MASTER PLAN
SYSTEM OVERVIEW

CITY OF BOULDER
Open Space & Mountain Parks

OUR LANDS.
OUR LEGACY.
OUR FUTURE.

FEBRUARY 21, 2018

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System Overview Report
Acknowledgments

We would like to give our sincere appreciation and thanks to the community members, Indigenous Peoples, volunteers and numerous partner agencies who enjoy, value and help protect Boulder's Open Space and Mountain Parks system.

Genuine thanks also go to the following individuals for their contributions to the outline or content of this report:

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- Curt Brown, Open Space Board of Trustees Representative
- Thomas Isaacson, Open Space Board of Trustees Representative

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Foreword

CONTINUING A LEGACY OF OPEN SPACE

When residents of the City of Boulder voted to purchase the 75-acre Chautauqua Park near the base of the Flatirons in 1898, the community initiated what would become a remarkable investment in open space and mountain park preservation. Fifty years ago, in 1967, Boulder voters enabled the City to become the first municipality in the United States to employ sales tax to fund open space. These legacy steps – of community-driven conservation and stewardship for an inspired quality of life – have helped the City of Boulder to acquire over 45,000 acres of ecologically rich and iconic landscapes that are highly valued by residents and visitors alike. **Today, it is estimated about 5,000 acres remain to be acquired to fulfill a vision of a comprehensive open space system.**

As the pace of acquisition slows and stewardship needs increase, the City of Boulder's Open Space and Mountain Parks (OSMP) Department is embarking on the next step to continue the legacy of open space. We are working with the community to develop an integrated, systemwide master plan that builds upon the Boulder Valley Comprehensive Plan and anticipates a future of collaborative, deliberate and transparent open space stewardship and service delivery over the next decade.

SYSTEM OVERVIEW PURPOSE

This report is the first informative step of the master plan process, providing an overview of the open space and mountain parks system. **We wrote the report to be accessible to the general public and collaborated across multiple disciplines to assemble a complex array of information.** The report format is organized around the open space purposes defined by the City of Boulder's Charter. This report and the accompanying outreach is a coordinated effort to engage more fully in the scope and purpose of the Charter and to support conversations with the community, partners and staff about shared values and priorities for the next decade and beyond.

It is also the first time we have assembled such a comprehensive overview of our complex system! I know we will continue to improve this kind of reporting as the years go on and we make periodic updates to this report in the future.

DEDICATION, PASSION AND FORESIGHT TO PRESERVE BOULDER'S GREATEST NATURAL ASSET.

OSMP has accrued over a century's worth of extensive knowledge in land acquisition, innovative management and collaborative stewardship. We also owe a debt of gratitude to the community, volunteers, the Open Space Board of Trustees, partner agencies, other organizations and staff. From start to finish, the accomplishments documented in this report would never have been realized without this collective input, organization and foresight. Your continued participation over the next 18 months will help guide the development of the master plan – so please stay involved.

Thank you for caring about Boulder's open space system, for taking the time to learn from this report, and for sharing your ideas for the future!

All the best,

Tracy Winfree
Director

HOW TO PARTICIPATE IN THE MASTER PLAN

The purpose of this report is to inform discussions about emerging policy questions and the future of Boulder's legacy land system. We need your help and feedback to help plan the future of our collective open space legacy. What do you value most about our open space and mountain parks system? What are your hopes for and concerns about the future?

WE ENCOURAGE YOU TO PARTICIPATE BY:

Visiting the project website to share your ideas, sign up for email updates and stay informed about engagement opportunities: **OSMPMasterPlan.org**

Following OSMP and the City of Boulder on social media **@boulderosmp; #OurLandsOurFuture; #OurlandsOurLegacy**

Participating in community events. Event times and places will be posted at **OSMPMasterPlan.org** and shared widely

Sending questions to osmpmasterplan@bouldercolorado.gov. Or, you can mail your comments to: Open Space and Mountain Parks, 66 S. Cherryvale Road, Boulder, CO 80303

HOW WILL YOUR FEEDBACK BE USED?

