

Red Mountain Open Space Resource Management and Implementation Plan



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**Larimer County Parks and Open Lands Department
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**Adoption of the
Resource Management and Implementation Plan
For Red Mountain Open Space**

The Resource Management and Implementation Plan for Red Mountain Open Space was recommended for adoption by the Larimer County Open Lands Advisory Board on September 27, 2007 and adopted by the Director of the Larimer County Parks and Open Lands Department.

Gary Buffington, Director Parks and Open Lands

Date

1. INTRODUCTION

1.1 Background

Red Mountain Open Space is part of a greater vision for the Laramie Foothills identified in the 2001 Larimer County Open Lands Master Plan to protect natural, visual, open space, cultural and agricultural resource values. This 14,980-acre property was acquired with the intent to protect native and rare vegetation and wildlife populations, provide for continued agricultural management, preserve scenic views and provide appropriate non-motorized outdoor recreational opportunities. The open space was purchased in part with funds from Larimer County's Help Preserve Open Spaces Sales Tax funds and in part from Great Outdoors Colorado (GOCO) and therefore, is subject to a deed restriction, which is held by the City of Fort Collins.

The Laramie Foothills is an intact landscape that stretches northwest of Fort Collins to the Rocky Mountains and into Wyoming. It is a landscape created by the merging of two great landforms, a rich and complex interface where red-rock outcrops and mesas emerge from expansive grasslands. The resulting mosaic of vegetation communities and landforms is a fertile place, rich in human history and host to an incredible diversity of plants, animals and natural communities. Due to these significant landscape resources, Red Mountain Open Space was purchased as part of the Laramie Foothills Mountains to Plains Project - a partnership between private landowners, Larimer County, the City of Fort Collins, The Nature Conservancy and the Legacy Land Trust to conserve over 55,400 acres in the Laramie Foothills. This landscape-level project will create a mountains to plains corridor of protected lands along the northern Front Range totaling approximately 140,000 acres (70,000 acres of protected private land and 70,000 acres of existing protected public land). To achieve this landscape-level land protection effort, it is the intent that approximately 1/3 of Red Mountain Open Space will be kept and managed fee-simple by Larimer County and approximately 2/3 of the acreage will be encumbered with a conservation easement and traded to an adjacent landowner for equivalently valued conservation easements on their ranchlands (see Map 1: Laramie Foothills Mountains to Plains Project Area).

1.2 Purpose and Objectives of the Plan

The purpose of this document is to: 1) examine the management objectives for Red Mountain Open Space given the current ecological, social, economic and political environments; 2) provide the formal program and policy guidelines that will direct the management and use of Red Mountain Open Space well into the future; and 3) develop specific implementation strategies for carrying out various components of the management plan and subsequent management efforts. The overall objectives of the plan are to:

- Define a vision and goals for protecting, managing and enhancing the natural, cultural, visual and western heritage resources of Red Mountain Open Space;

- Outline acceptable, appropriate and enjoyable outdoor recreation opportunities;
- Examine educational opportunities that enhance visitor appreciation and understanding of the resources and management goals at Red Mountain Open Space; and
- Define implementation policies, programs and responsibilities for the above goals as well as provide specific implementation steps where appropriate.

1.3 Scope and Organization of the Plan

The resource management plan for Red Mountain Open Space contains three main sections: 1) a review of existing conditions, including natural, visual, cultural and socioeconomic resources; 2) a discussion of opportunities, constraints and planning issues related to management of the open space; and 3) a management plan addressing the existing conditions, opportunities, constraints and planning issues and outlining implementation steps and phasing. The management plan covers the entire 14,980 acres originally purchased by Larimer County and will apply to any adjacent lands that are acquired as part of Red Mountain Open Space in the future. Once approximately 2/3 of the current open space lands are traded, encumbered with a conservation easement, this plan will no longer apply to those portions in private ownership.

1.4 Public and Agency Involvement

Extensive public and agency involvement has been utilized to ensure full representation of those parties interested in Red Mountain Open Space [In Process]. The management planning process was conducted jointly with the City of Fort Collins' Soapstone Prairie Natural Area plan to solicit public input at a landscape-level management focus for both parcels.

At the first public meeting held January 24, 2007, over 200 citizens were in attendance, the management plan process was introduced, natural and cultural resources and management zoning concepts were presented and the public's visions, issues and concerns were identified (see Appendix A for the summarized concerns noted at the public meeting and corresponding management direction sent post-meeting to participants). The second meeting, an open house, was held August 16, 2007, where copies of the draft management plans (Red Mountain Open Space and Soapstone Prairie Natural Area) were available for public review and over 80 citizens attended. In addition, the draft plans were available on the County and City's websites for a month-long review period.

In addition to public workshops, the draft management plan was reviewed by the Open Lands Advisory Board, Parks and Open Lands Staff and a technical advisory group (listed below) comprised of various specialists to ensure resource expertise and diverse user group input.

Core Planning Team

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Larimer County Open Lands Advisory Board Subcommittee

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2. EXISTING RESOURCES

2.1 Overview

Red Mountain Open Space, currently comprising 14,980 acres, is located in the Laramie Foothills, north of the City of Fort Collins and Town of Wellington (Map 1). This property was purchased by Larimer County for its natural, visual, open space, cultural, outdoor recreational and agricultural resource values.

2.2 Natural Resources

a. Climate

Red Mountain Open Space has a highly variable, semi-arid climate. The climate data used to characterize this property has been recorded in Fort Collins, however the climate data is generally reflective of conditions in this region (Colorado Climate Center 1999).

The average maximum daily temperature is approximately 70° Fahrenheit or above from May through September, with the daily average maximum reaching approximately 85 degrees in July and August. High temperatures may exceed 100 degrees, but nights are cooler with an average low during the summer of approximately 54 degrees. Winters are generally cold but are characterized by temperature swings. January is the coldest month with an average daily maximum of 41.5 degrees and minimum of 13.6 degrees.

Average annual precipitation is 14.4 inches, with the highest amount of precipitation occurring in May. Average annual snowfall is approximately 50 inches.

b. Topography/Geology/Soils

Topography

The Laramie Foothills is a region of diverse topography -- a place where the plains and the foothills of the Rocky Mountains come together and create a dynamic and scenic landscape of open valleys, isolated buttes and colorful hogbacks in reds and browns. The elevation change on the property ranges from about 5,900 feet in the southeast corner to a highest elevation point of 7,458 feet in the northwest corner.

Geology

The rocks of Red Mountain Open Space tell a story of a dynamic geological history that spans over 1.8 billion years. Much of the following geologic information was compiled by Scott Larson at Colorado State University.

The crystalline “basement” rocks which underlie the entire open space consist of metamorphosed sedimentary rocks that were intensely deformed by extreme heat and pressure around 1.8 billion years ago (bya) and later intruded by the Sherman and Silver Plume Granites and igneous dikes

around 1.4 bya. These rocks were eroded to a level surface forming a plain that geologists call “the great unconformity”.

Approximately 550 million years ago (mya) during the early Paleozoic Era the seas transgressed over the area depositing marine sedimentary rocks upon the great unconformity. These early Paleozoic rocks were completely removed by erosion following the uplift of the Ancestral Rockies, but are still preserved in other parts of Colorado. The Ancestral Rockies were uplifted during the early to middle Pennsylvanian Period (325 to 295 mya). The red and maroon sandstones of the Fountain Formation are the oldest sedimentary rocks exposed on the open space overlying the “basement” and are late Pennsylvanian/early Permian deposits of alluvial fans and braided streams (295-280 mya). The deposition of sediments continued through the end of the Permian and into the early Triassic, depositing the limestone, red sandstones, siltstones, shale and gypsum of the Ingleside, Owl Canyon, Lykins and Jelm Formations (280 to 240 mya). The deposition of sediments stopped in the Early Triassic and resumed in the mid Jurassic with the deposition of the sandstone of the Entrada Formation and the limestone and shales of the Morrison Formation, approximately 180 to 150 mya. The Dakota Formation was deposited in the early Cretaceous around 110 mya and contains one shale and two sandstone members which are very resistant to erosion and form two distinct hogbacks on the eastern boundary of the open space. The Benton Group consists mostly of marine shales and is poorly exposed on the eastern margin of the open space and overlain by the Niobrara Formation which contains 2 prominent hogbacks of marine limestone exposed on Soapstone Prairie Natural Area to the east. The Pierre Shale, a late Cretaceous marine shale and sandstone was deposited approximately 90 mya and is the youngest deposits of marine sediments in the area.

The Colorado Rocky Mountains began to rise in the late Cretaceous Period approximately 72 mya, following a collision of North America with another plate to the west. This mountain building event, known as the Laramide Orogeny, lasted until 40 mya and consisted of faulting the crystalline “basement” and faulting, folding and tilting the overlying sedimentary rocks. The folded and tilted sediments were deeply eroded before the deposition of the white, volcanic ash rich mudstones of the Oligocene White River Group around 34 mya. Folding of the Dakota Formation during the Laramide Orogeny created unstable landforms and resulted in massive landslides during the Oligocene also. The Arikaree Formation is a light gray siltstone that is late Miocene deposited around 24 mya. The uplift of North America beginning in the late Miocene, around 10 mya, caused streams to resume the erosion of the Rockies and deposited the sands and gravels of the Ogallala Formation forming the Gangplank, the high, east sloping plain that covers the older folded and faulted sedimentary rocks and forms the northeastern boundary of Red Mountain Open Space. Approximately 10 MYA this weak layer of the Plateau began to erode, leaving more resistant layers including the hogbacks and other formations. This erosion period carved out the Big Hole as rivers and drainages flowed from the north. The uplift of the region continued through the late Miocene, Pliocene and the Pleistocene as streams cut their present valleys. The high terraces perched on the margins of the modern valleys are the erosional remnants of higher floodplains. The many terraces exposed on the margins of Sand and Boxelder creeks suggests that landsliding within the Dakota Formation has frequently dammed local creeks in the past. Specific geologic points of interest include:

Table Mountain: The resistant Dakota sandstone caps the mountain which is folded into a syncline where the Dakota dips inward from both east and west.

Boxelder Creek Drainage: This drainage is mainly comprised of a thin layer of alluvium on top of bedrock. Due to flooding downstream in the Town of Wellington a series of dams were constructed along the drainage in the 1950's to slow or block large storm event flows.

Haygood Canyon: Looking west into the canyon, red and white sandstones of the Lykins Formation are exposed below a layer of folded gypsum (alabaster). West and up the canyon, Lykins outcrops of white-pink Lyons sandstone, Owl Canyon shales and sandstones and Ingleside sandstones are visible and are part of the Permian and older rocks to the west.

Road Cut to top of Big Hole and into Wyoming: Comprised of the White River and Ogallala formations which contain river gravels and form the low angle surface on Soapstone Prairie Natural Area and rolling grasslands which are part of the Ogallala Plateau.

Anticline Canyon: The canyon is the deepest structural level of the sand creek anticline and exposes the lowermost Owl Canyon Formation and the upper Ingleside Formation. The anticline is a fault propagated fold which means the basement is cut by a fault which dips east at 45-50 degrees. The lower Fountain Formation is also cut but the displacement on the fault dies out to zero and the overlying Ingleside and upper Fountain is just folded. The sinuous nature of the anticline and syncline and the single direction of stress along the fold suggest that it is a reactivated fault or faults in the basement. The syncline to the east is just a part of this same anticline as the rocks return to the regional dip of 15-20 to the east. On the USGS quad map there is a labeled "drill hole" which on-site consists of a 10-foot deep steel well casing (vertical 6 inch pipe). While it is not clear if this was an oil or water well, it has been sealed and abandoned and this fold is a geologic type that is pretty much guaranteed not to trap oil.

Gypsum-Karst Formation: There is a small spring that runs from the Goodwin Ranch southeast onto Red Mountain Open Space. Where the spring enters the property boundary it disappears underground into a limestone layer that has produced karst formations. Based upon a field trip and mapping exercise conducted by the Colorado Cave Survey, an underground cavern approximately 250 feet long with narrow passages has formed from the subsurface flow of water here. Due to the instability of the karst formations, this underground cavern is extremely dangerous.

In addition, in this same gypsum outcropping, there is a circular collapse pit with vertical walls that is currently fenced and previously used as a dump containing a variety of discarded items. It is most likely that the pit overlies an underground watercourse and resulted from collapse of the underlying gypsum cave. There is no ravine entering the pit, so it's not related to swallowing of local surface drainage.

Judging by the vertical, relatively unweathered walls, the pit may be a rather recent feature, perhaps no more than 20 or 30 years old.

Soils

According to the Soil Survey of Larimer County (NRCS 1980), the following are the dominant soil associations for Red Mountain Open Space (Map 2):

Wetmore-Boyle Rock Outcrop Association: Shallow, nearly level to steep, well drained to excessively drained, gravelly sandy loams that formed in materials weathered from granite and rock outcrop; on mountainsides

Kirtley-Purner-Haplustolls Association: Shallow to deep, nearly level to steep, well drained mainly loams, fine sandy loams and clay loams that formed in materials weathered from sandstone; on uplands and fans.

Haplustolls-Baller-Rock Outcrop Association: Shallow to deep, strongly sloping to steep, well drained mainly loams, clay loams and stony sandy loams that formed in material weathered from sandstone and rock outcrop on uplands.

c. Hydrology

There are two creeks that flow through Red Mountain Open Space – Boxelder and Sand creeks. The headwaters of both watersheds are on private lands and flow into the open space. While both riparian corridors contain examples of rare plant communities (see rare vegetation section D), they both have also been heavily used by livestock and invasion by noxious weeds and streambank erosion are prevalent in locations. The presence of flood debris away from the stream channel, including large logs, indicates intense flooding episodes that occur through the canyons.

Boxelder Creek flows perennially out of Boxelder Canyon and is an important water source for wildlife as well as for the agriculture that occurs around it. Boxelder Creek supports large cottonwoods and willows above the Boxelder Dam No. 5. Below the dam, a somewhat degraded section of the creek flows into the agricultural field before again being dammed near the Woodham's Place (see Section 3-4 Cultural Resources).

Approximately 8 miles of Sand Creek flows through the property and bisects a portion of the Big Hole after flowing out of Haygood Canyon to the northeast. Downstream of Haygood Canyon, Sand Creek is a perennial stream that flows through a forested riparian corridor eventually forms a broad gravel wash. Sand Creek is also dammed creating a large shallow pool above Boxelder Dam No. 6. Below the dam the water is released and cuts through an anticline (see Drill Canyon section below) creating a unique canyon, however the riparian area here has historically been significantly degraded by livestock grazing. Sand and Boxelder creeks meet at the south end of Table Mountain.

Five small ponds are present on the open space, all in the eastern portions. Four are small perched ponds that are natural and collect runoff from very small basins between the two high hogbacks. These ponds do provide some water for livestock but are likely a more important

water source for wildlife. The fifth pond is man-made and in the low eastern valley. This pond is a significant source of water for livestock until it dries up usually in late August.

d. Vegetation

The Laramie Foothills encompasses an area where two ecosystems come together – the Central Shortgrass Prairie to the east and the foothills of the Rocky Mountains to the west. The foothills are part of the Laramie Mountain system running north-south and on the Red Mountain Open Space property and comprise a portion of the Boxelder Creek Headwaters and Rawhide Creek catchments within the North Fork of the Cache la Poudre watershed. Representing an ecological transition zone, it hosts a combination of plants and animals from both the plains and the foothills, which makes for an area rich in biodiversity. The site is within a Colorado Natural Heritage Program (CNHP) Potential Conservation Area with a B2 rank of "very high biodiversity significance". The Laramie Foothills contain one of the most extensive high-quality foothills shrubland-grassland complexes known along the Front Range. Vegetation types present on Red Mountain Open Space include: riparian systems, ponderosa pine woodlands, mountain mahogany shrublands, foothills grasslands, shortgrass prairie and saltbush shrublands. Vegetation types are shown on Map 3. See Appendix B, Table 1 for a list of plant species recorded at Red Mountain Open Space to date.

Foothills Grassland Complex. The foothills grassland complex comprises approximately 50% of Red Mountain Open Space and is primarily found in the deeper soils typical of valley floors as well as in patches within the rolling foothills. The grassland complex is primarily characterized by needle-and-thread (*Stipa comata*), western wheatgrass (*Pascopyrum smithii*) and blue grama (*Bouteloua gracilis*), with a variety of grass and forb species including buffalograss (*Buchloe dactyloides*), green needlegrass (*Stipa viridula*), big bluestem (*Andropogon gerardii*), pussytoes (*Antennaria rosea*), prickly-pear cactus (*Opuntia macrorhiza*, *Opuntia polycantha*), prickly poppy (*Argemone polyanthemus*), bee plant (*Cleome serrulata*), milk vetch (*Astragalus* sp.), blazing star (*Liatrus punctata*), buckwheat (*Eriogonum effusum*), timothy (*Phleum pratense*), great basin wildrye (*Elymus* sp.), Kentucky bluegrass (*Poa pratensis*), fringed sage (*Artemisia frigida*), scurfpea (*Psoralea tenuiflora*) and coneflower (*Ratibida columnifera*).

Shortgrass Prairie. The eastern portions of the property include shortgrass prairie that is contiguous with the larger shortgrass prairie heading eastwards and north into Fort Collins' Soapstone Prairie Natural Area. The shortgrass prairie is characterized by blue grama and buffalograss and includes a diversity of other native grass and forb species.

Mountain Mahogany Shrubland. Mountain mahogany (*Cercocarpus montanus*) shrublands occur on portions of Red Mountain Open Space with moderately steep slopes and shallow soils, from 5,900-7,400 feet in elevation and particularly lining the Big Hole and on the east side of Table Mountain. Mountain mahogany shrubland communities occur at the foothills transition zone and while they are plentiful within their range (the northern Front Range of Colorado and southern Wyoming), they are statewide and globally rare. There are five different mountain mahogany shrubland communities within Red Mountain Open Space (see rare species section below) and are considered exemplary in their quality and extent primarily due to lack of weeds and the occurrence of large unfragmented communities.

While these shrubland communities are dominated by mountain mahogany they also include other shrub species such as skunkbush (*Rhus trilobata*), currant (*Ribes cereum*) and rabbitbrush (*Crysothamnus nauseosus*). The herbaceous understory consists of various grass and forb species including green needlegrass, western wheatgrass, needle-and-thread, Indian ricegrass (*Oryzopsis hymenoides*), broom snakeweed (*Gutierrezia sarothrae*), fringed sage, blue grama, yucca (*Yucca glauca*), prickly-pear cactus and side-oats grama (*Bouteloua curtipendula*), among others. In small, localized portions of the shrubland areas, cheatgrass (*Bromus tectorum*) has invaded and become the dominant grass species.

Ponderosa Pine Woodlands

On the eastern hogbacks there are sporadic stands of ponderosa and juniper, however the ridge tops in the western 1/3 (~1063 acres) of the Big Hole are predominantly vegetated by ponderosa pine, with Douglas fir (*Pseudotsuga menziesii*) dominant on north facing slopes. The rare Ponderosa pine/spike fescue (*Pinus ponderosa/Leucopoa kingii*) community is found in dense stands in this forested area and is an old growth indicator. Other tree species in these woodlands include Rocky Mountain juniper (*Juniperus scopulorum*), limber pine (*Pinus flexilis*) and a couple representative pinyon pine (*Pinus edulis*) trees. Previously the northernmost known extent of pinyon pine in Larimer County was the Owl Canyon Pinyon Grove just north of Highway 287 near the Forks. The Owl Canyon stand established about 450 years ago and genetically resembles populations in Utah more than those in S. Colorado prompting the theory they were either planted either deliberately or accidentally by Native Americans. Alternatively they may have been avian dispersed which is the most likely way the individuals were dispersed to Red Mountain Open Space from the Owl Canyon stand.

Of particular note, not only does Red Mountain Open Space contain the northeastern-most extent of the pinyon pine range, but also a champion Rocky Mountain maple (*Acer glabrum*). Ponderosa and Douglas-fir were found to average 158 and 115 years of age, respectively. The average last ten years of diameter growth for the ponderosa pine is 10/32ths of an inch while the average best ten year of growth is 30/32ths of an inch as indicated by past growth rings. The Colorado State Forest Service completed a Forest Stewardship Plan for Red Mountain Open Space that breaks the forested areas down into nine unit types with identified management needs (Colorado State Forest Service, 2006). The variable plot cruising method was used to inventory stand type, plot location, slope, aspect, tree height and diameter, regeneration, ground cover, fuel loading, wildlife signs, insect and disease for 158 plots. The Forest Stewardship Plan includes summarized stand descriptions and management recommendations.

Riparian Corridors

Approximately 5 miles of Sand Creek and 4.5 miles of Boxelder Creek flow through Red Mountain Open Space and comprise the predominant riparian areas on the property. These two creeks flow across portions of the open space and converge on the south side of Table Mountain as a broad, gravel wash. In addition, there are many smaller riparian drainages on-site that contain mesic vegetation. Within the canyons that these two creeks have incised, cottonwoods and willows create a multi-layered structure of trees and shrubs over a diverse, mesic herbaceous layer adjacent to the stream channels. The steep canyon walls have dense stands of Douglas-fir on north-facing slopes, while mountain mahogany shrublands dominate south-facing slopes. Sand Creek flows through Haygood Canyon and there are two rare plant associations found

along this riparian zone (see rare species section below). Narrowleaf cottonwood (*Populus angustifolia*) is the dominant riparian tree forming a canopy over diverse shrub species including rocky mountain maple (*Acer glabrum*), wild plum (*Prunus americana*), sandbar willow (*Salix exigua*), plains cottonwood (*Populus deltoides*), chokecherry (*Prunus virginiana*), bluestem willow (*Salix irrorata*), skunkbush, snowberry (*Symphoricarpos oreophilus*) and cottonwood (*Populus acuminata*). The herbaceous understory in the riparian areas includes Kentucky bluegrass, needle-and-thread, western wheatgrass, lupine (*Lupinus argenteus*), sticky geranium (*Geranium caespitosum*), water sedge (*Carex aquatilis*), field horsetail (*Equisetum arvense*), poison ivy (*Toxicodendron rydbergii*) and field mint (*Mentha arvensis*).

