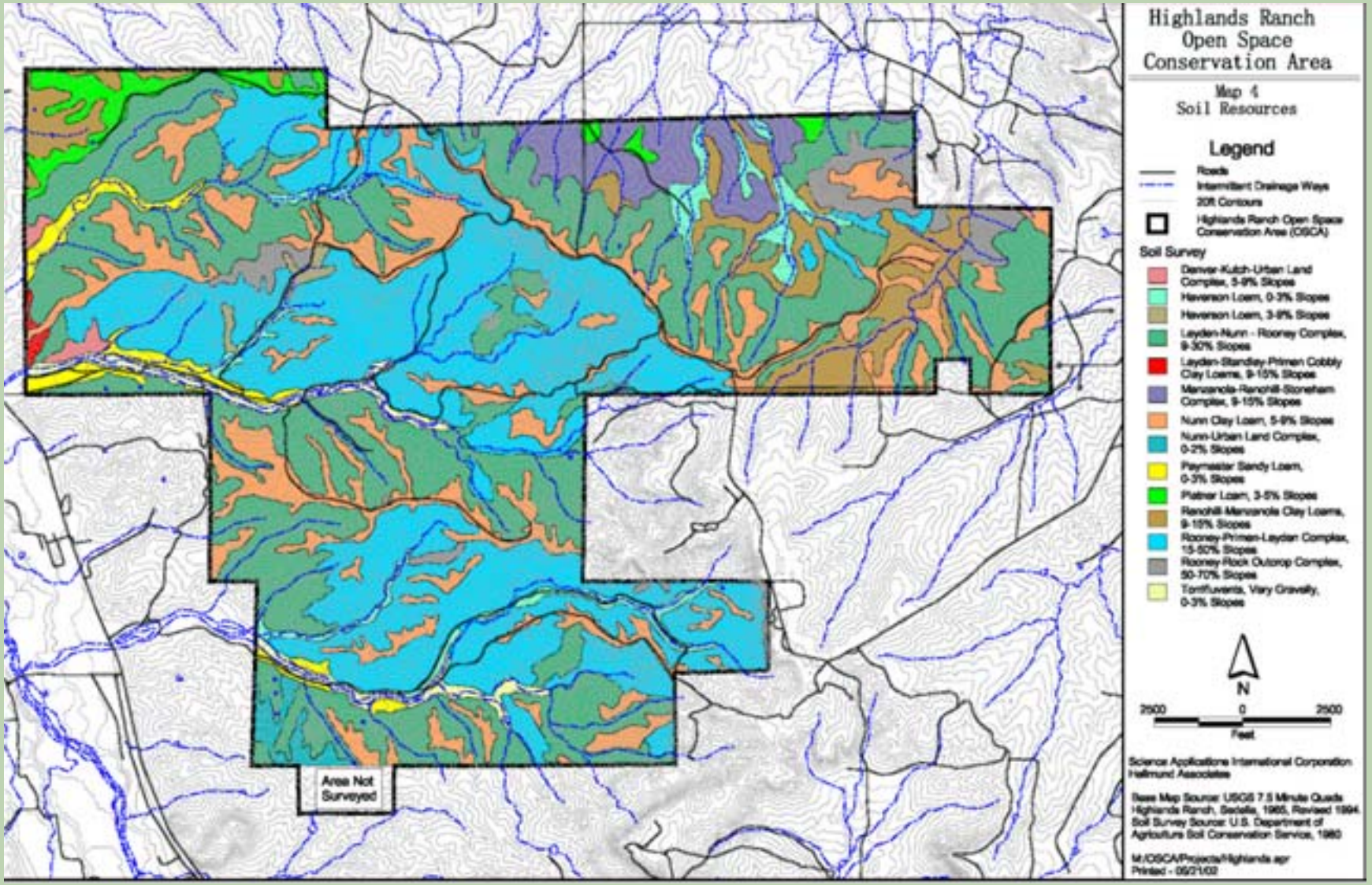
Soil Resources

OSCA's soils have been mapped by the United States Department of Agriculture, Soil Conservation Service (USDA-SCS 1980), now known as the National Resources Conservation Service (NRCS). This survey identified 14 separate soil complexes within OSCA. (See Map 4.)

The Beeman Creek and Sand Creek drainages are dominated by Rooney-Primen-Leyden complex soils with 15 to 50% slopes. These soils are typically found on hill slopes and ridge lines at elevations from 5,600 feet to 6,500 feet above mean sea level. The Rooney soil is shallow and well drained and is formed in colluvium and residuum of sandstone and conglomerate rock. Permeability of this soil is moderately rapid and available water capacity is low. Runoff is rapid and erosion hazard is severe. The Primen soil is shallow and well drained and consists of cobbly, gravelly, and clayey material. Permeability of the Primen is slow, available water capacity is low, runoff is rapid, and erosion hazard is severe. The Leyden soil is moderately deep and well drained. It is formed from calcareous, cobbly, gravelly, and clayey materials. Permeability is slow, available water capacity is low, runoff is rapid, and erosion is a severe hazard in these soils (USDA-SCS1980).

OSCA also has major coverage by the Leyden-Nunn-Rooney complex. This complex typically has 9 to 30% slopes. This complex occurs in each of the eight drainages of the property. The Leyden and Rooney soils are described in the paragraph above. The Nunn soil primarily occurs on hill slopes and fans. It is deep and well drained, and is formed from calcareous and clayey material derived from mudstones and shale. Permeability is slow, available water capacity is high, runoff is rapid, and erosion is only a slight hazard (USDA-SCS 1980).

The Nunn Clay Loam complex is also common in OSCA. This unit occurs on high terraces, hill slopes, and fans, and features 5 to 9% slopes. This soil is a deep, well-drained unit, with slow permeability, high available water capacity, medium runoff potential, and moderate erosion hazard (USDA-SCS1980).


Highlands Ranch
Open Space
Conservation Area
Map 4
Soil Resources
Legend
Roads
Intermittent Drainage Ways
20ft Contours
Highlands Ranch Open Space Conservation Area (OSCA)
Soil Survey
Denver-Kutch-Urban Land Complex, 5-9% Slopes
Haverson Loam, 0-3% Slopes
Haverson Loam, 3-9% Slopes
Leyden-Nunn - Rooney Complex, 9-30% Slopes
Leyden-Standley-Primen Cobbly Clay Loams, 9-15% Slopes
Manzanola-Ranchill-Stoneham Complex, 9-15% Slopes
Nunn Clay Loam, 5-9% Slopes
Nunn-Urban Land Complex, 0-2% Slopes
Paymaster Sandy Loam, 0-3% Slopes
Platner Loam, 3-5% Slopes
Ranchill-Manzanola Clay Loams, 9-15% Slopes
Rooney-Primen-Leyden Complex, 15-50% Slopes
Rooney-Rock Outcrop Complex, 50-70% Slopes
Torrifluvents, Very Gravelly, 0-3% Slopes
N
2500
0
2500
Feet
Science Applications International Corporation
Hellmund Associates
Base Map Source: USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994
Soil Survey Source: U.S. Department of Agriculture Soil Conservation Service, 1980
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Area Not Surveyed

Vegetation/Habitat Resources

The vegetation of OSCA is discussed in this section of the plan in terms of habitat and the dominant plant communities and species within each area. (See Map 5.)

Habitat is where wildlife live. It is composed of the vegetation, soil, and water resources of OSCA. These resources provide food, water, and cover for wildlife. How these resources are interspersed and the structure and diversity of vegetation determine, in part, the diversity of wildlife.

Several factors influence the distribution and abundance of plants across a landscape, including latitude, elevation, aspect, slope, soils, precipitation, and land use. Within the project area, latitude and precipitation differences are minimal; therefore, differences in the remaining factors primarily influence the composition and distribution of plant species. The topography of the study area consists of rolling hills with elevation increasing from west to east. Elevations in the study area generally range from 5,750 feet to approximately 6,500 feet.

Four primary habitat types occur within OSCA: grasslands, shrubland, pine woodland-shrubland, and riparian woodland (Table 2) (ERT/Ecology, 1978). In addition to these habitat types, two small formerly cultivated areas (26 acres) also exist. One of these areas was used as polo grounds. These habitats were originally described in the *Survey of the Vegetation and Wildlife of Highlands Ranch* (ERT/Ecology, 1978). Each of these is discussed in more detail below.

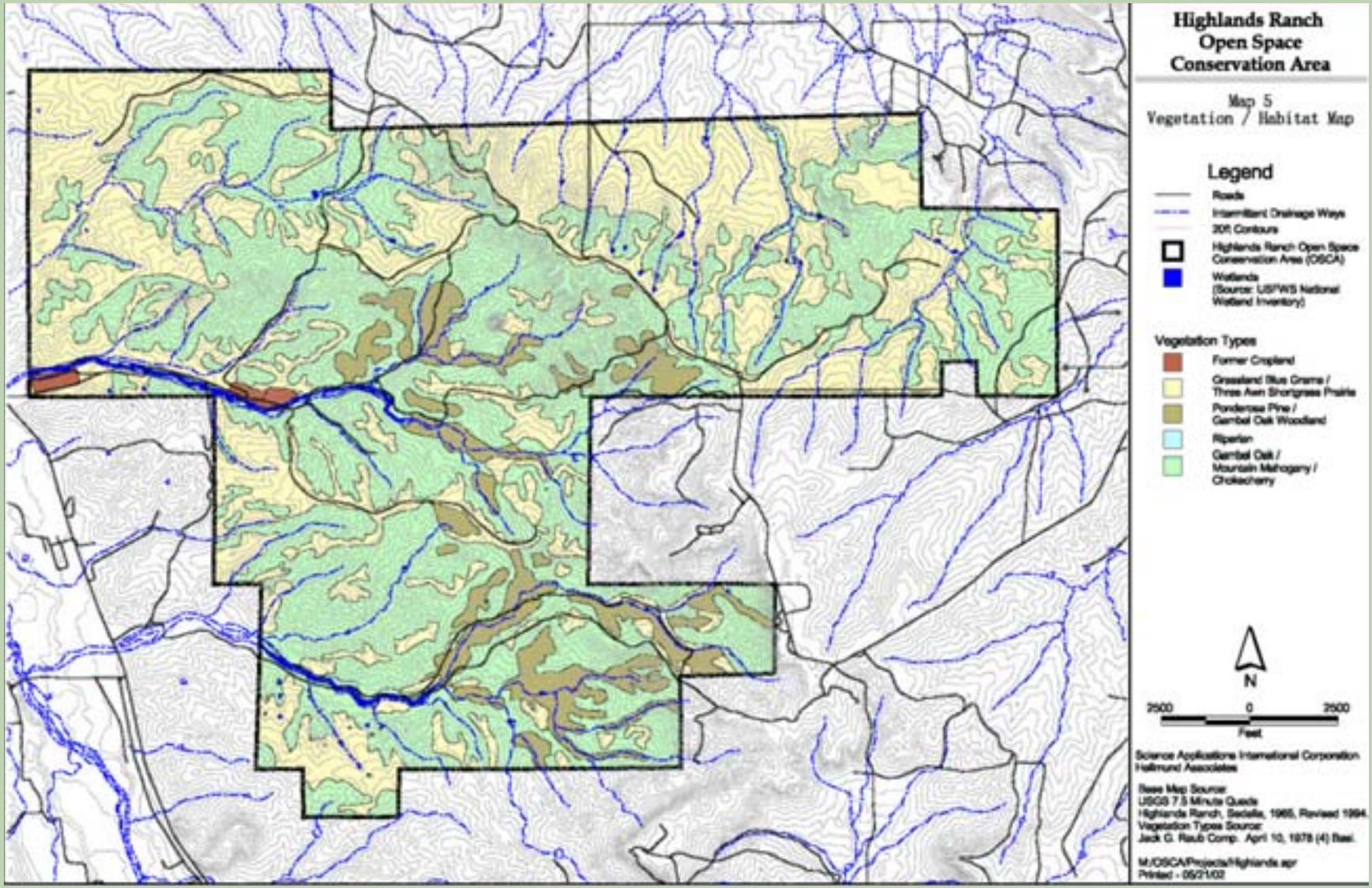
TABLE 2. AREAL EXTENT OF HABITAT TYPES FOUND WITHIN OSCA

Habitat Type	Estimated Area (ac)*	Percent of Area
Grasslands	3,244	40
Shrubland	4,224	51.5
Pine woodland-shrubland	619	7.5
Riparian	79	1
Abandoned cultivated land	34	0
TOTAL	8,200	100

*Area estimates were derived from vegetation mapping completed in 1978. Considering the dynamic nature of natural systems, and the elapsed time since this mapping was completed (23 years), these area estimates should be considered approximate.