All comments will be documented and shared online. Substantive comments about factual errors in this report will be addressed in addenda to the report. Other comments will be documented for future updates to the report following completion of the master plan. Your input will guide the creation of focus areas, strategies and priorities for the final master plan document - all of which will be further developed and refined in future engagement windows. Major existing plans, policies and regulations will also inform systemwide strategies in the forthcoming master plan.

A PURPOSE-DRIVEN CHARTER

The City of Boulder's Charter provides the basis for most municipal functions, including the delivery of municipal services. Approved by city voters in 1986, **Article XII, Section 176** of the charter guides the way we manage open space and, as stewards of the City of Boulder's open space, we strive to fulfill these community-approved charter purposes. The Open Space Board of Trustees (OSBT) and City Council hold us accountable for the delivery of the broad charter policy statements listed below.

OPEN SPACE PURPOSES

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

(a) NATURAL AREAS AND FEATURES OR SPECIES OF SPECIAL VALUE
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

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

(c) PASSIVE RECREATION
Preservation of land for passive recreational use, such as hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding or fishing

(d) AGRICULTURE
Preservation of agricultural uses and land suitable for agricultural production

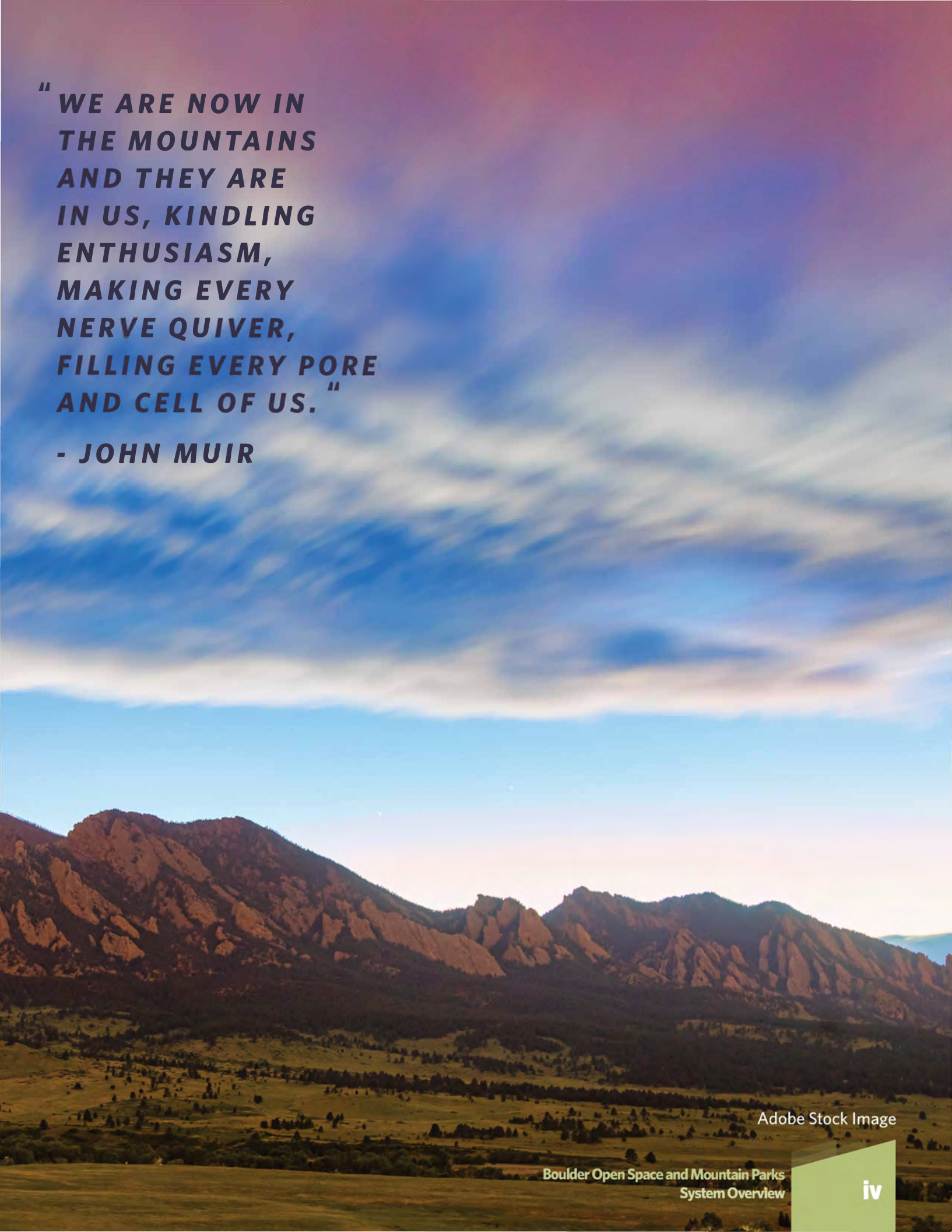
(e) LIMITING SPRAWL
Utilization of land for shaping the development of the city, limiting urban sprawl and disciplining growth