Shale Barrens and Saltbrush Shrublands

The shale barrens occupy the southeast portion of the property and are dominated by mountain mahogany (community not yet ranked) and transition into saltbush shrublands to the east. Winterfat (*Kraschninnikovia lanata*) and the rare community of four-wing saltbush/blue grama (*Atriplex canescens/Bouteloua gracilis*) (G3/S3) are present in this area. Within this mountain mahogany dominated shale barrens the understory consists primarily of western wheatgrass, Indian ricegrass, little sunflower (*Helianthus pumilus*), mountain bladderpod (*Lesquerella montana*), hairy clematis (*Clematis hirsutissima*), spreading buckwheat (*Eriogonum effusum*), Howard's evening primrose (*Oenothera howardii*), musk phlox (*Phlox muscoides*), tufted milkvetch (*Astragalus spatulatus*), Townsend daisy (*Townsendia grandiflora*), whiskbroom parsley (*Harbouria trachypleura*) and prince's plume (*Stanleya pinnata*). Although appropriate habitat is present, no bell's twinpod (*Physaria bellii*) were found on these Niobara hogbacks probably because the elevation here is too high (over 5,800 feet in elevation).

Rare Species

The property has a biodiversity rank by the Colorado Natural Heritage Program (CNHP) of B2, or very high biodiversity significance as part of the Table Mountain Hogbacks, Rawhide Flats and Boxelder Creek Headwaters potential conservation areas. These potential conservation areas within Red Mountain open space support imperiled lower montane-foothills shrubland communities, declining grassland species and globally rare foothills riparian woodland plant communities, respectively (Map 4). In the fall of 2004 and spring of 2005, CNHP conducted a vegetation survey of Red Mountain Open Space and found the following:

- Four mountain mahogany plant associations (see table below). The largest community in Colorado of mountain mahogany/New Mexico feathergrass (*Cercocarpus montanus/Stipa neomexicana*) occurs on Red Mountain Open Space.
- Haygood Canyon supports a rare narrowleaf cottonwood/chokecherry (*Populus angustifolia/Prunus virginiana*) community which is a late seral community and maintained by regular flooding.
- Boxelder Canyon supports a rare narrowleaf cottonwood/bluestem willow (*Populus angustifolia/Salix irrorata*) community. This early seral community has a dense cover of willow that would indicate frequent flooding.
- Shale barren community – SE hogbacks on the ranch that are dominated by mountain mahogany with very little understory.

Threatened or Imperiled Plant Communities Ranked by the Colorado Natural Heritage Program			
Common Name	Scientific Name	G-rank	S-rank
Mountain mahogany/Griffith's wheatgrass	<i>Cercocarpus montanus/Pseudoroegneria spicata</i>	G4	S3
Mountain mahogany/Needle-and-thread shrubland	<i>Cercocarpus montanus/Stipa comata</i>	G2	S2
Mountain mahogany/New Mexico feathergrass	<i>Cercocarpus montanus/Stipa neomexicana</i>	G2G3	S2S3
Mountain mahogany/Mountain muhly shrubland	<i>Cercocarpus montanus/Muhlenbergia montana</i>	G2	S3
Shale barren mountain mahogany	<i>Cercocarpus montanus</i> barrens (to be described)	GU	SU
Four-wing saltbush/Blue grama	<i>Atriplex canescens/Bouteloua gracilis</i>	G3	S3
Ponderosa pine/Spike fescue	<i>Pinus ponderosa/Leucopoa kingii</i>	G3	S3
Narrowleaf cottonwood/Bluestem willow	<i>Populus angustifolia/Salix irrorata</i>	G2	S2
Narrowleaf cottonwood/Chokecherry	<i>Populus angustifolia/Prunus virginiana</i>	G1Q	S1

As part of the 2005 CNHP survey, Ute ladies tresses orchid (*Spiranthes diluvialis*) was searched for but not found on-site.

Exotic Plants and Noxious Weeds. Some exotic plants have become established on portions of the open space as a result of historic land uses including grazing and introductions from surrounding areas. These exotic species are fairly isolated to more disturbed locations including existing roadways, agricultural fields, near buildings and cattle sheds and in some drainages. Known exotics include two bromes (*Bromus japonicus* and *Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), field bindweed (*Convolvulus arvensis*), mullein (*Verbascum thapsus*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), common burdock (*Arctium minus*), leafy spurge (*Euphorbia esula*), dalmation toadflax (*Linaria dalmatica*), Russian knapweed (*Centaurea repens*), scotch thistle (*Onopordum acanthium*), buffalobur (*Solanum rostratum*) and houndstongue (*Cynoglossum officinale*). While all of these exotics are actively monitored and controlled by the Open Lands Program, Canada thistle, musk thistle, leafy spurge and dalmation toadflax are regulated by Larimer County. Controlling the existing weed patches and preventing spread and introduction of new weed species will be key for management considerations.

e. Wildlife

As a large, relatively intact landscape, Red Mountain Open Space and adjacent protected lands provide habitat for a variety of wildlife species including game, nongame, threatened and endangered species relatively distant from development and human influence. The connectivity of these protected lands ensures large, contiguous lands for wildlife, and will benefit those species that require large territories.

Birds

Rock outcrops, riparian systems, and the diversity of shrubland, grassland and woodland habitats provide for a diversity of bird species at Red Mountain Open Space. Several small drainages including Sand and Boxelder creeks provide rich riparian habitat and canopy structure. Bird species documented by the Rocky Mountain Bird Observatory in 2007 at Red Mountain Open Space include: American robin, American goldfinch, black-headed grosbeak, cordilleran flycatcher, green-tailed towhee, killdeer, common snipe, mallard, turkey vulture, mountain bluebird, mourning dove, western meadowlark, lazuli bunting, plumbeous vireo, pygmy nuthatch, red crossbill, spotted towhee, stellar's jay, violet-green swallow, house wren, canyon wren, cliff swallow, rufous-sided towhee, pigeon, lesser goldfinch, chipping sparrow, oriole, Virginia's warbler, warbling vireo, white-throated swift, western wood pewee, yellow warbler, raven (including 2-3 known nest sites), black-billed magpie, spotted towhee, Brewer's blackbird, song sparrow, common grackle, rock dove, kingfisher, mountain chickadee and other migrant species common to the foothills. High rock outcrops provide nesting and foraging locations for hunting and perching raptors including prairie falcon, peregrine falcon (Colorado Species of Special Concern), Cooper's hawk, turkey vulture, ferruginous hawk, red-tailed hawk, barn owl (including nest sites in Sand Creek drainage), great-horned owl, bald eagle and golden eagle (including 3 known nest sites - Haygood Canyon, along Boxelder Creek and along the eastern hogback) among other species.

Mammals

Due to its location, the Laramie Foothills likely served as an important connection between the mountains and the plains for historic seasonal animal migration and dispersal. Red Mountain Open Space supports a variety of large-ranging mammals including mountain lion (*Felis concolor*), coyote (*Canis latrans*) (including dens), mule deer (*Odocoileus hemionus*), white-tail deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), American elk (*Cervus elaphus*) and pronghorn (*Antilocapra americana*). Of particular note, bighorn sheep (*Ovis canadensis*) were historically observed on Red Mountain Open Space and now the closest populations are found approximately 6 miles to the west. Red Mountain Open Space is included in a large regional mule deer migration and winter concentration area that extends from Wyoming south into Boulder County and potential elk calving areas exist on-site but need to be confirmed (Natural Diversity Information Source, 2007). In general, winter concentration periods correspond to the months of December through March and elk calving occurs in June. The Laramie Foothills has been noted as a "hot-spot" by the Division of Wildlife for chronic wasting disease (CWD) and in 2001 and 2002, 28 deer were harvested off the property and 2 tested positive for CWD.

Small and medium-sized mammal and bat surveys were completed in spring and summer 2005 by CNHP on the northern portions of Red Mountain Open Space. Netted or observed species included striped skunk (*Mephitis mephitis*), long-tailed vole (*Microtus longicaudus*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), northern pocket gopher (*Thomomys talpoides*), meadow vole (*Microtus pennsylvanicus*), black-tailed prairie dogs (*Cynomys ludovicianus*) (there is an approximately 5-acre population at the southeast corner of the property), long-legged myotis (*Myotis volans*), long-eared myotis (*Myotis evotis*), hoary bat (*Lasiurus cinereus*), big brown bat (*Eptesicus fuscus*) and western small-footed myotis (*Myotis ciliolabrum*). There are no rare or imperiled bat species of conservation concern known on the

property. For a list of wildlife present or likely at Red Mountain Open Space see Appendix B, Table 2.

Amphibians and Reptiles

Amphibian and reptiles species observed during the CNHP 2005 survey include rattlesnakes (*Crotalus viridis*), bullfrog (*Rana catesbeiana*) and chorus frog (*Pseudacris triseriata*),

Aquatic Species

The two perennial creeks on Red Mountain Open Space, Sand and Boxelder creeks, were sampled by the Colorado Division of Wildlife for fish composition. The only fish species trapped were mixed age class, small brook trout (*Salvelinus fontinalis*) a non-native fish species introduced in Colorado in the 1870’s. There was evidence of recruitment and reproduction. However, the water quality and temperature and native aquatic insect assemblage in both creeks are very good and both have the potential to support introduction of the native and state and federally threatened greenback cutthroat trout (*Oncorhynchus clarki stomias*).

Similarly, in March 2007, an aquatic insect survey was completed by Colorado State University (Boris Kondratieff) on both creeks with excellent results showing that the assemblage of native aquatic insects was intact indicating good stream quality. Species recorded include stoneflies such as the rare snowfly (*Capnura wanica*), mayfly (*Baetis magnus*), Gunnison snowfly (*Utacapnia poda*), Angulate snowfly (*Paracapnia angulata*), blue-winged olive (*Baetis tricaudatus*), stoneflies (*Sweltsa* sp.), Oregon forestfly (*Zapada oregonensis*) and alderflies (*Sialis* sp.). Uncommon insect species found in the gypsum karst formations include a variety of mayflies, an albino millipede (new species and genus) and cave webworms (possibly the first documented occurrence in Colorado, although adults collected in the spring or summer are needed for an exact species determination).

Rare or Endangered Wildlife

The most significant wildlife species on-site include large-ranging mammals that are found generally throughout the property, nesting and perching raptors (in particular peregrine falcons observed flying overhead) and black-tailed prairie dogs.

Significant Wildlife Species	
Common Name	Why Significant
Wide ranging mammals (elk, deer, mtn lion, bear, bobcat, pronghorn)	Potential calving areas; Severe winter range; Large movement corridors meet habitat requirements
Nesting/perching raptors (including peregrine falcon)	Nest sites; State species of concern; Peregrine falcon has CNHP ranking S2/G4
Potential Preble’s Meadow Jumping Mouse habitat	Federally-threatened/CNHP S1 ranking (critically imperiled statewide)
Native aquatic insects	Indicator species of good stream and aquatic health - assemblage of native aquatic insects were found in both creeks.
Black-tailed prairie dog	CNHP ranking S3/G4; Indicator species of grassland health.

According to the Colorado Natural Heritage Program, portions of Red Mountain Ranch have the potential to support such rare species as the McCown's longspur, chestnut-collared longspur, ferruginous hawk, swift fox, and Preble's meadow jumping mouse (*Zapus hudsonius*). While none of these species has been documented on-site at this time, all with the exception of Preble's occur on Soapstone Prairie Natural Area. A Preble's trapping survey conducted by CNHP along Sand Creek in June 2005 resulted in negative trapping results for this species. Additional surveys for this species will be conducted prior to any management actions that might affect suitable habitat.

2.3 Visual Resources

The visual resource values of the Laramie Foothills area and specifically of, from and within Red Mountain Open Space are immense. The breathtaking view into the Big Hole from atop the rim from Soapstone Prairie Natural Area and the City of Cheyenne Open Space is unparalleled. Table Mountain, Sundance Mountain and other prominent rock outcroppings rise dramatically from the valley floor, Haygood Canyon's brilliant crimson cliff lines cut between forested hillslopes and riparian corridors lined with cottonwood and willow flow like a ribbon of green and gold through the property. The southeastern portion of the site with its low hogbacks and rolling foothills grassland are characteristic of the openness and wide expanses for which the Laramie Foothills area is known.

2.4 Cultural Resources

a. Archaeology

Red Mountain Open Space and surrounding areas are known to be rich in prehistoric, protohistoric and historic archaeological sites, as evidenced by previous research in the local area by Colorado State University, the University of Northern Colorado, the Smithsonian Institution and private individuals (Beausoleil 1994). Its location adjacent to the City of Fort Collins' Soapstone Prairie Natural Area, which includes the Lindenmeier Site – one of 3 prehistoric sites that are national landmarks in Colorado - further compounds the interest in this area.

In 2006 and 2007, a Class I and II archaeological survey of the open space was conducted in partnership between Colorado State University (CSU) (LaBelle, Andrews and Newton 2007), Larimer County Open Lands Program and Colorado Historical Society. Prior to this survey, only 31 archaeological sites had been known from Red Mountain Open Space from work conducted by the Coffin family (1920-1924), and survey work conducted in the 1970's related to the Boxelder Water Control and Rawhide Power Plant projects. During the 1970's surveys CSU professor Elizabeth Morris first excavated the Lykins Valley Site. Significant finds included protohistoric tools and beads alongside European goods indicating a mixed-cultural occupation, likely pre-dating the Long Expedition. Dr. Morris lobbied to protect a portion of the archaeological sites, but many were destroyed during construction of the Boxelder Dam No. 5. During the 2006 and 2007 Class II survey contracted with Dr. Jason LaBelle through the Laboratory of Public Archaeology at CSU, the Lykins Valley site was revisited and found mostly intact and an additional 75 sites were recorded. These newly recorded sites include 19

prehistoric isolated finds, 22 small prehistoric sties, 26 prehistoric sites, 1 historic site, 6 multi-component sites and 1 site of unknown age. Some sites found in close proximity to springs are fairly large with many tools and indicate a more residential use. Lithic source areas have been documented that served the region for over 10,000 years, dating back to the Lindenmeier Folsom occupations. Prehistoric sites include lithic and groundstone scatters, stone circles (both for lodges and ceremonial purposes), open camps, a rock pile, and thermal features. Larimer County currently has a curation agreement with the Fort Collins Museum to curate items that were collected during the 2006/2007 surveys (diagnostic or imperiled items) as well as earlier collections.

Historic sites types include protohistoric ranching camps, scattered trash, historic engraving and a Stone Johnny (see below *History* section). Of particular note, there is a one-room hand-hewn log cabin supported by sand and limestone slabs thought to be the oldest historic feature on the open space (see photo below). A shepherder cabin with associated outhouse and a stone foundation is located nearby. These structures were probably used for ranching and livestock management purposes and a number of historic artifacts were noted in and near them including such things as juice cans, food cans, clear, green and amethyst bottle glass, white nails, wire, straps, metal door hinges and worked amethyst glass.

b. History

There has been human occupation in the Laramie Foothills since nomadic people traveled throughout this landscape. Folsom artifacts tell of early hunter-gatherer cultures in this area and the Lindenmeier Site on Soapstone Prairie Natural Area is one of the largest known occupations in North America. Known Native American groups in the Laramie Foothills Area included the Apache, Comanche, Arapahoe, Cheyenne and Kiowa in the 18th and 19th centuries.

All of the land was originally owned by the United States Government following the Louisiana Purchase. In 1897, 5 sections, comprising every other section, of the Big Hole were patented to the Union Pacific Railroad. Warren Livestock owned portions of the open space and ran Coriente and Hereford cattle and eventually sheep from the late 1880's through the 1940's. During this time, the two buildings (discussed above) were likely constructed to house shepherders. Similarly, a number of stone monuments ("Stone Johnnies") on-site were likely constructed by shepherders. The Big Hole was owned for a period in the 1940's by F. P. Williams. In 1963, the majority of the Big Hole was sold by the Warren Livestock Company to the Terry Land Company (currently the Terry Bison Ranch). In 1965 the Terry Land Company sold their interests to the Belvoir Grazing Association who owned large tracts of land in Wyoming.



Shepherder cabin at western edge of the Big Hole.

Some of the earliest settlers on the Upper Boxelder Creek (southern portion of Red Mountain Open Space) were Maggie Williams, R.O. Roberts, Mary Alice Bennett (Goodwin), Nettie and William Treadwell, Allie Bradley, Emily Fish, Ernest J. Swanson, Bert and Ella Nauta, H.F. Bonnell, Horace Yeakle, Alexander Webster and J.M. Autrey, many of whom homesteaded in

this area. The Upper Boxelder Creek headwaters was reported to be a beautiful area with good trout fishing and where Sunday picnics were organized from Cheyenne and Denver (Livermore Women's Club).

In 1893, the southeast portion of the open space, east of current day CR 21, (owned predominately by Union Pacific Railroad) was sold to Thomas Hayden. In the 1940's this southeast portion was owned by several different families including Hayden, Munroe, Swanson, Moore and others. Both sections 16 and 36 were State Land Board parcels.

The southwest portion of the open space (west of CR21 and south of the Big Hole) included several homesteaded parcels. There is a large stand of cottonwoods in Section 18 that had a homestead built into the gravel embankment (still evident as a gravel mound today). Near the location of the existing Boxelder Dam #5 there was a log cabin homestead that was later moved in 1910 adjacent to the existing barn in section 13. Several sections (including Section 13) were homesteaded by R.O. Roberts who built the barn (still on site), a log house (burned down in 1950's) and corrals. In 1914, these lands were sold by Joseph Mitchell and Joseph Hurd to the Albert Goodwin family. The Goodwin children (Steven, Mearle, Albert and Kenneth) attended the small school that had been moved and is still on-site until they went to high school. (Daniel Woodhams, Personal Communication). The Goodwin Family still owns about 800 acres as an inholding to Red Mountain Open Space. In 1933 this southwest portion of the property was owned by Treadwell/ Bradley/Fish and sold to Horace Yeakle who owned the property into the 1940's. Before 1957, ownership records show this same parcel to be owned by H.F. Bonnell (it was during this time that the log house caught fire and burned down) and sold to Bert and Ella Nauta. In 1957 the Nautas sold to Clifford and Orville Woodhams who ranched cattle and grew hay on their lands which spanned those portions of the current open space lands from CR 21 west and north to the Big Hole (except the 800 acres around Table Mountain which remained in the Goodwin ownership). Clifford's son, Daniel, had the large Quonset moved on-site and finished the interior of the small quonset (Daniel Woodhams, Personal Communication). Later, Daniel Woodhams, sold the land to Jerry McMorris. McMorris used the Quonset huts, barn and outbuildings along with a couple modulars he brought in as a ranch headquarter for his ranch manager. The boxcar and corrals at the mouth of Haygood Canyon were used during gentleman cattle drives to take steer up to the Frontier Days in Cheyenne. Cots were placed in the boxcar for sleeping and the steers were corralled overnight in the pens.

The earliest known settler in the southernmost portion of Red Mountain Ranch (currently Ackerman Ranch), was William Calloway (a surveyor of the Livermore Valley) who bought land in 1867. He sold the land to his brother Martin Calloway who was a successful sheep rancher there from 1869 until his death in 1879. Calloway developed early irrigation and filed a water right on the Box Elder Creek. In 1895, James A. Toney purchased the ranch. In 1898, the ranch sold to the Greenacre brothers, Allen, Harold and Edgar. The Greenacres added land to the ranch including railroad sections and land grants. They restocked sheep on the ranch in 1910 and ever since cattle, horses and sheep have been run. The Greenacres' built a log house (currently on lands owned by the Ackerman Family) later covered with white board siding and irrigated alfalfa fields just east of the house. A buffalo jump was excavated on the Greenacre ranch on the south side of Boxelder Creek and not too far off the County Road by Roy G. Coffin of CSU. Many points and scrapers were removed. In 1917, the ranch sold to Ed Munroe and

included those portions of the current open space lands from CR 21 east. Munroe ran sheep on the ranch and in 1922 obtained a USFS permit to summer graze sheep on the north slope of the Mummy Range. Each July he trailed by Livermore, Pingree Hill, Dad's Gulch and Bennett Creek Ridge and back again in September (Livermore Woman's Club, 1995). Mrs. Munroe named the area up near the Big Hole "Red Mountain Ranch" due to the red soils and outcroppings, although the true Red Mountain peak is west and off of Granite Canyon Road.

Red Mountain Ranch was purchased in 1994 by Jerry McMorris and was comprised of the Belvoir, Woodhams and portions of the Munroe ranches as well as the State Land Board sections (Note: The Belvoir Ranch in Wyoming was acquired by Jerry McMorris from the Belvoir Grazing Assoc. (23,950 acres) and then 17,300 sold to the City of Cheyenne in July 2003). The northern portion of the open space was purchased by McMorris from Daniel Woodhams and the southern portion of the open space was purchased from multiple heirs to the Munroe estate. Larimer County purchased the 13,500-acre Red Mountain Ranch in December 2004 from McMorris and the 1,480-acre Red Canyon property owned by the Gallegos family in September 2007, which now comprise the 14,980-acre Red Mountain Open Space.

2.5 Agricultural Resources

Approximately 1% of the entire 14,980-acre Red Mountain Open Space is cultivated in hay production and corresponds with those portions of the open space intended to be encumbered with a conservation easement and traded. The remainder is dryland pasture used for grazing.

a. Grazing

The Natural Resources Conservation Service (NRCS) conducted a grazing assessment of the property in August 2005 (Appendix C) and installed range monitoring plots (see Map 2) corresponding with ecological sites. In general the range condition is good to excellent and the NRCS plans to use portions of the property and in particular the mountain mahogany slopes as reference points for developing ecological site models for the state. The way the property is currently being grazed is generally very good and the NRCS would not recommend cross fencing but rather to continue to keep the stocking rate lowered below capacity and keep tanks in good shape to keep cattle dispersed.

