



Parks and Open Space

5201 St. Vrain Road • Longmont, Colorado 80503
303.678.6200 • Fax: 303.678.6177 • www.bouldercounty.org

MINUTES AND PROCEEDINGS OF THE PARKS AND OPEN SPACE ADVISORY COMMITTEE April 27, 2017

The meeting was called to order at 6:00 p.m. by John Nibarger in the Hearing Room of the Board of Commissioners, Third Floor, Boulder County Courthouse, Boulder, Colorado.

POSAC Members in Attendance

Present: Sue Anderson, Jenn Archuleta, Cathy Comstock, Jim Krug, James Mapes, John Nibarger, Gordon Pedrow, and Heather Williams

Excused: Scott Miller

Staff in Attendance

Sandy Duff, Dave Hoerath, Ron West, Susan Spaulding, Janis Whisman, Renata Frye, Conrad Lattes, Therese Glowacki, Amy Oeth, and Eric Lane

Approval of the March 23, 2017 Meeting Minutes

Action Taken: Jenn Archuleta moved to accept the previous month's minutes. Jim Krug seconded the motion. Motion carried 7-0. [Jim Mapes abstained because he was not at the March meeting.]

Public Participation - Items not on the Agenda

None

Lainson Open Space - Xcel Energy Takings from Boulder County Interests

Staff Presenter: Sandy Duff – Land Officer

Action Requested: Recommendation to BOCC

Public Comments: None

Action Taken: Gordon Pedrow moved to accept staff recommendation for the taking as presented, and Jenn Archuleta seconded the motion. ***After discussion, motion carried unanimously.***

CU South

*Staff Presenters: Amy Oeth – Land Use Planner, Ron West – POS Planner,
Eric Lane – POS Director*

Action Requested: Information Only
(No public comments were taken)

Rabbit Mountain Elk Management Plan

Staff Presenters: Therese Glowacki – Resource Management Division Manager

Action Requested: Recommendation to BOCC

Public Comments:

- Carol Walker, 16500 Dakota Ridge Rd., Longmont
- Suzanne Webel, Boulder County Horse Association, Boulder Area Trails Coalition, 5735 Prospect Rd, Longmont
- Ben Rodman Backcountry Hunters and Anglers, P.O. box 1070, Lyons
- Steven Lohr, Big Game Forever, 7216 Timothy Place, Niwot
- Shelley Smagac, 8996 Tahoe Lane, Boulder
- Kent Ingram Colorado Wildlife Federation, 1 Red Birch, Littleton
- Steve Hilde, APLLC, 4429 Prairie Trail Dr Loveland
- Dennis Kuehl, 13191 N 75th St, Longmont
- Allen Kerby Rocky Mountain Elk Foundation, 86 Stoll Circle, Lake George
- Gary Weihe, Ph.D., 2490 Agate Rd, Boulder
- Skip Hicks, Hicks Ranches, 13407 N 75th Avenue, Longmont
- Kenith Stillman, 4535 Moorhead Ave, Boulder
- Terry Parrish, Parrish Ranch Conservation Partnership, LLLP, 15720 Parrish Road, Berthoud
- John Harris, 938 Wolf Creek Dr., Longmont

- Sue Cass, Boulder County Nature Association (BCNA), 1524 Henry Court, Longmont
- Jon Cook, Hygiene
- Hank Shaw, 1112 W Enclave Cir, Louisville
- Anita Moss, 122 Old Post Office Rd Boulder
- Marcia Barber, 1109 Mountain Pines Rd, Boulder
- Alex Barber, 1109 Mountain Pines Rd., Boulder
- Renee De Alba, 116 Longs Peak Dr., Lyons
- Elle Cushman, Cushman Cattle Co. 13450 N 75th ST, Longmont
- Susan Honeycutt, 774 Cougar Dr., Boulder County
- Hunter Johnson, 3594 Larkspur Dr., Longmont
- Cam Johnson, 3594 Larkspur Dr., Longmont
- Dean Johnson, 2112 10th, Longmont
- Louis Beaupre, 1650 Stardance, Longmont
- Amy Strombotne, 8502 Stirrup Ct, Boulder County

Action Taken:

Motion 1: Jim Krug moved to request staff write a more multi-faceted approach to show all the tools available in time for the May 25 meeting for POSAC to use in a study session. Gordon Pedrow seconded the motion. ***Motion withdrawn.***

Motion 2: Gordon Pedrow moved to request staff write a more multi-faceted approach to show all the tools, including game damage permits, culling, temporally appropriate hazing, and PZP contraception, available in time for the May 25 meeting for POSAC to recommend as an action item, with written public comment submitted before the meeting, but no public testimony at the meeting. Jim Krug seconded the motion. ***After discussion, motion carried unanimously.***

Director's Update

- Pella Crossing grand reopening was April 26.
- BOCC approved the revised cropland policy as it relates to GE crops and Neonicotinoids
- May 20 is the county-wide open space advisory committees' bus tour to discuss regional trail connections

Adjournment

The meeting adjourned at 10:45 p.m.

The full audio, available staff memos, and related materials for this meeting can be found on our website: www.BoulderCountyOpenSpace.org/POSAC



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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

DATE: Thursday, April 27, 2017
TIME: 6:00 p.m. *(Please note the earlier start time)*
PLACE: Commissioners' Hearing Room, 3rd Floor, Boulder County Courthouse,
1325 Pearl Street, Boulder, CO

AGENDA

Suggested Timetable

- 6:00 1. **Approval of the March 23, 2017 Meeting Minutes**
- 6:05 2. **Public Participation - Items not on the Agenda**
- 6:10 3. **Lianson Open Space - Xcel Energy Takings from Boulder County Interests**
Staff Presenter: Sandy Duff – Land Officer
Action Requested: Recommendation to BOCC
- 6:20 4. **CU South**
Staff Presenters: Amy Oeth – Land Use Planner, Ron West – POS Planner, Eric Lane – POS Director
Action Requested: Information Only
(No public comments will be taken)
- 7:00 5. **Rabbit Mountain Elk Management Plan**
Staff Presenters: Therese Glowacki – Resource Management Division Manager
Action Requested: Recommendation to BOCC
- 7:30 **Public Comment Period for Elk Management Plan**
Sign up here to speak: www.BoulderCountyOpenSpace.org/POSAC
- 10:00 6. **Director's Update**
- 10:10 7. **Adjourn**

Available staff memos & related materials for this meeting may be viewed on our website:
www.BoulderCountyOpenSpace.org/POSAC



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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: 6:00 p.m., Thursday, April 27, 2017 Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Lainson-Xcel Energy Takings from Boulder County Interests

PRESENTER: Sandy Duff, Land Officer

ACTION REQUESTED: Recommendation to the BOCC

Summary

Xcel Energy proposes to acquire a permanent easement to relocate an existing power line on a portion of the Lainson Open Space property in order to accommodate a Boulder County Transportation intersection improvement project at the intersection of 95th Street and Isabelle Road in Boulder County.

Background

Boulder County Transportation is in the final stages of plans for improvements proposed at 95th and Isabelle that include widening Isabelle road to allow for an additional turn lane onto 95th Street. This widening will affect the Lainson Open Space property. Boulder County Parks and Open Space has already approved of the transfer of management of approximately 1 acre of land to Boulder County Transportation, and subsequently, an existing power line on the north side and the west side of the open space property will need to be relocated. Xcel needs approximately 0.195 acre (generally a 10 foot wide easement) so that the overhead line will move slightly and transition to a buried power line on the north and west edges of the property, intersecting at an above ground switch cabinet.

Xcel Energy has condemnation authority over Boulder County, so the county is legally unable to prevent this project. The county will be entitled to the proceeds for the permanent easement takings, and Xcel and the county will coordinate to protect and preserve the open space interests, minimize site disturbances, and provide reclamation standards to the extent practicable.

Public Process

The terms of the resolution creating the sales tax that was used to purchase the Lainson Open Space property require specific procedures be followed to dispose of this property, including adjacent property owner notification, newspaper notice, and a 60-day waiting period following county commissioner approval. The notices included an invitation to attend and comment at this meeting. No public comments have been received to date, and any additional comments we receive will be shared with you at the meeting.

Staff Discussion and Recommendation

Staff recommends approval of the permanent easement to Xcel Energy. The county cannot prevent this taking, and Boulder County prefers to cooperate informally with Xcel Energy in these instances and negotiate fair compensation rather than the full formal condemnation process that is more costly and time-consuming for both parties. Xcel Energy is being cooperative in meeting staff's requests designed to protect natural resources as much as possible and properly reclaim the areas following installation of the electric line.

Value of Takings

Xcel Energy is required to provide just compensation for the easement taking, and *appropriate* value work has been provided. The county and Xcel Energy have negotiated \$3,090.90 for the permanent easement, which represents 50% of the fee value.

POSAC Action Requested

Recommendation to the Boulder County Commissioners for approval.





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PARKS AND OPEN SPACE ADVISORY COMMITTEE

TO: Parks & Open Space Advisory Committee

TIME/DATE: Thursday, April 27, 2017, 6:00 p.m.

LOCATION: Commissioners Hearing Room, 3rd floor, Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Boulder Valley Comprehensive Plan Review of CU South

PRESENTERS: *Eric Lane, Parks and Open Space Director*
Amy Oeth, Land Use Long Range Planner II
Ron West, Parks and Open Space Resource Planner

ACTION REQUESTED: *(Information and input only)*

I. INTRODUCTION

Every five years, the Boulder Valley Comprehensive Plan (BVCP) undergoes a Major Update process during which all the core values, policies, master plans, land use map designations, and other components of the plan are reviewed.

As part of this update, requests are submitted for Land Use Map designation changes to the existing plan which, in this case, is the 2010 edition. City and county planning staff review and prepare recommendations on those that have been received. The requests and staff recommendations are then forwarded and must be approved in public hearings for further study and ultimately accepted by decision-making bodies: City Council, City Planning Board, Board of County Commissioners (BOCC), and County Planning Commission (PC).

The purpose of this agenda item is to review potential BVCP changes to the "Open Space – Other" (OS-O) land use designation on a portion of the University of Colorado Boulder's (CU) South Campus property ("CU South"). The 308-acre CU South property is owned in fee by CU. The property has 193 acres designated as OS-O which is land identified prior to 1981 upon which the city and county aspired to preserve open space values with methods such as intergovernmental agreements, dedications, or acquisitions. Since purchasing the property in 1996, CU has allowed much of it to be open for limited public recreational access. The property also adjoins City of Boulder Open Space lands at South Boulder Creek and contributes to open space values there. The city aims to work cooperatively with CU to achieve multiple community objectives for future uses of CU South, including addressing CU's needs.

This discussion follows a study session with the Planning Board on April 6, a study session with City Council on April 11, and a discussion and recommendation with the city's Open Space Board of Trustee's (OSBT) on April 12.

A. Parks and Open Space Advisory Committee's (POSAC) Role

In accordance with Sec. II.c (6) of the BVCP, POSAC as well as OSBT has the responsibility to review open space elements of the BVCP:

Requests for changes to the comprehensive plan that affect an area designated Open Space will be reviewed by the city Open Space Board of Trustees and the county Parks and Open Space Advisory Committee. The board of trustees will make a recommendation prior to any action on that change. (Sec. II.c(6))

Thus, staff requests POSAC's review of the following materials and welcomes any input that POSAC would like to provide. Any feedback received will help inform discussions with the BOCC and PC. County staff is reviewing all of the input and research that has been assembled so far and would like to receive input from POSAC before making a recommendation to the BOCC or PC.