(f) URBAN SHAPING
Utilization of non-urban land for spatial definition of urban areas

(g) FLOODPLAIN PROTECTION
Utilization of land to prevent encroachment on floodplains

(h) AESTHETICS AND QUALITY OF LIFE
Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community

Open space land may not be improved after acquisition unless such improvements are necessary to protect or maintain the land or to provide for passive recreational, open agricultural, or wildlife habitat use of the land. (Added by Ord. No. 4996 (1986), 1, adopted by the electorate on Nov. 4, 1986.)



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Purpose of the Report

This report presents an overview of the City of Boulder's Open Space and Mountain Parks (OSMP) system - its natural resources, passive recreational opportunities, agricultural resources and day-to-day business operations. It is an introduction to more than 45,000 acres of open space and provides an overview of the successes and opportunities inherent in public lands management in an urban setting. It provides a snapshot of our current conditions and the future trends that may affect our work to uphold open space purposes defined in the City of Boulder's Charter.

As we embark upon our systemwide master planning process in 2018, this report will be used to support conversations with the community, partners and staff about shared values and priorities for the next decade and beyond. Additional information will also inform these community conversations, including a separate report summarizing a systemwide visitation study and visitor survey conducted in 2016 and 2017.

Ponderosa pine saplings stands alone in a meadow with Eldorado Canyon background. OSMP Image

How to Use This Report

AUDIENCE

This overview report is written to be accessible to a broad range of personal backgrounds, public perspectives and concerns.