Grasslands

Grassland habitat is the second largest habitat type within OSCA, and comprises approximately 3,244 acres (40%) of the land area. These shortgrass prairie grasslands predominantly occur over the northern part of OSCA, but are scattered throughout tree and shrub communities on gentler slopes (ERT/Ecology, 1978). Blue grama (*Chondrosum gracile*) is the dominant species. Other native grass species include needle-and-thread (*Stipa comata*), three-awn (*Aristida purpurea*), and western wheatgrass (*Pascopyrum smithii*). Other species that occur within the grassland habitat type include yucca (*Yucca glauca*), broom snakeweed (*Gutierrezia sarothrae*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and prickly pear (*Optunia spp.*) (ERT/Ecology, 1978).


Highlands Ranch
Open Space
Conservation Area
Map 5
Vegetation / Habitat Map
Legend
Roads
Intermittent Drainage Ways
20ft Contours
Highlands Ranch Open Space Conservation Area (OSCA)
Wetlands (Source: USFWS National Wetland Inventory)
Vegetation Types
Former Cropland
Grassland Blue Grama / Three Awn Shortgrass Prairie
Ponderosa Pine / Gambel Oak Woodland
Riparian
Gambel Oak / Mountain Mahogany / Chokecherry
N
2500
0
2500
Feet
Science Applications International Corporation
Hallmund Associates
Base Map Source:
USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994.
Vegetation Types Source:
Jack G. Raub Comp. April 10, 1978 (4) Sheet.
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Shrublands

Comprising approximately 4,224 acres (52%) of the land area, shrubland habitat is the largest habitat type at OSCA. These Gambel oak/mountain mahogany (*Quercus gambelii*/ *Cercocarpus montanus*) shrublands predominate in the central portion of OSCA, and along drainages. Other species commonly found in shrublands include skunkbush (*Rhus trilobata*), chokecherry (*Padus virginiana*), wild plum (*Prunus americana*), hawthorn (*Crataegus erythropoda*), elk sedge (*Carex geyerii*), and Kentucky bluegrass (*Poa pratensis*) (ERT/Ecology, 1978).

Pine woodland-shrubland

Pine woodland-shrublands comprise approximately 619 acres (8%) of the land area within OSCA. This habitat type is most common at higher elevations in the southern half of OSCA. Ponderosa pine (*Pinus ponderosa*) and Gambel oak are the dominant plant species. The understory of this habitat type is similar to those described for the shrubland habitat.

Riparian Habitat

Riparian areas make up a small percentage (1%) of the total land area of OSCA. Mature plains cottonwood trees (*Populus deltoides*) with an understory of wild plum, hawthorn, and willow (*Salix spp.*) typify riparian habitat within OSCA (ERT/Ecology, 1978). Herbaceous species found in riparian areas include western wheatgrass, Kentucky bluegrass, cheatgrass (*Bromus tectorum*), horehound (*Marrubium vulgare*), crane's bill (*Erodium cicutarium*), dandelion (*Taraxicum officinale*), yarrow (*Achillea lanulosa*), and thistles (ERT/Ecology, 1978).

Noxious Weeds

Throughout the western United States noxious weeds have become a severe problem, and OSCA has not been immune to the spread of these invasive species. Invasive species are defined as "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health". Noxious weeds are invasive species that have been designated by rule (i.e. State, County, Municipality, etc) as being noxious, and meet one or more of the following criteria: 1) aggressively invades or is detrimental to economic crops or native plant communities, 2) is poisonous to livestock, 3) is a carrier of detrimental insects, diseases, or parasites, and/or 4) the direct or indirect effect of the presence of this plant is detrimental to natural ecosystems or agricultural areas (CNAP et al. 2000). Within OSCA the primary noxious weeds of concern are cheatgrass (*Bromus tectorum*) and diffuse knapweed (*Centaurea diffusa*).

Site reconnaissance in May 2001 yielded a partial OSCA plant list, which is presented in Appendix 1, and which includes some noxious weeds.

Wetland Habitat

The U.S. Army Corps of Engineers (COE) 1987 Wetland Delineation Manual defines wetlands as "those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted to life in saturated soil conditions." In other words, wetlands are those transition areas between dry land and open water, where a well-adapted

suite of plants grow and dominate in soils that tend to be wet for a significant portion of the year.

Wetland habitat of OSCA has been previously mapped under the USFWS's National Wetland Inventory (NWI) Program. More specifically, the USFWS has mapped the Highlands Ranch and Sedalia, CO, 7.5-minute Quadrangles for wetland and deepwater habitats. OSCA lies within the southern half of the Highlands Ranch Quadrangle and the northern portion of the Sedalia Quadrangle. It is important to note that NWI mapping of wetland habitat does not necessarily identify wetlands as defined by the Army Corps of Engineers and as regulated under Section 404 of the Clean Water Act. The NWI maps use the Cowardin et al. (1979) methodology for classifying the different types of wetlands that may be found at any given site. A composite map of OSCA wetland habitat resources, based on NWI mapping, is provided as Map 2.

There are four classes of wetland habitat identified within the boundaries of OSCA:

1. palustrine, aquatic bed, semipermanently flooded, impounded (PABFh), 8.85 acres;
2. palustrine, unconsolidated shore, temporarily flooded, impounded (PUSAh), 0.68 acres;
3. palustrine, unconsolidated shore, seasonally flooded, impounded (PUSCh), 1.85 acres; and
4. riverine, intermittent, streambed, temporarily flooded (R4SBA), 62.43 acres.

The first three classes of wetlands all refer to impoundment areas (bermed ponds) that are man-made, generally quite small, and isolated. As such, they are unlikely to constitute jurisdictional wetlands. The fourth class in OSCA is riverine streambed. It occurs along Beeman and Sand Creeks. Site reconnaissance by SAIC in May 2001 found little if any hydrophytic vegetation in these two streambeds. Therefore, these streambeds are appropriately classified as "Other Waters of the United States," rather than wetlands.

Water Resources

The surface water resources of OSCA are limited primarily to ephemeral washes (runoff from precipitation only) and intermittent drainages (runoff from precipitation or spring flows). Additionally, there are several stock ponds on OSCA. Stream and pond resources, as well as 100-year floodplains are shown in Map 2.

Groundwater in OSCA is found in both shallow settings (near-surface perched or unconfined alluvial aquifers) and also in bedrock aquifers (semi-confined or confined aquifers). Formal surveys of springs have not been conducted on OSCA; however, several flowing springs were observed during the 2001 site reconnaissance. Many of these springs were probably used historically for stock watering, and most of the stock ponds that are currently evident on the property were clearly fed by the flow of springs. The NWI wetland habitat map depicting the impounded palustrine wetlands (i.e., the stock ponds) includes many of the springs on the property.

Wildlife Resources

There have been several field inventories (ERT/Ecology, 1978 and 1979) for a variety of species of wildlife in OSCA. These studies have focused on the major species of large

mammals and also birds that inhabit the property. Most recently, the Colorado Division of Wildlife (CDOW) conducted an aerial survey (using a helicopter) to identify elk and deer herds on OSCA and adjoining properties and to attempt to count the numbers of these species. The count is necessarily a minimum number, due to the difficulties encountered in aerial surveys (lighting, background, animals bedded down or simply not visible behind intervening landscape, etc.). Approximately 400 to 600 elk were estimated during the CDOW 2001 counts.

No plains sharp-tailed grouse were found during the year 2001 grouse survey by the CDOW. There was an unconfirmed sighting of a small number of this species during site reconnaissance in 1979. The numbers of these birds have apparently been declining for several years (CDOW surveys).

An inventory of species observed, or whose sign was observed, during a site reconnaissance in May 2001, are presented in Appendix A This inventory does not represent a complete list of wildlife species inhabiting OSCA.

Black-tailed prairie dogs

A wildlife species of particular concern is the black-tailed prairie dog. This species has been suffering from population declines due to disease and loss of habitat. Recently the U. S. Fish and Wildlife Service (USFWS) decided that this species warranted listing under the Endangered Species Act, but higher priority species need to be listed first (i.e., warranted but precluded status).

Currently, several active prairie dog colonies exist within OSCA. Prairie dogs are considered "keystone species" of prairie ecosystems (Hoogland 1995). Campbell and Clark (1981) state that prairie dog colonies are used by 64 vertebrate species, and at least one, the black-footed ferret (*Mustela nigripes*), is an obligate predator of prairie dogs. The ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*) and the black-footed ferret all benefit from the presence of prairie dogs. Burrowing owls were detected during the 1979 surveys (ERT/Ecology 1979).

Prairie dogs are a good candidate for watchable wildlife (K. Hardesty, Colorado Division of Wildlife, 2001, personal communication.)

Grazing Resources

Historically Highlands Ranch has been a working cattle ranch, as was the land that became Daniels Park and as is Cherokee Ranch today. Even while the community of Highlands Ranch has been under construction, cattle have been grazed in OSCA.

On the average, approximately 400 head of cattle, have been grazed in OSCA, rotated through the various pastures. Over the past three years, the cattle have been shipped in each Spring and shipped out each Fall. There is, however, a herd of approximately 75 head that winter on the property.

Cultural and Historical Protection Overlay Zone

OSCA's Cultural and Historical Protection Overlay Zone (See Map 6) is in recognition that Native American Indian cultural activities continue today at the Tall Bull Memorial Grounds within Daniels Park, immediately adjacent to OSCA. These activities include social

gatherings, communal spiritual events such as teepee ceremonies, and private spiritual undertakings, such as vision quests. The grounds provide spiritual sanctuary to 50 American Indian nations, the Native American Church, and various councils and institutions. Maintaining peaceful and visually unobtrusive surroundings for the grounds is paramount.

All development proposals within the Overlay Zone shall be referred to the Tall Bull Memorial Grounds Council for their participation and input in the design review process.

Historic Resources

Two historic resources stand within OSCA: the Douglas County Pasture Ranch and the Lafayette Griggs Ranch. The structures are deteriorated and in generally poor condition. Shea Homes has taken steps to stabilize and secure these properties.

The Douglas Pasture Ranch, located in the southern part of OSCA, was built circa 1899. The site includes a house, barn, silo, bunkhouse, chicken house, cistern and windmill. The Lafayette Griggs Ranch, located in the northeastern part of OSCA, was built circa 1883. The site includes a ranch house, outbuildings, shed and corral.