B. OSBT's Feedback

The OSBT approved (5:0) the following recommendation at their meeting on April 12, 2017:

The OSBT to (1) state that it recognizes important Open Space values on the CU South property including, but not limited to, the portion currently designated Open Space Other and (2) endorse the OSMP staff report, 2015-2017 Boulder Valley Comprehensive Plan Update CU South OS-O Open Space Analysis as a guide to protecting and enhancing open space values during four body review of the BVCP Land Use designations and subsequent deliberations. We believe that a close working partnership between the University and the City, combined with broad community input, can accomplish very significant benefits for OSMP charter purposes, in addition to accomplishing critically important flood mitigation.

II. STAFF PROCESS and SITE INFORMATION

A. Public Comment And Process

City staff designed the CU South community engagement process to be concurrent with the 2015 BVCP Major Update, and discussion about CU South as part of the BVCP has been occurring since 2015. During an open house in September 2016 and subsequent community meeting in December, staff shared technical studies and gathered feedback. Summaries are available on the [CU South BVCP project webpage \(https://bouldercolorado.gov/bvcp/cu-south\)](https://bouldercolorado.gov/bvcp/cu-south). Over the past several months, most written comments and public testimony have centered on the city's proposed flood mitigation improvements on the CU South property, a desire to convert CU South to open space, and requests for more time to reconsider potential alternatives. In response to questions and comments about flood mitigation, the city has created a list of frequently asked questions that address these and other concerns on the [South Boulder Creek Flood Mitigation webpage \(https://bouldercolorado.gov/flood/south-boulder-creek-flood-mitigation-planning-study\)](https://bouldercolorado.gov/flood/south-boulder-creek-flood-mitigation-planning-study).

Some common themes of public comments so far have included:

- CU South provides important wetlands, grasslands, habitat for plants and animals, and development of site could destroy that.
- The existing suitability studies are insufficient to understand the patterns of use or presence of federally listed species on the site.
- The property provides excellent recreational opportunities, and development will result in fewer places to walk, run, or take dogs.

The city, county, and CU hosted an open house on April 3, 2017 to share new information with the community for feedback.

B. Site Information

CU South is entirely in Boulder County jurisdiction and in BVCP planning Area II, which makes it eligible for annexation. There are currently three BVCP land use designations on portions of the property as described in the table below and shown on the map in **Attachment A**. These designations provide a sketch of the desired land use pattern of the Boulder Valley and serve as the basis for initial zoning designations if and when properties are annexed into the city.

CU South Land Use Designations	Approx. Area
Low Density Residential (LR)	49 acres
Medium Density Residential (MR)	67 acres
Open Space-Other (OS-O)	193 acres

The OS-O designation differs from most other land use designations in that the city’s zoning does not include a corresponding open space designation. Also, unlike the other open space land use designations that apply to acquired or deed restricted open space, OS-O is instead defined as aspiration to preserve open space through a variety of means including intergovernmental agreements, dedications, or acquisitions.

During the 2000 and 2005 BVCP updates, CU requested changes to the land use designations at CU South as part of plans to consider annexation and development of CU South. Those land use change requests were tabled pending the completion of the South Boulder Creek Flood Mitigation Study. That study was approved in 2015 by City Council. City staff recommended addressing CU South as a part of the 2015 update; involved the public; and considered the following needs to:

- Address flood safety along South Boulder Creek, carrying forward City Council approved Option D from the South Boulder Creek Major Drainageway Plan conceptual plan;
- Engage the community and stakeholders in discussions about future uses of CU South, using analysis to inform the conversation;
- Recognize CU’s intent to plan for and develop some of the site and annex it in its entirety; and
- Consider retaining open space values for parts of the site, including natural area, wildlife habitat, recreational, and scenic uses.

CU Boulder has provided general information about its future vision for the site which includes flood mitigation areas, recreational and athletic fields and facilities including showers and restrooms, affordable workforce housing for faculty and staff, student housing, academic, instructional and research facilities, and outdoor research space. More information can be found in [CU Boulder’s CU South FAQs \(https://www-static.bouldercolorado.gov/docs/CU_Boulder_South_FAQ_update_12.13.16-1-201612151317.pdf\)](https://www-static.bouldercolorado.gov/docs/CU_Boulder_South_FAQ_update_12.13.16-1-201612151317.pdf) posted on the CU South BVCP project webpage referenced above.

III. APPROACH AND RECOMMENDATION

City staff’s approach to developing a recommendation on changes to the land use designation at CU South will follow the procedures set forth in the BVCP including requiring review and recommendation from OSBT, review by POSAC, and ultimately approval by the four decision-making bodies. Staff will combine this information with input regarding flood mitigation, transportation, CU’s intentions for the site, and other community feedback to prepare a recommendation on potential changes to the land use designations at CU South.

The City's Department of Open Space Mountain Parks (OSMP) prepared a review of the relationship of the OS-O designated area at CU South to each of the purposes of open space as described in the City Charter (**Attachment B** – "2015-2017 CU South OS-O Open Space Analysis"). OSMP also prepared a map entitled "CU South Open Space Services Map" that identifies portions of the OS-O designation on CU South with lower, medium, and higher potential to provide the City Charter's open space purposes (**Attachment C**).

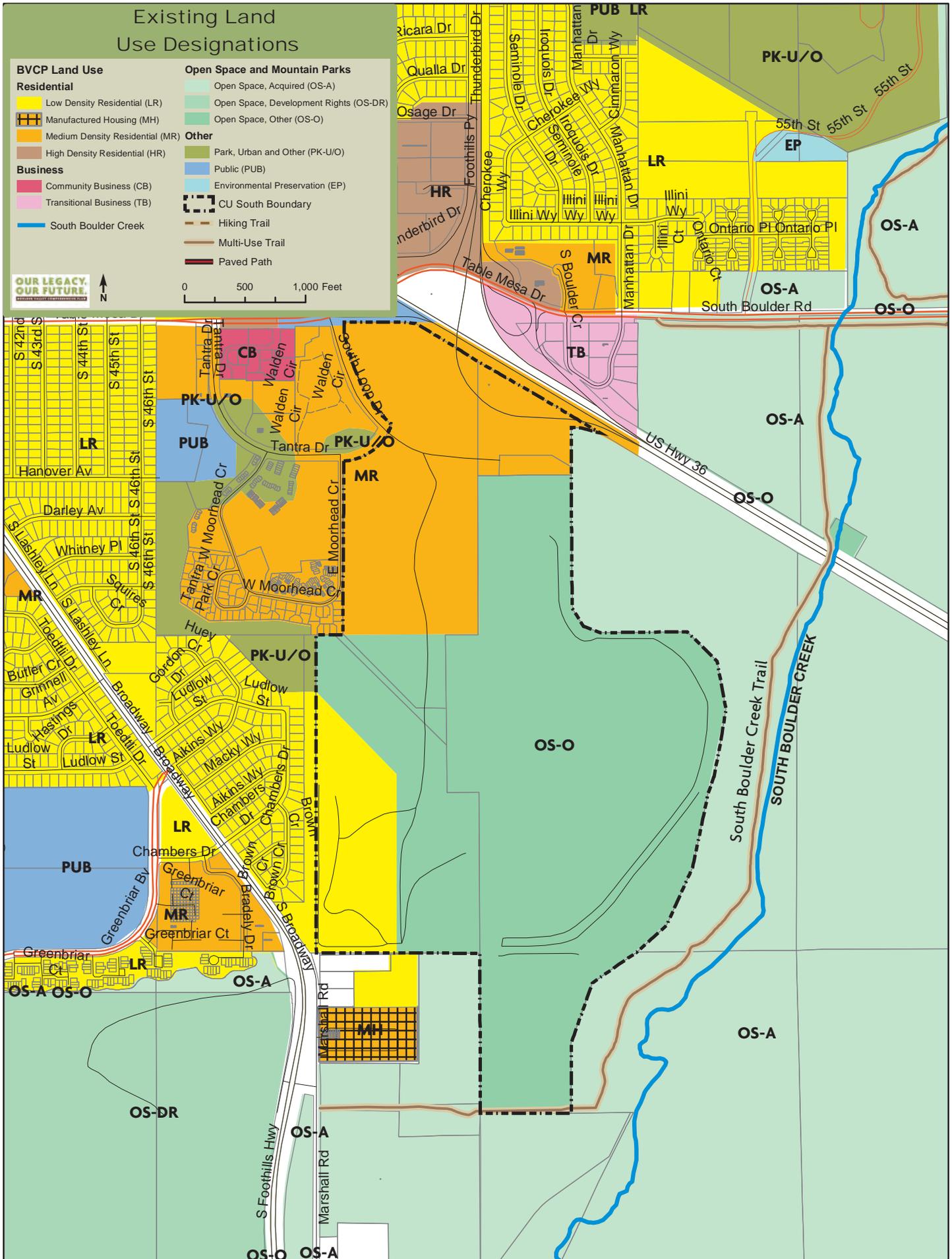
As shown on the CU South Open Space Services Map (**Attachment C**), an area of higher OS potential is identified in the eastern and southeastern portion of the OS-O designation. This area includes the majority of areas identified by Biohabitats as having greater conservation value due to the overlap of resources of significance including flora, fauna, water resources, wildlife habitat, and native ecosystems. It also has high viewshed value as reported by both Biohabitats, and the city staff's [Site Suitability Analysis \(https://www-static.bouldercolorado.gov/docs/Report_A1-1-201701121705.pdf?_ga=1.49378278.1599711842.1490129536\)](https://www-static.bouldercolorado.gov/docs/Report_A1-1-201701121705.pdf?_ga=1.49378278.1599711842.1490129536) which is posted on the city's CU South BVCP project webpage referenced above.

Since the restoration potential of natural areas is also a component of the City Charter's open space purposes, OSMP staff considered where ecological restoration would have the greatest potential open space benefit. OSMP staff included some areas of lesser conservation value in the "Higher Open Space Potential" area because these areas could be restored to create larger and more effective habitat blocks. One of the ways that such restoration could be integrated into the design of this site would be to address compensatory mitigation needs. Development of CU South could result in the need to compensate for unavoidable environmental impacts—especially to wetlands. From a site design perspective, such a requirement could be addressed by restoring the degraded areas of CU South that are contiguous with the areas of higher conservation value creating larger habitat blocks with even greater open space value.

As stated above, the environmental contractor Biohabitats completed a resource site analysis of the 308 acres, and OSMP subsequently reported on how the subject area relates to the City Charter's open space elements. In a broader context, Boulder County Parks and Open Space (POS) is interested in the natural resources of the entire watershed and the entire county. POS staff will present on how the 308 acres fit into this larger picture, including resource designations in the Boulder County Comprehensive Plan (BCCP) designations, and a brief site history through aerial photographs. Based on BCCP designations, natural resource elements include: rare and threatened species; wetlands; riparian areas; archeological travel corridor; major agricultural ditches; floodplain (from a natural process point-of-view); significant natural communities; open roadside corridor; critical wildlife habitat; adjacency to existing open space; natural area; high biodiversity area; and environmental conservation area.

IV. NEXT STEPS

Currently, City Council and the Planning Board are tentatively scheduled to hold a public hearing on the BVCP, including CU South, on May 23. Dates for BOCC and PC study sessions for CU South are yet to be determined. Schedules are subject to change.