The open space is currently a cow/calf operation. With additional grazing on the adjacent 1800-acre Belvoir Ranch in Wyoming this operation could support 250 pairs, but the actual current use with the Belvoir Ranch is 215 to 230 pairs. Without the Belvoir Ranch, an estimated 215 pairs could graze Red Mountain Open Space year around, with supplemental hay. The open space produces grass and grass/alfalfa mix hay and any additional needed hay is purchased.

Larimer County Parks and Open Lands assumed active grazing management of Red Mountain Open Space in mid-June 2006. Prior to that date a general lease of the property was in effect with the previous owner, which allowed 250 animal units per month at \$8.00 per animal unit and \$750.00 per month for the facilities. Grazing management was determined by the lessee. In June 2006 a one year grazing lease agreement was signed with an adjacent land owner and included a grazing plan developed in partnership between Parks and Open Lands and the Natural

Resources Conservation Service. The grazing plan specifies up to 110 cow/calf pairs to be grazed on the property or confined in feeding facilities on the property. Per animal unit month (AUM), \$9.68 was charged. The pasture rotation schedule for this 12-month period was Bench Pasture - 2 weeks, Boxelder Pasture - 2 weeks, Big Hole Pasture-2 1/2 months, Meadow Pasture - 2 weeks, Rawhide Pasture - 2 months, Valley Pasture- 2 weeks, Hill and Sand Creek pastures and contained (supplemental feed) - 4 months, and Table Mountain Pasture - 1 month. The pasture rotation and stocking rates for the remainder of 2007 on a new lease will be determined by range conditions. The grazing fee for the new lease will be \$10.22 per AUM. During the early part of 2007 up to 50 cow/calf pair were in trespass in the Big Hole Pasture for up to 2 months. Weather and fence conditions prevented removing these cattle or maintaining fences to a level to keep them out.

The Ranch has seven main pastures, ranging from approximately 700 acres to 5000 acres. About 5% of the range is rock outcrop, riverwash or very steep and produces little or no forage. About 34% of the range has shallow, rocky soils dominated by shrubs or woodland and has low forage production. About 52% of the range has moderate to good forage production. About 9% of the Ranch, including the cropland, has good forage production. The hazard of erosion for many of the soils on the Ranch is moderate to severe. Areas where overgrazing or congregation of livestock occurs erode easily and recovery is difficult. Another primary limiting factor is precipitation. The range conditions vary from poor adjacent to isolated livestock watering to excellent on higher, less used benches receiving more precipitation. Overall the range appears to be in good to very good condition (see NRCS report, Appendix C).

Typical pasture rotation is the Big Hole Pasture late spring to mid summer, the Southeast Pasture mid summer to late fall and the pastures and hay fields around the two headquarters during the winter and early spring.

Livestock Tanks and Facilities

There are a total of 4 springs, 4 windmills and 5 livestock tanks on the property (Map 5). Some the tanks have wildlife escape ladders at this time and it is recommended they be installed on the remainder as well as a water quality sample taken at each spring. Most tanks on property need to have a triangular fence put around the top of the tank to keep cattle from going into the tank or stepping on the edge and destroying the tank. Below is an inventory of each tank:

- Northernmost tank: The outtake needs cleaning; the downhill edge of the concrete needs an apron of rock material to shore it up and the float needs replacing.
- Tank north of middle mountain: Doesn't appear to be flowing out of spring although there were wet patches in the soil.
- Tank south of middle mountain: Needs replacing as is damaged from cattle; may need redeveloping to capture water better; should be sited on uplands out of drainage.
- Tank up draw with historic buildings: Needs to be patched or replaced (has hole in the side) and the outtake needs cleaning.
- Tank at N end of CR 21: Fair condition.

Livestock Water

Livestock water is generally well distributed, seldom more than ¾-mile from all of the more productive forage areas. The 31 livestock water sources include: Nine live stream locations,

four intermittent stream locations, one year-round pond, five intermittent ponds, three undeveloped year-round springs, three developed year-round springs (one is in Wyoming and piped by agreement into Colorado); two intermittent undeveloped springs, one intermittent developed spring (development has failed, but there is surface water) and three wells (150-foot deep well on electric pump at the Southwest Place; 145-foot deep well on electric pump at the Southeast Place; 300-foot deep well with windmill in the Southeast Pasture).

Ranch Facilities

There are two sets of improvements on the Ranch sufficient for ranch operations, the southwest and southeast places: formerly called the “upper place” and the “Quonset” respectively. The southwest place includes a modular (built in 2000 with 3 bedrooms/2 bath), two Quonset huts (one from 1954 with living space including 2 bedrooms and 1 bath and the other a machine shed built in 1985), a steel machine shed (1975), two pole frame sheds, a pole frame loafing shed, a log school house (estimated built in 1910) and a barn (built in 1910). In 2006, the schoolhouse was re-roofed by Larimer County to protect it from further deterioration and the barn roof was patched where large portions had blown off. The southeast place includes a 1,344 s.f. modular (1994), two pole frame loafing sheds, a hay shed, concrete feed bunks and a bulk bin for feed grains. Both modulares are served by propane and have domestic wells and septic systems.

On-Site Facilities					
Improvement	Location	Size (s.f.)	Year Built	Condition	Comments
Modular	SW Place	1377	2000	Average	3 bdr/2bath/no basement/no garage
Quonset	SW Place	403	1954	Average	Living quarters-2bdr/1bath/kitchen
Barn	SW Place	2769	1910	Average	Frame, wood siding, stalls, hay mow
Shop	SW Place	2352	1975	Good	Metal siding, concrete floor
Machine shed	SW Place	832	1985	Average	Quonset, metal siding, dirt floor
Loafing shed	SW Place	1200	Unknown	Poor	Pole Frame, wood siding
Loafing shed	SW Place	360	Unknown	Poor	Pole Frame, wood siding
Chicken coop	SW Place	270	1950	Average	Pole frame, wood siding
Log building	SW Place	150	1910	Poor	Possibly historic school house
Working pen	SW Place		Unknown	Good	Pole & board, incl. loading chute
Corrals	SW Place		Unknown	Fair	4 pens, pole, incl. stack yard
Ranch House	Red Canyon	600	Unknown	Poor	Wood siding; asphalt roof
Root Cellar	Red Canyon	100	Unknown	Poor	Stucco
Corrals	Red Canyon		Unknown	Average	
Pit Toilets (2)	Red Canyon		Unknown	Poor	Filled with dirt and rubbish
Modular	SE Place	1344	1994	Average	3bdr/2bath/no basement/no garage
Hay shed	SE Place	1320	1990	Average	Pole frame, metal siding, dirt floor
Loafing shed	SE Place	4950	1990	Average	Pole frame, metal siding, dirt floor
Loafing shed	SE Place	7560	1990	Average	Pole frame, metal siding, dirt floor
Grain bin	SE Place	500 bu.	1990	Average	Upright grain storage
Working pen	SE Place		1990	Good	Pole & board, incl. loading chute
Feed lot & corrals	SE Place		1990	Good	Pipe/cable/pole/wire/board, 6pens, concrete feed bunks
Stack yards	SE Place		1990	Good	Three compounds
Holding pen	SE Place	2 ac.	1990	Good	Wire fence

b. Irrigated Agriculture

Larimer County, with oversight from the Natural Resource Conservation Service, reported a Land Evaluation Site Assessment (LESA) score of 101 on Red Mountain - an "excellent" score according to LESA standards (see LESA Summary Score Sheet Appendix D). This excellent score for the open space is due mainly to the large size, good water distribution and generally good land condition. Less contributory to this excellent rating, but also rated very high, was the low potential of encroachment by development, habitat value, strategic preservation value, visual/scenic value and its very high cultural/historic resource potential. Larimer County intends to trade approximately 8,500 acres in the southern portion of the property, (subject to an existing conservation easement) for an equivalently valued conservation easement on adjacent lands to the south. This innovative land/easement swap will result in placing conservation easements on a total of approximately 17,000 acres and swapping in particular these irrigated acres so as to keep the land in agricultural production.

Approximately 134 acres (1% of the open space) is cropland of irrigated, sub-irrigated and dryland hay fields. Of this acreage, approximately 110 acres are at the Southwest Place and 24 acres are at the Southeast Place. The majority of this cropland is highly productive Class II soils with the remainder moderately productive Class IV soils. The primary limiting factor is water. Water rights on Boxelder Creek are junior to a downstream ranch. There is not enough water available in the summer after "calls" by the more senior rights and irrigation on the open space mainly occurs in the winter. This allows only one cutting of hay, producing about 150 tons. These fields are also grazed after cutting and until spring growth begins. Water is diverted with earthen and plastic sheet dams and diversion pipes into earthen ditches at both Places on Boxelder Creek. The fields are flood irrigated. The water delivery system is in fair to good condition. There is evidence of abandoned fields and irrigation ditches upstream of the Southwest Place where diversion dams failed. One failed system is on the east side of Boxelder Creek from the irrigated fields at the Southwest Place. This field produces dryland and sub-irrigated hay.

A substantial amount of water flows into Boxelder Creek from the adjudicated Quonset Spring at the Southwest Place. There is some question whether this water should be allocated solely for use on Red Mountain Open Space at the Southeast Place or is it part of the Boxelder Creek water right subject to more senior calls.

2.6 Socioeconomic Resources

a. Red Mountain Open Space Land Status

The Larimer County Open Lands Program acquired the first phase (13,500 acres) of Red Mountain Open Space for \$9,718,800 in December 2004. Larimer County contributed \$1,864,400 from Help Preserve Open Space sales tax revenues and a grant was received from Great Outdoors Colorado for \$7,854,400 (\$1,000,000 from Division of Wildlife Quadrant funds) to purchase the first phase of the open space. The second phase (1,480 acres) was purchased in 2007. Larimer County contributed \$2,669,000 from Help Preserve Open Space sales tax revenues, the City of Fort Collins contributed \$996,000, and The Nature Conservancy contributed \$335,000. The property is zoned O-Open.

Easements, Leases and Encumbrances

There is an existing tower lease on the property, southeast of Table Mountain on the ridge above CR 21. The annual lease rate is \$9600 plus \$4000 for road maintenance. The tower is 150 feet tall from its base and the lease term is for ten years with four 10-year extensions.

There are both temporary and perpetual access easements with The Nature Conservancy (TNC) and City of Cheyenne, Wyoming. The temporary access easement allows Larimer County to conduct vehicular, pedestrian and equestrian guided public tours across lands owned by Cheyenne to access portions of Red Mountain Open Space above the rim of the Big Hole. A perpetual access easement allows TNC access through Red Mountain Open Space to monitor and conduct biological assessments on the City of Cheyenne lands for which they hold a conservation easement. A perpetual easement also allows Larimer County to cross City of Cheyenne property to access the 200 acres of Red Mountain Open Space northeast and above the Big Hole for maintenance, management, patrol and emergency reasons (not for general public access).

As part of the Great Outdoors Colorado grant funding towards acquisition of the property, \$1,000,000 was contributed from Wildlife Quadrant Funds with the stipulation that Larimer County would work with the Division of Wildlife to allow limited hunting on the property in the future. As part of development of the property management plan, Larimer County will work with the DOW to determine the specifics of what this limited hunting will include.

Other known encumbrances include a Deed of Trust (that will be paid off when the property sells), electric and phone utility easements across the southern portion of the property and two access easements to other properties to the west. There are also easements for the two flood control dams. Exact locations will be known when title work is received. There are no known boundary disputes as the ranch boundaries are primarily delineated by section lines. Due to this fact, Larimer County has decided not to perform a survey on this large parcel but will use the legal description.

Roads and Trails

Currently there are no established or designated trails with the exception of worn cattle trails.

County Road 21 runs north/south through the property and provides all-weather access to the south central portion of the open space. Several dry-weather roads provide access to pastures and hay fields. There are a variety of 4-wheel drive tracks in varying conditions that access most areas of the primary pastures and the communications tower. There is no vehicular access to the northwest part of the Big Hole Pasture and portions in the northeast and southwest of the Southeast Pasture. There is no vehicular access to the Southeast Pasture from the west.

Fences

Most boundary and pasture fences are in fair to good condition. Existing fencelines are generally intact and in good condition including barbed wire fences along the north, east and south boundaries of the property. There are some intact fences along the west border, however in areas it is down or missing. To some extent, topographic constraints along the west border preclude

livestock movement to and from Red Mountain Open Space. The fence along the south side of Section 31 and the west portion of the fence across the south part of Section 7 are in poor condition. The fence along the south side of sections 8 and 9 is mostly down and not functioning. Nearly all the fences are four-strand barbed wire. There is a five-strand barbed wire fence along the south side of the east pasture. There are indications that some fencelines do not coincide with property lines (Map 5).

Water Rights

There are four adjudicated springs on the Ranch that provide livestock water, as well as rights to the spring water from Wyoming flowing into the tank on the northern property boundary:

- Belvoir 19S Spring Well (SW1/4SE1/4 Sec. 19-T12N-R69W)
- Belvoir 30 Spring Well (SW1/4SW1/4 Sec. 30-T12N-R69W)
- Belvoir 36 Spring Well (NW 1/4NW1/4 Sec. 36-T12N-R70W)
- Quonset Spring (SE1/4SE1/4 Sec. 13-T11N-R70W)
- Sturdevant Ditch No. 1, No. 2 and No. 3 are adjudicated water rights diverted from Boxelder Creek for irrigation:
 - Sturdevant Ditch No. 1 (Sec. 13-T11N-R70W)
 - Sturdevant Ditch No. 2 (Sec. 13-T11N-R70W)
 - Sturdevant Ditch No. 3 (Sec. 19-T11N-R70W)

No. 1 diversion is washed out and not currently carrying water. No. 2 supplies water for the hay fields just north of the Southwest Place on the west side of Boxelder Creek. These ditches have a combined decree of 10.67 cfs, which is more than is typically available. Appropriation dates are 8/15/1873 and 8/20/1873, which are No. 64 and No. 65 priority for the Poudre Drainage. No. 3 is diverted further down stream, supplying water for the hay fields at the Southeast Place.

Mineral Rights

Larimer County has ordered a title commitment and will communicate mineral severance details once it is received. A preliminary geologic report indicates that "...the probability of extraction or removal of mineral resources from the phase I purchase of Red Mountain Ranch is considered to be remote". On the phase II purchase of 1,480 acres, Larimer County retains 50% of oil and gas rights, and 100% of other mineral rights in Section 5 (640 acres) and Section 8 (160 acres). All other mineral rights appear to be severed.

Environmental Assessment

Larimer County had an Environmental Phase I survey completed. No hazardous materials were identified on the property.

The one borrow pit on the property is located along the lower portion of Sand Creek just southeast of Table Mountain in the young stream gravel that was historically used for road material. There are also two small quarries on-site, one just north and one south of Table Mountain and both located in the gypsum of the Lykins. One portion of the southern quarry includes an approximately 50-foot deep sink hole which has historically been used for disposal of household trash, although nothing hazardous is apparent.

b. Adjacent Land Use

Surrounding lands are a combination of publicly-owned and private lands, mainly consisting of large ranches and low-density rural residential subdivisions (Map 1).

Adjacent Protected Lands

Adjacent protected lands include the 18,764-acre Soapstone Prairie Natural Area, owned and managed by the City of Fort Collins. Approximately 1,800 acres north of Red Mountain Open Space in Wyoming is owned by the City of Cheyenne, with a conservation easement held by The Nature Conservancy, anticipated to have future public access from the north.

Other protected lands in the vicinity include: The 17,000-acre Roberts Ranch Conservation Easement along Hwy 287 and The Nature Conservancy's 7,000+ acre complex of conserved land centered on Phantom Canyon Preserve. These lands connect to over 24,000 acres of state lands including State Wildlife Areas and Owl Canyon Pinyon Grove Natural Area. South of Red Mountain Open Space are smaller conservation easements - the Buckeye and Ackerman CE's. The Colorado State University 9,000-acre Maxwell Ranch to the west, is a property that was donated to CSU under terms that stipulate that the property cannot be developed or used for anything other than a working ranch and research facility and is currently being considered for a potential wind generation site.

Adjacent Private Lands

The two larger private ranches in the area are owned by the Goodwin and Ackerman families. The Goodwin Ranch (800 acres) is an inholding to Red Mountain Open Space and includes the majority of Table Mountain. The Ackerman Ranch (20,000 acres) is south of the Open Space and primarily used for grazing and irrigated agriculture. In 2004, Larimer County worked with the Ackerman family to place 564-acres of the irrigated agricultural lands under conservation easement. To the west of the Big Hole portion of the Open Space are several 35-acre subdivisions accessed off of Red Mountain Road from Hwy 287.

East and south from Soapstone Prairie Natural Area is the 25,680-acre Meadow Springs Ranch owned by the City of Fort Collins Utilities Department. Currently the ranch is leased for grazing with about 5% of the acreage used annually to "land apply" wastewater biosolids. While not currently protected, the Fort Collins Utilities Department has indicated that they may be interested in selling conservation easements on portions of the ranch at some point in the future. As an enterprise agency, the Utilities Department cannot donate easements.

Conservation Easement and Future Public Access Lands

A conservation easement currently exists on all of Red Mountain Open Space (see Appendix E Conservation Easement). The conservation easement specifies both permitted and prohibited uses. Prohibited uses primarily include construction of buildings or structures (with the exception of 6 reserved building sites and an office/garage for recreation management purposes), mining, commercial signs or uses, application of waste material or damage to historic/archaeologic features. It is the goal of Larimer County to trade ~8,500 acres of the southern portion of Red Mountain Open Space (which includes the two existing modularitys and four additional reserved homesites) for an equivalently valued conservation easement on adjacent private lands. This transaction will keep contiguous lands in active farming and

ranching and in private ownership. Larimer County will retain the ~6,480 acres in the northern portion of the open space.

c. Location, Access, Circulation and Traffic.

Red Mountain Open Space is located in northern Larimer County along the Colorado/Wyoming border. The property is east of Highway 287 and west of Interstate 25. A location map of the property is shown in Map 1. A general legal description of the property is as follows:

All or portions of the following sections: Sections 19, 30, and 31, T12N, R69W; Sections 23, 24, 25, 26, 35, and 36, T12N, R70W; Sections 1, 11, 12, 13, and 24, T11N R70W; and Sections 4, 5, 6, 7, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23, T11N, R69W of the 6th Prime Meridian.

County Road 21 provides access to Red Mountain Open Space. This unpaved access road is county maintained to the internal access roads on the open space and for approximately 2 miles within the property boundary.

d. Public Services

Fire protection. Fire protection is ultimately the responsibility of the Larimer County Sheriff's Department. Red Mountain Open Space, however, is also served by the Wellington Volunteer Fire Department and Livermore Volunteer Fire Department.

Public safety. Larimer County Parks and Open Lands staff are responsible for the education and enforcement of open space regulations and assist the Sheriff's Department, Division of Wildlife and other law enforcement agencies in responding to emergencies and preventing criminal activity. Parks and Open Lands staff provide visitor assistance and emergency and medical aid. Search and rescue operations would be coordinated through the Sheriff's Emergency Services Program.

e. Recreational Use and Demand

With increasing population along the Front Range, the demand for close, convenient recreational opportunities is also increasing. The current (2003 census) population of Larimer County is approximately 266,610, with 124,767 living in Fort Collins. With existing regional and local parks and open spaces experiencing heavy use, there is a need for additional recreational opportunities in Larimer County.

Currently there are diverse but limited recreation opportunities in the Laramie Foothills area. Eagle's Nest Open Space includes approximately 5 miles of hiking and equestrian trails and limited hunting. The Nature Conservancy provides limited guided hikes at the Phantom Canyon Preserve, focusing on education and land preservation. There is no public access to any of the conservation easements held by the Legacy Land Trust, Larimer County or The Nature Conservancy. The Division of Wildlife allows hiking, biking, camping, hunting, fishing and horseback riding at Lower, Middle and Upper Cherokee Park as well as at Lone Pine Wildlife Area – providing a combined total of 28,000 acres for outdoor recreation. However, these DOW areas are open to the non-hunting public from June 14th – August 1st, allowing only 1 ½ months of recreation per year. Red Mountain Open Space would be a significant expansion of existing

recreational opportunities in this unique landscape in conjunction with the Soapstone Prairie Natural Area and future recreation proposed on the City of Cheyenne's open space to the north.

f. Operations Budget and Funding

Red Mountain Open Space operations and capital improvement projects will be funded through Help Preserve Open Space sales tax dollars. Annual management costs for all management and maintenance of Red Mountain Open Space are projected based on management zones, with the most developed zones corresponding to the highest management cost/acre. In total, for the approximately 6,000 acres that will be kept in county fee ownership, management costs for the first full year Red Mountain Open Space is open to the public, are projected to be approximately \$620,000. Management dollars will cover the cost of rangers and regulation enforcement, weed management, administration, fence repair, trash removal, education, trail maintenance and vegetation restoration as needed.

3 OPPORTUNITIES, CONSTRAINTS AND PLANNING ISSUES

3.1 Overview

During the management plan development process, input was received from the public, a Technical Advisory Group, the Open Lands Advisory Board and Parks and Open Lands Department staff concerning opportunities, constraints and planning issues in regards to the current existing conditions and management of Red Mountain Open Space. These issues may be divided into five key components: 1) natural resources; 2) cultural resources; 3) western heritage; 4) outdoor recreation; and 5) education.

3.2 Natural Resource Opportunities, Constraints and Planning Issues

Protect, manage and enhance natural and visual resources including maintaining and promoting healthy ecosystems and their processes.

Natural resource opportunities include:

- Protecting Red Mountain Open Space from encroaching development pressure to preserve the natural resource integrity of this important landscape.
- Maintaining and monitoring large intact areas of natural vegetation communities including the rare mountain mahogany/mixed grass plant communities, NRCS “Excellent” rating of the foothills grasslands, rare riparian plant associations along Sand and Boxelder creeks and the ponderosa pine/spike fescue community.
- Maintaining large undisturbed blocks of high quality wildlife habitat to ensure continued use of the area by native wildlife species including raptors, rare butterflies, calving areas, mule deer winter concentration areas, wide ranging mammals and predators, and Preble’s meadow jumping mouse.
- Evaluating the potential to restore greenback cutthroat trout to Sand Creek in partnership with the Division of Wildlife.
- Minimizing, to the extent possible, soil loss via erosion throughout the site.