REPORT ORGANIZATION

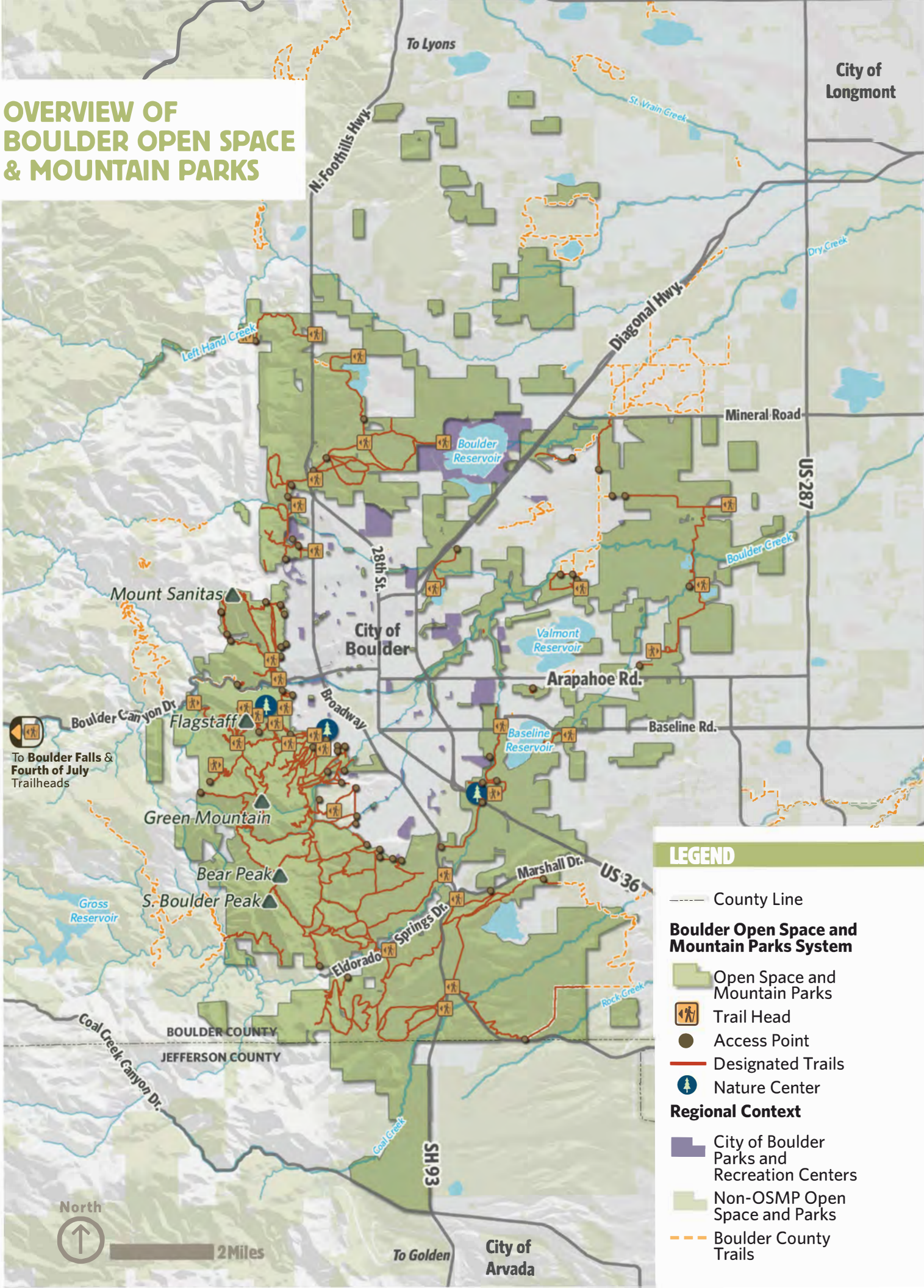
This report aligns with the City of Boulder's Engagement Strategic Framework as an initial step to share information as a foundation of inquiry for the rest of the master plan process. The report is also the first time we have assembled a comprehensive overview of how we manage the system according to charter purposes. Chapter snapshots are provided to give a brief overview of each topic and can serve as standalone documents to support public engagement. The system overview is organized in the following way:

- Chapters 1-3 gives a background on the City of Boulder's legacy of open space acquisition, stewardship and preservation in context with historic and current planning principles.
- Chapter 4 describes OSMP's financial picture and day-to-day business operations.
- Chapters 5-7 report on existing environmental conditions and resources, with a focus on Boulder's natural resources, water and floodplain management and agricultural resources.
- Chapters 8-11 describe the many ways in which people connect with open space and mountain parks, including opportunities to engage with agricultural landscapes, visitor amenities, scenic and cultural resources, and educational and outreach programming.
- The final chapter explores current conditions and emerging trends across all charter purposes in context with future directions, laying out initial questions for the path forward. This concluding chapter begins a conversation with community members about the future of Boulder's open space and mountain parks system.

WANT TO LEARN MORE ABOUT OSMP?

- Visit **OSMP.org**
- Sign up for OSMP emails: **bit.ly/osmpemails**
- Follow us on Facebook: **facebook.com/boulderosmp**
- Follow us on Twitter: **twitter.com/boulderosmp**

OVERVIEW OF BOULDER OPEN SPACE & MOUNTAIN PARKS



LEGEND

- County Line

Boulder Open Space and Mountain Parks System

- Open Space and Mountain Parks
- Trail Head
- Access Point
- Designated Trails
- Nature Center

Regional Context

- City of Boulder Parks and Recreation Centers
- Non-OSMP Open Space and Parks
- Boulder County Trails

EXECUTIVE SUMMARY
Celebrating a Legacy of Land Acquisition and Stewardship

INTRODUCTION

The City of Boulder's Open Space and Mountain Parks (OSMP) Department presents this system overview as a report on the current state of the natural resources, passive recreational opportunities and agricultural resources managed by the department and its day-to-day business operations. The report celebrates the community's remarkable and innovative investment in open space and mountain park preservation over the last 120 years and kicks off a systemwide master planning effort to ensure we continue our stewardship and commitment to sustaining the environmental, recreational, and community benefits of this vital resource well into the future.