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2015-2017 Boulder Valley Comprehensive Plan Update
CU South OS-O Open Space Analysis

This document is intended to provide a review of how the CU-South property's "Open Space – Other" (OS-O) area delivers, or has the potential to deliver, open space services by examining the relevance of each of the [open space purposes described in the City Charter](#).

Sec. 176. - Open space purposes-open space land.

Open space land shall be acquired, maintained, preserved, retained, and used only for the following purposes:

- (a) Preservation or restoration of natural areas characterized by or including terrain, geologic formations, flora, or fauna that are unusual, spectacular, historically important, scientifically valuable, or unique, or that represent outstanding or rare examples of native species;

Terrain

The dominant terrain of CU South is the South Boulder Creek floodplain. Historically South Boulder Creek has meandered across its floodplain eroding and depositing silt, sand and gravel to form a complex system of former channels, point bars, natural levees, meander scars and oxbow lakes. In the latter part of the 20th century, these creek deposits were mined from the CU South property.

The post-mining reclamation of the site was not designed to restore or mimic natural floodplain conditions. Consequently, while the pre-mining landscape may have included a mosaic of habitat types including riparian forests and wetlands and extensive stands of tallgrass prairie, these habitats are largely no longer present on the site.

Despite the lack of preservation opportunities, there appears to be significant potential to restore the character of the floodplain. Understanding the feasibility of such restoration would require further study, and may require the use of water rights to establish wetlands and other floodplain features.

Geological Formations

The most significant geologic formation of the site is the ancient creek terrace along the western boundary—outside of the existing Open Space - Other (OS-O) land use designation. This feature is mapped as both shale bedrock and consolidated deposits of glacial outflow deposited between 100,000 and 500,000 years ago. The terrace is steep in places, and provides a natural break between the residential neighborhoods west of CU and the reclaimed floodplain to the east. The creek terrace

CU Natural Areas
and Scientific Value

Among the City of Boulder charter's purposes of open space is the *preservation or restoration of natural areas . . . that are . . . scientifically valuable. . .*

The role of the university in the development of the site provides greater opportunity for uses that recognize scientific values than would be likely from other landowners. The site provides opportunities for undergraduate and graduate study of a wide range of topics associated with past land use, post-mining re-vegetation, agriculture, landscape architecture, environmental design and land management.

provides spectacular views to the south east of the South Boulder Creek Floodplain, Davidson Mesa and much of the Boulder Valley.

Flora and Fauna

Based upon results of a [site assessment](#) by the environmental consulting firm Biohabitats, CU South is dominated (80%) by non-native vegetation. Consequently, from an open space vegetation (flora) perspective, restoration opportunities exceed those for preservation on the site. Of the approximately 20% of the site dominated by native vegetation, most is in riparian and wetland areas at the southern end and along the south east edge of the property. There are also scattered areas of native vegetation along the edge of the upper (western) creek terrace.

Wetlands and riparian flora are both uncommon and unusual in the Boulder Valley in that they represent a small amount of land cover, and provide habitat for a disproportionately large number of plant and animal species. Small and isolated populations of the federally threatened, and state and globally rare Ute ladies'-tresses orchid have been found at CU South.

The wildlife (fauna) on the site reflects both the habitat at CU South and the surrounding area. The property provides relatively large areas of open grasslands, as well as scattered marshes, small stands of riparian trees and shrubs as well as about 23 acres of open water. Consequently, species common to these habitats are encountered on the site. Although mostly urban to the north and west, CU South is surrounded to the east and south by city-owned open space and more open rural land uses in Boulder County. Rare species such as Preble's meadow jumping mouse and the northern leopard frog are found in the adjacent open space. Because of connectivity with these habitats, CU South may also support populations of some or all of these species. However, no surveys have been specifically conducted to assess their presence on site as part of the city's site assessment project.

Over 100 bird species have been observed at CU South since 2011, over half of which were confirmed to be breeding. These include 23 species that use wetlands for breeding, 13 species that nest in grasslands and 15 species that use riparian areas as breeding sites. Of the species observed the American kestrel, western meadowlark, common nighthawk, dickcissel, horned lark, lark sparrow, loggerhead shrike, vesper sparrow, grasshopper sparrow, and blue grosbeak are listed as conservation targets in the OSMP Grassland Ecosystem Management Plan. These observations indicate that the available habitat at CU South is of sufficient size and condition to support a diverse assemblage of native species.

As indicated above, South Boulder Creek floodplain could be restored to reestablish more natural and diverse geomorphology, recreating the physical features of its floodplain. With sufficient water rights and appropriate management, it is also likely that a mosaic of native vegetation could be restored to portions of CU South, creating a good example of native floodplain that could potentially support rare examples of native plants and animals.

Preservation of the OS-O designation area in its current condition would address the open space purposes described in this section of the charter to a low to moderate degree. The restoration potential of the OS-O designation area is good to excellent. The degree to which this purpose would be addressed is a function of how much of the designation was managed for the

preservation or restoration of these purposes. The OS-O lands closest to acquired city open space to the east would address these purposes more than lands further to the west.

(b) Preservation of water resources in their natural or traditional state, scenic areas or vistas, wildlife habitats, or fragile ecosystems;

Water Resources

Local hydrology data, site visits and review of aerial photography indicates the presence of nine ponds at CU South, five of which described as perennial and four of which are dry for some portion of the year. The ponds, which total about 23 acres, range in size from 1,650 square feet (0.03 acres) to 6.5 acres. None of the ponds at CU South were present prior to gravel mining and are likely resultant from mining activity. They are also likely supported by the local groundwater table. A study of the groundwater at CU South was beyond the scope of the city led suitability analysis.

The Dry Creek No. 2 ditch originates from South Boulder Creek south of the property and crosses the property along the inside border of the north-south berm. The University of Colorado owns thirty shares of Dry Creek No. 2 ditch associated with the property. With a typical per share yield of 5.4 acre feet, this amounts to 162 acre feet in an average water year. Prior to mining, these water rights were used to irrigate a portion of CU South (then known as the Deepe Farm). The Bear Creek Ditch also enters the property. It is not known if this ditch is currently actively managed and it does not appear that the University owns any rights in this ditch associated with the property. The local landscape, and regional watershed have been changed by mining, water diversion, residential development and historical agricultural practices, leaving no surface water resources in their natural state.

The OS -O designation area offers few opportunities to preserve water resources in their natural state. Depending upon soil conditions, the potential use of water resources for agriculture on the OS-O designated area of CU South are low to high with greater value associated with better agricultural soils. The potential to use water resources for ecological restoration is moderate to high with greater ecological restoration potential in the areas nearest to the city open space.

Scenic Areas or Vistas

As part of their site assessment work at CU South, Biohabitats conducted a [preliminary viewshed analysis](#) that considered aesthetics and views from within the site. View-points with a high viewshed score were generally located in the central and southern portions of the site around wetlands or lakes.

CU South is situated where the nature of development could significantly affect the most visually striking of the gateways to the Boulder Valley—specifically the view westward from Davidson Mesa. The US 36 roadway, bikeway and Davidson Mesa scenic overlook provide both visitors and residents a dramatic visual experience. For many, this view characterizes the Boulder Valley. The view from the South Boulder Creek terrace along the western side of CU South is also valued by residents of the Hy-View neighborhood. Recognizing the importance and value of these vistas, city staff conducted a [viewshed survey](#) from areas outside and around the perimeter of the site. This survey located higher value views along westbound US 36 and along the southwestern border of the site. Some of the areas with higher value views lie outside the OS-O designation.

The OS-O designation area offers good to excellent opportunities to preserve views from outside the site and to provide people using the site with high quality views of the surrounding landscape including areas managed by the city as open space.

Wildlife Habitat

The previous section explored available information regarding some aspects of vegetation and wildlife which can be used to infer that the CU South site, and in particular the OS-O section currently provides wildlife habitat to a moderate degree. With restoration, the site would offer greater wildlife habitat value. In addition to current or future site condition, the size and context of the property also contribute to its habitat value. Larger habitat blocks are likely to support a greater number of animals and greater variety of species; and are considered more valuable habitat. The OS-O designation on CU South comprises 193 acres in a single block. This is a relatively large block of habitat in the eastern portions of the Boulder Valley, especially outside of the city and county opens space land systems. In addition, the landscape position of this block is immediately adjacent to extensive open space managed in part of its wildlife habitat value.

The lands in the OS-O designation have the potential to address preservation of wildlife habitat to a moderate to high degree. The relative value of wildlife habitat is highest adjacent to city-owned open space. Ecological restoration would increase the area's value as wildlife habitat and the degree to which this open space purpose is addressed.

Fragile Ecosystems

Local ecosystems are vulnerable to development and to changes in the natural disturbance regimes. Since water is relatively scarce in the Boulder Valley, water dependent ecosystems are less common. Because of our large demands for water, these environments also tend to be strongly affected by human activity. At CU South, wetland and riparian communities are the most vulnerable to changes likely to occur with construction of buildings, installation of utilities including site drainage facilities and roadbuilding. The best opportunities to preserve these ecosystems is to protect them from further disruptions, to provide on-going management and where feasible restoration. Since these areas make up less than 20% of the site, only relatively small areas are suitable for preservation. However, larger areas could be *restored* to provide desired ecological function.

The OS-O designation area lies adjacent to lands owned by the city and managed as open space that could be impacted by changes in land use at CU South and specifically on the OS-O portions of the site. Much of this open space has been designated as the South Boulder Creek Natural Area by the State of Colorado. The natural area was designate to recognize not only species of conservation concern, but also the value of riparian, wetland and grassland ecosystems in the area. The ecological functions and values of the open space to the east of the OS-O designation and the South Boulder Creek Natural Area could be adversely affected by development activities. Such effects are likely to be less damaging the further they are from the Natural Area and the greater the width of undeveloped buffer separating the Natural Area from human disturbances and activities.

The lands within the OS-O designation have the potential to protect fragile (vulnerable) ecological systems to a moderate to high degree. The wider a buffer between the city-owned open space lands to the east and development on CU South, the greater the potential. Ecological restoration of the OS-O designation would further support protection of these ecosystems.

- (c) Preservation of land for passive recreational use, such as hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing; [A suitability analysis by transportation planning consultants Fox Tuttle Hernandez \(FTH\)](#), public comments, site visits and observations by city staff were used to develop a picture of current patterns of passive recreation at CU South. In addition to CU's use of the site for cross-country training, the dominant visitor activities are walking, dog-walking and running with some bicycle use. Fewer cyclists than pedestrians visit the site. Most visitor activities take place on dirt roads and visitor-created (social) trails. Staff have not observed fishing or equestrian use on the property, however it is likely that these activities occur from time to time. Under an agreement with CU Boulder and when conditions are appropriate, the Boulder Nordic Club grooms trails for cross-country skiing on the site. A good deal of current recreational use including the main access and parking are located outside of the OS-O designated area.

Measuring levels and types of visitation was beyond the scope of the suitability analyses led by the city. However, casual observation suggests that off-leash recreation (mostly hiking or running) with dogs is very popular at CU South. Although CU Boulder requests that dogs be leashed on the site, most dogs are not, and enforcement is minimal. Casual observations indicate that unleashed dogs typically travel either on or near the trails; however, it is also common to see dogs in the ponds during warmer weather. The long-term potential for recreational use of some of these areas may be impacted by plans for flood mitigation or development.