Constraints and planning issues associated with the natural resources of the property include the following:

- Visitors may disturb wildlife, particularly wide ranging mammals (mule deer, elk, mountain lion, bear) and nesting or foraging raptors.
- Focusing access to well-designed trails and roads will minimize habitat fragmentation, soil erosion, impacts to vegetation communities and ecological processes and visual impacts on the landscape and to other users.
- Introductions of noxious weeds and other non-native species from trail building, road improvements, horses, grazing by cattle that were fed hay from off-site and other users are a concern.

- Conducting sustainable grazing per a compatible and adaptive grazing plan will maintain plant vigor, healthy vegetation communities and enhance biodiversity.
- Lack of natural processes such as flooding or natural flow regimes, poor water quality and introductions of non-native plant and wildlife species may impact riparian communities and aquatic insects and fish species.
- Fire in rare mountain mahogany/mixed grass communities may result in non-native species establishment; lack of fire in grassland/forested areas may result in decadent plants and fuel loading.
- Locating trails outside of riparian corridors will minimize displacement of wildlife from water sources, impacts to nesting raptors in canyons and spread of weeds in these highly susceptible systems.
- Additional fencing in the area may prove detrimental to raptors and other wildlife utilizing the area (i.e. mule deer adults and young to cross).
- Not permitting dogs will avoid negative impacts to wildlife such as disease transmission, harassment, displacement, injury, etc.
- Chronic Wasting Disease, prevalent in the Laramie Foothills Area, is a concern for the health of deer and elk populations, in particular mature male deer. Hunting may be an important tool to control disease and numbers of deer and elk on-site.
- Tracking hunter numbers and take (sex, number, age of animals) will be important for responsible and adaptive hunting management.
- Upstream land use practices can impact water quality and impede natural flow regimes, thus negatively impacting aquatic insects and potential for native fish reintroductions.

3.3 Cultural Resource Opportunities, Constraints and Planning Issues

Provide, promote and enhance safe, enjoyable outdoor recreation opportunities while minimizing detrimental impacts upon natural, cultural and visual resources.

Cultural resource opportunities include:

- Protect, monitor and research as appropriate, cultural resource areas that are highly ranked due to their sensitivity and significance.
- Interpret, as appropriate, cultural resources that have lower sensitivity.
- Collect artifacts that become imperiled where they lay or are diagnostically significant and curate off-site in partnership with the Fort Collins Museum.

Constraints and planning issues regarding cultural resources include the following:

- Focusing access to well-designed trails and roads will minimize or avoid impacts to cultural resources.
- Research and education access to cultural sites should be determined on a special permit and/or guided basis, as appropriate.
- After hours or after dark use of the property may result in looting or loss of cultural features.

- Erosion, grazing, flooding and other surface disturbances may impact sensitive cultural resources.
- Historic buildings are in varying stages of wear and may be susceptible to collapse.
- Consolidating multiple collections of cultural resources from research groups (CSU, Coffin Family, etc.) is desirable.

3.4 Western Heritage Opportunities, Constraints and Planning Issues

Preserve the ranching tradition of the Laramie Foothills through on-going livestock grazing operations that are ecologically and economically sustainable and in balance with other resource protection and public access goals.

Western heritage opportunities include:

- Develop a grazing management plan that allows for adaptive management with the overriding goal of maintaining the property's excellent overall range condition.
- Demonstrate sustainable grazing practices to the public.
- Keep ranching as an economically viable practice on the property.
- Work with adjacent landowners to place lands under conservation easements and consider Red Mountain Open Space for a grass banking program to further land conservation goals in the Laramie Foothills.
- Partner with the Larimer County Planning Department to review development proposals for buffering conservation lands and ensuring they do not conflict with open space goals in this area.

Constraints and planning issues regarding western heritage include the following:

- Sustainable grazing on-site will minimize impacts to natural resources while providing economic viability to the operator and enhancing public perception of management activities.
- Livestock coming from weedy pastures may spread non-native species from their coats, hooves and feces onto this mostly weed-free range.
- Focusing livestock operator access to roads to maintain livestock facilities will minimize resource impacts and be less visually intrusive on the landscape and to other users.
- Operators riding horseback off trail may spread weeds into more remote or sensitive areas.
- Poor water quality or water development may result in health impacts to grazing animals and poor grazing distribution.
- Sheep and/or goat grazing may potentially spread pasturella, conjunctivitis or other diseases to native bighorn sheep herds if within ~10 miles of known native sheep populations.
- Down or cut boundary fencing may result in neighboring livestock trespass grazing on-site and impact lessee operations and range health.
- Grazing will be monitored and adjusted for weather, weeds, water sources, etc. to provide adaptive management and ensure good range health.

- Fencing cattle out of sensitive cultural sites and the trailhead will protect both cultural and infrastructure resources and provide improved recreation experiences.
- Activities such as de-horning, calving, roping and branding will be conducted off-site.

3.5 Outdoor Recreation Opportunities, Constraints and Planning Issues

Provide high quality non-motorized outdoor recreation opportunities while minimizing detrimental impacts upon natural, cultural and visual resources.

Outdoor recreation opportunities include:

- Sensitively locating and constructing a trailhead and trail system to provide high quality outdoor recreation, environmental education and wildlife viewing opportunities in balance with minimizing natural, cultural and visual impacts.
- Developing management zone designations to define sensitive, backcountry, frontcountry and developed areas and appropriate activities allowed within zones.
- Providing additional recreational opportunities in Larimer County to meet an increasing public demand for such amenities.
- Providing recreational opportunities that link Red Mountain Open Space to adjacent lands protected by the City of Fort Collins and City of Cheyenne.
- Allowing for a diversity of appropriate recreation activities across this large landscape including hiking, horseback riding, mountain biking, hunting, wildlife watching and accessibility for disabled visitors.

Constraints and planning issues regarding outdoor recreation include the following:

- Multiple use of all the trails may result in user conflicts and not meet the needs of any specific user group.
- Trail layout and design needs to balance protecting sensitive resources (cultural, natural, visual) with providing a high quality visitor experience that showcases the open space.
- Use of the area by large groups (e.g., commercial horseback riding trips, large group events, commercial tours, etc.) may overwhelm the capacity of the area.
- People using “nature’s restroom” may damage the natural environment and create a public health issue.
- Safety concerns related to hunting will need to be addressed by regulations, education, buffer distances from trails and other site amenities.
- Over-hunting may deplete the wildlife, impact wildlife viewing opportunities and displace other users due to carrying capacity, safety concerns and noise pollution from shooting.
- Hunting from vehicles or horseback could result in negative experiences for other open space users and spread weeds into more remote, sensitive areas.
- Backcountry camping may cause resource impacts to more remote areas of the property including wildlife displacement, theft of cultural sites, trampling vegetation, spread of weeds and visual impacts in this fairly open landscape.

- Backcountry camping experiences may be low quality or undesirable due to lack of water, high winds, livestock grazing, noise of the trains passing and highly visible flashing radio tower lights. Fire danger from campfires is a particular concern in these dry, flammable fuels and windy locations.
- Horse-drawn carriage use may be incompatible due to speed of horses pulling buggies, needed turn around space, occupying much of a roadway and additional parking space accommodation.
- Boundaries need to be clearly marked to avoid trespass onto private property.
- Artificial lighting at the parking/trailhead area may be a visual eyesore.
- Unless trash cans are secured and bear-proof, trash may be an issue at the trailhead.
- Multiple trailhead locations may be unsightly, fragment the landscape and increase management costs significantly.

3.5 Education Opportunities, Constraints and Planning Issues

Provide and enhance educational opportunities regarding the area's natural and cultural history and agricultural resources and the importance of responsible land use and stewardship.

Education opportunities include:

- Developing an education plan for Red Mountain Open Space that highlights main interpretive themes, including natural, cultural and western heritage resources and management on-site and a variety of appropriate means to convey these main themes to the public.
- Providing the opportunity for visitors to learn about this unique landscape and experience the foothills/prairie ecotone in the Laramie Foothills.
- Expanding the volunteer trails, naturalists and ranger assistants programs to this area.
- Engaging volunteer assistance with on-site management activities such as weed management and wildlife monitoring, among others.
- Partnering with the City of Fort Collins Museum to interpret curated cultural artifacts at the new museum facility.

Constraints and planning issues regarding education are:

- Developing an education plan once the property is open to the public will allow for gauging the public's desires and interests.
- Developing an aesthetic trailhead design and signing in concert with management zone designations (frontcountry vs. backcountry) will avoid eyesores and over-signing that may take away from the natural character of the site.
- Determining a means to educate the public about the sensitive resources that will at the same time not result in their destruction or additional impacts.
- Large groups may overwhelm the capacity of the open space.
- Unsupervised volunteer activities, despite best intentions, may need expertise and guidance to ensure management goals are met and stewardship practices are being followed.

4 MANAGEMENT PLAN

4.1 Overview, Management Zones and Management Targets

To meet the purpose and objectives of the Red Mountain Open Space Management Plan and to address the opportunities, constraints and planning issues brought forth by the public and staff, the plan is divided into five main components that correspond to management targets (Appendix F: Management Targets): 1) natural resource management; 2) cultural resource management; 3) western heritage; 4) outdoor recreation management; and 5) education opportunities. These five components, while addressed separately, are interrelated and will likely impact and influence each other. In addition, the plan briefly addresses the potential for future land conservation efforts adjacent to Red Mountain Open Space. Finally, a summary of implementation steps and recommended timing is presented.

a. Management Zones

Significant natural and cultural resources are spread across Red Mountain Open Space, however there are areas with higher resource sensitivity than other areas. To delineate the more sensitive resource areas and outline management goals for resources and visitation at Red Mountain Open Space, management zones have been defined for the open space (Map 6). There are five primary management zones for Red Mountain Open Space: Developed, frontcountry, backcountry, primitive and sensitive. Each zone is spatially defined by the existing and desired resource conditions for which there are related visitor use expectations, levels of facility development, carrying capacity, ecological and visitor perception indicators and subsequent adaptive management options (Appendix G: Management Zones). The sensitive management zone corresponds to areas with significant cultural and/or ecological resource values requiring a higher level of protection and can also overlap into other zones at times.

Carrying Capacity

Carrying capacity refers to the type and level of human use that can be accommodated while sustaining conservation objectives and visitor opportunities. At Red Mountain Open Space, carrying capacity will be monitored and the information used for adaptive management purposes, specifically to adjust visitor use to ensure protection of resource values and high quality visitor experiences.

Limits of Acceptable Change

Since the overriding management vision for Red Mountain Open Space is protecting, managing, and enhancing natural, cultural and western heritage resources, it will be important to regularly monitor those resources and adapt management actions and recreational uses as needed to minimize adverse impacts. Regular on-going monitoring will occur for each management target (see section 4.1 b below). If it is determined that in the process of providing safe and enjoyable recreation opportunities, the ecological, cultural or western heritage resource values at Red Mountain Open Space are adversely impacted, recreational activities will be evaluated to assess means to minimize the impact. Specifically, seasonal trail closures, timing of activities, appropriate fencing, elimination of specific activities, evaluation of guided hikes including

number, frequency, timing, group size, etc. will be examined to reduce or minimize impacts. (See Appendix H: Limits of Acceptable Change Management Action Options) The protection of resource values will take precedence over recreational opportunities with the exception of the developed zone.

b. Management Vision and Targets

The primary management vision for Red Mountain Open Space includes protection of the ecological, cultural and western heritage values on-site while as appropriate providing outdoor recreation opportunities that minimize impacts to those values.

For each of the four vision components for Red Mountain Open Space (ecological, cultural, western heritage and recreation) a set of management or conservation targets have been identified by the technical advisory group and core planning team that include the most significant elements to protect and for which to focus planning efforts. A table is included in Appendix F: Red Mountain Open Space Management Targets that summarizes the 11 management targets including “nested targets” (such as individual species, specific cultural features or recreational features within the management target), significance of the target, sources of threats, the primary management goal and strategy to accomplish that goal and finally which management zone(s) they fall within on the open space.

Ecological Resource Conservation Targets include intact vegetation communities (shrublands, grasslands, riparian systems and ponderosa woodlands), soils and associated wildlife habitat and wildlife species. Specifically, the highest quality mountain mahogany shrubland community on the Front Range of Colorado is located on-site. It is because of the high quality foothills shrubland and grassland complexes that The Nature Conservancy has designated the Laramie Foothills as one of their primary sites to work in the nation and that the Natural Resources Conservation Service is using Red Mountain Open Space as a reference or baseline site for these shrubland ecological communities for the state. Similarly, CNHP has designated the open space as a very high significant biodiversity site supporting imperiled lower montane-foothills shrubland communities, declining grassland species and globally rare foothills riparian woodland plant communities.

Priority Conservation Targets	Nested Targets	Significance
Ecological Resource Conservation Targets		
Foothills Shrubland System	Mountain mahogany/mixed grass communities	CNHP S2 & S3 rankings (one of largest expanses in world, intact ecosystem, few weeds, etc.); NRCS excellent rating and use as an ecological site model.
	Sensitive bird/raptor species (barn owl, golden eagle, red-tail, raven nest sites)	Nest sites; State species of concern; Potential species from RMBO 2007 survey
	Wide ranging mammals (elk, deer, mtn lion, bear, bobcat, pronghorn)	Severe winter range/concentration areas/potential calving sites

Foothills grassland complex		NRCS good to excellent rating and use as an ecological site model
Riparian System	Narrowleaf cottonwood /bluestem willow community	CNHP S2 ranking (imperiled in state; only 6-20 occurrences known)
	Narrowleaf cottonwood /chokecherry community	CNHP S1/S2 ranking (critically imperiled statewide; only 5 or fewer occurrences known)
	Restoration target - greenback cutthroat trout (GCT)	CNHP S2 ranking (imperiled in state; only 6-20 occurrences known)
	Potential prebles habitat	Threatened/CNHP S1 ranking (critically imperiled statewide; only 5 or fewer occurrences known)
	Aquatic insects	Indicator species of good stream and aquatic health - assemblage of native aquatic insects present.
Ponderosa Woodlands	Ponderosa pine/Spike fescue	CNHP G3/S3 Ranking (vulnerable statewide, only 20 - 100 occurrences known)
	Wide ranging mammals (elk, deer, mtn lion, bear, bobcat)	Potential calving areas; Severe winter range; Important habitat requirements
Soils		Stable soils are the key to providing a sustainable landscape for grazing, recreation, weed control, habitat protection, and cultural resource protection.

Cultural Resource Conservation Targets include archaeological and historical sites and features including the Lykins Valley Site, numerous stone circles, buried sites and lithic scatter. The main vision for management of these archaeological and historical resources include partnering with the City of Fort Collins Museum to curate, display and educate the public about the areas significance at the museum. Education and interpretation on-site will be done in an outdoor classroom setting and in such a way to ensure that sensitive sites are protected.

Priority Conservation Targets	Nested Targets	Significance
Cultural Resource Conservation Targets		
Lykins Valley Site		Multi-occupation proto-historic site; early culture contact between Euroamericans and Indigenous people.
Stone Circles, Buried Sites, Campsites	Archaeological survey areas with cumulative ranking of 4 or higher.	Archaeological survey areas with cumulative ranking 4 or higher are most sensitive/significant.
	Archaeological Survey Areas with cumulative ranking 1-3	Archaeological survey areas with ranking of 1 are least sensitive but many have educational value.
	Collected Artifacts at Fort Collins Museum & Lab of Public Archaeology CSU	Collected because they were diagnostic or imperiled where they lay.
Homesteads; Historic Buildings; Early Water Control Features		Historic schoolhouse, barn, homestead, and sheepherder cabin have historic and educational value.

Western Heritage Conservation Targets on the property include preservation of the ranching tradition including maintaining the high quality vegetation communities and creating a sense of place as you travel through private ranchlands enroute to Red Mountain Open Space and on the open space itself. Sustainable livestock grazing for vegetation management, continuation of the area’s western heritage and in partnership with a local area rancher comprise this third primary management goal. On-site education of visitors about the importance and ongoing livelihood of our western heritage will be done in an outdoor classroom setting. By protecting adjacent ranchlands, the ranching tradition and western heritage of the larger Laramie Foothills landscape can still be interpreted and seen as visitors access Red Mountain Open Space.

The continuation of sustainable livestock grazing at Red Mountain Open Space is important both for vegetation management and promotion of sustainable working landscapes in the Laramie Foothills area. While vegetation management and enhancement is a priority for grazing management, the economic sustainability of grazing is also an important goal at Red Mountain Open Space. Livestock grazing practices will be continually monitored and evaluated to ensure that grazing is carried out in a sustainable manner and in concert with the approved grazing plan. If conflicts arise between providing safe recreation opportunities and livestock management practices, a balance will be sought between livestock grazing and recreation to minimize impacts to both and resolve the issue.

Priority Conservation Targets	Nested Targets	Significance
Western Heritage Management Targets		
Preservation of Ranching Heritage	Good to excellent range condition	NRCS good to excellent ratings; Demonstrates sustainable grazing practices; Keeps ranching viable on landscape.
	Entry road into open space	Passes through large landscapes of protected ranchlands, working landscapes and adds to the experience of the western heritage.

Outdoor Recreational and Educational Management Targets including a high quality trailhead and trail experience for non-motorized and non-commercial uses such as hiking, bicycling, horseback riding, wildlife watching, photography, bird viewing and limited high-quality hunting from designated trails. As requested on a special event basis for disabled or elderly citizens, guided educational tours may be provided by vehicle on designated roads, however most educational tours will be hiking trips with a volunteer naturalist. Similarly, providing exceptional views and a sense of place both on-site and as visitors travel enroute to the open space is a management goal. Red Mountain Open Space will be managed by designated zones (developed, frontcountry, backcountry, and primitive) to protect sensitive resource areas and scenic vistas, define visitor experiences and concentrate higher use to developed areas.

Priority Conservation Targets	Nested Targets	Significance
Outdoor Recreation Management Targets		
High Quality Recreational/ Educational Experiences	Trail layout and design	Connect to other open space area trail systems; Trails leading to vistas, interesting features; Educational opportunities
	Trailhead (TH) experience	First impression of the open space; Most highly developed area on-site; Focal point for information exchange.
	Hiking, mountain biking & equestrian experience	Main users of trail system
	Elk and/or deer hunting	Management tool for large mammal herds and to ensure good health, movement and selection of populations. GOCO Wildlife quadrant dollars were partially used (~10%) for property acquisition.
Views/Sense of Place	On-site (trails, trailhead) experience	Protect significant visual resources on-site and provide high quality recreational experience.
	Entry road design	Sets the tone entering area; Part of bigger LFMTTP vision of landscape sense of place protection; Long-term maintenance costs.

4.2 Natural Resources Management

Natural resources management addresses the health and dynamics of the plant and animal communities and the preservation of natural and geologic features and scenic vistas on Red Mountain Open Space. Natural resources management is grouped into five ecological conservation targets: a) Foothills shrubland system; b) Foothills grassland complex; c) Riparian system; d) Ponderosa woodlands; and e) Soils management.

a. Foothills Shrubland System

Within the foothills shrubland system there are several significant nested conservation targets that will be a focus for management activities including the mountain mahogany shrubland communities, sensitive bird and raptor species, and wide ranging mammals.

Mountain Mahogany Communities

The mountain mahogany communities extend onto the adjacent Soapstone Prairie Natural Area and conservation easement lands and are ecologically significant due to their large extent, minimal fragmentation, and few weedy species. The greatest threats to maintaining high quality, globally imperiled shrubland communities are fragmentation and invasive weed introduction and spread. Management actions will focus on preventing and/or minimizing fragmentation of these shrublands by roads, trails and other disturbances, employing vegetation management techniques to control non-native invasives, and requiring users to stay on designated trails to concentrate any weed spread within the trail corridor.

Red Mountain Open Space has been incorporated into Larimer County's Weed Management Plan and non-native plant species have been inventoried and mapped. The primary non-native species mapped within the mountain mahogany shrublands is dalmation toadflax. Control of dalmation toadflax is challenging and exacerbated by the steep nature of the terrain and difficulty accessing individual plants or small patches of toadflax within these dense shrubland communities. As feasible, toadflax will be controlled with integrated weed management efforts; if chemical spraying is employed, it will be conducted through spot spray techniques to minimize impacts to non-target plants.

Fire is a naturally occurring event in these systems and may be prescribed as a tool for mountain mahogany reproduction (via seeds or regrowth from roots), to create openings in this dense canopy and increase forage quality. However, the full effects of prescribed or naturally occurring fire are not completely understood and concerns exist if such a disturbance will increase the incursion of weedy species into these relatively excellent condition shrubland communities. If fire is determined a necessary prescription to meet a management goal, or if a naturally occurring fire moves through the mountain mahogany shrublands, vegetation will be monitored to determine what effects occur and any invasive species incursion will be treated.

Livestock grazing currently takes place on Red Mountain Open Space, although there is less movement of cattle within the shrubland communities due to corresponding steeper slopes. Sheep grazing will not be employed at this time due to concerns with mixing domestic bighorn and native sheep herds and transmission of brucellosis. Grazing leases will specify that livestock will not be grazed on Red Mountain Open Space if coming from weedy off-site pastures.

Vegetation monitoring plots were installed by the NRCS and transects and plots installed by Larimer County Parks and Open Lands to establish a baseline of vegetation composition on Red Mountain Open Space in 2006 and to provide a tool to evaluate vegetation changes over time and following management actions. These transects and plots will be monitored annually for 3-5 years and then on a 3 year interval in the future. The primary indicator for health of these rare mountain mahogany communities will be overall size (acres) of the plant communities and number of weed infestations within the communities and fragmentation from social trails.