The City of Boulder's Charter defines open space purposes and serves as the framework for this report. The accompanying master planning effort is organized to ensure that community members, partners and staff can participate in the conversation on how to adequately address the charter's purposes over the next decade and imagine a continued legacy of open space success.

ONE-HUNDRED AND TWENTY YEARS IN THE MAKING: BOULDER'S OPEN SPACE AND MOUNTAIN PARKS SYSTEM

Beginning with the purchase of Chautauqua in 1898 and followed closely by Frederick Law Olmsted, Jr.'s call to preserve the Boulder mountain backdrop and areas along major waterways, more than 45,000 acres of public land – a natural resource almost three times as large as the City of Boulder's urban landscape – have been acquired to date.

Today, it is estimated about 5,000 acres remain to be acquired to fulfill a vision of a comprehensive open space system that ties in to a vast network of public lands along Colorado's Front Range.

In 1967, Boulder became the first city in the United States to implement a tax to purchase and care for its natural lands. The fact that such a project has made such progress is a testament to the high value that community members attribute to preserving the natural landscape for future generations.

TRANSITION: FOCUS ON STEWARDSHIP

OSMP's budget, which totaled nearly $33.5 million in 2016, is highly dependent on sales tax revenues. In fact, 88 percent of OSMP funding comes from citizen-approved sales tax increments. While some of these tax increments will either decrease or sunset in the next few years, expected declines in funding will be offset by conservative acquisitions budgets, partnerships, and an increased focus on taking care of the properties we currently own and manage.

Diversifying funding streams and partnerships will continue to grow in importance.

BOULDER: WHERE PLAINS AND MOUNTAINS MEET

Two continental-scale ecological regions – the Great Plains and the Southern Rocky Mountains – merge within Boulder's open space and mountain parks, forming a unique transitional zone in which the city is located. Boulder's natural areas contain a diversity of habitats and species and unique geologic formations.

Through its many local and regional partnerships, OSMP manages and preserves ecosystems that include habitat for plants and animals considered rare locally, nationally and even globally, a benefit whose far-reaching positive effects contribute significantly to Boulder's reputation and quality of life. Boulder's Open Space and Mountain Parks lands support more than 60 percent of the native flora found in Boulder County and more than 26 percent of the plant species found statewide. They are also home to the highest-quality cliff-nesting raptor habitats in the western United States.

While generations of Boulder residents have long worked to conserve and protect the areas diverse natural areas, growing urbanization and past ecological disturbances have affected and continue to affect our two major ecosystems - grasslands and forests.

A 2010 Grassland Ecosystem Management identified more than 50 ecological indicators to track the status of conservation targets and the health of our grassland ecosystems. Today, our ecological monitoring and stewardship work rates the health of that important ecosystem as fair based on the presence of invasive, non-native plant species and the quality of riparian areas. However, conditions are especially good in the south and west part of the grasslands planning area and significant improvements have been made in the northern part.

We evaluate the current condition of our forest ecosystems by evaluating 31 management and monitoring objectives identified in the Forest Ecosystem Management Plan (FEMP). Today, our ecological monitoring suggests that the overall state of our forests is fair, because our fire management efforts are on track but that non-native plant species, non-native frogs and disturbances to riparian areas remain management challenges to address.

As stewards of the community's open space, we restore disturbed areas where vegetation condition and structure and overall ecosystem function are considered to be outside the range of acceptability but capable of being restored with a reasonable investment of resources. Currently, there are 11 active restoration projects over 500 acres of OSMP's grasslands, wetlands and riparian ecosystems. At the same time, we also work to restore our important forest ecosystems.

As of 2017, we have treated over 1,400 acres of forested land to improve the health of our forests and to reduce the fire danger for Boulder neighborhoods.