CU South is near designated trails constructed and/or maintained by the City of Boulder and the bike routes that serve Tantra Park. A portion (0.12 mile) of the South Boulder Creek Trail, constructed and maintained by the city, crosses the south end of the CU South property under the provisions of an agreement between CU and the city. CU South is also accessible from the US 36 Bikeway at the junction of South Loop Road and Table Mesa Drive and could be accessed from Colorado Hwy 93 via the South Boulder Creek Trail. The US 36 Bikeway also connects with the South Boulder Creek Trail at South Boulder Creek.

The long-term recreational potential for the OS-O designated area at CU South is high for the South Boulder Creek Trail and a connection to the US 36 bikeway. The recreation potential is medium for an east-west connector to Tantra Park. There is some recreational potential on trails throughout the area.

- (d) [Preservation of agricultural uses and land suitable for agricultural production;](#) In its historic state, CU South would have supported similar opportunities for livestock grazing and hay production as the open space lands to the east currently provide. However, with the significant disturbances to soil and water delivery infrastructure associated with mining, the site's agricultural quality has been significantly diminished. Studies of irrigation infrastructure or soil quality on the site were beyond the scope of the city's site assessment. No agriculture takes place on the property now as has not for many years. Infrastructure for agriculture including fencing and water facilities for livestock as well as structures necessary to irrigate the land were not extensively evident during field visits. Based upon current vegetation patterns the postmining vegetation was planted for quick

revegetation and erosion control. The dominant species are not especially high quality livestock forage.

The best opportunities associated with on-site agriculture uses might be the integration of community vegetable gardens or orchards to support residential uses in the area. Such use may require importing soils, if on site soils are inappropriate for this use. In addition, the availability of water rights would influence opportunities for agricultural land uses in the OS-O designation.

The site has low to medium potential to serve agriculturally related open space purposes depending on soil quality and the availability of water.

- (e) Utilization of land for shaping the development of the city, limiting urban sprawl, and disciplining growth;
- (f) Utilization of non-urban land for spatial definition of urban areas;

Shaping Development of the City and Spatial Definition of Urban Areas

Open Space plays a key role in helping shape the urban environment. Well-defined edges and entryways for the city are important because they support an understanding and appreciation of the city's image, emphasize and preserve its natural setting, and create a clear sense of arrival and departure (BVCP Policy 2.04, 2.05). The definition of community edge is a design priority and natural features, such as open space, often play a critical role.

The entire OS-O designation area has potential to serve this charter purpose.

Disciplining Growth and Limiting Urban Sprawl

At over 300 acres, CU South is the largest undeveloped area in one ownership in Area II. It lies adjacent to developed portions of the city and adjacent to South Boulder Creek floodplain grasslands that are part of a century old agricultural operation. The combination of development and open space described in the current BVCP land use designations recognize the importance placed by the city and county on integrating open space as part of the site to define the urban edge.

The entire OS-O designation area has potential to serve this charter purpose.

- (g) Utilization of land to prevent encroachment on floodplains; and

According to Boulder County flood mapping, about 25% of the OS-O designation lies within the 100-year floodplain of South Boulder Creek, most of this area lies to the east and south of the berm. Also in the floodplain is a small (ca. 7 acres) area in the northern portion of the property. About one third of the OS-O designation is shown as land outside of the 100-year floodplain that is protected by the berm (flood levee). This area would be impacted if the existing levee was overtopped or ever intentionally removed in the future. As such, the area may be another location where this open space purpose could be addressed. The remainder of the OS--O designation lies outside both the mapped 100-year floodplain and the areas that are protected by the berm.

Those portions of the OS-O designation area that lie to the east and south of the berm have the potential to address this charter purpose to a high degree. The areas in the OS-O designation area

mapped as “protected by levee” may also have potential to address this charter purpose especially with restoration.

(h) Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community.

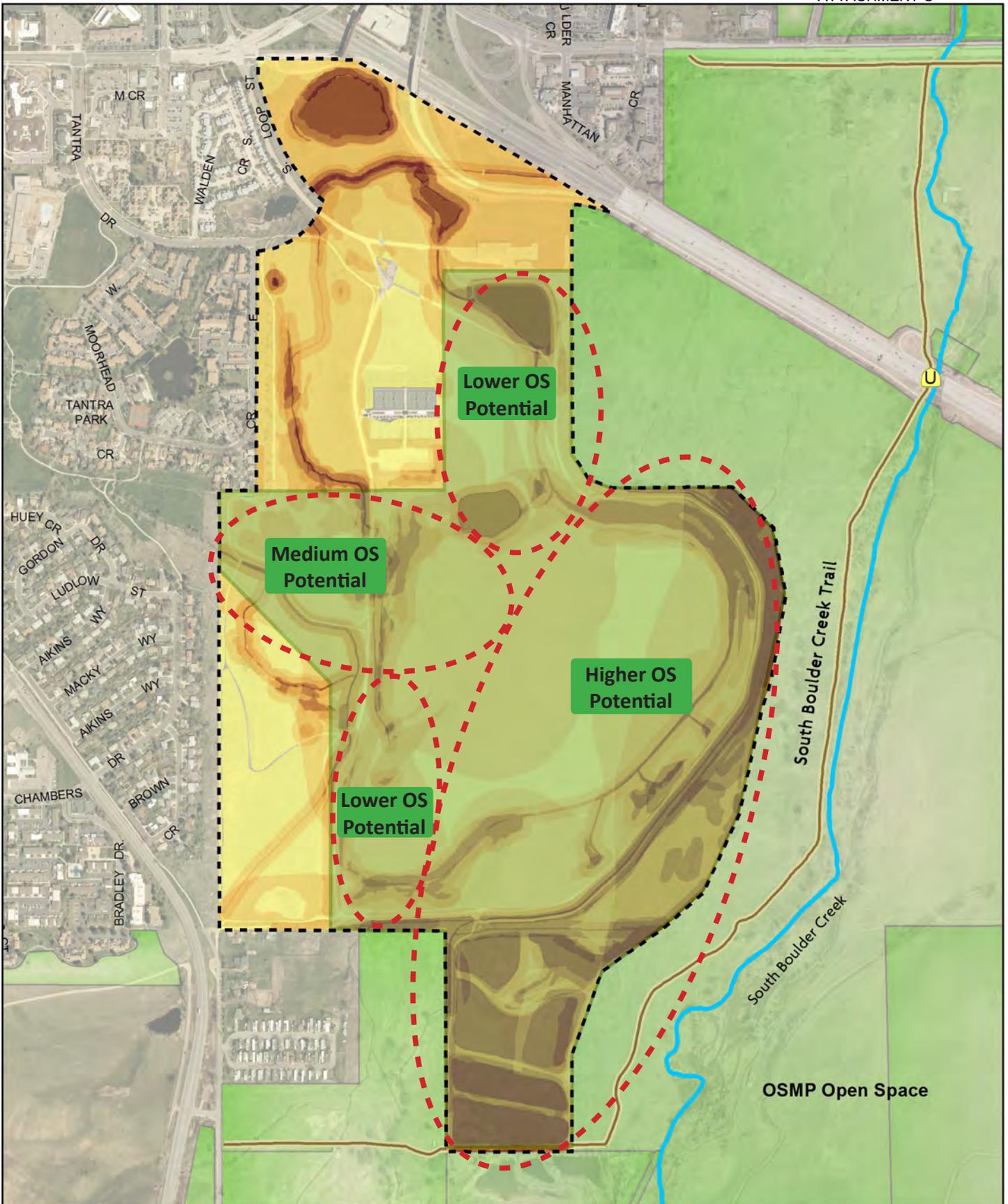
Aesthetic and Passive Recreation Value

Covered above

Quality of Life

This open space purpose is more specifically addressed in the preceding sections.

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CU South Open Space Services

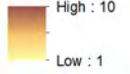


City of Boulder Colorado

 CU South Boundary	 Multi-Use Trail
 Open Space - Other	 South Boulder Creek
 Underpass	 OSMP Land

Suitability Rating

Score



High : 10
Low : 1

Note: High=greater conservation value, and Low=less conservation value






Parks and Open Space

5201 St. Vrain Road • Longmont, Colorado 80503
303.678.6200 • Fax: 303.678.6177 • www.bouldercounty.org

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Thursday, April 27, 2017, 6:00 p.m. Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Elk Management Plan

PRESENTER: Therese Glowacki, Resource Management Manager

ACTION REQUESTED: Recommendation to Board of County Commissioners

Background: Rabbit Mountain as the highest biodiversity of any Boulder County Park. Elk use of Rabbit Mountain and the surrounding area has significantly changed in the last 30 years. The 1985 Rabbit Mountain Management Plan barely mentions elk. In 2005 there were approximately 25 elk counted using the area. And now, in the fall of 2016, staff from Boulder County Parks and Open Space (POS) and Colorado Parks and Wildlife (CPW) counted 350 animals on the Rabbit Mountain complex. The elk population has grown exponentially in the past several years, buoyed by enhanced survivorship of the elk and their offspring. The current use and travel patterns of this elk herd are causing issues across the northern part of the county on and around Rabbit Mountain because this herd does not migrate.

Current Situation: POS and CPW have been meeting on this issue for several years. Our primary goal has been to monitor the elk population and natural resources of Rabbit Mountain. One of the first things we did jointly was to put four radio collars on elk to see their distribution and movement patterns. Tracking with those collars was completed in 2016 (they are no longer collecting data) and is documented in the draft Elk Management Plan. We recently put 7 new radio collars on in 2017 to replace the old ones and learn more about the expanded use areas.

As elk numbers grew, CPW enhanced hunting opportunities on private lands surrounding Rabbit Mountain, including creating a special liberalized hunt unit on private lands. These additional hunting areas have not slowed the herd from growing. The elk leave Rabbit Mountain at night and go to private lands, returning to the safety of open space during the day, where they can't be hunted. The accumulating conflicts and resource damage is concerning to both agencies.

Boulder County began collecting vegetation data specific to elk use in late 2015 to document levels and locations of heavy elk use on Rabbit Mountain. Monitoring has shown some substantial localized impacts to shrub stands in the core elk use area. The species composition and weedy characteristics are different in the high elk use area compared to the non-elk use area. Over time, this monitoring will help us observe and document vegetation impacts relative to static, increasing or decreasing elk populations.

The increased herd size has impacted neighboring private lands as well. These private lands provide food for elk from irrigated fields of hay, alfalfa, and corn. These elk damage livestock and residential fences, residential landscaping, as well as the crops. CPW paid over \$56,000 in crop damage claims due to this herd in the last four years; over \$100,000 over a longer period. The expanded movements in the past year have brought concerns from new parties further east, where the elk sometimes spend several days. POS agricultural tenants and organic farmer have recently raised their concerns about potential elk damage. There have also been several car accidents resulting in elk death and severe vehicle damage in the area.

The draft plan outlines all the alternatives we considered as we contemplated how to reduce the resource impacts of this ever-growing elk herd.

After careful consideration of many options and techniques, our working group has concluded that the most appropriate method to achieve our objectives is to propose a limited public hunting program, incorporating POS lands into the existing Rabbit Mountain elk hunting subunit. The goal of this additional harvest is to restore a migratory pattern to the herd and reverse the trend of the growing population. This in turn, will reduce the natural resource impacts on Rabbit Mountain. We also hope this will reduce the elk-human conflicts we are currently seeing. We will combine removals from the public hunt with other efforts that address the resource and private land damage concerns. These may include limited fencing, hazing, possible alternative crops, and other efforts to restore the damaged habitats. We do not propose such actions lightly. We are proposing a safe, effective program of harvest, balanced with the existing uses in and around Rabbit Mountain.