Sensitive Bird/Raptor and Wide Ranging Mammal Species

Red Mountain Open Space is one of the most remote, intact, wildlife landscapes in Larimer County and on the Front Range of Colorado and there is an abundance of wildlife that is not sensitized to humans and are relatively "wild". Due to the *wild* nature of the properties' wildlife, the remoteness of these areas, and on recommendation from the Division of Wildlife, it has been determined that domestic dogs are incompatible with the primary goal of protecting the site's significant wildlife resources and will not be allowed at Red Mountain Open Space. Negative impacts of dogs on wildlife may include disease transmission, harassment, displacement, injury and death. On a limited and special permit basis, working dogs that are necessary for livestock operations under guidance of grazing tenants may be considered. In the big picture, in the Larimer County Parks and Open Lands and the City of Fort Collins Natural Areas and Parks systems there are over 96 miles of trails that allow domestic dogs; and 13 miles of trails that do not allow domestic dogs.

Trails, roads, fences and other on-site features will be located to avoid or minimize fragmenting large landscape areas or disturbing sensitive wildlife areas including potential elk calving areas, migration corridors, perennial creeks, den sites and raptor nesting sites following Division of Wildlife recommendations. If trail alignments are not sufficient to prevent disturbance to nesting birds seasonal closures will be employed and the behavior and presence of nesting raptors will be closely monitored to determine if negative impacts are occurring and if and when seasonal closures are necessary. Specifically all recreation facilities and activities will be located outside the ¼ -mile CDOW recommended buffer distance for golden eagle nests. Red Mountain Open Space is included within a mule deer winter concentration area which generally corresponds with the months of December through March (Colorado Division of Wildlife). For this reason as well as others (low visitation, incimate weather, muddy trails, lack of snow for winter recreation) Red Mountain Open Space will be closed seasonally in winter months.

On-going monitoring of wildlife including their distribution and abundance and visitor behaviors will determine the appropriateness of additional wildlife protection measures.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
Ecological Conservation Targets				
Foothills Shrubland System	Mountain mahogany/mixed grass (Griffith's wheatgrass, mountain muhly, needle and thread and New Mexico feathergrass) communities	<ul style="list-style-type: none"> Weeds Fragmentation from trails, roads, etc. Erosion 	<ul style="list-style-type: none"> Maintain large, intact mountain mahogany communities functioning within their natural range of variability. 	<ul style="list-style-type: none"> Minimize fragmenting shrublands (trails, roads, etc) Driving limited to designated roads No off-trail public access. Manage vegetation adaptively (grazing, fire, & other management actions based on ecological principles). Integrated weed control. No livestock from weedy pastures. Educate about sensitivity.
	Sensitive bird/raptor species (barn owl, golden eagle, red-tail, raven nest sites)	<ul style="list-style-type: none"> Disturbance during nesting periods or to perching raptors 	<ul style="list-style-type: none"> Protect and buffer nest sites. 	<ul style="list-style-type: none"> Keep trails away from cliffs and outside nest buffers. Minimize fragmenting large areas of habitat Ranger presence. Education. Monitor nest sites.
	Wide ranging mammals (elk, deer, mtn lion, bear, bobcat, pronghorn)	<ul style="list-style-type: none"> Disturbance during sensitive periods (winter & calving) and flushing year-round 	<ul style="list-style-type: none"> Provide large, undisturbed blocks of habitat including movement corridors and calving sites. 	<ul style="list-style-type: none"> Seasonal trail/area closures. No trails in calving, movement corridors, or other sensitive areas. Minimize habitat fragmentation. Wildlife-friendly fencing. Monitor distur

Implementation Steps:

- Restrict public access and management access to designated trails and roads, with the exception of limited permits for education and research purposes.
- Design trails to avoid sensitive wildlife areas (such as movement corridors, cliffs, calving areas, and buffers to known nest sites) and to minimize fragmentation of the mountain mahogany shrublands.
- Fencing will meet wildlife-friendly fence specifications for height of wires and spacing for deer, elk and pronghorn to pass under and over.
- Incorporate Red Mountain Open Space into Departmental Integrated Weed Management Plan and implement weed management efforts. As feasible, spot spray in mountain mahogany community to minimize impacts to non-target species.
- Evaluate the potential use of fire in mountain mahogany communities and ensure management goals to minimize non-native introductions are primary.
- Continue sustainable livestock grazing and specify in grazing leases not to allow livestock from weedy pastures.
- Monitor distribution and abundance of wildlife and implement seasonal closures of trails or areas as needed to minimize wildlife impacts.
- Monitor rare mountain mahogany plant communities for non-native species presence and extent, social trails and erosion.

b. Foothills Grassland Complex

The foothills grasslands comprise approximately 50% of Red Mountain Open Space and are primarily found in the valleys and correspond with the highest areas of grazing utilization. Characterized by needle-and-thread (*Stipa comata*), western wheatgrass (*Pascopyrum smithii*) and blue grama (*Bouteloua gracilis*), the grasslands are rated by the NRCS as being in excellent condition with few weed infestations. There are isolated patches of cheatgrass and some locations that have been disturbed by land management activities including the construction of the Sand Creek Dam (Dam #5) and spillway, areas around livestock watering tanks, the corral and ranching roads that are in need of restoration. The north-south valley road to the City of Cheyenne Open Space and the eastern spur road to Soapstone Prairie Natural Area will be maintained for livestock operator, emergency and maintenance access and will be surfaced with an aesthetically blending hard material. Portions of these roads are within arroyos or washes and will also be used as part of the designated trail system.

Management of the foothills grassland complex will focus on maintaining good to excellent condition native grassland composition to minimize erosion, reduce spread or introduction of non-native invasive species, and preventing and/or minimizing fragmentation of the grasslands by roads, trails and other disturbances. Trails will be designed to minimize fragmentation and visitors will be required to stay on designated trails to limit weed spread to the trail corridor. Off-trail access will be allowed for educational or research purposes by permit and on a limited basis corresponding to periods of least impact.

Grazing management will be on-going in cooperation with a lessee. Future grazing management may include grass-banking and/or rotational grazing in partnership with a lessee on Soapstone

Prairie Natural Area. The goal of either approach is to provide high quality land stewardship, to meet large-scale conservation goals, and/or to provide sustainable ranching practices.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
Ecological Conservation Targets				
Foothills grassland complex		<ul style="list-style-type: none"> Weeds. Large-scale conversion from native to non-native plant community Habitat fragmentation from trails, roads, etc. Erosion 	<ul style="list-style-type: none"> Maintain large, intact native foothills grassland plant composition and cover and functioning within its natural range of variability. Continue livestock grazing to meet grassland management goals. 	<ul style="list-style-type: none"> Minimize fragmentation by trails, roads, etc. No driving off-roads; On-trail access only by public (unless education or research permit). Integrated weed management Manage vegetation sustainably (grazing, fire, and other management actions based on ecological principles). Revegetate disturbed areas with native seed. No livestock from weedy pastures. Education. Monitoring.

Implementation Steps:

- Design trails to minimize fragmentation of the foothills grasslands.
- Restrict public access and management access to designated trails and roads, with the exception of limited permits for education and research purposes.
- Incorporate Red Mountain Open Space into Departmental Integrated Weed Management Plan and implement weed management efforts. As feasible, spot spray in mountain mahogany to minimize impacts to non-target species.
- Evaluate the potential use of fire in mountain mahogany communities and ensure management goals to minimize non-native introductions.
- Continue sustainable livestock grazing and specify in grazing leases not to allow livestock from weedy pastures. Evaluate grass banking.
- Revegetate roads slated for closure and disturbed areas with native seed.
- Monitor foothills grassland community for non-native species presence and extent, social trails and erosion.

c. Riparian Systems

The two perennial riparian systems on Red Mountain Open Space, Sand and Boxelder creeks, are of very high ecological significance. Attributes include rare vegetation communities only known from only 5-20 occurrences globally, high water quality, nesting golden eagles, potential Preble’s meadow jumping mouse habitat and rare and intact assemblages of aquatic insects. Both riparian systems are supported by perennial stream flows making them significant for

wildlife diversity and watering areas and a rare commodity in Colorado in that they are not currently fragmented by trails, roads or other features. The primary goals for management of these riparian areas are to maintain them as large intact and unfragmented systems and corridors, primarily for wildlife movement corridors and habitat. The only access to these areas will be for educational or research purposes by permit and on a limited basis corresponding to periods of least impact to riparian vegetation and wildlife. Education will be particularly important for ensuring public ownership in the long-term protection of these riparian areas. No trails, roads or other permanent features will be constructed within these riparian zones with the exception of minimal wildlife-friendly fencing to control visitor access and livestock. Fishing is not being considered as a compatible use with the protection of these areas.

There are non-native invasive weed species along the lower reaches of Sand Creek and lower end of Haygood Canyon that will be managed via integrated weed management techniques that are labeled for use in proximity to water. Fencing will be used to create a distinct pasture within Haygood Canyon from the Big Hole Pasture to allow use of livestock for weed management purposes within Haygood Canyon. Timing of use of livestock will correspond with minimizing impacts to wildlife, nesting raptors and to ensure sufficient vegetation cover in riparian areas during periods of high flow to protect streambanks, dissipate energy and trap sediments.

Protection of the banks of Sand and Boxelder creeks and other drainages is important for maintaining high quality riparian habitat for wildlife species including aquatic insects and fish and a healthy river system. Grazing plans that limit and direct access of livestock to the river corridor will be critical for ensuring long-term sustainability of riparian areas.

Due to Sand Creeks exceptional water quality, intact nature of the riparian area, and hydrological barrier (it flows subsurface downstream of the canyon mouth), this creek may be a good candidate for the introduction of native greenback cutthroat trout (*Oncorhynchus clarki stomias*). Larimer County will explore this possibility with the Division of Wildlife and upstream landowners.

The Preble’s meadow jumping mouse is listed as threatened and protected under the Endangered Species Act and therefore it is required that trapping within both Sand and Boxelder creeks be completed prior to any activities within 300 feet of the creeks to address impacts and mitigation of impacts to the mouse and it’s habitat. Initial trapping in 2005 indicated that the Preble’s meadow jumping mouse does not inhabit Red Mountain Open Space.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
Ecological Conservation Targets				
Riparian System	<ul style="list-style-type: none"> Narrowleaf cottonwood /bluestem willow community. Narrowleaf cottonwood /chokecherry community 	<ul style="list-style-type: none"> Weeds. Habitat fragmentation (trails, roads, etc.) Bank erosion. Lack of natural processes (flooding; natural 	<ul style="list-style-type: none"> Maintain plant communities functioning within their natural range of variability. 	<ul style="list-style-type: none"> No fragmentation by trails, roads, etc. Fence riparian areas as own grazing units. Control timing of grazing to prevent bank damage. Access for education/ research only - limit #

		flows)		/group size/ timing to minimize impacts. <ul style="list-style-type: none"> • Integrated weed management. • Educate on sensitivity of riparian areas.
	Restoration target - greenback cutthroat trout (GCT)	<ul style="list-style-type: none"> • Competition with non-native fish. • Overfishing. • Warm stream temps. • Poor water quality from sedimentation or fecal coliform. • Improper hydrology. • Drought. • Streambank impact from recreation and grazing. 	<ul style="list-style-type: none"> • If conditions are appropriate for reintroduction, protect and improve the habitat for GCT prior to and following successful restoration efforts. 	<ul style="list-style-type: none"> • Work with DOW to remove non-native fish and reintroduce GCT in Sand and Boxelder creeks. • If re-introduction is successful, work with DOW for long-term management success measures. • Work with upstream landowners to maintain normal flows and not introduce non-natives. • Grazing management. • No public access
	Potential Preble's habitat	<ul style="list-style-type: none"> • Weeds. • Riparian habitat loss and/or fragmentation (trails, roads, etc.) 	<ul style="list-style-type: none"> • If present, protect Preble's meadow jumping mouse and its habitat. 	<ul style="list-style-type: none"> • Complete USFWS trapping requirements. • Minimize fragmentation of riparian areas by trails, roads, etc. • Maintain healthy upland vegetation.
	Aquatic insects	<ul style="list-style-type: none"> • Warm stream temps. • Eutrophication or poor water quality from sedimentation or fecal coliform. • Drought 	<ul style="list-style-type: none"> • Improve conditions for desirable aquatic insects (i.e. species intolerant of poor water quality). 	<ul style="list-style-type: none"> • Limit sedimentation; • Manage grazing to maintain healthy riparian veg. to protect banks while limiting eutrophication.

Implementation Steps:

- Avoid fragmentation of riparian areas by trails, roads, etc.
- Fence riparian areas as separate grazing units for weed management.
- Control timing of grazing to prevent damage to streambank when most vulnerable.
- Access for education/research only - limit # /group size/ timing to minimize impacts.
- Complete integrated weed management activities as outlined in weed management plan.
- Educate the public about the sensitivity of riparian areas and rare plant communities.
- Work with DOW to remove non-native fish and reintroduce greenback cutthroat trout in Sand and Boxelder creeks.

- Work with upstream landowners to maintain normal flows and prevent introduction of non-native plant or fish species.
- Complete USFWS trapping requirements for Preble's.
- Maintain healthy upland vegetation.
- Manage grazing to maintain healthy riparian vegetation to protect banks and limit sedimentation and eutrophication.

d. Ponderosa Woodlands

The ponderosa pine woodlands comprise about 1/3 or 1,063 acres of the open space lands that will be retained and include both open and closed canopy areas. Within the ponderosa woodlands there are two nested targets: a rare plant community – ponderosa pine and spike fescue and habitat for wide ranging mammals.

Ponderosa Woodlands

The Forest Stewardship Plan for Red Mountain Open Space (Colorado State Forest Service 2006) denotes 9 management units each with specific management recommendations for each. The main management goals include reducing wildfire hazard, reducing or eliminating elythroderma diseased trees and maintaining a healthy and vigorous forest. Management prescriptions primarily focus on thinning and pile burning slash with a focus on removing dog-hair stands, deformed and elythroderma-diseased trees and prescribed burning.

Management of the rare ponderosa pine/spike fescue community will utilize good forest stewardship practices described above as well as minimize fragmentation of the forested portions of the property from trails, roads, etc. and avoid activities that may increase weed introductions.

Larimer County Parks and Open Lands will work with the Colorado State Forest Service and Larimer County Emergency Services staff to develop a fire management protocol for both prescribed burning and wildfire management. In addition to prescribed burning, another management tool to reduce ladder fuels, remove less vigorous saplings and provide openings in forested areas for understory growth, will be defining areas for fire breaks in the event of a wildfire. There are existing old roads and natural fire breaks on the property that would serve as a best defense in the event of a wildfire and simultaneously allow for more natural fire regime vs. crews creating fire breaks that do not match management goals.

Wide Ranging Mammal Species

Trails, roads, fences and other on-site features will be located to avoid or minimize fragmenting large landscape areas or disturbing sensitive wildlife areas including potential elk calving areas, migration corridors, perennial creeks, and den sites following Division of Wildlife recommendations. Red Mountain Open Space is included within a mule deer winter concentration area which corresponds with the months of December through February. For this reason as well as others (low visitation, incimate weather, muddy trails, lack of snow for winter recreation) Red Mountain Open Space will be closed seasonally in the winter months. On-going monitoring of wildlife including their distribution and abundance and visitor behaviors will determine the appropriateness of additional wildlife protection measures.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
Ecological Conservation Targets				
Ponderosa Woodlands	Ponderosa pine/Spike fescue	<ul style="list-style-type: none"> • Weeds. • Habitat fragmentation from trails/roads/etc. • Erosion 	<ul style="list-style-type: none"> • Maintain ponderosa pine/spike fescue community with a native species composition functioning within its natural range of variability. 	<ul style="list-style-type: none"> • Avoid fragmentation by trails, roads, etc. • No driving off-roads. • On-trail access only by public (unless education or research permit). • Implement forest stewardship (thinning; and low intensity prescribed fire).
	Wide ranging mammals (elk, deer, mtn lion, bear, bobcat)	<ul style="list-style-type: none"> • Disturbance during sensitive periods (winter and calving); • Flushing year-round 	<ul style="list-style-type: none"> • Provide large, undisturbed blocks of habitat including movement corridors and calving sites. 	<ul style="list-style-type: none"> • Seasonal trail/area closures. • No trails in calving, movement corridors, or other sensitive areas. • Minimize habitat fragmentation. • Education. • Monitor distribution and abundance

Implementation Steps:

- Avoid fragmentation by trails, roads, etc. and avoid driving off roads for management or other activities.
- Allow on-trail access only with the exception of education or research purposes by permit.
- Implement Forest Stewardship Plan recommendations including thinning and low intensity prescribed fire.
- Consider seasonal trail or management zone closures to minimize impacts to wide ranging mammals during sensitive periods and winter months (December thru February).
- Do not develop trails in calving areas, through wildlife movement corridors, or in other sensitive areas.
- Monitor distribution and abundance of wide ranging mammals.

e. Soils

The steep slopes and folding land forms within Red Mountain Open Space act to drain surface runoff towards many small drainages and ultimately channel into Sand or Boxelder creeks. The smaller drainages carry intermittent flows most common during the spring snowmelt period and after heavy rain events, although some are spring-fed. Sand and Boxelder creeks are perennial streams with water flowing year round, although in some portions of the streambed water

percolates under the sandy soils. Both creeks are prone to large flood events as evidenced by large debris dams and open washes. Monitoring of the drainages and springs will be important to determine water availability for wildlife and continued livestock grazing and to monitor erosion over time.

Soil erosion is a major threat to land productivity and subsequently may impact wildlife values and water quality. A combination of the soils and geology on Red Mountain Open Space make the site susceptible to high runoff during precipitation events with potential soil erosion and gully formation. Maintaining stable soils is the key to providing a sustainable landscape for grazing, recreation, habitat protection and cultural resource protection. Erosion of rock formations is also of concern for reasons of aesthetics, habitat value and maintaining geologic integrity of the site.

To minimize excessive or unnatural erosion on-site, the proposed trail system will be located to follow the land’s natural topographic contours and when appropriate and possible take advantage of the large non-riparian washes. Trails will be monitored to detect any significant sign of soil erosion. The site will be managed for grassland and shrubland health (maintenance of adequate vegetative cover), through sustainable livestock grazing practices and focusing access to designated trails and roads only. Roads that are maintained for management purposes will be surfaced with a visually unobtrusive material to avoid rutting and subsequent driving outside of the road bed. To minimizing disruption to nesting and perching raptors and erosion of rock faces, rock climbing will not be allowed at Red Mountain Open Space.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
Ecological Conservation Targets				
Soils		<ul style="list-style-type: none"> • Loss of topsoil by wind or water erosion. • Loss of cultural sites. • Degradation of habitat. • Reduced quality of recreational experience (e.g. rutted trails). • Deterioration of aesthetics. • Impacts to water quality 	<ul style="list-style-type: none"> • Prevent excessive human and livestock caused soil erosion throughout entire site. 	<ul style="list-style-type: none"> • Monitor watershed (pastures, drainages, roads, trails) for excessive erosion. • Implement soil stabilization measures, where necessary (e.g. check dams, revegetation, rest, etc.). • In areas where cultural resources are imperiled, work with archaeologists to determine best course for protection (stabilize banks, etc.). • Proper trail/road construction.

Implementation steps:

- Monitor the watershed (pastures, trails, roads, drainages) regularly to check for excessive erosion and deterioration.

- Monitoring of the drainages and springs will be important to ensure water availability for wildlife and livestock and to monitor erosion over time.
- Require all users remain on designated trails.
- Surface, with a harder and visually unobtrusive material, designated roads that will remain in place for management purposes. Add check dams or drainage culverts as appropriate.
- Use volunteers to assist in monitoring and encouraging proper trail use.
- Implement soil stabilization measures where necessary (such as check dams, revegetation, or allowing for pasture rest).
- Ensure that grazing plans limit access of livestock in the river corridor.

4.3 Cultural Resource Management

Protection of archaeological and historic resources, collectively the cultural resources, is a primary goal of management at Red Mountain Open Space. Protection of archaeological resources is defined here as keeping artifacts intact and in contextual location where they lay. This includes protection from looting, casual collecting, erosion, surface disturbance and damage or loss by other means. As part of the archaeological survey, all the recorded sites were given a ranking on a scale between 1-3 (1 being lowest and 3 highest) in terms of three criteria: sensitivity, research potential and public education value. A cumulative ranking across all three criteria is also given.

Sensitivity is judged to be the potential for loss or disturbance by people. Low sensitivity sites include small lithic scatters containing little to no tools or features, while high sensitivity refers to resources in danger of being collected or looted, primarily due to the abundance of cultural debris or those sites that might be significant for ritual purposes. Research potential and merit will be evaluated on whether something new is to be learned to build upon regional or local sequence data. Public education rankings are based on the compelling story of the sites. Those sites of low rank lack information in regards to date or function of the sites while high ranking sites are those with an associated date or public lesson such as stone circles as examples of domestic architecture or Stone Johnnies as examples of sheepherder navigation.

About half of the sites received a cumulative ranking of 4 or higher and are considered to be valuable to the regional historic or prehistoric record. Management of these sites will focus on ongoing protection and avoiding any disturbances. As appropriate, these sites may be important for future research or study. These highly significant sites will be interpreted for what they tell us in the big picture, but not directly at the archaeological site location to protect their location and integrity. Trails will be located to give a minimum 30 meter buffer distance from sensitive sites and visitors will be required to stay on designated trails. Less sensitive cultural sites (sheepherder cabins, stone circle sites and the homestead cabin) will be interpreted at the cultural site location and trails will be designed to take visitors nearer these features for educational purposes.

As of March 2007, over 181 at-risk or diagnostic artifacts have been collected on-site, most during the 2006 and 2007 class II archaeological survey and are being curated at the City of Fort

Collins Museum. To protect the significant cultural resources on-site, archaeological sites will be regularly monitored and at-risk or diagnostic artifacts will be removed for education purposes and be curated at the Fort Collins Museum so long as the curation agreement is in place. If this agreement is terminated, archaeological features collected on Red Mountain Open Space will be curated with another accredited and secure institution. Larimer County will participate in creating educational displays at the new museum facility for the interpretation of collected artifacts. Trails, roads, livestock facilities and other surface disturbances will be located outside of culturally sensitive areas. As possible, consolidation of cultural artifacts from CSU with the Fort Collins Museum will be encouraged.