Responsive and diligent stewardship of these precious forest and grassland ecosystems against threats from invasive species to impacts of climate change will continue to be a top priority.

PROTECTING WATER RESOURCES

Within the Open Space and Mountain Parks system, water resources are carefully protected and preserved in their natural or traditional state: about 70 percent of perennial streams and 87 percent of ephemeral streams are protected by OSMP. For more than 50 years, OSMP has also acquired $60-$70 million in water rights that are used to support agricultural activities and sustain the ecological health of the larger system. Continued work is needed to improve the health of riparian areas, which are transitional areas between creeks and drier upland habitat, from threats including invasive species.

Another key purpose for our department is to prevent encroachment into floodplains. It is important to note that the acquisition and management of portions of the floodplain prevented major development from occurring in flood prone areas, reducing flood risk to existing development in and surrounding Boulder, which is one of the most flood-prone areas in Colorado because of its geographic setting.

While demands on limited water resources are increasing with population growth, maintaining quality and improving the health of OSMP water resources is critical for the health of ecosystems and residents alike.

AGRICULTURAL RESOURCES THAT PROMOTE LOCAL FOOD, CULTURAL HERITAGE AND ECOLOGICAL HEALTH

In a unique partnership, one-third of OSMP-held lands - or about 15,000 acres - are leased to about 26 ranchers and farmers. As such, lessees do the stewardship work of 15 full-time staff members, saving OSMP more than $1 million in labor and material cost annually. Agricultural production primarily consists of livestock grazing or hay/forage production. OSMP works with ranchers and farmers to maintain healthy soils and other best practice strategies including integrated, non-chemical pest management and water conservation. An existing network of water delivery infrastructure delivers adequate irrigation water for use in agricultural production as well as for support of wetlands and unique wildlife habitats and vegetation communities.

$1.8 million in estimated maintenance costs for agricultural buildings has been scheduled over the next ten years. Meanwhile, many farmers and ranchers are aging, with fewer people taking up these roles.

VISITOR ENJOYMENT

OSMP's 45,000 acres accommodate approximately 6.25 million visits each year, up from an estimated 4.7 million in 2005. The current estimate is similar to the roughly 6.9 million annual visits to nearby Jefferson County's 54,000 acres of open space, which have seen similar rates of increase in past years. Systemwide, nighttime visitation (11 p.m. to 6 a.m.) has decreased since 2005, from 1.4% of total visitation to 0.66%. An estimated 1 to 2 million dogs visit OSMP each year, 60% of which enjoy off-leash experiences. An additional visitor

study due out in May 2018 will further describe visitor demographics, activities and experiences, and how visitation varies by location among other important characteristics.

A 2005 Visitor Master Plan established a framework for decisions to foster a high-quality visitor experience while also working to protect and preserve the lands for future generations. Additional research studies are currently underway to advance our understanding of visitation levels and patterns and visitor experiences. In all recent resident surveys, more than eight in 10 people say their experiences on OSMP lands are very good or excellent with only four to 7 percent of daily visitors experiencing some degree of conflict with other visitors.

In the 2016 Resident Survey, residents said the areas they visited most often are: 1) Chautauqua; 2) Mount Sanitas; 3) Wonderland Lake; 4) Shanahan Ridge; 5) Mesa Trail. In the same survey, residents said there were some areas they don't visit any more. The major reasons visitors report not visiting open space areas are: 1) Crowded, too many people; 2) Dogs; 3) Wildlife or other closure; 4) Parking; 5) Age, health and injury. Recreation amenities - such as trails, nature centers and trailheads - as well as other OSMP facilities require ongoing maintenance and enhancement to support high-quality visitor experiences and rising visitation levels. Deferred maintenance on many of these facilities has been scheduled out over the next decade.

Establishing a balance between visitor enjoyment and stewardship of resources is critical. While not unique to OSMP, management challenges – from car parking to invasive weeds – are monitored with an eye for balancing access with preservation.

CONNECTING PEOPLE WITH NATURE

Named "the best place to raise an outdoor kid" by Backpacker Magazine, Boulder boasts an extensive network of facilities, trails and amenities maintained by OSMP that offer multiple opportunities for youth, families and people of all ages to connect with and explore nature. Our efforts effectively engage the community, creating connections that inspire a life-long love of the land.