We originally presented this topic to POSAC in August, 2016. POSAC directed us to draw up a plan that they could review to address this issue. The attached plan is the result.

We have been collecting public input on-line from our website for the past 3 weeks. The website includes the draft plan and an opportunity for the public to enter whether they support, don't support, or would support the plan with modifications. To date almost 300 people have submitted on-line comments. Of these, about 75 % support the plan, or support the plan with modifications. We also held an open house on April 6 at which 110 people attended to hear the presentation and ask questions.

With this public input, we understand areas of concern include: public safety; request not to close the property for too long for recreationists; stakeholders not wishing not to kill any animals and not supporting any hunting on county open space; neighbors' concerns for their own property being damaged; concern for the natural resources of Rabbit Mountain; and frustration that Rabbit Mountain has become an unnatural safe-haven for these elk. To address these, we propose closing the entire open space during any hunting to address safety; closing the property for 3 days/week, no weekend days, for the 5 month hunting season to reduce displacing recreation; working with neighbors to observe changes in behavior of the elk as we take this management action; and trying to reduce the natural resource damage on Rabbit Mountain by getting the elk to migrate.

Action Requested: Recommendation to the Board of County Commissioners.

Rabbit Mountain Elk Management Plan: 2017-2027

Draft April 2017



Introduction

This document presents the history of elk presence at Rabbit Mountain Open Space. It describes the population increases since the late 1990s and the impacts the elk are having on the native biodiversity of Rabbit Mountain. It outlines the elk-human conflicts that have arisen since the elk population has increased. It further describes actions taken by Colorado Parks and Wildlife (CPW) and Boulder County Parks and Open Space (BCPOS) to measure and mitigate these impacts. Finally, it presents recommendations for management of elk with the goal of getting elk to move from Rabbit Mountain, and re-establishing seasonal migration, thus reducing the negative impacts of too many elk using Rabbit Mountain.

Background

The Rabbit Mountain elk sub-herd is a segment of the St. Vrain elk herd residing in northern Boulder and southern Larimer counties. Elk immigrated to Rabbit Mountain and Indian Mountain sometime in the mid-1990s after being absent from the area for decades, and more likely since the early 1900s. Radio telemetry data from elk captured on Heil Ranch Open Space during 1998 and 2003 indicate that the Heil Valley sub-herd was the original source of this Rabbit Mountain herd. The Rabbit Mountain population initially grew slowly to about 30 animals by the mid-2000s. Elk numbers remained at around 10-30 animals until about 2010, when the herd's numbers burgeoned to at least 100 animals by 2013 and to over 350 in 2016 (Figure 1).

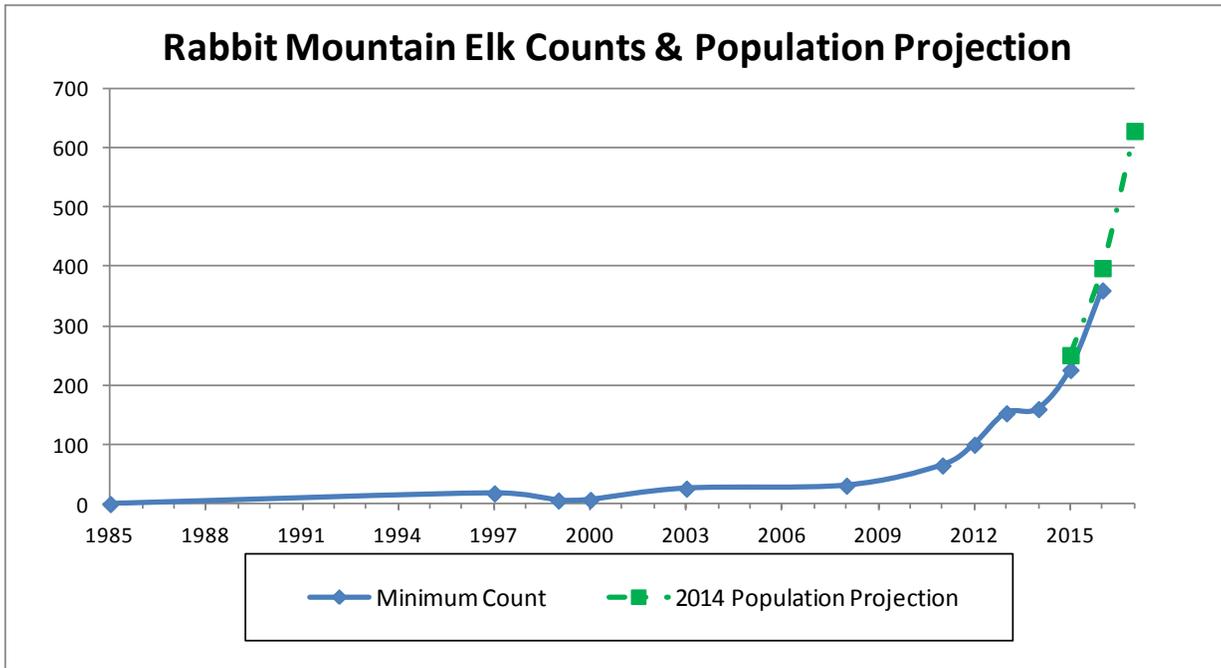


Figure 1. The Rabbit Mountain elk herd minimum counts and projected population growth. Population projection was prepared in 2014 and subsequent minimum counts included as available (e.g. 2015 and 2016).

When elk first appeared on Rabbit Mountain, hunting on nearby private land adequately controlled population growth. However, the elk have learned to avoid hunters by using areas where hunting is not allowed. Female elk, which make up most of the Rabbit Mountain herd, have ceased the seasonal migration to higher elevation summer range and now stay on or around Rabbit Mountain year-round. The most recent telemetry studies confirmed that the herd does not migrate and found that the elk spend the day on Rabbit Mountain and Indian Mountain Open Space and move to adjacent agriculture fields each night (Figure 2).

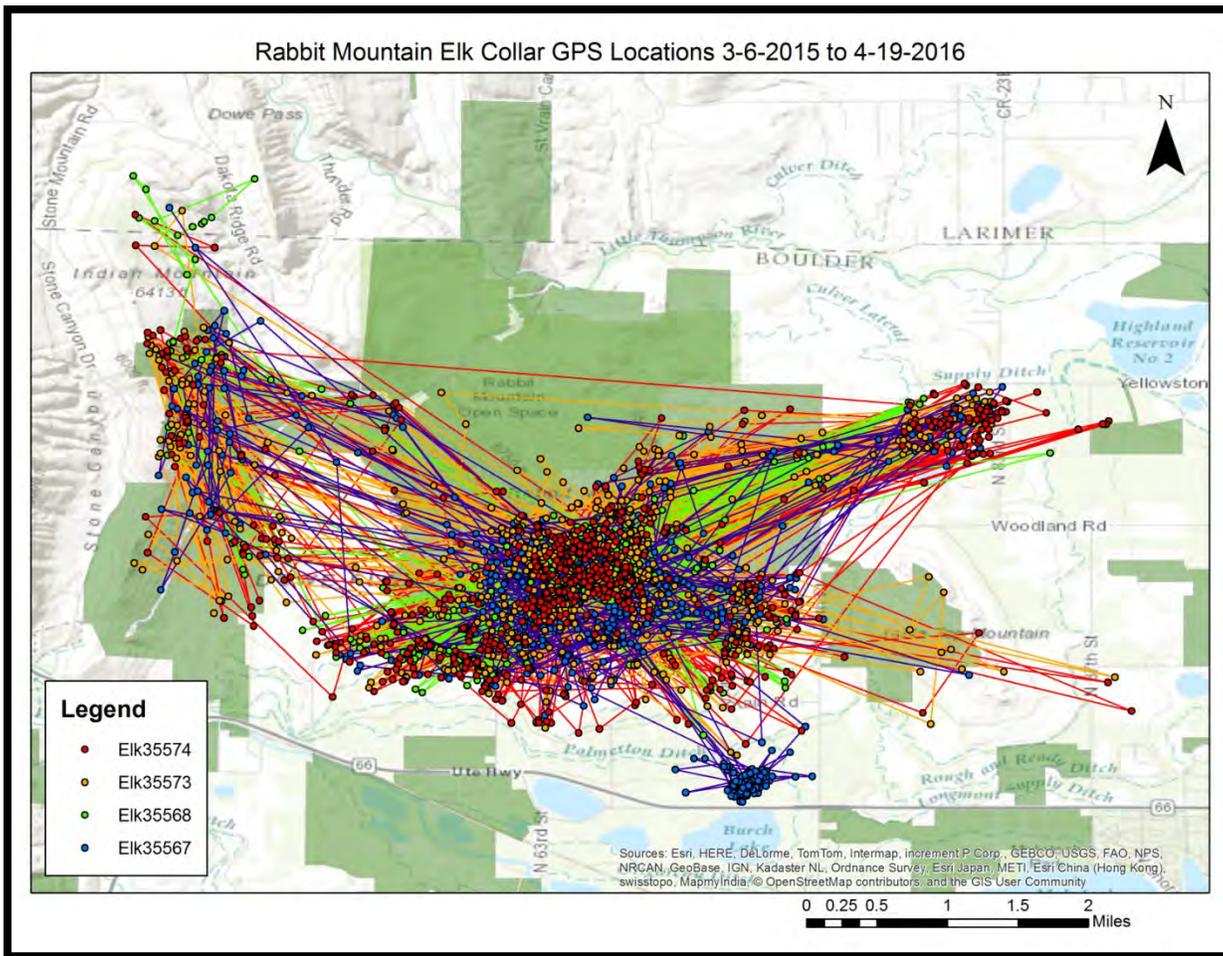


Figure 2. Telemetry locations of four female elk from the spring of 2015 to the spring of 2016.

High Biodiversity at Rabbit Mountain

Colorado Natural Heritage Program (CNHP) inventoried Boulder County in 2007 and 2008 to assess the county’s biodiversity. This survey identified areas with the highest biodiversity significance based on rare, threatened, and endangered species and habitats:

“The foothills of Boulder County harbor the highest concentration of globally rare biodiversity elements. There are two foothills areas with outstanding biodiversity significance (B1), **Rabbit Mountain** and Red Hill South of Lyons, which achieve B1 ranks due to their concentration of four or more globally critically imperiled to globally imperiled (G1-G2) element occurrences that are in excellent or good (A- or B-ranked) condition. These elements include foothills natural communities, several mountain mahogany shrublands, and two Piedmont grassland communities. Additionally, embedded within these areas are shale outcrops with globally imperiled Bell’s twinpod (etc.). Rabbit Mountain and Red Hill South of Lyons are the only areas in Boulder County where foothill shrublands contribute significantly to the vegetation mosaic on the landscape” (CNHP 2009).

There is also significant biodiversity in the reptiles found at Rabbit Mountain. Ehrenberger et al. (2015) revealed that of 33 species of snakes found in Colorado, nearly one-third (nine species) are found on Rabbit Mountain. These species are dependent on the vegetation and habitat found on the mountain.

Vegetation Monitoring Summary

Native plants on Open Space are experiencing extensive damage by browsing, grazing and trampling, even down to mineral soil in elk bedding areas. In mid-July 2016, Plant Ecology staff at BCPOS conducted vegetation monitoring at Rabbit Mountain Open Space to assess vegetation cover and diversity in the three prominent habitats; grassland (meadow), shrubland and forest.