At this time, no archaeological sites are being recommended for excavation however the Lykins Valley site may be a candidate site for future consideration if funding and interest from an accredited organization exists. If the Lykins Valley site is part of the lands traded to an adjacent landowner, the conservation easement language will specify protection of the site and artifacts and will outline appropriate research, access and excavation, etc. of the site. The Lykins Valley site needs to be fenced from cattle and regularly monitored for erosion. Any requests for research of cultural sites at Red Mountain Open Space will be reviewed to ensure consistency with management plans. The potential to nominate the Lykins Valley Site to the National Register of Historic Places will be explored.

There is a rich cultural history at Red Mountain Open Space. Incursions by native peoples, explorers, homesteaders and cattle ranching all mark a significant cultural history in this area. Of particular note, the historic schoolhouse and barn on the portions of Red Mountain Open Space likely to be traded, have interesting historic value. These features should be called out in the conservation easement to ensure their protection if traded to an adjacent rancher. Additionally, water control features, the sheepherder cabin, and old homestead cabin have historical interest and will be interpreted for the public. Historic buildings will be fenced or closed off from livestock to prevent damage to the structures.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategy
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Cultural Resource Conservation Targets				
Lykins Valley Site		<ul style="list-style-type: none"> Trampling. Looting. Digging. Erosion. Fragmentation from trails, roads, etc. 	<ul style="list-style-type: none"> Protect Lykins Valley site. 	<ul style="list-style-type: none"> Language in CE to protect site if traded and allow for education/research access. Fence from livestock. Regularly monitor. Establish site security plan. Evaluate merit and need for research access. Consider nominating for National Register of Historic Places. Consider future excavation of site or retaining ownership to maximize the protection.

Stone Circles, Lithic Scatter, Campsites	<ul style="list-style-type: none"> • Archaeological Survey Areas with cumulative ranking of 4 or higher. 	<ul style="list-style-type: none"> • Trampling. • Looting. • Digging. • Erosion. • Fragmentation from trails/roads/etc. 	<ul style="list-style-type: none"> • Protect, research, and interpret as appropriate. 	<ul style="list-style-type: none"> • No trails, roads, or facilities on or within 30 m buffer of sensitive cultural resource areas. • No off-trail or vehicle use. • Fence from livestock. • Interpret as appropriate to ensure protection. • Monitor erosion and collect newly surfaced or at-risk artifacts. • Careful site selection for any ground disturbing activities (fence posts, signs, trail markers, tanks).
	<ul style="list-style-type: none"> • Archaeological Survey Areas with cumulative ranking 1-3 	<ul style="list-style-type: none"> • Trampling. • Erosion. • Fragmentation from trails/roads/etc. 	<ul style="list-style-type: none"> • Protect, research, and interpret as appropriate. 	<ul style="list-style-type: none"> • Minimize trails, roads, or facilities within cultural sites. • No off-trail or vehicle use. • Interpret as appropriate to ensure protection. • Monitor erosion and collect newly surfaced or at-risk artifacts.
	<ul style="list-style-type: none"> • Collected Artifacts at Fort Collins Museum & Lab of Public Archaeology CSU 	<ul style="list-style-type: none"> • Lost if used without appropriate storage, handling, etc. • Mis-interpreted. • Kept in storage and not displayed for education. 	<ul style="list-style-type: none"> • Protect, research, and interpret as appropriate. 	<ul style="list-style-type: none"> • Work with museum on educational displays at new museum facility. • Encourage this off-site interpretation of cultural resources as the primary interpretive goal for Red Mountain cultural artifacts. • Consolidate CSU's collection with the museums collection. • Provide visitors with an on-site experience interpreting/displaying representative artifacts at a central location
Homesteads; Historic Buildings; Early Water Control Features		<ul style="list-style-type: none"> • Collapse. • Vandalism 	<ul style="list-style-type: none"> • Protect, research, and interpret as appropriate. 	<ul style="list-style-type: none"> • Language in CE to protect traded historic structures. • Re-roof barn and schoolhouse on trade lands. • Historic structures on open space fenced from livestock and stabilized. • Interpret as appropriate. • Consider moving selected historic buildings to appropriate visitor access sites

Implementation steps:

- Sites with a cumulative ranking of 4 or higher will be managed for their ongoing protection and avoided by any disturbances. As appropriate, these sites may be important for future research or study.
- Develop a site security plan to protect cultural resource areas.
- Trails will be located a minimum 30 m buffer distance from sites with cumulative ranking of 4 or higher; visitors will be required to stay on designated trails.
- Curate removed, at-risk and diagnostic artifacts with the Fort Collins Museum or another accredited, secure and appropriate institution.
- Fence cattle out of significant cultural resource areas to prevent erosion, damage and/or loss of cultural features and stabilize structures over time.
- Require the public to remain on designated trails
- Investigate the need and potential to nominate the Lykins Valley Site to the National Register of Historic Places.
- Continue to encourage non-invasive, legitimate, scientific study of cultural features on-site that match the management goals of Red Mountain Open Space. Any removed artifacts that are in jeopardy or diagnostic will be curated at the Fort Collins Museum consistent with our curation agreement.
- Regularly monitor eroding areas, arroyos and riparian drainages for cultural artifacts on-foot with archaeology volunteers that are members of organizations that have signed a code of ethics (Colorado Archaeological Society, etc.).

4.4 Western Heritage

Grazing is a strong economic tradition and part of the western heritage in northern Larimer County. Grazing will be conducted in concert with a grazing plan developed in partnership with the Natural Resources Conservation Service. Grazing will be managed in partnership with lessees and to minimize impacts to recreation activities, encourage plant health and vigor, promote biodiversity, provide a management tool for wildlife habitat diversity (such as providing areas that are more heavily grazed and others that are less grazed, as different wildlife species benefit with these different grazing regimes) and prevent damage to riparian areas.

To allow greater flexibility in grazing management, spring development plans should be created for at least two springs in the Big Hole Pasture that include fencing off associated potential riparian areas. The far north spring in the Big Hole Pasture will need substantial maintenance in the next five years.

Boundary fences will be maintained in partnership with adjacent landowners. Internal fences will be maintained for the customary management of livestock as appropriate. Any new or replaced fences will be wildlife-friendly and designed to allow for wildlife passage.

It is important to work with grazing lessees on an annual basis and to walk the property and discuss goals and needs and changes necessary in the lease from year to year. Specific issues that will be considered in the update or adjustment of the grazing lease include:

- Stockwater: relocation or improvements to tanks; regular water quality sampling
- Habitual use patterns: Consider multiple access points to pastures that can be rotated to avoid habitual use patterns and denuded areas.
- Evaluate grazing intensity, frequency and/or season of use thereby providing sufficient rest to encourage plant vigor, re-growth and energy storage as well as minimize compaction of soils.
- Evaluate timing of grazing to prevent damage to sensitive areas and riparian corridors when they are most vulnerable to trampling. Avoid grazing in spring and fall in the same year. No late season grazing. No season long grazing.
- Ensure sufficient vegetation cover in riparian areas during periods of high flow to protect streambanks, dissipate energy and trap sediments.
- Ensure suitable habitat conditions remain for native wildlife.
- Evaluate herd management practices that promote mobility including herding and culling practices, class of livestock etc.
- Evaluate fencing status and identify repair areas.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategies
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Western Heritage Conservation Targets				
Preservation of Ranching Tradition	<ul style="list-style-type: none"> • Excellent range condition 	<ul style="list-style-type: none"> • Weeds. • Erosion. Large-scale conversion to non-natives. • Lack of grazing. • Poor water source/quality; Drought 	<ul style="list-style-type: none"> • Continue sustainable ranching operations. 	<ul style="list-style-type: none"> • Develop grazing mgmt plan with NRCS. • Consider grass banking. • Develop a grazing lease that is mutually beneficial to resource protection/recreation experience goals and to operator needs. • Work with operator to monitor grazing utilization & springs. • Develop springs outside of & to resource areas. • Define frequency/ timing/ appropriateness of livestock mgmt activities (branding, dehorning, driving to check facilities vs. riding, etc.). • Education of grazing as a management tool & as part of our W. heritage.

	<ul style="list-style-type: none"> • Entry road into open space 	<ul style="list-style-type: none"> • Development of adjacent lands. • Poorly constructed access. • Features that change the natural/western character. 	<ul style="list-style-type: none"> • Provide the public with glimpse of working landscape. 	<ul style="list-style-type: none"> • Continue to work with adjacent ranchers and landowners to place lands under conservation easement. • Consider role of grass banking in achieving conservation goals. • Work with Planning Dept. to review development proposals for buffering and fit with open space goals.
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Implementation Steps:

- Develop a grazing management plan in partnership with the NRCS.
- Develop a grazing lease that is mutually beneficial to resource protection/recreation experience goals and to livestock operator needs.
- Work with livestock operators to monitor grazing utilization & springs.
- Develop two springs in the Big Hole to protect resource areas.
- Define frequency, timing, and appropriateness of livestock management activities (branding, dehorning, driving to check facilities vs. riding, etc.).
- Continue to work with adjacent ranchers and landowners to place lands under conservation easement.
- Consider role of grass banking in achieving conservation goals.
- Work with Planning Department to review development proposals for buffering and fit with open space goals.

4.5 Outdoor Recreation Management

This section identifies appropriate and allowable outdoor recreational uses for Red Mountain Open Space in light of the primary management goals of protecting the significant ecological, cultural and western heritage resources on-site. The main targets for outdoor recreation management include providing a high quality recreational and educational experience (which will take into account elements of the trail layout and design, trailhead experience and specific user group experiences) and maintaining views or sense of place (both on-site and as visitors enter the property).

Management of various recreational activities and the level of use will be by management zones (see Appendix G). The four management zones include developed, frontcountry, backcountry, primitive, and sensitive. Map 6 shows how each of the various recreational opportunities described below (trails, trailheads, etc.) correspond to management zones.

Priority Conservation Targets	Nested Targets	Threat/Impact	Management Goal	Management Strategies
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Outdoor Recreation Targets				
High Quality Recreational/Educational Experiences	<ul style="list-style-type: none"> Trail layout and design 	<ul style="list-style-type: none"> Using roads that are not sustainable. Social trails developing. Poor views. Too many people on-site. Vehicles on trails/open space. 	<ul style="list-style-type: none"> Create a system of safe, interesting, multi-level, and sustainable trails while minimizing impacts to ecological, cultural and western heritage resources on-site. 	<ul style="list-style-type: none"> Partner with trail designs to connect with Fort Collins & Cheyenne open spaces. Identify points of interest that are non-sensitive. Identify educational points of interest.
	<ul style="list-style-type: none"> Trailhead (TH) Experience 	<ul style="list-style-type: none"> Trailhead is too large or too small. Unkept. Highly visible from trails. Sun glinting off vehicles from a distance. Too distant from Big Hole proper. Livestock. Congestion. Too many signs. Unclear regulations/visitor expectations. Erosion 	<ul style="list-style-type: none"> Create a visually appealing, functional, and sustainable trailhead. 	<ul style="list-style-type: none"> Work with L.A./Recreation Planner to locate trailhead in location that provides access to important experience areas. Design trailhead to match appropriate on-site carrying capacity. No lighting on-site. Ranger presence to prevent parking outside trailhead if full. Fence trailhead from livestock. Provide high quality, accessible information /educational materials at an aesthetic kiosk. Provide picnicking opportunities. Phase in minimum parking space numbers to meet projected visitation. Provide bear-proof trash receptacles.

	<ul style="list-style-type: none"> • Hiking, Mountain Biking & Equestrian Experience 	<ul style="list-style-type: none"> • Multi-use conflicts. • Negative interaction between Old West (Ranching) and New West (Recreation). • Large numbers of users in groups on trails. 	<ul style="list-style-type: none"> • Maintain an enjoyable on-trail recreational experience while minimizing impacts to ecological, cultural and western heritage resources on-site. 	<ul style="list-style-type: none"> • Design trails to meet multi-use needs & design standards. • Consider distance of travel, level of difficulty and diverse experiences in planning trails. • Frontcountry trails may need to have separation of uses closer to trailhead and shorter loop segments. • Post multi-use ethic signs. • Consider cost of high ranger presence to enforce diverse recreation regs/ uses/etc. • Look at adaptive management and options for equestrian access to minimize weed introductions (on roads only unless haunch bags, etc.). • Implement a max 12-heart beat rule for trail user groups.
	<ul style="list-style-type: none"> • Backcountry camping 	<ul style="list-style-type: none"> • Developed sites leave footprint or structure on landscape. • Visual resource impacts. • Weeds. • Increase cost /staffing. • Cultural and natural resource impacts. • No available water source for campers. • Wind. • Train horn. • Negative interaction with livestock. • Conflict with hunting. • Tower lights. • Fire danger. 	<ul style="list-style-type: none"> • If appropriate, implement safe, enjoyable, and sustainable backcountry camping while minimizing impacts to ecological, cultural and western heritage resources on-site. 	<ul style="list-style-type: none"> • Assess the need, public interest, and feasibility of backcountry camping over first 5-10 years property is open to public to determine if warranted to enhance recreational experience, and to evaluate the resource impacts and how to manage/mitigate for them. • With this information, consider as a future potential use during management plan update and public process in 5-10 years. Consider if trailhead locations on RMOS, SPNA & Cheyenne lands meet goal of access to the landscape and thus removing potential need to provide camping.

	<ul style="list-style-type: none"> Elk and/or Deer Hunting 	<ul style="list-style-type: none"> Weeds. Additional management cost/staffing. No vehicular access for hunting/retrieving animals. Safety concern. Noise if rifle hunting. Doesn't accomplish a wildlife management purpose. 	<ul style="list-style-type: none"> Utilize hunting as a sustainable and scientifically-credible wildlife management tool and recreational opportunity while minimizing impacts to ecological, cultural and western heritage resources on-site. 	<ul style="list-style-type: none"> Work with the CDOW to develop a limited, high quality hunting lease and mutually agreeable hunting management plan that specifically outlines a wildlife management goal from hunting. No vehicular access for hunting or animal retrieval. Hunting access on-foot only. Education of both the hunting and non-hunting public.
Views/Sense of Place	<ul style="list-style-type: none"> On-site (trails, trailhead) experience. 	<ul style="list-style-type: none"> Erosion. Highly visible structures (trailhead & facilities). Lights. Noise. Incompatible mgmt techniques (driving off-roads; many vehicles; etc.). Sun glinting off vehicles. 	<ul style="list-style-type: none"> Provide a fulfilling and aesthetically pleasing recreational experience in a natural setting throughout entire open space. 	<ul style="list-style-type: none"> Work with L.A./Recreation Planner to locate trailhead not visible from trails, overlooks, long vistas, etc. No lighting. Site trails to provide a variety of experiences to points of interest so users stay on trails. On-trail recreation use only. Set guidelines for no-off road driving of staff or livestock operator. Set guidelines to minimize vehicle trips into open space for any management purposes.
	<ul style="list-style-type: none"> Entry road design 	<ul style="list-style-type: none"> Development of adjacent lands. Features that change the natural/western character of entry/road. Erosion. Visible scarring of landscape. Dust from vehicles on roads. 	<ul style="list-style-type: none"> Provide an aesthetically pleasing and natural/western character along entire entryway into the open space. 	<ul style="list-style-type: none"> Design road to be sensitive to the visual resources, tucked out of sight from glinting windshields, and fit with the western and natural character of the landscape. Consider trade-offs with treating road for dust. Post speed limit signs that are compatible colors with landscape.

a. High Quality Recreation/Education Experiences

Trail Layout and Design

Approximately 12 miles of natural surface trails will be designed to meet multi-user needs where appropriate. Approximately 2.5 miles of trail will be designated as hiking only and correspond with a close-in loop for shorter distance travel (Map 6). Distance of travel, levels of difficulty and diverse experiences will be considered in trail planning as well as impacts to users (such as congestion closer to trailheads, potential for separation of some uses by trail or management zone) and resources.

If requested as a special event, limited guided tours for disabled or elderly visitors would be evaluated based on feasibility, impact to other users and resources. Restrooms will be wheelchair accessible and close-in trails may allow for wheelchair access based on terrain.

Trailhead Experience

The trailhead will be located to minimize visual impacts on the landscape while still providing close enough access to important recreation areas (Map 6). Carrying capacity, or the number of users on site at any one time, will be set by the number of trailhead parking spaces. On this large but wide open landscape, other visitors are highly visible throughout the open space. It is anticipated that facilities will be phased in over time to allow for starting small and then adding on to achieve the carrying capacity based on the amount of use balanced with resource protection.

Initially, the trailhead will be built for 30 vehicles and 10 horse trailers. If demand increases, the parking facility can be expanded to a maximum site capacity of 50 vehicles and 15 horse trailers. The trailhead will also be limited to two small picnic shelters and one larger shelter with benches, a vault toilet, water spigot, fencing around the perimeter to control livestock access and direct visitor traffic to the trail beginning point, a regulations kiosk, simple and low profile educational sign(s), and bear-proof trash receptacles. There will be no lighting or large obtrusive structures at the trailhead.

Hiking, Mountain Biking and Equestrian Experience

The trail system at Red Mountain Open Space will be natural surface and open to such recreational uses as hiking, horseback riding, bicycling, running and wildlife viewing. These non-motorized, non-commercial outdoor recreation activities will be on designated trails only (with the exception of limited, special permitted guided tours and research activities) to protect sensitive resource and wildlife habitat areas, prevent the spread of non-native species and minimize soil erosion. Multi-use ethics will be emphasized through education efforts, particularly in developed and frontcountry management zones. To minimize large groups on-site, there will also be enforcement of a maximum 12 heartbeat rule, meaning that per group there can be no greater than 12 heartbeats (equating to 6 horses with riders or 12 hikers).

To further minimize the spread of introduced non-native species some trails may be closed as needed to horse use to help address invasive weed concerns in ecologically sensitive areas. In partnership with local equestrian groups, Larimer County will explore other management actions to minimize weed introductions from horse manure.

Hours and Seasons of Operation

Red Mountain Open Space will be open for day use from dawn to dusk. Winter corresponds with the highest periods of inclement weather, sensitive large mammal winter range and low visitation estimates for RMOS and SPNA. There is little opportunity for winter recreational activities (such as cross-country skiing or snowshoeing) on these properties due to low altitude and high winds that result in very few days with standing snow on the ground. For these reasons, both properties will be closed seasonally in the winter time, generally from December through February, weather depending. Soapstone Prairie Natural Area will be closed Tuesdays, Wednesdays and Thursdays, however through a management agreement, a trail loop from Red

Mountain Open Space to Soapstone Prairie Natural Area will remain open. Other cross-boundary management opportunities for further discussion include sharing equipment between the two properties that can remain on-site to prevent weed introductions and save dollars; and ranger patrols.

Prohibited Uses

Due to the nature of horse-drawn carriage use (potential speed of horses pulling buggies, needed turn around space, occupying much of a roadway, additional parking space accommodation) by a fairly specialized user group, it is not being considered as a compatible use of the open spaces. If requested on a special event basis, this use would be reviewed and evaluated based on the level of impact to other users and resources. According to the Larimer County Sheriff's Department, horse-drawn carriages are treated the same as motorized vehicles and allowed on roads in greater Larimer County if a yield sign is displayed on the back of the buggy. This type of use is also allowable on U.S. Forest Service two-track road systems including the nearby Pawnee Grasslands.

Due to the truly wild nature of the properties' wildlife, the remoteness of these areas and on recommendation from the Division of Wildlife, we have determined that domestic dogs are incompatible with the primary goal of protecting the site's native wildlife. Negative impacts of dogs on wildlife may include disease transmission, harassment, displacement, injury and death. On a limited and special permit basis, working dogs that are necessary for livestock operations under guidance of grazing tenants may be considered. In the big picture, in the Larimer County Parks and Open Lands and the City of Fort Collins Natural Areas and Parks systems there are over 96 miles of trails that allow domestic dogs; and 13 miles of trails that do not allow domestic dogs. Dog parks specifically, fit the function of a City Parks system and currently the City is exploring additional areas system-wide where it may be appropriate to provide additional dog parks to the existing 3 that are currently available.

During the management planning process, the potential to allow rock climbing was explored with local rock climbing representatives. Outside of sensitive resource areas, no rock substrates of interest to climbers were noted on Red Mountain Open Space. Due to the low interest in rock outcroppings outside of sensitive resource zones and the significance of the ecological and cultural resources within sensitive zones, rock climbing will not be allowed anywhere on Red Mountain Open Space. Within the Parks and Open Lands System, the areas around Horsetooth Reservoir and Carter Lake are where high quality rock climbing will continue to be promoted and managed.

Commercial uses will not be allowed at Red Mountain Open Space, such as liveries, commercial hunting, etc., to protect high ecological values, minimize large numbers of users. Larimer County will work with adjacent landowners regarding trespassing issues. Signs will be posted on boundary fences indicated private property beyond. It is anticipated that since users are required to stay on trails and trails will not be placed in close proximity to adjacent property boundaries, there should be little trespass from hikers, mountain bikers and equestrian users. Hunters will be required to know the open space boundaries to avoid trespassing.

At this point in time, camping will not be allowed at Red Mountain Open Space. There were many considerations that came up in regards to backcountry camping including impacts to natural and cultural resources, influx of weeds, best means for designating sites and minimizing visual and resource impacts, cost to administer permits, distance from existing trailheads on Larimer County, Fort Collins and Cheyenne open space lands is not further than a few miles and visitor experiences (water availability, train noise, tower lights, etc.). After Red Mountain Open Space and Soapstone Prairie Natural Area are open to public access, the county will evaluate the potential for additional backcountry campsites based on demand, resource impacts and appropriateness in light of sensitive archaeological and natural resources. In comparison, backcountry camping is allowed at Horsetooth Mountain Park and is rarely, if ever, used. It will be important to gauge public demand for backcountry camping over time and if designating sites is determine to be feasible in the future, develop a means to actively monitor impacts associated with backcountry camping for adaptive management purposes. Allowance for future potential backcountry camping would not be implemented until the management plan update (every 5-10 years) and associated public process occurs and a full evaluation of resource impacts and other above considerations is completed.