A small sample of the inclusive range of our programming is listed below:

- Environmental education and outreach — including 346 guided hikes in 2016;
- Recreation and skill building — OSMP staff have facilitated more than 1,000 experiential art programs since 2007;
- Volunteering and service learning — volunteer hours equaled $500,000 in value in 2016;
- Inclusiveness and opportunities for all — 1,500 connections with Spanish speakers in 2016; and
- Youth and family engagement — more than 7,000 students learned about outdoor recreation through OSMP's school assemblies in 2017.
- On-the-ground advocates for connecting people to nature, OSMP's 15 full-time rangers operate as naturalists, rescuers, resource protectors and work cooperatively with visitors to uphold regulations and support community open space values.

Connecting people with nature is an essential endeavor to ensure current and future generations value and protect open space lands. Thanks to the support of our community, we are able to do that with help from staff, volunteers, partners and community members.

PRESERVING CULTURAL RESOURCES

The cultural resources of Boulder's open space lands contribute significantly to Boulder's sense of place and character. OSMP defines cultural resources as tangible and intangible, built and natural aspects, that are valued by a culture. Those can include historic buildings, archaeological resources and smaller scale objects like statues or mileposts. Found on land or documented by oral histories, cultural artifacts and scientific findings point to a history of human habitation of OSMP lands spanning from the last ice age (14,000 years ago), to Ute migration (700 to 300 years ago), to the rush of gold prospectors (around 1858). Open Space and Mountain Parks lands currently contain 1,000 known cultural resources of which 244 are considered historically significant based on the National Register of Historic Places eligibility criteria.

Significant themes, or patterns of historic and prehistoric land use, describing OSMP's most tangible resources include the following:

- Exploration and Settlement;
- Agriculture;
- Commerce and Production;
- Industry and Extraction;
- Engineering;
- Transportation and Wayfinding;
- Recreation and Entertainment;
- Health and Wellness; and
- Tradition and Religion.

Management of cultural resources is guided by a suite of plans including OSMP's Long Range Management Policies, area management plans and agreements with the State of Colorado and several American Indian Tribal Governments.

Delving deeper into the stories behind OSMP's cultural resources and setting them in a systemwide context can help strengthen the community's appreciation and preservation of open space lands.

UNDERSTANDING SCENIC LANDSCAPE TYPES

Boulder's quality of life is enriched by the diversity of scenic resources and landscapes in and around the city. In OSMP's 2016 Resident Survey, residents said that "aesthetic purposes" is the most important reason for having Open Space and Mountain Parks. Before 2016, there had been no formal effort by OSMP to inventory scenic resources and evaluate viewpoints throughout the system. To respond to this feedback, staff conducted a pilot inventory of major viewpoints using a modified version of the National Park Service's Visual Resource Program (VRP) protocol. This effort revealed that the overall quality of these viewpoints was generally high, with some management needs noted.

We are also in the process of conducting a preliminary landscape character assessment using long-standing methods developed in the United Kingdom and used throughout the world. For the first time, the iconic landscape features of Boulder have been described in a clear way, and the distinct visual types of landscapes that comprise the system have been drafted.

Over time, these initial descriptions will be developed into a full landscape character assessment to aid in the planning, design and management of the scenic resources and landscapes that support Boulder's community identity.

Junior rangers working on Hogback Trail.
© Phillip Yates

LOOKING TO THE FUTURE

CURRENT CONDITIONS AND EMERGING TRENDS

The master plan process is an opportunity to think about the legacy of accomplishments to date and imagine what the future holds for that legacy. As we think about our treasured open space lands, what conditions or trends may affect our future capability to uphold the Open Space and Mountain Parks (OSMP) purposes defined in the charter? Given our current approach to managing these conditions or trends, what strategic policy direction will best prepare us to meet the needs of the future? The final chapter explores topics ranging from the relationship of open space to health and well-being to building resiliency as we brace for the impacts of climate change. The chapter is organized in two sections of charts: The first section provides context and impacts around big picture trends and questions for the future; the second section explores trends that impact each OSMP charter purpose.