Archaeological Resources

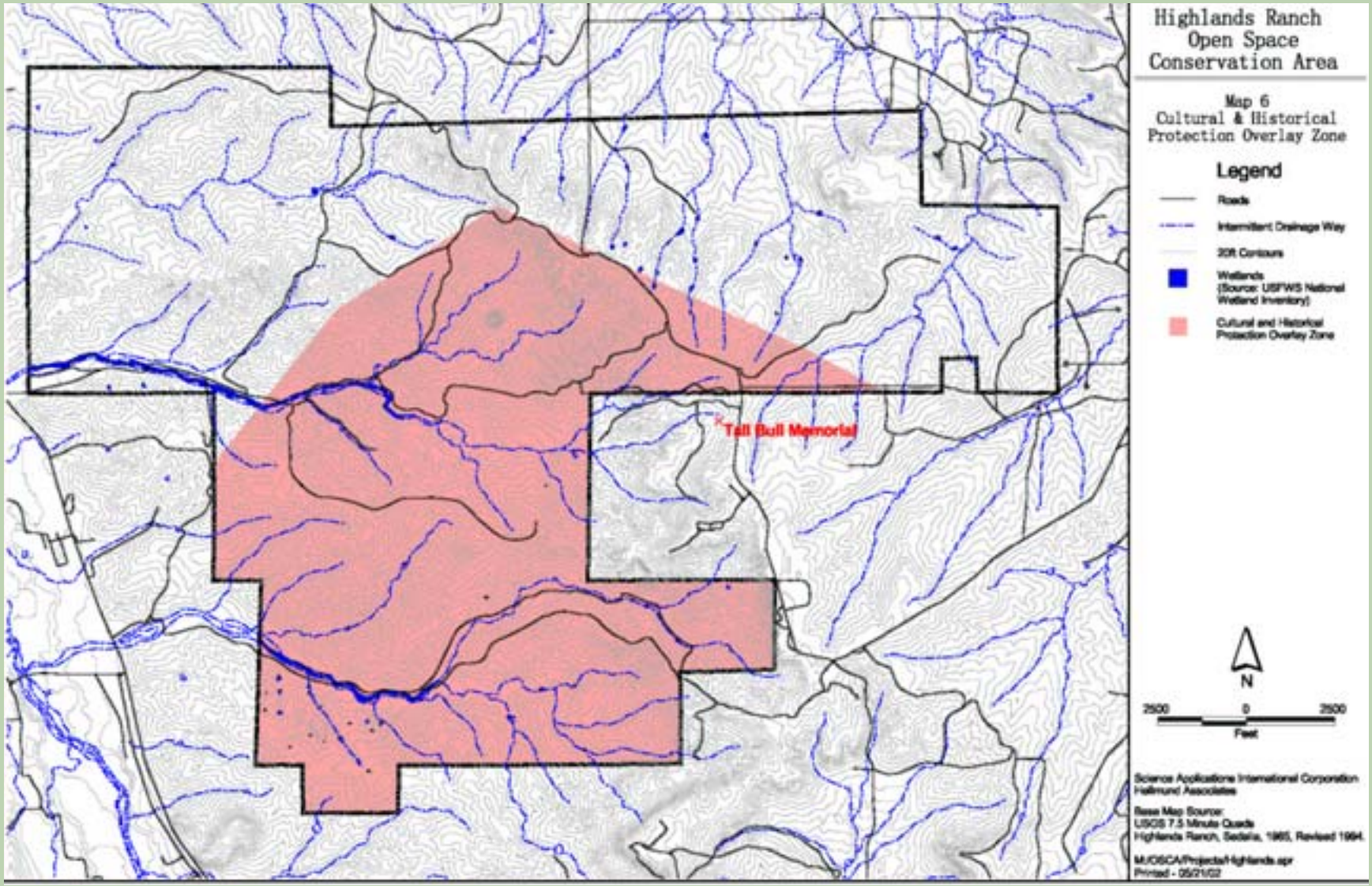
Within the last twenty-five years all parts of OSCA have been surveyed for archaeological resources. Numerous archaeological sites were located, mapped and recorded during these surveys. In order to protect these resources from unauthorized collection, no maps are included in this report. These archaeological sites represent Native American occupation of the area from Early Archaic through Early Historic times – a period of approximately 7,000 years. Three general categories of sites were identified during the survey: (1) quarry sites, (2) open campsites and (3) limited activity sites.

Paleontological Resources

OSCA lies within a large basin formed by upheaval of the Rocky Mountains during the late Mesozoic era. The basin has since filled with conglomerates, sands, silts and clays deposited by the erosion of deposits from the Front Range. The predominant bedrock units underlying the area include the Denver and Dawson formations. These formations are in turn overlain by Quaternary surficial deposits.

The Denver Formation (late cretaceous to early Paleocene in age) has a high potential for producing scientifically valuable fossils. There are exposures of the Denver formation on Highlands Ranch, but none are found on OSCA. Construction cuts into the Denver formation could expose new fossils of scientific importance. The Dawson formation (Paleocene in age) tends to produce plant fossils of less scientific significance than the mammal bones of the Denver formation.

Four fossil localities have been identified on OSCA. Three contain Bison bones found in Quaternary deposits and one contains plant leaves from the Dawson formation.


Highlands Ranch
Open Space
Conservation Area
Map 6
Cultural & Historical
Protection Overlay Zone
Legend
Roads
Intermittent Drainage Way
208 Contours
Wetlands
(Source: USFWS National
Wetland Inventory)
Cultural and Historical
Protection Overlay Zone
Tall Bull Memorial
N
2500
0
2500
Feet
Science Applications International Corporation
Hallmund Associates
Base Map Source:
USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994.
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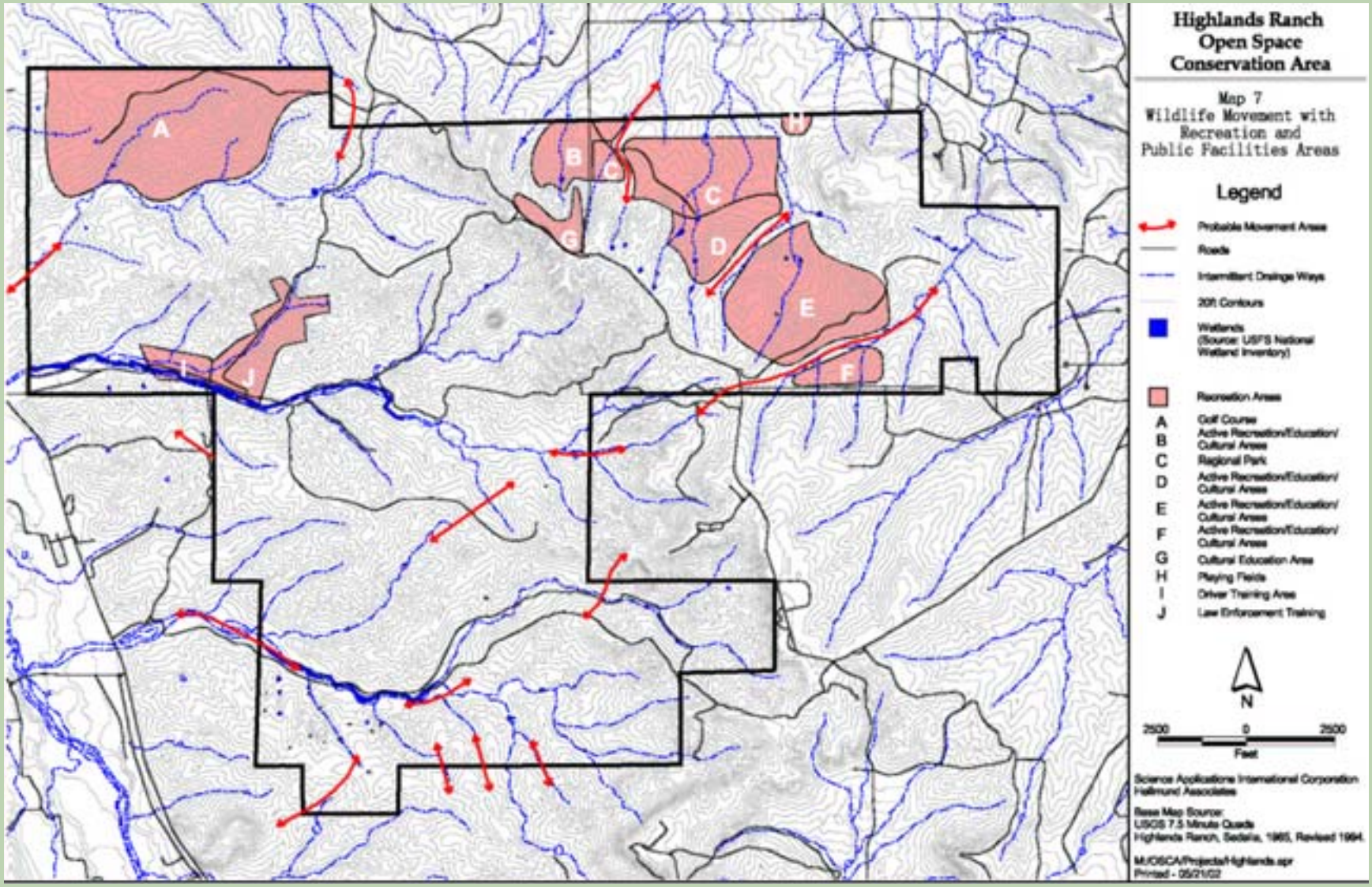
Highlands Ranch
Open Space
Conservation Area
Map 7
Wildlife Movement with
Recreation and
Public Facilities Areas
Legend
Probable Movement Areas
Roads
Intermittent Drainage Ways
20ft Contours
Wetlands
(Source: USFS National
Wetland Inventory)
Recreation Areas
A Golf Course
B Active Recreation/Education/
Cultural Areas
C Regional Park
D Active Recreation/Education/
Cultural Areas
E Active Recreation/Education/
Cultural Areas
F Active Recreation/Education/
Cultural Areas
G Cultural Education Area
H Playing Fields
I Driver Training Area
J Law Enforcement Training
N
2500
0
2500
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Science Applications International Corporation
Hallmund Associates
Base Map Source:
USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994.
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G. Resource Management Issues

Wildfire

The issue of wildfire in OSCA is a serious one. Evaluation of wildfire hazard was last accomplished in the EIS process in the late 1970's. At that time, it was determined that fire hazard was low in riparian and grassland plant communities, a medium hazard in the pine woodland community, and a severe hazard in the shrublands. Shrubland constitutes one of the major plant community types, occupying approximately 4,224 acres (more than half of OSCA). OSCA managers must be prepared to handle both small and large-scale fires, as well as the planning and potential implementation of controlled burn programs. The Littleton Fire Department has asked to collaborate on controlled burns in OSCA.

Current wildfire management plans are those described in the 1978 Highlands Ranch EIS. These plans, which include the following policies, will be reviewed by the Littleton Fire Department.

1. Slope: Fire spread rates increase with ground slope, and can be difficult to control on steep slopes.
2. Hazardous fire areas: Lands containing 'fire chimneys,' heavy fuels or other hazardous wildfire components will be carefully managed.
3. Fuel breaks: Practical fuel break systems will be installed in strategic fire defense locations.
4. Fuel modifications: Areas that have high fire hazard ratings, but that can be reduced to lower hazard ratings through thinning, grouping, or other methods of fuel modification, will be modified.
5. Prescribed burns: burns will be used as a management tool to reduce the potential for catastrophic wildfire. Revegetation with native grass and forb species, as well as weed management will be integral components of wildfire management.