Hunting

Hunting at Red Mountain Open Space will be allowed for wildlife management in coordination with the Division of Wildlife (DOW). Hunting will be on a limited basis as determined in partnership with the DOW in a hunting plan and lease. The DOW estimates 150-200 elk (male:female ratio of 40:100) and 100-300 deer (male:female ratio of 30:100) move through Red Mountain Open Space. The sex ratios are higher than what might naturally be expected and will be partially addressed in the hunting plan for the property. Both the DOW and Larimer County want to see very low numbers of hunters on-site to allow for a high quality opportunity and minimize impacts to other users. Specific elements of a hunting plan/lease on Red Mountain Open Space include:

- Hunting access and animal retrieval on foot only to minimize weed spread outside of existing trail corridors.
- A maximum of 9 permits total with the potential to reserve 1 permit for a youth hunting program. For elk this would include 2 bull elk tags and 3 cow elk tags and for deer, 2 deer buck and 2 doe tags. No pronghorn or mountain lion or other wildlife species will be hunted on Red Mountain Open Space.
- Hunting on weekdays only.
- Hunting via a lottery system for Red Mountain for anyone who draws a Unit #9 license.
- Hunters will be subject to specific Red Mountain Open Space regulations.
- Hunting access only from designated trailhead location, on-foot, no motorized vehicles for any purpose and designated no-hunting areas in sensitive resource and trail buffer zones.

b. Views/Sense of Place

On-site Experience

To protect the wide, open spectacular views on Red Mountain Open Space and provide a fulfilling and aesthetically pleasing recreational experience, design of on-site features is important. Larimer County will work with a landscape architect to locate the trailhead and base of operations building so they are not visible from significant vistas or the trail system. The

trailhead and building design will not include lights or large obtrusive structures and will use natural terrain, colors, materials and be of low profile. Trails will be specifically designed and built to identified points of interest to help encourage visitors to remain on designated trails. On-trail access (unless by special permit) and on-road only driving will be regulated to avoid visual impacts from social trails. Similarly, timing of management activities will be important to minimize visual impacts of vehicles, noise from activities and dust or other side-effects.

Entry Road Design

The entry road is the first visitor experience while traveling to and arriving at Red Mountain Open Space. The management goal is to provide an aesthetically pleasing and natural/western character along the entire entryway or route into the open space. Features that might impact this western aesthetic include residential or commercial development, over signing, or incompatible surfacing materials. This 2.5-mile entry road should be designed to limit automobile sightings from recreation trails and to reduce the impact that they have on the western character of the Laramie Foothills. Similarly, visual impacts from dust on the roadway may prompt a need to consider dust control measures, however they should be carefully weighed with the economic and environmental impacts of doing so. Any signs within the open space on the entry road should be minimal and designed with colors compatible with the landscape.

Implementation steps:

- Partner with the cities of Fort Collins and Cheyenne to design connecting trails to Soapstone Prairie Natural Area and the Cheyenne Open Space.
- Identify points of interest naturally, visually and from an education perspective that are non-sensitive to provide high quality trail experiences.
- Work with a landscape architect or recreation planner to locate a trailhead not visible from trails, overlooks, & long vistas that also provides access to important experience areas.
- Design the trailhead to match an appropriate on-site carrying capacity (current size of 30 vehicles/10 trailers; maximum build out to 50 vehicles/15 trailers).
- Construct a trailhead to include two small picnic shelters and one larger shelter with benches, a vault toilet, water spigot, perimeter livestock fencing, regulations kiosk, educational sign(s), and bear-proof trash receptacles. There will be no lighting or large obtrusive structures at the trailhead.
- Ensure adequate ranger or volunteer presence to prevent overflow parking if the trailhead if full.
- Design and construct ~12 miles of natural surface trails to meet multi-use needs and trail design standards.
- Designate a close-in, short hiking-only loop trail. Post multi-use ethic signs.
- Look at adaptive management and options for equestrian access to minimize weed introductions (on roads only unless haunch bags, etc.).
- Do not allow domestic dogs at Red Mountain Open Space.
- Close the open space to public access during the winter months (December through February).
- Work with the City of Fort Collins on cross-boundary management opportunities such as maintaining an open trail loop even during periods that Soapstone Prairie

Natural Area is closed, sharing equipment on-site to prevent weed introductions and save dollars, and ranger patrols.

- No horse-drawn buggy use will be allowed within the open space.
- Rock climbing will not be allowed within the open space.
- Assess the demand and feasibility of backcountry camping over first 5-10 years property is open to public.
- Work with the CDOW to develop a limited, high quality hunting lease and mutually agreeable hunting management plan for hike-in hunting only. Follow tenants agreed to above under the “*Hunting*” section regarding specific hunting issues.
- Education of both the hunting and non-hunting public including maps showing sensitive resource areas off-limits to hunting access.
- Set guidelines for no-off road driving of staff or livestock operator.
- Set guidelines to minimize vehicle trips into open space for any management purposes.
- Design and construct the 2.5-mile entry road to be sensitive to the visual resources and fit with the western and natural character of the landscape.
- Consider trade-offs with treating roadways for dust.
- Any signs within the open space on the entry road should be minimal and designed with colors compatible with the landscape.
- Construct a small, low profile, unobtrusive base of operations building that is designed with no outside lighting and uses natural terrain, colors, and materials.

4.6 Education Opportunities

Providing educational opportunities is an important management goal for Red Mountain Open Space. Educational opportunities may include educational signs, kiosks, or other non-personal materials as well as naturalist-guided programs focused on the main themes of the area’s cultural, natural and western heritage. Larimer County Parks and Open Lands will partner with the Fort Collins Museum for off-site interpretation of sensitive cultural resources that were collected on-site and are now curated with the museum. Partnering for the display and interpretation of Red Mountain Open Space off-site will eliminate the need to develop an onsite visitor center.

The large scale of this landscape and adjacent public lands allows for the development of an integrated education program with other agencies as well. Red Mountain Open Space is located adjacent to the City of Fort Collins’ Soapstone Prairie Natural Area, and open space managed by the City of Cheyenne. By partnering with these cities, environmental education opportunities could be coordinated within this larger landscape framework. Potential education subjects within the three main themes (natural, cultural and western heritage resources) include: The mountains to plains ecological connectivity; rare plant communities; species restoration, area geology; large wildlife movement corridors; hydrology, water rights and riparian systems of this headwaters area; incursions by early peoples including native Americans, trappers and traders, Fremont’s expedition, timing of early peoples and the domestic horse and homesteaders; western ranching tradition; and, the vision of the Open Lands Program, among others. On-going

ranching management and sustainable grazing practices both on-site and within the larger landscape context of the Laramie Foothills (surrounding conservation easement lands and large private ranchlands that visitors will have passed through to arrive at the open space) are also important themes.

Implementation steps:

- Develop an education plan for Red Mountain Open Space that includes main interpretive themes and appropriate personal and non-personal means to communicate them.
- Incorporate Red Mountain Open Space in the volunteer naturalist program for Larimer County Parks and Open Lands Department.
- Include the Red Mountain Open Space trail system in the Department “Adopt-a-Trail” program.
- Work with the cities of Fort Collins and Cheyenne to coordinate educational programs and materials
- Include educational materials in the trailhead vicinity including signs, brochures, etc. as appropriate.
- Any educational events that exceed Larimer County’s maximum group size limit or are off-trail would need to go through the Department Special Review Process
- When conducting large vegetation management and/or revegetation/restoration projects, incorporate a description or showcase management activities in interpretive talks, printed materials, etc.
- Educate visitors on the sensitivity of rare or imperiled plant communities and sensitive natural or cultural artifacts.
- Sensitive cultural sites (cumulative ranking of 4 or higher) will be interpreted from the trail to avoid disturbance of the archaeological site
- Less sensitive cultural sites (shepherd cabins, some stone circle sites and the homestead cabin) will be stabilized over time and interpreted at the cultural site location and trails will be designed to take visitors nearer these features for educational purposes.
- Education of the hunting and non-hunting public will be designed to minimize conflicts between these user groups.

4.7 Land Acquisitions

The Laramie Foothills Mountains to Plains Project is still in process to complete protection of approximately 55,000 acres in both fee-simple ownership and conservation easements. It is important to continue to protect adjacent lands to Red Mountain Open Space to provide a buffer for plant communities and wildlife movement corridors, provide a sense of place for visitors as they enter the landscape and ensure that the western ranching tradition in the area remains viable.

Implementation steps:

- Continue to work with land conservation partners and willing adjacent property owners to protect additional lands in the Laramie Foothills Mountains to Plains landscape.

- Partner with the Larimer County Planning Department to review development proposals for buffering conservation lands and ensuring they do not conflict with open space goals in this area.
- Consider implementing grass banking as a tool for landscape level land protection.

4.8 Summary of Implementation Steps and Phasing

A tabular summary of implementation steps and proposed timelines are provided below. These steps will be prioritized and implemented in a timely manner.

Summary of Implementation steps for Red Mountain Open Space

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
Foothills Shrubland System					
Restrict public access and management access to designated trails and roads, with the exception of limited permits for education and research purposes.	N/A			On-going	Parks and Open Lands Department
Design trails to avoid sensitive wildlife areas (such as movement corridors, cliffs, calving areas, and buffers to known nest sites) and to minimize fragmentation of the mountain mahogany shrublands.	N/A	X			Open Lands Program
Incorporate Red Mountain Open Space into the Department Integrated Weed Management Plan and implement weed management efforts.	Minimal			On-going	Weed District/Open Lands Program
Evaluate the potential use of fire in mountain mahogany communities and ensure management goals to minimize non-native introductions are primary.	N/A				Open Lands Program
Continue sustainable livestock grazing and specify in grazing leases not to allow livestock from weedy pastures.	Minimal			On-going	Open Lands Program/ Horsetooth District
Monitor distribution and abundance of wildlife and implement seasonal closures of trails or areas as needed to minimize wildlife impacts.	N/A			On-going	Open Lands Program/ Horsetooth District
Monitor rare mountain mahogany plant communities for non-native species presence and extent, social trails and erosion.	Minimal			On-going	Open Lands Program/ Horsetooth District
Foothills Grassland Complex					
Design trails to minimize fragmentation of the foothills grasslands.	N/A	X			Open Lands Program

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
Restrict public access and management access to designated trails and roads, with the exception of limited permits for education and research purposes.	N/A	X	X	X	Open Lands Program/ Horsetooth District
Incorporate Red Mountain Open Space into Departmental Integrated Weed Management Plan and implement weed management efforts. As feasible, spot spray in mountain mahogany community to minimize impacts to non-target species.	\$37,000/yr			On-going	Weed District
Evaluate the potential use of fire in mountain mahogany communities and ensure management goals to minimize non-native introductions are primary.	N/A			X	Open Lands Program
Continue sustainable livestock grazing and specify in grazing leases not to allow livestock from weedy pastures.	Minimal			On-going	Open Lands Program/ Horsetooth District
Revegetate roads slated for closure and disturbed areas with native seed.	Variable	X			Open Lands Program /Weed District
Monitor foothills grassland community for non-native species presence and extent, social trails and erosion.	Minimal			On-going	Open Lands Program/ Horsetooth District
Ponderosa Pine Woodlands Management					
Avoid fragmentation by trails, roads, etc. and avoid driving off roads for management or other activities.	N/A	X	X	X	Open Lands Program
Allow on-trail access only with the exception of education or research purposes by permit.	N/A		X	X	Open Lands Program
Implement Forest Stewardship Plan recommendations including thinning and low intensity prescribed fire.	\$900/ac		X	On-going	Open Lands Program
Consider seasonal trail or management zone closures to minimize impacts to wide ranging mammals	N/A		X	X	Open Lands Program/ Horsetooth District

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
during sensitive periods.					
Do not develop trails in calving areas, through wildlife movement corridors, or in other sensitive areas.	N/A	X	X	X	Open Lands Program/ Horsetooth District
Monitor distribution and abundance of wide ranging mammals.	N/A	X	X	X	Open Lands Program/ Horsetooth District
Riparian Systems					
Avoid fragmentation by trails, roads, or other disturbances.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Fence riparian areas as separate grazing units for weed management.	\$5,000	X			Open Lands Program/ Horsetooth District
Control timing of grazing to prevent damage to streambank when most vulnerable.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Allow access to riparian areas for education/research only - limit # /group size/ timing to minimize impacts.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Integrated weed management.	\$40,000	X	X	X	Weed District
Education about sensitivity of riparian areas.	Minimal		X	X	Education Program
Work with DOW to remove non-native fish and reintroduce GCT in Sand and Boxelder creeks.	Minimal		X	X	Open Lands Program/ Horsetooth District
Work with upstream landowners to maintain normal flows and not introduce non-native plant or fish.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Complete USFWS trapping requirements for Preble's.	\$5,000	X			Open Lands Program
Manage grazing to maintain healthy riparian vegetation to protect banks and limit sedimentation and eutrophication.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Soils Management					
Monitor the watershed (pastures, trails, roads, drainages) regularly to check for excessive erosion	Minimal	X	X	X	Open Lands Program/ Horsetooth District

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
and deterioration.					
Monitor drainages and springs to ensure water availability for wildlife and livestock and to monitor erosion over time.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Require all users remain on designated trails.	N/A		X	X	Horsetooth District
Surface roads with a harder and visually unobtrusive material, designated roads that will remain in place for management purposes. Add check dams or drainage culverts as appropriate.	\$___/mile	X			Open Lands Program/ Horsetooth District
Use volunteers to assist in monitoring and encouraging proper trail use.	N/A		X	X	Volunteer Program
Implement soil stabilization measures where necessary (such as check dams, revegetation, or allowing for pasture rest).	Variable	X	X	X	Open Lands Program/ Horsetooth District
Ensure that grazing plans limit access of livestock in the river corridor.	N/A	X	X	X	Open Lands Program/ Horsetooth District
Cultural Resource Management					
Sites with a cumulative ranking of 4 or higher will be managed for their ongoing protection and avoided by any disturbances. As appropriate, these sites may be important for future research or study.	N/A			X	Open Lands Program/ Horsetooth District
Develop a security plan for cultural site protection.	Minimal	X			Open Lands Program/ Horsetooth District
Trails will be located to give a minimum 30 meter buffer distance from sites with a cumulative ranking or higher and visitors will be required to stay on designated trails.	N/A	X			Open Lands Program/ Horsetooth District
Curate removed, at-risk and diagnostic artifacts with the Fort Collins Museum or another accredited, secure and appropriate institution.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Fence cattle out of significant cultural resource areas	\$15,000	X			Open Lands Program/

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
to prevent erosion, damage and/or loss of cultural features.					Horsetooth District
Require the public to remain on designated trails.	N/A		X	X	
Investigate the need and potential to nominate the Lykins Valley Site to the National Register of Historic Places.	N/A	X			Open Lands Program
Continue to encourage non-invasive, legitimate, scientific study of cultural features on-site that match the management goals of Red Mountain Open Space.	N/A	X	X	X	Open Lands Program
Any removed artifacts that are in jeopardy or diagnostic will be curated at the Fort Collins Museum consistent with our curation agreement.	Minimal	X	X	X	Open Lands Program
Regularly monitor eroding areas, arroyos and riparian drainages for cultural artifacts on-foot with archaeology volunteers that are members of organizations that have signed a code of ethics (Colorado Archaeological Society, etc.).	Minimal	X	X	X	Open Lands Program/ Horsetooth District
Western Heritage Management					
Develop a grazing management plan in partnership with the NRCS.	N/A	X			Open Lands Program/ Horsetooth District
Develop a grazing lease that is mutually beneficial to resource protection/recreation experience goals and to livestock operator needs.	Minimal	X			Open Lands Program/ Horsetooth District
Work with livestock operators to monitor grazing utilization & springs.	Minimal	X	X	X	Horsetooth District
Develop two springs in the Big Hole to protect resource areas.	\$30,000	X			Open Lands Program/ Horsetooth District
Define frequency/ timing/ appropriateness of livestock mgmt activities (branding, dehorning, driving to check facilities vs. riding, etc.).	Minimal	X	X	X	Horsetooth District

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
Continue to work with adjacent ranchers and landowners to place lands under conservation easement.	Variable	X	X	X	Open Lands Program
Consider role of grass banking in achieving conservation goals.	N/A		X	X	Open Lands Program
Work with Planning Dept. to review development proposals for buffering and fit with open space goals.	N/A	X	X	X	Open Lands Program
Recreation Management					
Partner with the cities of Fort Collins and Cheyenne to design connecting trails to Soapstone Prairie Natural Area and the Cheyenne Open Space.	N/A	X	X		Open Lands Program
Identify points of interest naturally, visually and from an education perspective that are non-sensitive to provide high quality trail experiences.	N/A	X	X		Open Lands Program
Work with a landscape architect or recreation planner to locate a trailhead not visible from trails, overlooks, & long vistas that also provides access to important experience areas.	Minimal	X			Open Lands Program
Design the trailhead to match an appropriate on-site carrying capacity (current size of 30 vehicles/10 trailers; maximum build out to 50 vehicles/15 trailers).	\$6,500	X			Open Lands Program/ Consultant/ Engineering
Construct the trailhead including 2 small picnic shelters and 1 larger shelter with benches, a vault toilet, water spigot, perimeter livestock fencing, regulations kiosk, educational sign(s), and bear-proof trash receptacles. There will be no lighting or large obtrusive structures at the trailhead.	\$500,000		X		Open Lands Program/ Engineering
Ensure adequate ranger or volunteer presence to prevent overflow parking if the trailhead if full.	In-house		X	X	Horsetooth District

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
Design and construct ~12 miles of natural surface trails to meet multi-use needs and trail design standards.	\$300,000	X	X	X	Open Lands Program
Designate a close-in, short hiking-only loop.	In-house		X		Open Lands Program/ Horsetooth District
Post multi-use ethic signs	\$50/each		X		Horsetooth District
Look at adaptive management and options for equestrian access to minimize weed introductions (on roads only unless haunch bags, etc.).	N/A			X	Open Lands Program/ Horsetooth District
Implement a 12-heart beat rule for group sizes.	Minimal		X		Horsetooth District
Assess the need, public interest, and feasibility of backcountry camping over first 5-10 years property is open to public to determine if warranted to enhance recreational experience, and to evaluate the resource impacts and how to manage/mitigate for them.	Minimal			X	Open Lands Program/ Horsetooth District
Work with the CDOW to develop a limited, high quality hunting lease and mutually agreeable hunting management plan for hike-in hunting only.	Minimal		X	X	Open Lands Program/ Horsetooth District
Follow tenants agreed to under the “ <i>Hunting</i> ” section regarding specific hunting issues.	N/A			X	Open Lands Program/ Horsetooth District
Education of both the hunting and non-hunting public including maps showing sensitive resource areas off-limits to hunting access.	Minimal			X	Education Program/ Horsetooth District
Set guidelines for no-off road driving of staff or livestock operator.	N/A	X	X	X	Open Lands Program/ Horsetooth District
Set guidelines to minimize vehicle trips into open space for any management purposes.	N/A	X			Open Lands Program/ Horsetooth District
Design & construct 2.5-mile entry road to be sensitive to the visual resources and fit with the western and natural character of the landscape.	\$500,000	X			Open Lands Program/ Engineering

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
Education Opportunities					
Construct a small, low profile, unobtrusive base of operations building that is designed with no outside lighting and uses natural terrain, colors, and materials.	\$200,000		X	X	Open Lands Program/ Engineering
Develop an education plan for Red Mountain Open Space that includes main interpretive themes and appropriate personal and non-personal means to communicate them.	In-house	X	X		Education Program
Incorporate Red Mountain Open Space in the volunteer naturalist program for Larimer County Parks and Open Lands Department.	Minimal	X	X	X	Education Program
Include the Red Mountain Open Space trail system in the Department "Adopt-a-Trail" program.	Minimal		X	X	Education Program
Work with the cities of Fort Collins and Cheyenne to coordinate educational programs and materials	Minimal	X	X	X	Education Program
Include educational materials in the trailhead vicinity including signs, brochures, etc. as appropriate.	\$500/year		X		Education Program
Any educational events that would be of a larger group size or off-trail would need to go through the Department Special Review Process.	Minimal	X	X	X	Open Lands Program/ Horsetooth District
When conducting large vegetation management and/or revegetation/restoration projects, incorporate a description or showcase management activities.	Minimal		X		Education Program
Educate visitors on the sensitivity of rare or imperiled plant communities and sensitive nature of cultural artifacts.	Minimal		X		Education Program
Sensitive cultural sites (cumulative ranking of 4 or higher) will be interpreted for what they tell us in the big picture, but not directly at the archaeological site	Minimal		X		Education Program

Red Mountain Open Space Implementation Steps	Cost Estimate	2008	2009	2010 and beyond	Responsible program*
location to protect their location and integrity.					
Less sensitive cultural sites (shepherd cabin, some stone circle sites and the homestead cabin) will be interpreted at the cultural site location.	Minimal		X		Education Program
Education of hunting and non-hunting public	N/A			X	Education Program
Land Acquisitions					
Continue to work with land conservation partners and adjacent property owners to protect additional lands in the Laramie Foothills Mountains to Plains landscape.	Variable	X	X	X	Open Lands Program
Partner with the Larimer County Planning Department to review development proposals for buffering conservation lands and ensuring they do not conflict with open space goals in this area.	N/A	X	X	X	Open Lands Program
Consider implementing grass banking as a tool for landscape level land protection.	N/A			X	Open Lands Program