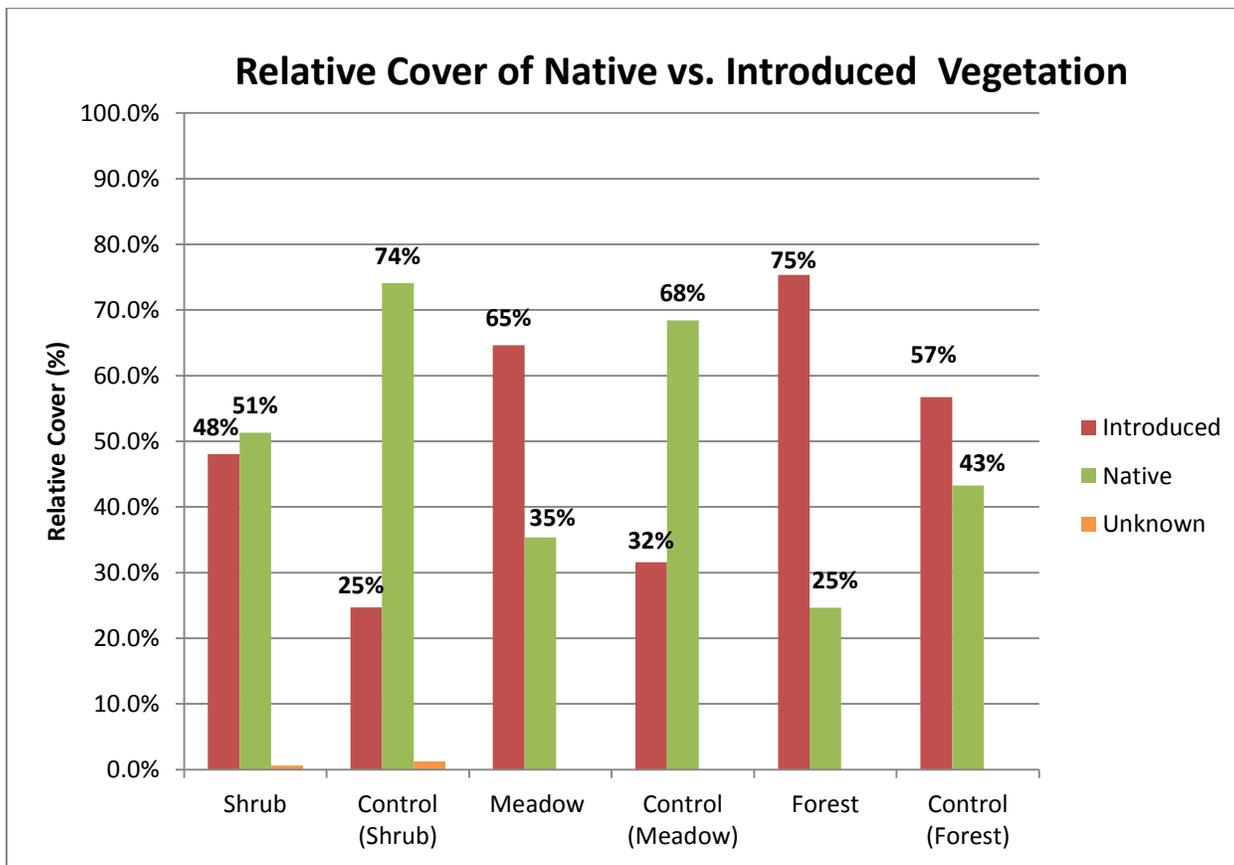


Figure 3. Relative Cover Native vs. Introduced Vegetation

Preliminary results showed differences in introduced (weeds) vs. native vegetation cover between affected (elk use) and control (no elk use) transects. Control transects had higher percentages of native species cover than the affected transects, across all cover types. In addition, introduced species had higher cover in all elk use areas. (BCPOS, 2016)

These preliminary results are consistent with visual assessments of on-the-ground conditions within the approximately 500 acres being heavily used by elk. While we don't think the herd is foraging extensively on Rabbit Mountain, their presence (loafing, standing, trailing, clipping, some browsing) has impacted habitat quality. The disturbance to the soil from these actions has led to an increase in non-native plant species, most notably cheatgrass (*Bromus japonicus* and *Bromus tectorum*). These invasive species proliferate in disturbed areas and out-compete native species.

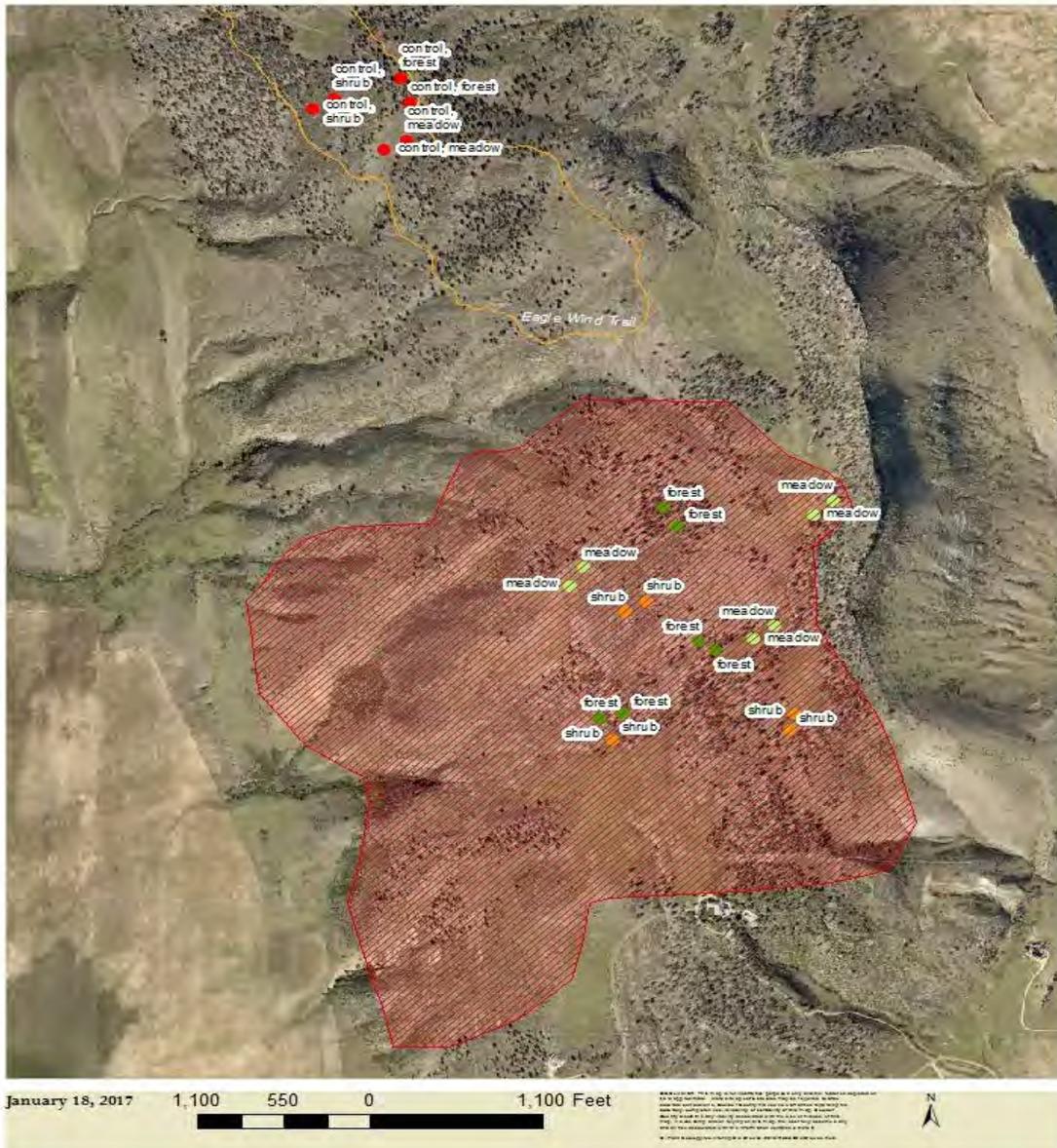


Figure 4. Vegetation Monitoring Transect Location, with Core Area shown in red.

Shrub Utilization Study Summary

The biologically diverse shrub communities mentioned by CNHP are comprised of both three-leaf sumac (*Rhus trilobata*) and mountain mahogany (*Cercocarpus montanus*). The dominant of the two is the mountain mahogany, which is a deciduous, many-branched shrub that can grow to over 6 feet in height. Mountain mahogany is utilized by both deer and elk as important winter forage, and our shrub monitoring assessed only this species.

In 2016, wildlife staff established monitoring transects in the heavily used elk core area, on the periphery of the core area, and outside of the core area (control transects). The results indicate that the shrubs are being heavily impacted in the high elk use area (BCPOS, 2017) (Figures 5, 7).