Also, the Colorado State Forest Service Guide to Wildfire Hazard Mitigation and Response will be consulted.

Weeds

An integrated weed management is vital to the maintenance of native biodiversity in OSCA plant communities. It is obvious during a driving tour of OSCA that two-track roads have provided an avenue for the spread of noxious weeds through the landscape, particularly various species of thistles, cheatgrass, and knapweed. A plan should be prepared and implemented as soon as funding for the effort can be provided.

Recreation

There is a wide range of issues related to recreation in OSCA. Perhaps the largest issue is the magnitude of demand for and types of recreational use. OSCA has terrain that is well-

suited for hiking, biking, horseback riding, camping, bird watching, and wildlife viewing. The impacts of these pursuits must be balanced with the natural resource management goals of this plan, and should be carefully considered.

Viewshed Protection

OSCA lies immediately adjacent to the Tall Bull Memorial Grounds in Daniels Park. This important Native American site is used for ceremonies and sits high on the ridgeline above much of OSCA. Because of the placement of the Memorial Grounds, trails and campgrounds should be designed with an eye toward creating the least intrusion to the viewshed. Representatives of Tall Bull Memorial Grounds will be consulted on these improvement plans within the Cultural and Historical Protection Overlay Zone and proposals to mitigate their impacts. (See Map 6.)

Soil Erosion

The Beeman and Sand Creek subwatersheds feature soils that are rated severe for erosion potential. This is significant because of the probability that these will be key wildlife habitat areas in the management of OSCA. The importance of the soils in promoting a functioning ecosystem in these areas cannot be overstated. Good vegetative cover needs to be promoted, weeds need to be eliminated, and roads in these areas should be properly maintained to minimize or eliminate erosion, if not vital to well maintenance, cattle operations, or management actions. Such areas should also be restored.

Wildlife Habitat Maintenance

One of the key species for OSCA, in terms of watchable wildlife, is elk. The CDOW has estimated 400-600 currently reside in OSCA. The CDOW is in the process of determining a carrying capacity for elk residing in the area, but it is already apparent from visible damage to habitat and reports from CDOW biologists, that there are probably too many elk on this 8,000-acre range and adjacent properties.

In order to properly balance the aspects of watchable wildlife and maintaining a quality elk herd at or below carrying capacity of the range, it will most likely be advisable to harvest elk from this area. The CDOW is planning on harvesting elk in OSCA for 2002. The success of this hunt should be carefully gauged in order to allow for further planning and habitat maintenance.

Hunting in OSCA will be used as an important management tool. Controlling the number of elk will promote higher quality vegetation, which in turn will better support elk and other wildlife.

Revenues generated from granting limited access to hunters might be used to restore degraded habitat, and thereby improve the overall condition of the range. Both reducing the resident elk population and improving range condition will aid in maintaining a healthy, viable resident elk population at OSCA.

Grazing

Grazing will be used as a land management tool and also to perpetuate an historic use of this landscape. Grazing will be carefully managed so it does not compromise OSCA's natural resource and recreational objectives.

Special Designations for OSCA

A special natural resource designation for OSCA is one means of communicating to the public that OSCA is a special place that deserves careful treatment.

Two possible special designations are quite easy to obtain. They primarily involve submitting a short application and paying a modest fee. These are the Humane Society of the United States's Urban Wildlife Sanctuary Program (www.hsus.org) and the National Wildlife Federation's Backyard Wildlife Habitat Community Wildlife Habitat Project (www.nwf.org/habitats).

A third program is the Colorado Natural Areas Program (http://parks.state.co.us/cnap), which would involve a more detailed application and review process, but would be a greater distinction. From preliminary discussions with administrators of the program, OSCA would be of interest because of its proximity to a major urban area and its potential for environmental education.

Having and communicating one or more of these designations would help visitors appreciate the value of OSCA because of the recognition it has received.

See Appendix D for more information about these three programs.

3. Management

This section describes the goals, objectives, and strategic actions needed for the successful management of OSCA's varied resources.

A. Mission Statement

The mission of the 7,000-acre management area within the 8,200-acre Highlands Ranch Open Space Conservation Area is to provide visitors with unprecedented opportunities to enjoy nature near where they live, while protecting and conserving natural, archaeological, historical, and cultural resources for the enjoyment of future generations. OSCA is currently owned by Shea Homes, with ultimate ownership by the Highlands Ranch Community Association. The 1,200-acre balance making up OSCA is set aside for developing recreational and community facilities, per the June 2000 OSCA Plan adopted by Douglas County.

B. Vision

The Highlands Ranch Open Space Conservation Area is open space for future recreation, public facilities, wildlife management, and agriculture, including cattle ranching.

OSCA is envisioned as a diverse place where, in some areas, people will be able to participate in high quality educational and recreational activities related to OSCA's natural and cultural resources. Other areas will be managed primarily for wildlife with little or no access. Some portions will also be kept as a working cattle ranch, so that future generations will be able to appreciate this important historical aspect of Highlands Ranch.

In the future, OSCA will be a place that many people will know and love because it will offer experiences with nature they can't find on a similar scale as close to home. OSCA will also mean a great deal to people just because it is there. Even if people don't visit it they will value knowing there is a large area within metropolitan Denver where nature has free reign.

While access may be very limited at some times and in some locations, visiting the Backcountry at OSCA and seeing elk, deer, raptors, and other animals and birds in a natural setting — and the possibility of seeing signs of black bear and mountain lion — will have a profound impact on many peoples' lives.

In undeveloped portions of OSCA, outside of the Backcountry, there may be trails for hiking, biking, and horseback riding, as well as informal and formal opportunities to learn about nature.

People will come to many parts of OSCA just to take in the views, both those within the site and more distant ones, such as of the Front Range and downtown Denver. Within the site they will see pine-covered hills, unusual rock outcroppings, grasslands, and meadows. Dramatic mountain views include Pikes Peak, Mount Evans, Longs Peak, as well as the rugged foothills that lie at the feet of these 14,000-foot peaks.

That people care about OSCA will be evident as they become involved as volunteers. Some may participate in "citizen science" programs that aid OSCA managers in learning and caring for OSCA's diverse resources. Other volunteers may lead visitors on "expeditions" through the Backcountry and other parts of OSCA, when and where appropriate.

C. Operating Principles

The following operating principles are broad statements that were used in formulating management goals and objectives for OSCA.

- A large part of OSCA is being set aside to permanently protect an extensive area of open space for long-term natural resource conservation and for opportunities to observe and recreate in nature.
- Management of OSCA will be in close collaboration with managers of neighboring properties, recognizing the cross-boundary nature of many of OSCA's resources, such as wildlife.
- Signage will be kept to a minimum to keep down visual clutter, but will be sufficient to inform visitors of important management information. Signs will be carefully designed and sited to be appropriate to their settings.
- Management will include wise and prudent practices that minimize negative impacts on natural and ecological systems and features.
- Activities within OSCA will be managed to reduce erosion, conserve soil, minimize catastrophic wildfire, and protect wildlife and native plant communities
- Periodic, ongoing monitoring and input from resource experts will be used to revise or fine-tune management actions, as appropriate.
- Educational and other experimental opportunities of interest to visitors will be carefully developed so they don't harm the site's natural or cultural resources and they are likely to become stewards/volunteers
- Topographic features, trails, and other landmarks will be given names and referred to as such to help visitors appreciate the variety of OSCA's resources.
- Areas that will eventually be developed with community and recreation facilities (See map on Pages 4-5) will be managed for their open space values in the interim.

D. Management Areas and Facilities

To help focus and facilitate management, OSCA was divided into six broad management areas based on the natural resources and intended uses of each area. (See Map 8 and Table 3.) The first four are the focus of this management plan.

Table 3: Approximate size of each Management Area

Management Area	Approximate acres
The Backcountry	3,659
Wildcat Mountain Outdoor Education Area	839
The Wildlife Corridor	1,077
Beeman Creek Area (including the 158-acre Law Enforcement Training Facility)	876
Gateway Area	1,234
Golf Course Area	515
	8,200

In the June 2000 OSCA Plan, two general uses of OSCA are identified: 7,000 acres for open space area and 1,200 acres where various types of community and recreation facilities area allowed (see map on Pages 4-5). The Backcountry, Wildcat Mountain Outdoor Education Area, the Wildlife Corridor, and portions of the Beeman Creek Area and the Gateway (wildlife movement and drainages areas between development areas) are included in the 7,000 acres.

The major geographic focus of this management plan is in these four areas:

The Backcountry (3,659 acres)

At the southern end of OSCA, this area is managed primarily for wildlife and nature observation. It is the most remote from development of any part of OSCA and is surrounded by major conservation lands. The area is recommended to be open to visitors under carefully controlled conditions. In general, all visitors will enter through the Gateway with a guide (who may be a volunteer).

The Plan calls for trails designed for experiencing nature firsthand, and the area is largely managed as a place to be away from urbanization. Visitors will primarily enjoy the area on foot. Occasionally, under carefully managed conditions, mountain bicycling or horseback riding may be allowed if there are no conflicts or impacts to rare plant communities or species and sensitive or erosive soils.

Management issues

- Recommended general trail alignments are shown on Map 8 and are to be refined in the future. Trails are to be designed as the primary viewing "platform" for

observing wildlife and other aspects of nature. Observation blinds or decks may be built in strategic places where wildlife sightings are more likely.
- Careful coordination will be necessary with Centennial Water and Sanitation District, which manages the municipal water wells throughout the Backcountry so that OSCA and well-management objectives do not conflict in this area.

Wildcat Mountain Outdoor Education Area (839 acres)