5 LITERATURE CITED

1. Braddock, W.A., D.D. Wohlford, J.J. Connor. 1988. *Geologic Map of the Livermore Quadrangle Larimer County, Colorado* (Map GQ-1618). USGS, Washington D.C.
2. Colorado Climate Center. 1999. Website: <http://ccc.atmos.colostate.edu>
3. Colorado State Forest Service, 2006. Forest Stewardship Plan for Red Mountain Open Space. Fort Collins District.
4. Doyle, G. 2004. *Survey of Critical Biological Resources Larimer County, Colorado 2004*. Colorado Natural Heritage Program.
5. Green, Bob. 2005. Personal Communication
6. LaBelle, Jason, B.N. Andrews and C.C. Newton. 2007. *Class II Archaeological Survey of the Red Mountain Ranch Open Space, Larimer County, Colorado*. Department of Anthropology, Colorado State University.
7. Larimer County Parks and Open Lands Department. 2001. *Larimer County Open Lands Master Plan*. Loveland, CO.
8. Livermore Women's Club. 1995. *Among These Hills – A History of Livermore, Colorado*. Citizen Printing Company.
9. Natural Diversity Information Source. 2007. www.ndis.nrel.colostate.edu
10. Roberts, Catherine. 2005. Personal Communication
11. USFS. 1997. *Revision of the Land & Resource Management Plan for the Arapaho-Roosevelt National Forest and Pawnee National Grasslands*.
12. USDA-SCS. 1980. *Soil Survey of Larimer County Area, CO*. U.S. Government Printing Office. 239-812/3.
13. Woodhams, Daniel. 2006. Personal Communication

6 APPENDIX A: Public Meeting Notes

Red Mountain Open Space (RMOS) and Soapstone Prairie Natural Area (SPNA)	
Public Meeting Notes and Management Response	
Issues	Management Solutions
Use volunteers to help with management.	Both the County and City currently use volunteers extensively for such management activities as trail building and maintenance, weed control, trash pick up, on-site naturalists and trailhead hosts and intend to request volunteer assistance at SPNA and RMOS as well.
Fire danger	No campfires will be allowed on RMOS or SPNA. The management plans will address prescribed burning as a management tool for vegetation management.
Grazing/Livestock Management	Grazing is a strong economic tradition and part of the western heritage in northern Larimer County. Grazing will be conducted in concert with a grazing plan developed in partnership with the Natural Resources Conservation Service. Grazing will be managed in partnership with lessees and to minimize impacts to recreation activities, encourage plant health and vigor, promote biodiversity, provide a management tool for wildlife habitat diversity (such as providing areas that are more heavily grazed and others that are less grazed, as different wildlife species benefit with these different grazing regimes), and prevent damage to riparian areas. The City of Fort Collins will consider bison grazing as a future possibility and evaluate it based on facility needs, economics and safety.
Protection of the Lindenmeier Site and other cultural/historical resources is a concern	Protecting the Lindenmeier Site and other significant cultural/historical features is a priority and one of the primary goals of the management plans. Currently, we are conducting ongoing inventories in partnership with CSU and the Fort Collins Museum. To protect the significant cultural resources on-site, archaeological sites will be regularly monitored and any at-risk artifacts will be removed for education purposes and be curated at the Fort Collins Museum. Trails, roads, livestock facilities and other surface disturbances will be located outside of culturally sensitive areas.
Education/Interpretation Opportunities	On-site education is an important management goal for these properties and opportunities may include naturalist-guided and self-guided educational tours and programs of cultural, natural, historical, western heritage, and other themes. In addition, we will be partnering with the Fort Collins Museum for future interpretation of curated items.
Do not allow motorized vehicles on open space.	Motorized recreation is not allowed per the Help Preserve Open Spaces ballot language. No motorized recreation will be allowed at RMOS or SPNA. Maintenance, ranger and other staff and livestock operators do at times require motorized access onto the open space for specific management activities.

Phasing of access/facilities over time and carrying capacity	Carrying capacity, or the number of users on site at any one time, will be set by the number of trailhead parking spaces. It is anticipated that facilities will be phased in over time to allow for starting small and then adding on to achieve this carrying capacity based on the amount of use balanced with resource protection.
Trail design/layout	Trail design and layout will take into consideration naturally and culturally sensitive resource areas and provide high quality visitor experiences and showcase significant vistas and features.
User Conflicts	Trails will be designed to meet multi-user needs as appropriate. Distance of travel, levels of difficulty and diverse experiences will be considered in trail planning as well as impacts to users (such as congestion closer to trailheads, potential for separation of some uses by trail or management zone) and resources. Multi-use ethics will be emphasized through education efforts.
Allow horseback riding, mountain biking, hiking	Equestrian, mountain biking and hiking activities will be allowed on designated trails. However, not all trails will necessarily be open to all recreation uses and will be defined by management zone.
Horses & noxious weeds are a concern	There are very few non-native plant species currently present at SPNA and RMOS. To minimize the spread of introduced non-native species all uses will be on designated trails with few exceptions (research and limited guided hiking tours). Also, some trails may be closed to horse use to help address invasive weed concerns in ecologically sensitive areas. In partnership with local equestrian groups, we will explore other management actions to minimize weed introductions from horse manure.
Permit horse-drawn carriages, buggies, etc	Due to the nature of this activity (potential speed of horses pulling buggies, needed turn around space, occupying much of a roadway, additional parking space accommodation) by a fairly specialized user group, it is not being considered as a compatible use of the open spaces. We will be meeting with equestrian representatives to discuss this issue. If requested on a special event basis, this use would be reviewed and evaluated based on the level of impact to other users and resources. According to the Larimer County Sheriff's Department, horse-drawn carriages are treated the same as motorized vehicles and allowed on roads in greater Larimer County if a yield sign is displayed on the back of the buggy. This type of use is also allowable on U.S. Forest Service two-track road systems including the nearby Pawnee Grasslands (call 346-5000 for more information).
Hunting	Hunting at Red Mountain Open Space will be allowed for wildlife management in coordination with the Division of Wildlife (DOW). Hunting will be on a limited basis as determined in partnership with the DOW in a hunting plan and lease. On Soapstone Prairie Natural Area hunting may be allowed in the future, following observation of wildlife for several years after the opening. Hunting access would be on foot for hunting and animal retrieval to be consistent with minimizing weed spread outside of existing trail corridors.

Accessibility for disabled people/ Continue guided limited tours for disabled access.	If requested as a special event, limited guided tours for disabled visitors would be evaluated based feasibility, impact to other users and resources. Restrooms will be wheelchair accessible and close-in trails may allow for wheelchair access based on terrain.
Rock climbing	Rock climbing will be evaluated to determine if it is an appropriate activity at these properties. We will be meeting with rock climbing representatives to discuss the desirability of climbing in light of the existing rock substrates, distance from trailheads, ecological considerations, and potential impacts to other users or their viewshed.
Protect Wildlife	Protection of wildlife and their habitat is a primary goal on SPNA and RMOS. Trails and other on-site features will be located to avoid sensitive wildlife areas following Division of Wildlife recommendations. Monitoring, education, keeping intact unfragmented habitats, not allowing domestic dogs, and potential seasonal trail closures will be the measures employed to protect wildlife and their habitats.
Dogs	Due to the truly <i>wild</i> nature of the properties' wildlife, the remoteness of these areas, and on recommendation from the Division of Wildlife, we have determined that domestic dogs are incompatible with the primary goal of protecting the site's native wildlife. Negative impacts of dogs on wildlife may include disease transmission, harassment, displacement, injury and death. On a limited and special permit basis, working dogs that are necessary for livestock operations under guidance of grazing tenants may be considered. In the big picture, in the Larimer County Parks and Open Lands and the City of Fort Collins Natural Areas and Parks systems there are over 96 miles of trails that allow domestic dogs; and 13 miles of trails that do not allow domestic dogs. Dog parks specifically, fit the function of a City Parks system and currently the City is exploring additional areas system-wide where it may be appropriate to provide additional dog parks to the existing 3 that are currently available.
Winter Closure of Properties	Winter corresponds with the highest periods of incimate weather, sensitive large mammal winter range, and low visitation estimates for RMOS and SPNA. There is little opportunity for winter recreational activities (such as cross-country skiing or snowshoeing) on these properties due to low altitude and high winds that result in very few days with standing snow on the ground. For these reasons, both properties will be closed seasonally in the winter time. The City is exploring the potential to close Soapstone on 1-2 weekdays corresponding to low visitation times year-round.
Backcountry Camping	The City is evaluating the possibility of designating 1-2 backcountry campsites with stoves on Soapstone Prairie Natural Area during the initial opening of the site. The City will monitor the amount of use and resource impacts to determine if backcountry camping is a compatible use. In addition, after the properties are open to public access, we will evaluate additional backcountry campsites based on demand, resource impacts and appropriateness in light of sensitive archaeological and natural resources.

Prairie Dog Management.	Existing prairie dog colonies will be monitored regularly. Protection of wildlife and their habitat is a primary goal on RMOS and SPNA and therefore, prairie dogs will be managed as a part of the larger ecosystem.
Species Reintroductions	There are specific habitat and management requirements to allow rare or endangered species to be reintroduced on new sites and we will explore the possibility of species reintroductions in partnership with the Division of Wildlife and US Fish and Wildlife Service.
CR 15 Improvements and Drainage	The City of Fort Collins Natural Area Program is designing improvements to County Road 15.
Fences	Boundary fences will be maintained in partnership with adjacent landowners. Internal fences will be maintained for the customary management of livestock as appropriate. Any new or replaced fences will be wildlife friendly (designed to allow for deer and elk to jump and pronghorn to go under).
Trespass on Private Property	Signs will be posted indicating the open space/natural area boundaries. Upon request, adjacent landowners will be given a phone number for the on-site manager/ranger staff to report any trespass issues.
Long-term management costs	Funding for long-term management of both sites comes from both the Help Preserve Open Spaces Sales Tax and City of Fort Collins Open Space Yes! Tax funds. These dollars are allocated for management activities including ranger patrols, weed control, grazing management, trail maintenance, routine maintenance, etc. In addition, the City and County regularly apply for grants and have volunteer opportunities to help off-set costs for specific resource management projects and stretch their available management dollars.
Wind Development	The conservation easement in place on Red Mountain Open Space prohibits wind development.

7 APPENDIX B: Species Lists

Table 1: Plant species recorded at Red Mountain Open Space	
Grasses	
Needle-and-Thread	<i>Stipa comata</i>
Green Needlegrass	<i>Stipa viridula</i>
Blue Grama	<i>Bouteloua gracilis</i>
Buffalo Grass	<i>Buchloe dactyloides</i>
Mountain Muhly	<i>Muhlenbergia montana</i>
New Mexico Feathergrass	<i>Stipa neomexicana</i>
Foxtail	<i>Alopecurus pratensis</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Side-oats Grama	<i>Bouteloua curtipendula</i>
Indian Ricegrass	<i>Achnatherum hymenoides</i>
Three-awn	<i>Aristida purpurea</i>
Junegrass	<i>Koeleria macrantha</i>
Western Wheatgrass	<i>Pascopyron smithii</i>
Kentucky Bluegrass	<i>Poa pratensis</i>
Canada Bluegrass	<i>Poa compressa</i>
Big Bluestem	<i>Andropogon gerardii</i>
Sedges	
Sun Sedge	<i>Carex stenophylla</i>
Shrubs	
Mountain Mahogany	<i>Cercocarpus montanus</i>
Skunkbush	<i>Rhus trilobata</i>
Hawthorn	<i>Crataegus macrantha</i>
Wax Currant	<i>Ribes cereum</i>
Rabbitbush	<i>Crysothamnus nauseosus</i>
Wild Plum	<i>Prunus americana</i>
Chokecherry	<i>Prunus virginiana</i>
Snowberry	<i>Symphoricarpos oreophilus</i>
Snakeweed	<i>Gutierrezia sarothrae</i>
Trees	
Ponderosa Pine	<i>Pinus ponderosa</i>
Pinyon Pine	<i>Pinus edulis</i>
Plains Cottonwood	<i>Populus deltoides</i>
Narrowleaf Cottonwood	<i>Populus angustifolia</i>
Succulents	
Prickly Pear Cactus	<i>Opuntia macrorhiza</i>
Nipple Cactus	<i>Coryphantha missouriensis</i>
Cactus sp.	<i>Opuntia polyacantha</i>
Forbs	
Violet	<i>Viola purpurea</i>
Violet	<i>Viola nuttalli</i>
Salsify	<i>Tragopogon dubius</i>
Spreading blackwheat	<i>Eriogonum effusum</i>
Silver Sage	<i>Artemisia frigida</i>
Musk Phlox	<i>Phlox muscoides</i>
Yucca	<i>Yucca glauca</i>
Little Sunflower	<i>Helianthus pumilus</i>
Globemallow	<i>Sphaeralcea coccinea</i>
Locoweed	<i>Oxytropis sericea</i>

Prairie Sage	<i>Artemisia ludoviciana</i>
Scurfpea	<i>Psoralea tenuiflora</i>
Mountain Bladderpod	<i>Lesquerella montana</i>
Nailwort	<i>Paronychia jamesii</i>
Shorts Milkvetch	<i>Astragalus shortianus</i>
Drummond Milkvetch	<i>Astragalus drummondii</i>
Flexile Milkvetch	<i>Astragalus flexuosa</i>
Bastard Toadflax	<i>Comandra umbellate</i>
Prince's Plume	<i>Stanleya pinnata</i>
Thrift Mock Goldenweed	<i>Stenotus armerioides</i>
Tufted milkvetch	<i>Stenotus armerioides</i>
Geyer Larkspur	<i>Delphinium geyeri</i>
Nuttall Larkspur	<i>Delphinium nuttallsanum</i>
Salt and Pepper	<i>Lornatium orientale</i>
Sand Lily	<i>Leucocrinum montanum</i>
Wild Blue Flax	<i>Adenolinum lewisii</i>
Wild Onion	<i>Allium textile</i>
Western Wallflower	<i>Erysimum asperum</i>
Skull Cap	<i>Scutellaria sp.</i>
Blue Mustard	<i>Brassica elongata</i>
Woods Rose	<i>Rosa woodsii</i>
Largeflower Townsend Daisy	<i>Townsendia grandiflora</i>
Rayless Tansyaster	<i>Machaeranthera grindelioides</i>
Pinnate Tansymustard	<i>Descurainia pinnata</i>
Alyssum	<i>Alyssum parviflorum</i>
False Dandelion	<i>Nothocalais undulata</i>
Golden Smoke	<i>Corydalis aurea</i>
Mouse Ear	<i>Cerastium strictum</i>
Groundsel	<i>Senecio fendleri</i>
Rocky Mountain Spurge	<i>Euphorbia robusta</i>
Wild Geranium	<i>Geranium caespitosum</i>
Carolina Whitlowgrass	<i>Draba reptans</i>
Wormwood	<i>Artemesia filifolia</i>
Bluebells	<i>Mertensia lanceolata</i>
Puccoon	<i>Lithospermum incisum</i>
Western Wallflower	<i>Erysimum asperum</i>
Whiskbroom Parsley	<i>Harbouria trachypleura</i>
Evening Primrose	<i>Oenothera brachycarpa</i>
Howard's Evening Primrose	<i>Oenothera howardii</i>
Poison Ivy	<i>Toxicodendron rydbergii</i>
Alumroot	<i>Heuchera parviflora</i>
Death Camas	<i>Toxicoscordion venenosum</i>
Bahia	<i>Bahia dissecta</i>
Hairy Clematis	<i>Clematis hirsutissima</i>
Prickly Poppy	<i>Argemone sp.</i>
Pussytoes	<i>Antennaria rosea</i>
Yarrow	<i>Achillea lanulosa</i>
Non-natives	
Mullein	<i>Verbascum thapsus</i>
Dandelion	<i>Taraxacum officinale</i>
Ragweed	<i>Ambrosia trifida</i>
Redstem Filaree	<i>Erodium cicutarium</i>
Crested Wheatgrass	<i>Agropyron cristatum</i>
Whitlow Wart	<i>Draba nemerosa</i>
Gumweed	<i>Grindelia squarrosa</i>
Bindweed	<i>Fallopia convolvulus</i>

Blue Mustard	<i>Chorisposa tenella</i>
Jim Hill Mustard	<i>Sisymbrium altissimum</i>
Cheatgrass	<i>Bromus tectorum</i>
Smooth Brome	<i>Bromus inermis</i>
Japanese Brome	<i>Bromus japonicus</i>

Table 2: Wildlife species recorded or likely present at Red Mountain Open Space

Table 2: Wildlife species recorded or likely present at Red Mountain Open Space	
Mammals	
Mule deer	<i>(Odocoileus hemionus)</i>
Mountain lion	<i>(Felis concolor)</i>
Coyote	<i>(Canis latrans)</i>
Elk	<i>(Cervus canadensis)</i>
White-tailed deer	<i>(Odocoileus virginianus)</i>
Least chipmunk	<i>(Eutamias minimus)</i>
Uinta chipmunk	<i>(Eutamias umbrinus)</i>
Rock squirrel	<i>(Citellus variegatus)</i>
Golden-mantled squirrel	<i>(Citellus lateralis)</i>
Hispid pocket mouse	<i>(Perognathus hispidus)</i>
Black-tailed prairie dog	<i>(Cynomys ludovicianus)</i>
Pronghorn	<i>(Antilocapra americana)</i>
Deer mouse	<i>(Peromyscus maniculatus)</i>
Rock mouse	<i>(Peromyscus difficilis)</i>
Big brown bat	<i>(Eptesicus fuscus)</i>
Silver-haired bat	<i>(Lasionycteris noctivagans)</i>
Hoary bat	<i>(Lasiurus cinereus)</i>
Western small-footed myotis	<i>(Myotis ciliolabrum)</i>
Long-legged myotis	<i>(Myotis volans)</i>
Long-eared myotis	<i>(Myotis evotis)</i>
Northern pocket gopher	<i>(Thomomys talpoides)</i>
Mexican woodrat	<i>(Neotoma mexicana)</i>
Prairie vole	<i>(Microtus ochrogaster)</i>
Long-tailed vole	<i>(Microtus longicaudus)</i>
Porcupine	<i>(Erethizon dorsatum)</i>
Red fox	<i>(Vulpes fulva)</i>
Raccoon	<i>(Procyon lotor)</i>
Striped skunk	<i>(Mephitis mephitis)</i>
Mountain cottontail rabbit	<i>(Sylvilagus nuttalli)</i>
Amphibians	
Chorus frog	<i>(Pseudacris triseriata)</i>
Bullfrog	<i>(Rana catesbeiana)</i>
Reptiles	
Prairie rattlesnake	<i>(Crotalus viridis)</i>
Bull snake	<i>(Pituophis melanoleucus)</i>
Birds	
American kestrel	<i>(Falco sparverius)</i>
Killdeer	<i>(Charadrius vociferous)</i>
Mallard	<i>(Anas platyrhynchos)</i>
Great-horned owl	<i>(Bubo virginianus)</i>
Barn owl	<i>(Tyto alba)</i>
Common raven	<i>(Corvus corax)</i>
Turkey vulture	<i>(Cathartes aura)</i>

Cooper's hawk	<i>(Accipiter cooperii)</i>
Red-tailed hawk	<i>(Buteo jamaicensis)</i>
Golden eagle	<i>(Aquila chrysaetos)</i>
Wilson's phalarope	<i>(Phalaropus tricolor)</i>
Song sparrow	<i>(Melospiza melodia)</i>
Red-winged blackbird	<i>(Agelaius phoeniceus)</i>
White-throated swift	<i>(Aeronautes saxatalis)</i>
Northern flicker	<i>(Colaptes auratus)</i>
Western kingbird	<i>(Tyrannus verticalis)</i>
Rock dove	<i>(Columba livia)</i>
Western meadowlark	<i>(Sturnella neglecta)</i>
Mountain bluebird	<i>(Sialia mexicana)</i>
Common snipe	<i>(Gallinago gallinago)</i>
Brewer's blackbird	<i>(Euphagus cyanocephalus)</i>
Stellar's jay	<i>(Cyanocitta sterleri)</i>
American robin	<i>(Turdus migratorius)</i>
Spotted towhee	<i>(Pipilo sp.)</i>
Mourning dove	<i>(Zenaida macroura)</i>
Black-billed magpie	<i>(Pica pica)</i>
Common grackle	<i>(Quiscalus quiscula)</i>

8. APPENDIX C: NRCS Range Assessment

9. APPENDIX D: LESA Agricultural Score Sheet

LARIMER COUNTY LESA SUMMARY SCORESHEET

Name: Charles M. Gindler

Date: July 14, 2004

Site: Red Mountain Ranch

Factor	Points		Weight	Score	Totals
LE – Land Evaluation	<u>10.5</u>	X	1.00	= 10.5	10.5
SA1 - Farm size	<u>100</u>	X	0.30	= 30	
SA1 - Water availability	<u>90</u>	X	0.20	= 18	
SA1 - Land condition	<u>35</u>	X	0.10	= 3.5	
				SA1 Total	51.5
SA2 - Distance to annexed boundary	<u>100</u>	X	0.15	= 15	
				SA2 Total	15
SA3 - Habitat value	<u>100</u>	X	0.07	= 7	
SA3 - Strategic value	<u>100</u>	X	0.10	= 10	
SA3 - Visual/Scenic value	<u>75</u>	X	0.04	= 3	
SA3 - Cultural/Historic value	<u>100</u>	X	0.04	= 4	
				SA3 Total	24
Total LESA Score (LE + SA1 + SA2 + SA3)					101

NOTES: Approximately 13,280 acres. This ranch is a matrix of low forage production areas with steep slopes and/or rock outcrops, and highly productive native grass meadows and valleys. Additionally, good fencing, improved water development and 81 acres of irrigated hay fields contribute to productivity. NRCS forage production estimates on January 22, 2002 yields a carrying capacity of approximately 1450 AUMs. The above LESA score represents a Rangeland Comparison Rating of "Excellent".

10. APPENDIX E: Conservation Easement

11. APPENDIX F: Red Mountain Open Space Management Targets

12. APPENDIX G: Management Zones

13. APPENDIX H: Limits of Acceptable Change Management Action Options