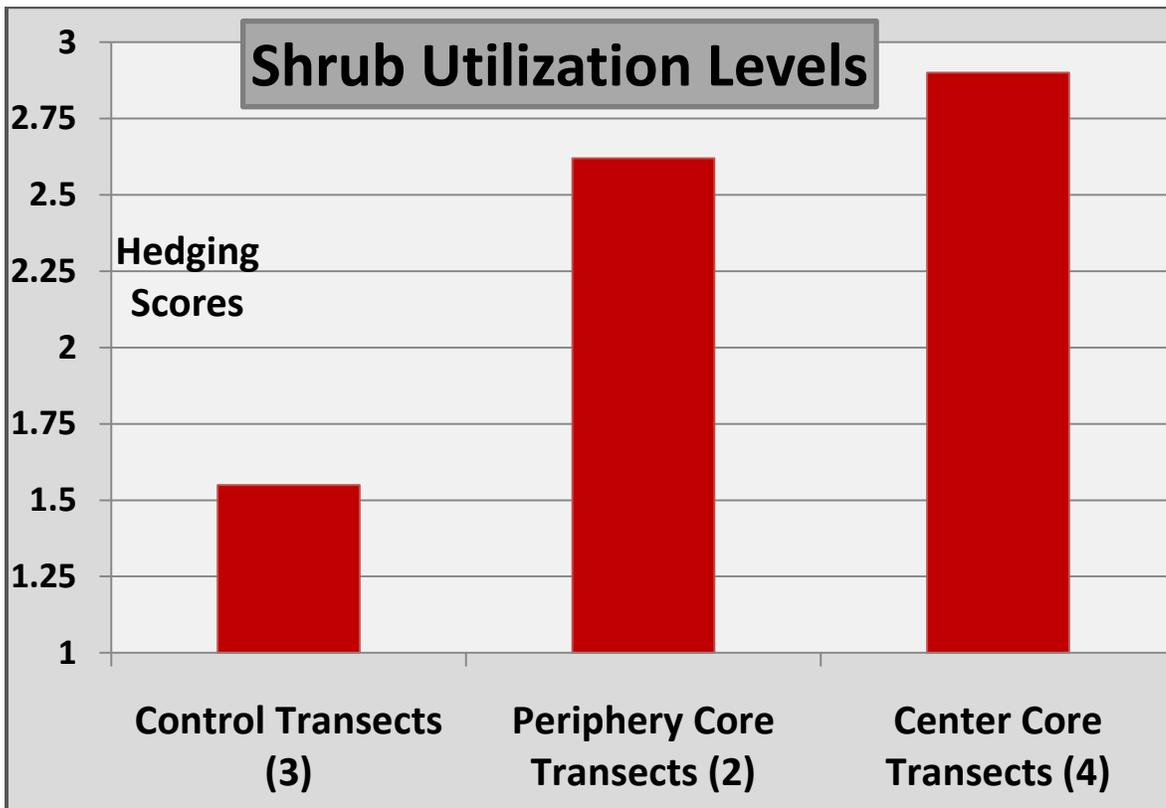


Figure 5: Averaged Shrub Utilization Levels



Figure 6. Photo Documentation of Shrub Utilization Study Transect Areas

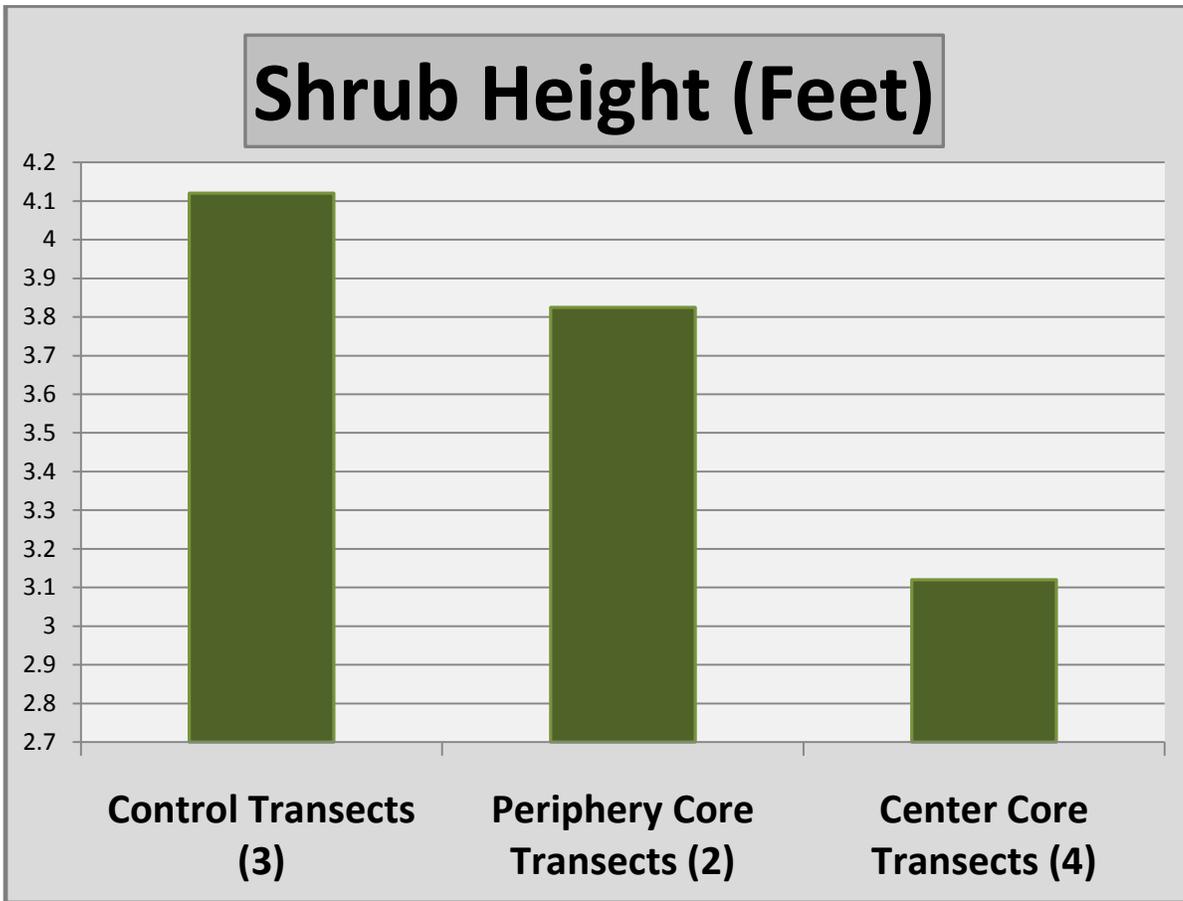


Figure 7. Averaged Shrub Heights per Transect Group

Comparing the transects, the pattern of use shows heavier utilization in the core area, with a gradient of use from core to periphery, to control. However, as this was the study’s pilot year, more control transects will be added to increase sample size to better inform our statistical analysis. (BCPOS, 2017).

However, these preliminary results show that elk are shaping the shrub component in the core use area through heavy utilization. It is acceptable and expected to have areas of high ungulate use across a landscape. However, with the growth trajectories we are seeing for this herd, we expect to see increased habitat damage, including potential loss of shrubs, in the core area over time. The disturbance being caused to this valuable habitat area will take many years to recover if elk populations are not managed now, and will require management actions such as weed management and restoration efforts.

Elk-Human Conflicts

In addition to elk intensive use of natural plant communities, elk-human conflicts increase each year. The elk from Rabbit Mountain have caused damage to growing crops including corn, alfalfa and grass hay, orchards, ornamental trees and shrubs, standing forage such as hay stacks, fences, agricultural equipment such as irrigation lines, and a variety of personal property including sheds and outbuildings. Colorado Parks and Wildlife (CPW) is liable for damage by elk to agricultural products and fences (C.R.S. 33-3-103 and 33-3-104). In the last four years alone (2012-2015), CPW has paid \$56,727 in damages to agricultural crops caused by the

Rabbit Mountain elk herd where official claims were filed and an increasing number of landowners indicate they may file game damage claims in the future.

Summary of Elk Impacts

Since 2003, elk numbers on Rabbit Mountain have increased from 25 to over 270, a ten-fold increase. The elk have developed use patterns where they spend the days on Rabbit Mountain and move to private lands at night to feed on crops. They avoid hunting pressure on private lands and do not migrate. Their current range is six square miles. This large number of elk has heavy impacts on the native biodiversity of Rabbit Mountain with trampling and browsing vegetation. In addition, human-elk conflicts in the surrounding area are on the rise. For these reasons, Colorado Parks and Wildlife has approached Boulder County to find a solution for this increasing problem.

Plan Goal and Objectives

Goal:

Manage a sustainable elk population on Rabbit Mountain and surrounding areas through adaptive management.

Objectives:

- 1) Re-establish seasonal migration patterns where the elk migrate to higher elevation summer range for 3-5 months each year and do not concentrate year-round on Rabbit Mountain.
- 2) Reduce impacts to grassland sites, shrub stands, and forested areas in the high-use area of Rabbit Mountain. Curtail any expansion of high-use areas from the current core area.
- 3) Maintain an elk herd of 30-70 animals on Rabbit Mountain based on historic numbers. The lower end of the range is for non-migratory elk. The upper end if seasonal migration is re-established and elk use Rabbit Mountain for winter range. (See figure 1).
- 4) Continue to work with agricultural producers and landowners to minimize elk damage and elk-human conflicts to private property to the extent possible.

Actions Taken to Mitigate the Elk Impacts

- CPW has issued game damage hunting licenses to landowners, provided panels to protect stacked hay, and facilitated hazing efforts on private lands with agricultural damage since 2003.
- CPW and Boulder County Parks and Open Space (BCPOS) staff established a working group in August 2013 to discuss the herd status, examine natural resource and agricultural damage caused by the high density, non-migratory elk population, and possible remedies.
- In 2014, CPW created a special elk hunting subunit around Rabbit Mountain to concentrate elk harvest and hunting pressure on the over abundant elk around Rabbit Mountain, while reducing the risk of overharvesting elk in other areas of the St. Vrain elk herd. To date, liberal season dates and license quotas are allocated each year. The appropriate number of licenses for the subunit is reviewed annually.
- CPW, with assistance from BCPOS, captured four cow elk and deployed GPS collars in March 2015 to study the herd's movements and demographics (Figure 2).

- CPW, with assistance for BCPOS, captured a further 7 elk on Rabbit Mountain (for GPS collars) in February/March 2017, and as of March 2017, have captured an additional 3 (of planned 7) cows at Heil Valley Ranch.
- Based on new radio telemetry data and to fully encompass the range of Rabbit Mountain elk sub-herd, the subunit was expanded in 2016. Approximately 20 antlerless elk were harvested during the 2015 season, which is not enough to stabilize the elk population growth trajectory (Figure 1). In addition, intensifying hunting pressure on private land surrounding Open Space may be further concentrating elk on Open Space (which is not open to hunting) and intensifying resource damage.
- BCPOS tested hazing in fall-winter 2015-16.
- BCPOS established elk habitat monitoring in 2016 and will continue in 2017. Wildlife staff established six shrub transects documenting use levels on mountain mahogany in the core area used by the elk. In 2016, Plant Ecology staff established nine vegetation cover and composition transects in the core area and three outside (controls) documenting impacts from prolonged presence of elk. (Results summarized above).
- CPW and BCPOS gave a presentation describing the Rabbit Mountain elk situation to the Regional Elk Working Group in Estes Park in October 2015 to solicit input for possible remedies.
- BCPOS and CPW presented to the Boulder County Parks and Open Space Advisory Council (POSAC) on April 29, 2016. POSAC gave direction to work on an elk management plan.

Management Options Considered

Status Quo

At present, the elk population at Rabbit Mountain continues to increase. If no management action occurs, resource damage on Rabbit Mountain will continue and expand. The availability of agricultural crops to the south and east adjacent to refuge on Rabbit Mountain ensures that the herd will not self-regulate according to resource availability. Therefore damage to crops will increase as the elk numbers increase. Other types of conflict will continue as well (fence trampling, elk-vehicle collisions, damage to landscaping and fruit trees). CPW and BCPOS agree that management action is needed.

Fertility Control

Currently, there is no legally approved fertility control drug for use in elk and even if there was, efficacy in free ranging population has not been demonstrated. A research study conducted within Rocky Mountain National Park, found that Gonacon, the most promising fertility control drug for free ranging ungulates, was effective at reducing pregnancy for one year post vaccination in individual animals, but effectiveness dropped off rapidly and by year three there was no difference between treated and control pregnancy rates (Powers et al. 2014). If Gonacon were approved for elk, it would require annual capture and treatment of a large proportion of breeding age female elk (>200 at Rabbit Mountain). Elk capture costs range from \$600 to over \$1000 or more per animal per capture per year. Even if annual capture costs in excess of \$100,000 were approved, the logistics of capture would likely be an insurmountable barrier because of the skittish nature of these particular animals and that they live in a fairly developed area which limits effectiveness of large scale capture methods which usually involve helicopters.

In addition to legal considerations, high cost and logistical hurdles, there is no evidence in the literature to indicate that fertility control techniques can be effectively applied on a scale large enough to limited population growth rates of free-ranging cervids (Walter et al. 2010, Powers et al. 2014). Moreover, in the Rabbit Mountain

situation, elk numbers and associated impacts to native plants are currently not sustainable that necessitates an immediate reduction in elk population size. Given that elk are long lived, with female life spans often exceeding 20 years, it would take decades before fertility control would result in any population reduction and only in the absence of immigration from other nearby elk subpopulations, such as Heil Valley Ranch, or Larimer County.

Sterilization of male elk is not an effective fertility control method for the same reasons listed for females and due to the polygamous nature of elk, long travel distances of males and multiple estrus cycles of unbred females. For these reasons, CPW and BCPOS conclude that fertility control is not a solution for the Rabbit Mountain elk herd.