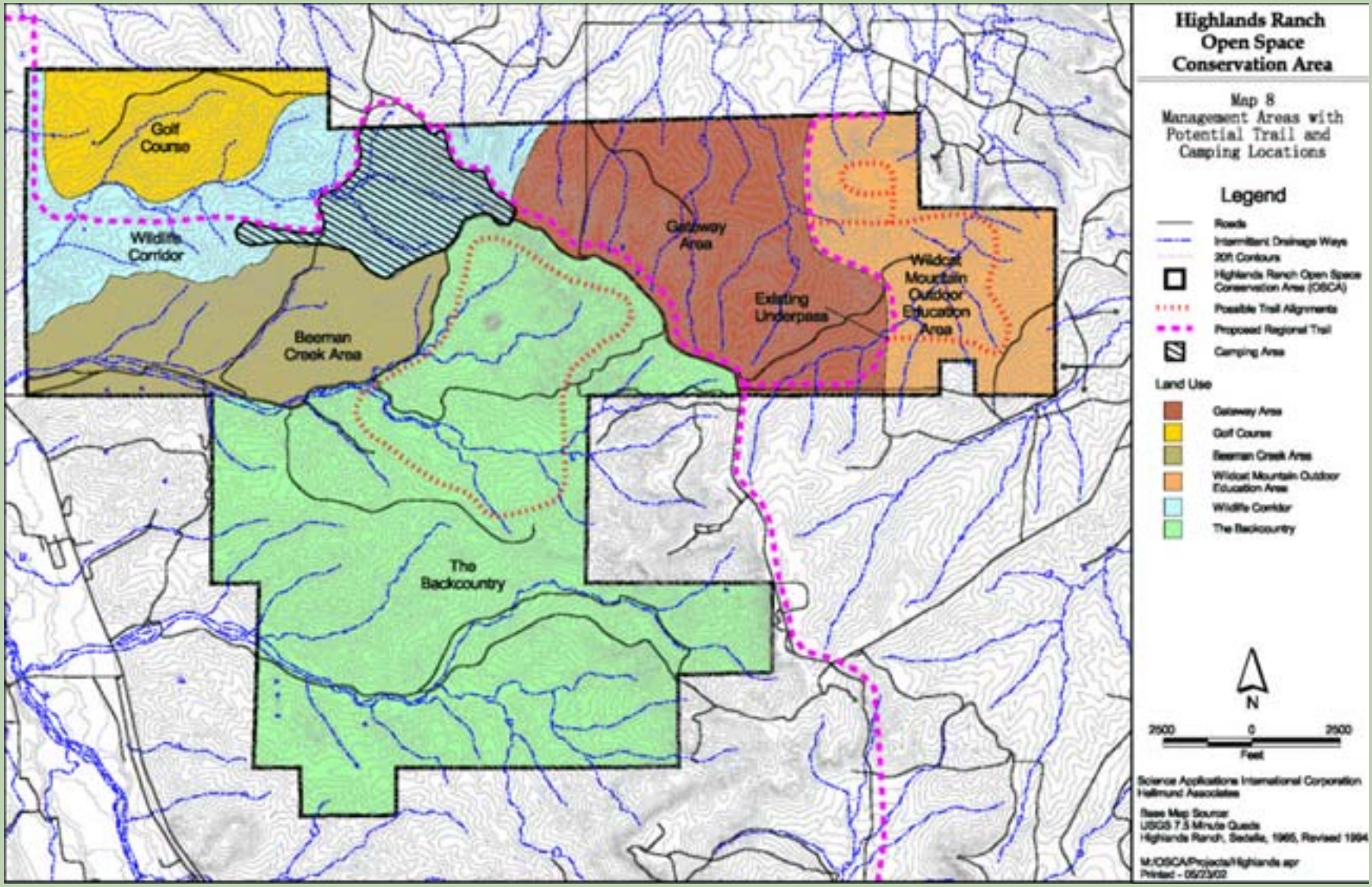
At the northeast end of OSCA, this area includes Wildcat Mountain and is bounded by Monarch Boulevard to the west. It is a place to recreate in nature and learn outdoor skills, both informally and formally. Hiking, mountain biking, jogging, horseback riding, and nature exploration will be allowed. Carefully designed trails, which also connect into the Douglas County East/West Trail System, will take people to the northern edge of Wildcat Mountain, but the cliffs themselves will be off limits to visitors for safety or possible raptor nesting reasons. The area is surrounded by existing development on three sides and will have very good access from the regional trail and roads.

Management issues
- Recommended general trail alignments are shown on Map 8 and are to be refined in the future. Trails are to be designed as the primary viewing "platform" for observing wildlife and other aspects of nature. Observation blinds or decks may be built in strategic places. Trails will have to be carefully planned on top of Wildcat Mountain in conjunction with appropriate warning signs to keep visitors from unsafe conditions that may exist near the cliffs.
- This area has a strong recreation and outdoor education focus. This is an area where children might gain experience with outdoor skills in an informal setting.
- Interpretive signs will help communicate messages of environmental stewardship.
- Dramatic views are available on top of Wildcat Mountain.

The Wildlife Corridor (1,077 acres)

This area is a broad band along the Douglas County East-West Regional Trail as it passes through the western half of OSCA. Outside of the trail right-of-way, this area will be largely managed for wildlife – especially wildlife movement – and for scenery to be appreciated from along the trail. There will be simple camping facilities here, developed for Highlands Ranch residents, and, if the local school district is interested, possibly available for their students. Individual campsites will be carefully sited within the larger zone shown as the "camping area" on Map 8. Siting will be consistent with the concepts presented in this plan and in consultation with the Colorado Division of Wildlife.

Management issues
- This is primarily the area through which the Douglas County East-West Trail passes in the western portion of OSCA.


Golf Course
Wildlife Corridor
Beeman Creek Area
Gateway Area
Existing Underpass
Wildcat Mountain Outdoor Education Area
The Backcountry
Highlands Ranch Open Space Conservation Area
Map 8
Management Areas with Potential Trail and Camping Locations
Legend
Roads
Intermittent Drainage Ways
20ft Contours
Highlands Ranch Open Space Conservation Area (OSCA)
Possible Trail Alignments
Proposed Regional Trail
Camping Area
Land Use
Gateway Area
Golf Course
Beeman Creek Area
Wildcat Mountain Outdoor Education Area
Wildlife Corridor
The Backcountry
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Base Map Source:
USGS 7.5 Minute Quads
Highlands Ranch, Sedalia, 1965, Revised 1994
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- Map 8 shows a generalized area for camping within the Wildlife Corridor. Specific campsites and any other camping facilities will be carefully sited in the future. Camping will primarily be for Highlands Ranch residents. Other users may include school and other youth groups. Greatest use will probably be primarily in the fall and spring and sometimes in the winter and therefore sites should be in sunny spots. Typically campers will hike in (less than a mile from the Gateway), but supplies may be driven in, as may those campers with special needs.
- Naming the area "wildlife corridor" is a means of communicating to trail users that they are visitors in the domain of wildlife and should act accordingly.

This area is a major wildlife movement connection between the open space system to the north, managed by the Highlands Ranch Metro Districts, and the southern parts of OSCA to the south and Plum Creek to the west.

The Beeman Creek Area (876 acres)

This area surrounds and includes the 158-acre Law Enforcement Training Facility. The portions of this area outside the Training Facility are managed for wildlife and not open to the public.

Management issues

- Areas not part of the Training Facility but immediately surrounding it should be managed for wildlife. There are special opportunities for wildlife here because people will be strictly excluded from this buffer for safety reasons.
- The area will serve to separate the more public Wildlife Corridor from the more sensitive Backcountry.

Other areas of OSCA will be managed as part of this plan until all or portions of them are developed with community and recreation facilities. They are:

The Gateway Area (1,234 acres)

The June 2000 OSCA Plan allows development of various community facilities in this area, such as a new Douglas County regional park. Most important to this plan will be what in the 2000 Plan is called "Area G." This will serve as the entrance to the Backcountry. Other parts of the Gateway will remain permanently open to protect wildlife movement and natural drainages (see map on Pages 4-5). The HRCA initiated a strategic planning process in October 2001 to determine the future uses of the Gateway areas to be developed with community and recreation facilities.

Management issues

- All of the Gateway will be managed as open space until sections are transferred to other owners or developed by the Highlands Ranch Community Association. Some areas will remain open space permanently because of their wildlife and drainage values. (See map on Pages 4-5.)
- Developers of individual areas will be encouraged to plant appropriate vegetation as buffers at the edge of their developments to help screen the development from wildlife using adjacent open space.

The permanent open space should be managed as an integrated system with the rest of OSCA's open areas, as well as the open space to the north managed by the Highlands Ranch Metro Districts, even though that land is distinctly different in nature and appearance. This integrated management is necessary because wildlife use these lands as one integrated system of habitats.

The Golf Course Area (515 acres)

The June 2000 OSCA Plan identifies this area as the site of a future, private course and country club.

E. Overall Management Goals

The following are the overall goals for managing the multiple-use areas within OSCA. Each goal is important to the success of OSCA. They are not presented in priority order. The objectives and strategic actions for implementing each goal are given in Section F.

1. Help make OSCA a premier place for experience-based wildlife observation and outdoor education by managing a major portion of OSCA (the Backcountry) as a place where wildlife thrive and people can experience wildlife, native vegetation, and scenery in a natural setting.

2. Help make OSCA a premier place for outdoor education and recreation by managing a portion of OSCA (Wildcat Mountain Outdoor Education Area) so people can participate in nature-based recreation and education in an appropriate natural setting.

3. Coordinate with organizations interested in conducting environmental education programs in the Backcountry.

4. Manage OSCA to restore and protect habitat linkage areas and wildlife populations within the context of a larger ecosystem.

5. Manage OSCA with a view toward the larger ecosystem it sits within, especially through partnerships with managers and owners of adjacent lands and of easements across OSCA.

6. Create diverse opportunities for volunteers to aid in providing visitor programs and in monitoring and managing OSCA.

F. Objectives and Action Steps

OSCA's mission, vision, and goals are expressed more specifically below through more detailed objectives and strategic actions. While the mission, vision, and goals will stay consistent over the coming years, the objectives and actions will be re-evaluated periodically and revised as needed.

Each action is proposed within a specific timeframe:

- Ongoing
- Within 2 years
- 2-5 years
- By the time title to OSCA is transferred from Shea Homes to HRCA
- After the transfer of title from Shea Homes to HRCA
- Prior to permitting visitor access

GOAL 1: Help make OSCA a premier place for experience-based wildlife observation and outdoor education by managing a major portion of OSCA (the Backcountry) as a place where wildlife thrive and **people can experience wildlife, native vegetation, and scenery in a natural setting.**

Objective A: Designate the southern part of OSCA as the Backcountry, where visitors (typically guided by a naturalist/volunteer) can view wildlife and other aspects of nature, with the number of visitors and the time of the year carefully controlled to minimize disturbance to wildlife during critical periods of their life cycle (e.g., breeding). (See management philosophy for the Backcountry, Section D: Management Areas and Facilities.)

a) Action: Design and install signs marking the Backcountry, both large signs at the entrance and smaller ones along the boundary fenceline. (*Prior to permitting visitor access)*

b) Action: Establish rules for those visiting the Backcountry to ensure both their safety and the protection of the Backcountry's resources. This would include emergency evacuation protocols and identification of key access points and contacts in the event of a medical emergency *(Prior to permitting visitor access)*

c) Action: Publish and distribute information explaining the rules and resources of the Backcountry so people understand the specific, limited uses allowed in this area and appreciate the considerable resources it contains. *(Prior to permitting visitor access)*

Objective B: Design and construct trails, observation spots, and other appropriate site features to maximize the possibility of seeing wildlife without causing adverse impacts to wildlife.

a) Action: Develop detailed alignments for trails based on the general routes presented in this plan (see Map 8) and construct and manage the trails. *(Prior to permitting visitor access)*

b) Action: Site and construct observation locations, including observation decks, along the trails, where visitors are likely to be able to see wildlife without adversely effecting them. Adverse effects can be avoided by using buffer zones, including buffering distance and vegetation screening (as published in the literature or recommended by CDOW) to avoid and minimize adverse effects to wildlife.. *(Prior to permitting visitor access)*

Objective C: Design camping facilities, as permitted in the 2000 OSCA Plan, to maximize the experience of the Wildlife Corridor's diverse and interesting natural setting while minimizing negative impacts to resources and visual impacts to the Tall Bull Memorial Grounds, located nearby in Daniels Park.

a) Action: Develop final siting for camping facilities based on the general location presented in this plan (see Map 8) and construct. *(After title transfer)*

b) Action: Develop and publish rules for users of the camping facilities. *(After title transfer)*
c) Action: Create a maintenance plan and use schedule for camping facilities within the Wildlife Corridor. *(After title transfer)*

Objective D: Help people experience wildlife firsthand without harming wildlife.

a) Action: Collaborate with the Colorado Division of Wildlife, and other partners on appropriate techniques for providing opportunities to enjoy nature while carefully managing wildlife. *(By the time title is transferred)*
b) Action: Develop memoranda of understanding with the Douglas County School District to cooperate in creating educational programs, including both day and overnight, for school groups. *(By the time title is transferred)*
c) Invite and train volunteers to help lead programs and to assist with resource monitoring. (See Goal 6: Volunteers.) *(After title is transferred)*

Objective E: Coordinate with Centennial Water and Sanitation District regarding their need to access and service the domestic water wells within OSCA, as well as other agencies with rights of access into OSCA.

a) Action: Evaluate the existing road network in discussion with Centennial and, especially where there are erosion problems or redundancy, close or reroute segments, as appropriate. *(Within 2 years)*
b) Action: Work with holders of all rights of way to ensure their management practices are compatible with the goals for the Backcountry (and other parts of OSCA). *(Ongoing)*

Objective F: Identify and restore any degraded areas with native vegetation, prioritizing areas that would supplement important wildlife habitat or corridors or reduce erosion, if restored.

a) Action: See Goal 4. *(Ongoing)*

Objective G: Seek special designation status for the Backcountry, Wildcat Mountain Outdoor Education Area, or other parts of OSCA, with recognition by the Humane Society of the United States, National Wildlife Federation, and Colorado Natural Areas Program.

a) Action: Submit applications to the most appropriate programs for recognition. *(After title is transferred.)*

GOAL 2. Help make OSCA a premier place for outdoor education and recreation by managing a portion of OSCA (Wildcat Mountain Outdoor Education Area) so people can participate in nature-based recreation and education in an appropriate natural setting.

Objective A: Designate the Wildcat Mountain area of OSCA for environmental education and recreation, where visitors can hike, bike, ride horses, and explore in

a natural setting. (See management philosophy for this area, Section D: Management Areas and Facilities.)

a) Action: Post signs delineating the area's boundary and listing allowable uses. *(Prior to permitting visitor access)*
b) Action: Post rules for visiting area. *(Prior to permitting visitor access)*
c) Action: Publish information explaining the rules and resources of the area so people understand and support appropriate uses and timing of uses (including possible temporary closures). *(Prior to permitting visitor access)*

Objective B: Design site features, such as trails, observation locations, and interpretive signs to maximize the educational and recreational experience of the area, to protect the resources, and help keep visitors safe.

a) Action: Develop detailed alignments for trails based on the general alignments presented in this plan (see Map 8) and construct and manage the trails.). *(Prior to permitting visitor access)*
b) Action: Develop interpretive signs to help visitors understand the resources, management, and allowable activities of the area). *(Prior to permitting visitor access)*

Objective C: Help people experience nature firsthand without degrading it, through both recreation and education.

a) Action: Collaborate with appropriate partners on educational and recreational programs that take advantage of the area's natural characteristics. *(After title transfer)*
b) Action: Develop memoranda of understanding with the Douglas County School District and recreation providers to cooperate in creating educational and recreational programs. *(After title transfer)*
c) Invite and train volunteers to help lead programs and to assist with resource monitoring. (See Goal 6: Volunteers.) *(After title transfer)*
d) Develop emergency evacuation protocols and identification of key access points and contacts in the event of a medical emergency. *(Ongoing)*

Objective D: Identify and restore any degraded areas with native vegetation and give priority to those areas that, if restored, would supplement important existing wildlife habitat, wildlife corridors, or reduce erosion.

a) Action: See Goal 4. *(Ongoing)*

GOAL 3: Coordinate with organizations interested in conducting environmental educational programs in the Backcountry.

Objective A: Plan programs for the gateway.

a) Action: Develop partnerships for broad-based support, participation, and management of programs. *(By the time title is transferred)*

b) Action: Develop educational programming for the Backcountry, coordinated with the programming associated with the Wildcat Mountain Outdoor Education Center. *(By the time title is transferred)*
c) Action: Develop a kiosk or other modest structure with parking to serve as the entry to the Backcountry. *(After title is transferred)*
d) Action: Investigate the feasibility of and demand for a more substantial visitor facility (nature center) at the entry to the Backcountry. *(By the time title is transferred)*

GOAL 4: Manage OSCA to restore and protect habitat linkage areas and wildlife populations within the context of a larger ecosystem.

Objective A: Form and consult periodically with a Resource Working Group of public natural resource agencies and other professionals to assess the state of OSCA's natural resources and to recommend management direction for the coming year. Through management practices: encourage diverse native plant communities, control of noxious weeds, reduce erosion, and use prescribed fires to avoid unmanageable wildfires.

a) Action: Develop a protocol for periodic natural resource assessments to standardize data collection. Include transects, plots, building on the existing DOW transects, and establish photo points for time-lapse photographs. *(Within 2 years)*
b) Action: Host a periodic field visit and meeting with the Resource Working Group to assess management success. *(Ongoing)*
c) Action: Revise work plan as necessary based on comments from the Resources Working Group. *(Ongoing)*

Objective B: Manage wildlife resources to sustain their native diversity for the enjoyment of future generations.

a) Action: Conduct regular wildlife censuses using staff, other agency personnel, volunteers, or consultants. *(Ongoing)*
b) Action: Develop management approaches that support diverse native plant communities to support diverse wildlife. *(Ongoing)*
c) Action: Identify wildlife species that will be the priorities for various areas within OSCA. These priorities will vary from the Backcountry to the Wildcat Mountain area to other parts of OSCA, and will influence overall management prescriptions for these areas. *(Within 2 years)*

Objective C: Conduct practical research into open space management issues and share that research with other open space managers.

a) Action: Include a research component in appropriate management tasks to help refine and test management techniques and develop knowledge useful to managers of OSCA and open space in other communities. *(Ongoing)*
b) Action: Develop a website, listserv, or other means of disseminating information to managers of other open space. *(2-5 years)*

c) Action: Join the Colorado Open Space Association and other associations of open space managers to share information. *(Within 2-5 years)*

Objective D: Manage weeds and other exotic species to prevent invasion, manage their spread, and reduce their impact on OSCA's and neighbors' natural systems.

a) Action: Conduct a survey of exotic species to determine their type, location, and degree of infestation. *(Within 2-5 years)*
b) Action: Prepare an integrated weed management plan that identifies priorities and strategies. (Within 5 years)
c) Action: Manage noxious weeds, when practical, consistent with Colorado's Strategic Plan for Noxious Weed Management. *(Ongoing)*
d) Coordinate weed control efforts with Douglas County and adjacent land owners. *(Ongoing)*

Objective E: Restore degraded habitat.

a) Action: Identify degraded areas to be restored. *(Within 2 years)*
b) Action: Identify priorities and timing for restoration and implement accordingly. *(Within 2 years)*

Objective F: Continue limited cattle ranching as a management tool and to preserve this historical use.

a) Action: Conduct a grazing lands inventory to evaluate range condition of the areas with potential for continued livestock grazing. *(Within 2 years)*
b) Action: Create Best Management Practices (BMPs) for grazing using the Colorado State Forest Service and Natural Resources Conservation Service manuals for BMPs before the inventory is complete. *(Within 2 years)*
c) Action: Review and revise BMPs once an inventory is complete for an area. *(Ongoing)*

Objective G: Protect and preserve historic, archaeological and cultural resources

a) Action: Identify priority historic, archaeological and cultural resources preservation issues for OSCA, in consultation with the Colorado State Historic Preservation Office and local historic societies. *(Within 2 years)*
b) Action: When possible, maintain historic structures to enhance educational value. *(Ongoing)*
c) Action: Protect historical, archaeological & cultural resources from vandalism. *(Ongoing)*
d) Action: Explore compatible visitor use opportunities of historic structures. *(After title is transferred)*
e) Action: Develop partnerships to interpret and conserve areas of historic, archaeological and cultural significance, especially with organizations with cultural and historic connections to sites within or near OSCA. Potential partners include the Tall Bull Memorial Council and local historic societies. *(After title is transferred)*

Objective H: Find important landscape features in development areas and communicate their significance to eventual owners.

a) Action: Identify significant natural and cultural features within areas to be transferred to other ownership and encourage their conservation by future owners. *(By the time title is transferred)*

GOAL 5: Manage OSCA with a view toward the larger landscape it sits within, especially through partnerships with managers and owners of adjacent lands and of easements across OSCA.

a) Action: Participate in the North Areas Cooperative Management Council, which includes managers of open space in this part of Douglas County, to collaborate on landscape-scale issues, such as wildlife and wildfire management. (*Ongoing)*
b) Action: Participate in the Chatfield Basin Conservation Network to stay abreast of opportunities for regional collaboration. (See Section E. Connections with adjacent lands or www.chatfieldbasin.org for more information.) (*Ongoing)*
c) Action: Develop a list of easement holders and the actions they are allowed to take on their easement. (*Within 2 years)*
d) Action: Communicate to easement holders OSCA goals for the areas through which their easements pass. (*Ongoing)*
e) Action: Seek other funding opportunities, including cost-share programs to work on regional issues. (*Ongoing)*

GOAL 6: Create diverse opportunities for volunteers to aid in providing visitor programs and in monitoring and managing OSCA.

a) Action: Appoint a volunteer coordinator. *(After title is transferred)*
b) Action: Invite volunteers to help conduct interpretive and educational programs for the visitors. *(After title is transferred)*
c) Action: Invite volunteers to help with appropriate aspects of OSCA's management and monitoring. *(After title is transferred)*
d) Action: Develop and conduct "service learning" projects in collaboration with the Douglas County School District and other organizations, as part of a comprehensive intergovernmental agreement with the Douglas County School District. *(After title is transferred)*
e) Action: Develop a friends group to support the management and educational activities of OSCA. *(After title is transferred)*

G. Rough, Order-of-Magnitude Costs of Managing OSCA

The costs of managing open space can vary widely, depending on the conditions of the resources and the amount of visitor use. Costs also will vary within OSCA, depending on vegetation type and the scope of weeds or other problems present, and the nature and intensity of surrounding land uses. Areas with ponderosa pines, for example, may require intensive maintenance if pine bark beetle or other such problems arise. In OSCA the main costs will include:

- Fence maintenance
- Trail management and maintenance
- Noxious weed management
- Wildlife management
- Vegetation management (including any prescribed burning)
- Camping area maintenance
- Visitor management/services (including law enforcement)

Excluding costs associated with the campground, we estimate the expense of maintaining open space in OSCA at $75 to $150 per acre, per year. This range is based on averages for other locales and the experience nearby of managing open space by the Highlands Ranch Metro Districts. (See Table 4.)

Table 4. Comparable Estimates for Open Space Management and Rough Order of Magnitude Management Costs for managing Open Space at OSCA

Program	Cost per acre/year
City of Boulder Open Space Program	$75
Santa Fe County, NM (working estimate)	$100
Highlands Ranch Metro Districts	$190-210
Rough, Order of Magnitude Projected Costs for OSCA	$75-150
	Total projected costs/per year
7,000 acres of OSCA @ $75/acre/year	$525,000
7,000 acres of OSCA @ $150/acre/year	$1,050,000

Note: Santa Fe County partially based its estimate on the City of Boulder average.

The Highlands Ranch Metro Districts averages are very helpful because they are for lands just north of OSCA. They are for areas, however, that are more intensively managed than will be OSCA, and include paved trails and intensive management practices, such as, mowing along fencelines.

Multiplying the low estimate in the suggested range ($75/acre/year) times the number of acres of natural open space to be managed in OSCA (7,000 acres) provides an overall estimate of $525,000. Because areas near development, for example in the Gateway, will require

greater care than other areas, such as parts of the Backcountry, this overall estimate will most likely be quite low. For similar reasons the high end of the suggested range ($150/acre/year) probably results in an overall estimate that is high.

Also, some areas eventually to be developed with community and recreation facilities will be managed as open space in the interim, which could be for more than ten years.

As inventories of weeds and other management issues are completed and as more detailed plans are developed for trails and other improvements, it will be easier to identify management costs for various areas within OSCA.

See Appendix E: Detailed Cost Estimates and Sources.