Trap and Transplant

Chronic wasting disease (CWD) occurs in both elk and deer on Rabbit Mountain and within the St. Vrain Elk herd. CWD, and potential transmission of other diseases, is reason not to transplant elk from Rabbit Mountain to areas far enough away to ensure elk will not return. In addition, Colorado elk herds are near or above population objectives, so finding a suitable release location is problematic especially for elk habituated to feeding on agricultural crops. Cost and logistics as described in the Fertility Control option are also restrictive for such an extensive capture operation. For these reasons, CPW and BCPOS conclude trap and transplant is not a viable option.

Professional Culling

While this method can potentially be effective at reducing ungulate populations, it is in opposition to state statute 33-1-101 (4) C.R.S which states that hunting will be the primary method of effecting necessary wildlife harvests. Agency and professional culling is also counter to the North American Model of Wildlife Conservation (Organ et al. 2012). Past CPW experience involving agency culling for CWD management and a public survey of Evergreen residents regarding elk management options (Chase et al. 2002) indicates that the public prefers public harvest over professional culling in Colorado. While CPW has, in limited circumstances, employed agency or professional culling, it has only occurred when necessary removals could not be achieved by public harvest or hunting programs. For these reasons, the State and CPW does not currently have a statewide standard for application and implementation of a contract or municipal culling program for overabundant ungulates. Therefore, CPW and BCPOS conclude that agency or professional culling is not a viable option.

Fencing

Temporary limited fencing can be an effective tool to aid in native plant recovery in areas overgrazed/trampled by elk when employed in conjunction with population reduction and distribution management options. All fencing would be built to be wildlife friendly (allow movement of other species). However, monitoring would need to occur to prevent unfenced areas from damage as the elk are excluded from the fenced area. Fencing of the pine stands, used by the elk for bedding, would force elk into other areas and would be expensive. Standard 8' game fencing on wood posts is likely to cost between \$15-30/meter. Electric fence for elk has also been used with high efficacy (high tensile and braided hotwire). The high tensile 5-7-strand fence costs \$10-12/meter (\$25-30,000 for the large field enclosure). Electric braid fencing costs \$10-12/meter as well. BCPOS would determine the best alternative to fence the highly impacted native vegetation on Rabbit Mountain.

Fencing of agricultural fields was considered, but the number of properties and diversity of crops being utilized by the elk make this option cost prohibitive and has unacceptable ecological and esthetic consequences. While to date, CPW has paid game damage on only two corn fields, radio telemetry and landowner's complaints indicate elk are using grass pastures and grass and alfalfa hay fields as their primary agricultural forage. If the one or two corn fields are fenced, it will likely increase intensity of elk damage on other agricultural crops, which in turn would prompt landowners to call to fence their hay field and/or file for game damage payments.

The larger of the two cornfields that sustain repeated damage is 27 ha with a perimeter of 2500m (\$70,000 enclosure at the high end).

From a statewide perspective, CPW does not support (nor fund) the use of large-scale fencing due to impacts to wildlife movement corridors and sustained costs. Fencing one field can lead to use of other fields and request for fencing by adjacent landowners and it is not possible to fence all affected fields. In addition, funding fencing on private property sets a precedent that would not be sustainable in the Rabbit Mountain Area and in other areas of the state.

If the elk herd population size is not reduced simultaneously, fencing will only move overabundant elk to other areas prompting new areas of damage to crops, landscape and native plants.

Crop alternatives

Changes to the types and rotation of agricultural crops may impact game damage payments. Farmers could be approached with the option to plant alternate, less palatable crops and compensating for the difference in worth (Cattanach et al, 1991). Following an acre of corn may cost around \$600-750/ac (\$50,000 for one year of the large acreage cornfield). The cost would be less if a substitute crop were planted.

Elk are a highly mobile and adaptable species with a wide ranging diet. Currently, the Rabbit Mountain herd utilizes native grass and shrubs, grass pastures, grass and alfalfa hay fields, corn, triticale and stacked hay as forage. In other areas of Colorado, CPW has noted elk damage to a variety of crops, including but not limited to, pumpkins, organic potatoes, growing wheat and beans.

In the closing weeks of 2016 and early 2017, radio telemetry locations indicate the Rabbit Mountain herd use of agricultural crop fields has expanded east of N95th almost to US Hwy 287 involving dozens of landowners. Most of these landowners grow grass and alfalfa hay that elk are feeding on. Of note, grass hay grown in the Hygiene and Longmont area is well known as superior horse hay and is priced accordingly. Also of note, in 2016, one of the fields that had previously held corn that received annual game damage payments changed to alfalfa and triticale. Elk continued to utilize the field extensively, and although a game damage claim was not filed, the producer indicates a claim will be forthcoming in 2017 if elk damage continues.

CPW and BCPOS agree that alone this option will not solve the Rabbit Mountain elk herd situation because it does not reduce elk numbers. While CPW would welcome decreases in game damage payments, based on experiences with elk crop damage around Colorado, CPW concludes that crop alternatives will likely not be able to be implemented at a scale which will significantly contribute to an overall solution to the Rabbit Mountain elk situation. However, conversations with farmers will continue in order to find a comprehensive solution to the elk issue.

Hazing

Hazing of elk can cause elk to move at least temporarily, but the literature and experience shows it is labor intensive and elk eventually habituate over time (Walter et al. 2010). In addition, hazing does not result in direct population reduction of overabundant elk. CPW liability for damage to real and personal property by elk while being moved by CPW is a consideration (C.R.S 33-3-104(b)).

BCPOS tested hazing on Rabbit Mountain during the fall and winter of 2015-2016. BCPOS staff visited the southern portion of Rabbit Mountain 20+ times from July 2015 through March 2016. The elk always chose to move away from the staff, be they one or many. In nearly all cases elk ran away as a large group. Some of the time they chose to cross the grass flats, N. 55th, and the mine west of Rabbit Mountain to Indian Mountain, without pursuit from staff. Staff was able to influence the direction of travel in most cases. Radio-collared animals returned to Rabbit Mountain in usually one-to-three days (as long as six days) if they crossed the mine

to Indian Mountain. No noisemakers, dogs, horses, cracker shells, gun shots, etc. were required to make the elk move.

Due to the limited effectiveness, labor intensity, and CPW statutory liability for damage, BCPOS and CPW conclude that hazing is not a viable option.

BCPOS and CPW Staff Management Options Recommendations:

Public Harvest Program

The problem of elk overpopulation and its impacts on the biodiversity of Rabbit Mountain, and the limits of effective alternatives, lead CPW and BCPOS to consider a public harvest program. Below outlines an implementation plan of this option as our preferable alternative for review.

This technique has proven highly effective in managing wildlife populations and their distribution (Organ et al, 2012). Harvest of elk and deer for food on land that is now Rabbit Mountain Open Space is a traditional human use dating back to Native Americans over 10,000 years ago. The pros and cons of this option rely heavily upon the method in which it would be implemented. CPW and BCPOS staff time would be necessary, and could be augmented via oversight provided by a volunteer or paid program coordinator. This option would require minimal cost to CPW and BCPOS, provided that participants are required to purchase an elk hunting license, provide their own equipment and volunteer their time. All harvested animals will be properly prepared and all edible parts will be removed from the property as legally required.

The mechanisms for licensure allowing animal harvest already exist via established CPW processes. A public harvest program would be in compliance with state statute 33-1-101(4) C.R.S that articulates the state will use hunting as the primary method of effecting wildlife harvest and is compatible with the North America Model of Wildlife Conservation (Organ et al. 2012).

- 1) All harvest activities are aimed at encouraging elk to move, perhaps returning to seasonal migration. Actual numbers of elk harvested may be relatively low. The purpose is to make Rabbit Mountain no longer a safe haven for elk.
- 2) Implement a public harvest program that prioritizes public safety using trained, skilled and licensed volunteers to harvest female elk on Rabbit Mountain and Indian Mountain Open Space. Continue to facilitate hunting on adjacent private lands using targeted, liberal elk licensing strategies.
- 3) Consider temporary fencing in limited areas on Rabbit Mountain to allow for recovery of native plants on Open Space if BCPOS funding is available. Elk exclusion fence, as has been used on other BCPOS property, may be needed in the most heavily impacted area.
- 4) In winter 2017, capture and deploy up to 10 GPS collars on Rabbit Mountain elk to monitor the results of management actions and to allow adaptive management approaches.
- 5) Employ adaptive management approaches in addition to the public harvest program, including hunting on private land, continued discussions about crop alternatives, and possible hazing if legal and effective.
- 6) Implementing techniques to accelerate vegetation recovery will be essential. Native vegetation impacted by elk overuse may take years to recover even after elk numbers are reduced to objective.

Rabbit Mountain Elk Public Harvest Program

Following is the proposal for an adaptive management approach. Updates on this program, and significant changes to this approach, will be brought to POSAC and the County Commissioners in 2018.

Who: GMU 20 antlerless rifle license holders, except Private Land Only licenses

What: Limited Antlerless Elk Harvest

How: Lottery type-access system administered by BCPOS or CPW. Firearms (rifles) only, foot and horse or llama travel only.

When: August 15 – December 15. (All areas, including eagle closure)
December 15-January 31 (Areas outside eagle closure only)
Per week = Monday – Wednesday

Two hunters, each with up to two companions, in one vehicle (on the access road only) per one week slot. No motorized vehicles will be allowed, off road.

One hour before sunrise and one hour after Sunset. Hunters can hunt only one-half hour prior to sunrise and one-half hour after sunset per CPW regulation, but additional time before and after legal hunting hours may be needed for access and game retrieval.

Where: All of Rabbit and Indian Mountain Open Space properties with exception of 150 yard buffer around property edge and Open Space facilities (kiosks, trailheads, and designated parking areas). Prohibit activity within eagle closure area after Dec. 15.

Proposed Access

- Top of Rabbit Mountain (drive in to top on the access road).
- Corner of N 75th & Woodland
- Corner of N 55th Street
- Driveway to Money property.

Mandatory Hunter Orientation by BCPOS

- Training and Property Orientation
- Hunt Coordinator to lead program (BCPOS staff-Rangers) *This person would get calls for check-ins, success reporting, and end of season success reporting.*
- Signed Agreement from Hunter
- Mandatory Reporting
- Use of non-lead bullets
- No posting of harvested elk photos on social media or other electronic media
- No dogs

Frequently Asked Questions

Q: Is this a ploy by Colorado Parks and Wildlife to generate revenue?

A: No. In Colorado, big game populations are managed for specific population size objectives, which are approved in a public process by the Parks and Wildlife Commission. The number of licenses issued is determined by size of the population relative to the objective. If the population is above the objective, more licenses are issued. If the population is below the objective, fewer licenses are issued. Finally, it is likely that the implementation of a public harvest program on Rabbit and Indian Mountain Open Space will result in fewer licenses issued than are currently issued after the refuge situation is removed and the elk population reductions are realized.

Q: Do other Municipalities use public harvest to manage wildlife?

A: Yes, several open spaces and municipalities have public harvest programs to help manage wildlife populations. Below, is a list of some programs on the Front Range.

-Jefferson County's Centennial Cone for deer and elk (<http://jeffco.us/open-space/parks/centennial-cone-park>)

-Larimer County's Red Mountain Open Space for elk, deer and pronghorn

(http://larimer.org/parks/red_mountain_hunting.htm)

-The Green Ranch at Golden Gate State Park for elk

(<http://cpw.state.co.us/placestogo/parks/GoldenGateCanyon/pages/huntinggreenranch.aspx>)

-The City of Elizabeth Deer Management Program (<http://www.townofelizabeth.org/deer-management-program.html>)

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