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Acronyms

BMP	Best Management Practice
CDOW	Colorado Division of Wildlife
CNAP	Colorado Natural Areas Program
COE	United States Army Corps of Engineers
MIP	Management Implementation Plan
NRCS	Natural Resources Conservation Service (formerly SCS)
NWI	National Wetland Inventory
OSCA	Highlands Ranch Open Space Conservation Area
SAIC	Science Applications International Corporation
SCS	Soil Conservation Service (now known as the NRCS)
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Appendix A:
Partial OSCA Plant and Wildlife Lists

Appendix A: Partial OSCA Plant and Wildlife Lists

Partial OSCA Plant List from Site reconnaissance in May 2001

GRAMINIOIDS	
Common Name	Scientific Name
Blue grama grass	Chondrosum gracile
Three awn	Aristida purpurea
Rocky Mtn. Bluegrass	Poa agassizensis
Bulbous bluegrass	Poa bulbosa
Sun-loving sedge	Carex pennsylvanica
Cheatgrass	Bromus tectorum
Indian ricegrass	Achnatherum hymenoides
Buffalograss	Buchloë dactyloides
Arctic rush	Juncus arcticus

FORBS	
Common Name	Scientific Name
Alyssum	Alyssum minus
Storksbill	Erodium cicutarium
Pricklypear cactus	Opuntia macrorhiza
Hedghog cactus	Echinocereus spp.
Diffuse knapweed	Centaurea diffusa
Musk thistle	Carduus nutans
Western dandelion	Taraxacum officinale
Wavyleaved dandelion	Nothocalais cuspidata
Mullein	Verbascum thapsus
Tansymustard	Descurainia pinnata
Yarrow	Achillea lanulosa
Goldenpea	Thermopsis rhombifolia
Purple mustard	Chorispora tenella
Violet	Viola nuttallii
Spring beauty	Claytonia rosea
Larkspur	Delphinium nuttallianum
Chiming bells	Mertensia lanceolata
Sand lily	Leucocrinum montanum
Pussytoes	Antennaria sp
Early purplevetch	Astragalus shortianus
Snakeweed	Gutierrezia sarothrae
Salt-and-pepper	Lomatium orientale
Cress	
Broom snenecio	Senacio spartioides
Clover	Trifolium sp

Salsify	Tragopogon sp
Western wallflower	Erysimum asperum
Indian paintbrush	Castilleja integra
Prairie smoke	Erythrocoma triflora
Common lupine	Lupinus argenteus
Drummond milkvetch	Astragalus drummondii
Woods rose	Rosa woodsii
Sticky geranium	Geranium caespitosum
Blue-eyed Mary	Collinsia parviflora
Narrow-leaved puccoon	Lithospermum incisum
Stonecrop	Amerosedum lanceolatum
Yucca	Yucca glauca

TREES and SHRUBS	
Common Name	**Scientific Name**
Ponderosa pine	Pinus ponderosa
Plains cottonwood	Populus deltoides
Gambel oak	Quercus gambelii
Wild Plum	Prunus americana
Chockcherry	Prunus virginiana
Snowberry	Symphoricarpos occidentalis
Serviceberry	Amelanchier alnifolia
Mountain mahogany	Cercocarpus montanus
Squawcurrant	Ribes cereum
Rocky Mountain Juniper	Sabina scopulorum
Three-leaved sumac	Rhus aromatica var trilobata

Wildlife species observed during a site reconnaissance in May 2001

MAMMALS	
Common Name	Scientific Name
Black bear (from tracks)	Ursus americanus
Elk	Cervus elaphus
Mule deer (from tracks)	Odocoileus hemionus
Porcupine (from tree damage)	Erethizon dorsatum
American badger (from skull)	Taxidea taxus

REPTILES/AMPHIBIANS	
None observed	

BIRDS	
Common Name	Scientific Name
Downy woodpecker	Picoides pubescens
White-breasted nuthatch	Sitta carolinensis
Virginia's warbler	Vermivora virginiae
Western kingbird	Tyrannus verticalis
American Crow	Corvus brachyrhynchos
Black-capped chickadee	Poecile atricapillus
Mountain bluebird	Sialia currucoides
Red-tailed hawk	Buteo jamaicensis
Spotted towhee	Pipilo maculatus
Northern flicker	Colaptes auratus
Common poorwill	Phalaenoptilus nuttallii
Vesper sparrow	Pooecetes gramineus
Horned lark	Eremophila alpestris
Black-billed Magpie	Pica pica
American robin	Turdus migratorius

Appendix B:
Potential Wildlife Species from Colorado Division of Wildlife

Appendix B: Potential Wildlife Species (Colorado Division of Wildlife)

The Colorado Division of Wildlife provided the following list of wildlife species that potentially occur in the kinds of vegetation found in OSCA. This is not a list of species that are known to be found in OSCA, but rather a list of wildlife that hypothetically might be found there, based on OSCA's general types of vegetation.

"Wildlife species using ponderosa pine, shortgrass prairie, mixed grass prairie, and scrub oak habitats in Latilong Block 12.

Data from the Colorado Division of Wildlife's Latilong Data Bank. Search by District Wildlife Manager Susanne Tracey, July 20, 2001."

Amphibians / Reptiles

Tiger salamander
Great plans toad
Woodhouse's toad
Plains spadefoot
Ornate box turtle
Northern earless lizard
Short-horned lizard
Rid-lipped prairie lizard
Northern prairie lizard
Praire-lined racerunner
Northern many-lined skink
Eastern yellowbelly racer
Plains hognose snake
Milk snake
Western coachwhip
Western smooth green snake
Bull snake
Western plains garter snake
Northern lined snake
Prairie rattlesnake

Mammals

Least shrew
Western small-footed myotis
Long-eared myotis
Little brown myotis
Hoary bat
Silver-haired bat
Big brown bat
Townsend's big-eared bat
Desert cottontail
Nuttal's cottontail
Black-tailed jack rabbit
White-tailed jack rabbit
Least chipmunk
Colorado chipmunk
Spotted ground squirrel
Thirteen-lined ground squirrel
Rock squirrel
Black-tailed prairie dog
Abert's squirrel
Northern pocket gopher
Plains pocket gopher
Silky pocket mouse
Hispid pocket mouse
Ord's kangaroo rat
Western harvest mouse
Plains harvest mouse
Northern grasshopper mouse
Mexican woodrat
Prairie vole
Porcupine
Coyote
Swift fox
Red fox
Gray fox
Black bear
Mountain lion
Racoon
Short-tailed weasel
Long-tailed weasel
Badger
Striped skunk
Bobcat
Elk
Mule deer
Pronghorn antelope

Birds

Turkey vulture
Sharp-shinned hawk
Cooper's hawk
Swainson's hawk
Red-tailed hawk
Golden eagle
American kestrel
Prairie falcon
Blue grouse
Sharp-tailed grouse
Wild turkey
Band-tailed pigeon
Barn owl
Flammulated owl
Great horned owl
Northern saw-whet owl
Common nighthawk
Common poorwill
Black swift
Chimney swift
White-throated swift
Calliope hummingbird
Lewis' woodpecker
Williamson's sapsucker
Three-toed woodpecker
Northern flicker
Dusky flycatcher
Western flycatcher
Purple martin
Scrub jay
Pinyon jay
Black-billed magpie
American crow
Chihuahuan raven
Common raven
Mountian chickadee
White-breasted nuthatch
Pygmy nuthatch
Rock wren
House wren
Western bluebird
Mountain bluebird
Townsend's solitaire
Swainson's thrush
American robin
Gray catbird
Water pipit
Loggerhead shrike
Solitary vireo
Orange-crowned warbler
Virginia's warbler
Chestnut-sided warbler
Black-throated gray warbler
Pine warbler
Black-and-white warbler
Ovenbird
MacGillivray's warbler
Western tanager
Black-headed grosbeak
Lzuli bunting
Cassin's sparrow
Chipping sparrow
Grasshopper sparrow
Dark-eyed junco
McCrown's longspur
Western meadowlark
Brewer's blackbird
Rosy finch
House finch
Pine siskin

Appendix C:
Potential Natural Areas Designations for OSCA

Wild Neighbors.org About Us
THE HUMANE APPROACH TO LIVING WITH WILDLIFE
A Project of The Humane Society of the United States

Urban Wildlife Sanctuary Program

The world can be a safer place for wildlife with your help.

Apply Online

Certify your property as an Urban Wildlife Sanctuary and join with others who share your concern and compassion for wildlife!

The Humane Society of the United States' Urban Wildlife Sanctuary Program helps people find a balance between human uses of land and the habitat needs of wildlife. By sharing the concepts of humane stewardship, we can help you live in greater harmony with your wild neighbors.

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©John Hadidian

You don't have to have acres of land to provide sanctuary. The Urban Wildlife Sanctuary Program is open to anyone with an interest in making our urban areas more hospitable to wildlife. Even a city apartment balcony can hold a birdfeeder or butterfly garden.

If you have a sincere desire to help wild animals by enhancing habitat on your property and committing to humane approaches for resolving conflicts with wildlife, your property could become an official HSUS Urban Wildlife Sanctuary.

Benefits of Urban Wildlife Sanctuary Membership

First and foremost, you'll enjoy the increased opportunities for observing wildlife. You'll also receive:

- **A free copy** of **Wild Neighbors: The Humane Approach to Living with Wildlife**, a 253-page book offering practical advice for humane, effective resolution of human-wildlife conflicts with more than 30 species of animals commonly found around homes and buildings. An $18 value!
- **A complimentary one-year subscription** to ***Wild Neighbors News***, our quarterly publication offering seasonal suggestions for helping wildlife, ideas for enhancing habitat, and feature articles on urban wildlife species.
- **A full-color certificate** dedicating your property as an Urban Wildlife Sanctuary.
- **Public recognition**, if desired, of your commitment to humane stewardship.

- **Access to information and resources** on urban wildlife and wildlife habitat.

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Share the Vision...

©Dave Manski

Humane stewardship means showing that we have not forgotten what it means to be a member of a community of living beings.

Your commitment to providing safe habitat for wildlife and following humane stewardship principles in caring for your property demonstrates your respect and compassion for other living creatures.

Enjoy the View!

The joy of seeing and hearing wild birds and animals will reward you again and again for your efforts in welcoming them onto your land. And you'll have the pleasure of knowing you've made an important investment in a healthy future for wildlife.

Apply Online

Questions? E-mail us at sanctuary@hsus.org, or phone 202-452-1100 and ask for the **Urban Wildlife Sanctuary Program.**

BACKYARD WILDLIFE HABITAT
NATIONAL WILDLIFE FEDERATION

Community Wildlife Habitat™

Backyard Schoolyard Workplace Community

Create Habitats
* The Basics
* Beyond Basics
* Need Help?

Certify Your Community
* How and Why
* Sample Sites

About the Program
* Overview
* Press Releases
* Newsletters

The Community Wildlife Habitat (CWH) project is part of National Wildlife Federation's Backyard Wildlife Habitat Program. CWH projects take the basics of this program - providing food, water, cover, and places where wildlife can raise their young - from the individual backyard to multiple locations throughout the communtiy. CWH projects also incorporate community projects such as stream clean-ups, invasive plant removals, and plant and wildlife rescues.

CWH projects benefit the entire community of plants, wildlife, and people through the creation of sustainable landscapes that require little or no pesticides, fertilizers, and excess watering. These landscapes help keep water and air resources clean. They are healthier for people and the environment, and are less resouce-dependant than conventional landscape. Habitat landscapes can serve to beautify our urban areas and give residents pride in their neighborhoods. A CWH project multiplies this positive effect by creating multiple habitat areas in backyards, schoolyards, corporate properties, community gardens, parkland, and other spaces.

Community Wildlife Habitat sites are springing up this year.

***Certified** site #1: Alpine, CA
***Certified** site #2: Zionsville, IN
***Certified** site #3: Reston, VA
***Registered** site #4: Englewood, CO
***Registered** site #5: Canastota, NY
***Registered** site #6: South Riding, VA
***Registered** site #7: Tukwila, WA
***Registered** site #8: Hillsboro Pines, FL

Field Guide & E-Newsletter

See a field guide of species in your area and receive a free bi-weekly E-Newsletter.

your zip

your email

☑ get newsletter

Go!

START your Community Wildlife Habitat project today!

Need Help?

There are NWF staff and resources available to assist you in making your habitat project a success.

New and Noteworthy

*Learn about the certification of Reston, Virginia
*Learn about the certification of Zionsville, Indiana
*Want to register your community?
*Please fill out our Citizen Naturalist survey.

Colorado Natural Areas Program

Colorado Natural Areas preserve some of the finest examples of Colorado's original and unique landscapes for the benefit of present and future generations. Sites qualify as Colorado Natural Areas when they contain at least one unique or high-quality feature of statewide significance:

Native plant communities
Geologic formations or processes
Paleontological localities
Habitat for rare plants or animals

Natural areas may be on public or private land and are designated through voluntary agreements with land owners.

The Colorado Natural Areas Program was created by an act of the Colorado Legislature in 1977. CNAP operates under the oversight of the Board of Parks and Recreation. The Natural Areas Council advises program staff and consists of four members appointed by the Governor and three members from state boards and commissions.

Natural Areas Act

Natural Areas Council and Staff

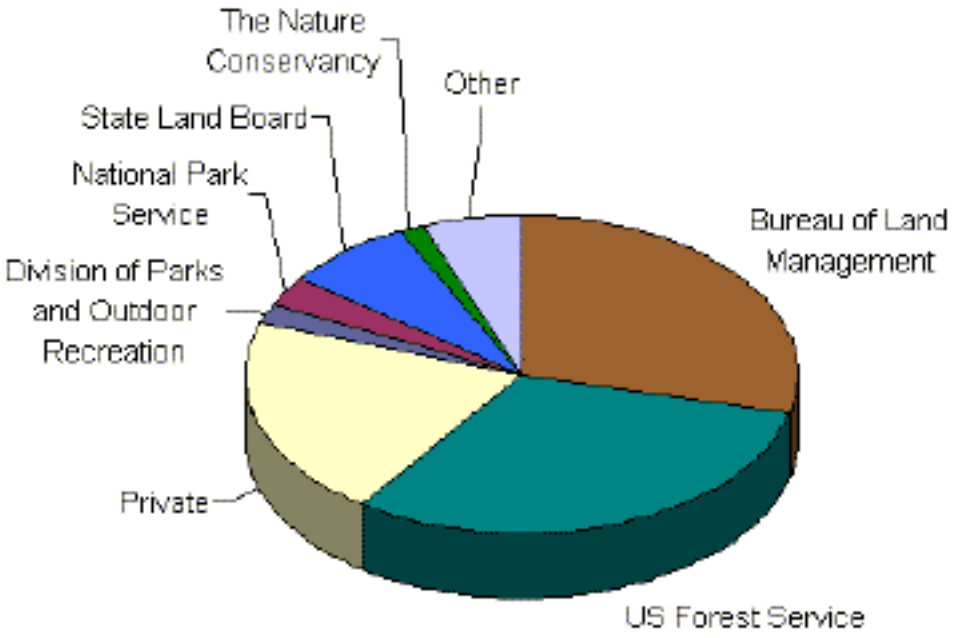
Why designate Natural Areas?

- to maintain natural features that make Colorado unique and contribute to the quality of life for the state's citizens and visitors.
- to serve as reference areas against which the health and productivity of managed and restored areas can be measured.
- to provide sites for research and education to increase our understanding of the world around us.
- to protect rare species and their habitat, both for their intrinsic values and for the benefit of future generations.

Natural area designation recognizes exceptional examples of Colorado's diversity, and acknowledges the stewardship of land owners and managers whose commitment to preserving our natural heritage benefits all citizens.

Over the past 23 years, the Colorado Natural Areas Program has worked in partnership with local, state and federal agencies and private citizens to identify and protect Colorado's special places -- places with unique and often spectacular geologic or paleontologic features, places that are home to rare plants or animals, and places that support excellent examples of plant communities that are rare or representative of our state. CNAP does not purchase property; all agreements are voluntary and non-binding. The program currently includes 63 designated sites and 36 registered sites.

Ownership of Natural Areas in Colorado
(designated, registered and identified sites)



Looking ahead . . .

The work of the Colorado Natural Areas Program continues to focus on identifying and designating sites of statewide significance. Other current projects include the formation of a Friends of Natural Areas Program, producing a program newsletter, and preparing management plans for designated natural areas. CNAP staff members also continue to provide expertise to the Colorado State Parks, the State Board of Land Commissioners and other state and federal agencies.

Return to CNAP Homepage

Appendix D:
Detailed Cost Estimates and Sources

Appendix D: Detailed Cost Estimates and Sources

The current ranch manager of OSCA estimates the following costs.

Wells and Water	Repair wells	$3,000/year
	Install power to windmills	$8,000 - $10,000/windmill
Fencing	Repair winter damage to fences	$3,000/year
	Repair fence due to trespass and elk damage	$12,000/year
Power	Power to run 3 windmills	$600/month
Roads	Grader work on roads	$5,000/year
Insurance	$1 million insurance policy for OSCA	$2,000/year

Major capital expenses envisioned as part of this management plan include some of the following:

- **Nature Center/Visitor Center for OSCA.** Construction of this type of facility varies widely depending on the final plans. A visitor's center can be as simple as an interpretive kiosk ranging in price from $15,000 to $35,000, whereas a full-scale nature center can cost 1.5 million dollars for construction only.

Description	Cost
Full-scale nature center. 8,000 square feet. Costs include parking area, paving, utilities and structure. Exhibits planned but phased in over 5 years.	$1,500,000
Kiosk Visitors Center: Three sided wood kiosk with a roof. Includes interpretive displays and a 5-space, natural surface parking area.	$35,000
Bear proof trash cans 2 @ $1,000 each	$2,000

- **Trail(s).** Construction of this type of facility varies widely depending on the final plans. A 6-foot wide natural surface trail will cost approximately $20,000 per mile. This is assuming that there are no unforeseen drainage or construction problems.

  Restrooms, picnic tables and parking areas are additional costs.

Description	Cost
Ten miles of six-foot wide natural surface trail @ $20,000 per mile.	$200,000
Two parking areas: Ten spaces in each area at $2,000 per space. Lots are adjacent to existing road. No need to improve the existing road. The parking area is natural surface.	$40,000
Bear proof garbage cans 2 @ $1,000. Located in parking areas.	$2,000
Picnic tables adjacent to trail: 5 tables at $1,500 each	7,500
Restrooms: 2 composting toilets (one at each parking area)	$150,000

- **Campground(s)**. Assuming this facility will be a walk-in campground, there will be four capital costs associated with its construction. Construction of the camping area including pads for high-use areas, tables and fire pits ($4,000 and $5,000 per site), restrooms, parking area and trash receptacles.

Description	Cost
Camping area: High use pad surrounded by timbers and filled with compact road base, table, grill and utility road (dirt-not improved) 15 sites at $5,000 per site.	$75,000
One parking area: Fifteen spaces at $2,000 per space. Lot is adjacent to the existing road. Parking area is natural surface.	$30,000
Restrooms: 1 composting toilet (located at parking lot)	$75,000
Bear Proof Garbage Cans 2 @ $1,000	$2,000

- Miscellaneous OSCA maintenance equipment (ATV's, Landscape equipment, fencing material, etc.)

Description	Cost
Fencing approximately 40 miles at $5,000 per mile	$200,000
Two 4-wheel drive trucks and 2 ATV's. Assumes a facility for parking these vehicles already exists.	$70,000
Assortment of tools for maintenance of campground, parking areas, picnic tables, and trails. Assumes a facility already exists for storing these tools.	$5,000

Management costs

- **Nature Center or Visitor Center for OSCA.** Management of these types of facilities vary widely depending on the final plans. Management of a Kiosk type facility can cost as little as $600 per year where as a full scale visitors center can cost $370,000 to staff and maintain.

Description	Cost
Full-scale Nature Center. Offers interpretive and educational programming, outreach, and exhibits.	$370,000
Kiosk Visitors Center: Unmanned, maintenance includes repairs, trash collection, and regarding of parking areas.	$1,600
Trash Collection	See OSCA Management

- **Trail(s).** Management of this type of recreational facility varies widely depending on the final plans. A 6-foot wide natural surface trail will cost approximately $900 per mile per year to maintain. This is assuming that there are no unforeseen drainage or structural problems.

  Management of restrooms, picnic tables and parking areas associated with the trail are additional costs.

Description	Cost
Ten miles of six-foot wide natural surface trail @ $900 per mile per year	$9,000
Two parking areas: Re-grade natural surface lots.	$2,000

Trash Collection: 2 bear proof garbage cans located at parking areas.	See OSCA Management
Five picnic tables adjacent to trail: Maintenance includes repairs and general cleanup. Maintenance/management of these tables would cost $780 per table per year.	$3,900
Restrooms: 2 composting toilets (one at each parking area). Maintenance includes maintaining the degradable additives and balance, cleaning the restrooms, and repairs.	$6.240

- **Campground(s)**. Management of a campground facility will include collection of fees, maintenance of the individual sites, weed control, parking areas, trash collection and restrooms.

Description	Cost
Camping area: Management to include collection of fees, cleaning of fire pits, general cleanup, weed control, and general repairs. ($1,500 per site per year)	$18,000
One parking area: Re-grading of natural surface parking area.	$1,000
Restrooms: 1 composting toilet in parking area. Maintenance includes maintaining the degradable additives and balance, cleaning the restrooms, and repairs.	$3,120
Trash Collection from 2 bear proof garbage cans.	See OSCA Management

- **Miscellaneous OSCA maintenance equipment** (ATV's, Landscape equipment, fencing material, etc.)

Description	Cost
OSCA Personnel: Three full time employees ($45,000 per year) and three seasonal employees ($15,000 per year). Assumes that facilities already exist to house the personnel.	$200,000
Maintain 40 miles of fence ($200 per mile per year)	$8,000
Maintain OSCA Trucks & ATVs (Includes gas, fees & maintenance)	$12,720
Manage noxious weeds (approximately $100,000 for 7,000 acres)	$100,000
Integrated Weed Master Plan	$10,000

Wildlife Plan	$10,000
Conservation Monitoring Plan	$20,000
Conservation Monitoring & Report	$15,000
Trash Collection for OSCA	$5,200
Restoration of Damaged Areas	$5,000 – 10,000/acre over 3 years

Persons & Agencies Contacted for Cost Information

Contacts made between October 5, 2001 and October 12, 2001

Bill Dailey, Manager of Open Space
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3280 Redstone Park Circle
Highlands Ranch, CO 80126
303-791-2710

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South Suburban Park and Recreation District
6631 S. University Blvd.
Littleton CO 80121
303- 730-1022 x 12

References for costs

Jefferson County Open Space 2001 Proposed Budget for the Lookout Mountain Nature Center. Jefferson County, Colorado.

Denver Botanical Gardens 2001 Budget for the Chatfield Nature Preserve. Denver, Colorado.

Trust for Public Lands Website: www.tpl.org