BIG PICTURE TRENDS AND QUESTIONS FOR THE FUTURE

In this section of **Chapter 12**, we have developed a list of questions for the future with background information to explore with community members. These questions include:

1. How do we best steward nature?
2. How do we prepare for the impacts of climate change?
3. What could an increase in population and visitation mean for the future?
4. Who will visit in the future and how can we manage the system inclusively for all groups?
5. How could ownership of mineral and oil and gas rights affect open space (e.g., oil and gas development)?
6. What impacts and opportunities will technology bring?
7. What operational and financial futures do we anticipate?

These questions are only the beginning of a conversation with the community. *We encourage community members to help shape our shared vision for the future.* What additional questions do you have? This process will help guide the creation of focus areas, strategies and priorities for the forthcoming master plan.

TRENDS AFFECTING EACH OSMP CHARTER PURPOSE

The final section of **Chapter 12** provides information on trends and management approaches for each charter purpose:

- Natural areas and species of special value
- Water, landscapes and ecosystems
- Passive recreation
- Agriculture
- Limiting sprawl
- Urban shaping
- Floodplain protection
- Aesthetics and quality of life

Please note that this chapter does not convey a comprehensive listing of all current and relevant policies. Rather, it highlights a sampling to broadly characterize our current management approach and begin a conversation with the community about what changes may be needed in the future.

THANK YOU!

We would like to thank community members, partners and staff for their time reading this report, and we look forward to an informed dialogue to shape the forthcoming master plan.

1

AN OPEN SPACE LEGACY OF ACQUISITIONS

RELEVANT CHARTER PURPOSES:

- **Utilization of land for shaping the development of the city, limiting urban sprawl and disciplining growth**
- **Utilization of non-urban land for spatial definition of urban areas**

Flatirons after a heavy April snow storm, seen from Chautauqua.
© Ann Duncan

This first chapter introduces the reader to the City of Boulder's and its residents' long and remarkable dedication to preserving open space and mountain parks, including such important citywide initiatives as the Olmsted report in 1910 and the National Park Service's (NPS) Master Plan for Mountain Parks in 1937. It also provides details about the establishment of the "Blue Line" in 1959 and the passage of the nation's first open space sales tax in 1967. After 120 years of collaborative effort, the city's Open Space and Mountain Parks (OSMP) Department has an interest in more than 45,000 acres and provides access to these lands through 151 miles of trails. The iconic landscapes that comprise the land that we preserve and manage are a fundamental part of Boulder's identity. The OSMP Department will continue to build on this legacy of public lands stewardship.

SNAPSHOT

1800

1859
Homesteaders begin settling on lands that became part of today's Open Space and Mountain Parks system. Early transportation routes like wagon roads, including Gregory Canyon Road, are built.

1900

1898
Boulder residents vote to approve a bond issue to purchase 75 acres near the base of the Flatirons for the Colorado Chautauqua.

1907
Boulder receives 1,600 acres of land on Flagstaff Mountain.

1910

1910
Frederick Law Olmsted Jr. delivers a report, "The Improvements of Boulder, Colorado" that encourages the city to preserve its mountain backdrop and areas along its major waterways.

1912
Boulder purchases 1,200 acres of land along its mountain backdrop for $1.25 per acre. This purchase, along with the land obtained in 1907, helps Boulder to begin building a "Mountain Parks" system.

1920

1920
Boulder purchases land to help prevent the Red Rocks and the Flatirons from being mined by stone quarries and other commercial uses.

1930

1978
The City of Boulder and Boulder County jointly adopt the Boulder Valley Comprehensive Plan (BVCP), which includes elements of the 1974 open space program plan. The BVCP states that open space shall provide "an important framework for land use planning in the Boulder Valley."

1980

1986
Boulder voters approve a city charter amendment to provide more permanent protection for open space lands. While the City Council voted to approve an ordinance creating the Open Space Board of Trustees in 1973, this voter-approved charter amendment clearly establishes the role of the board and the Open Space Department in Boulder's city charter and defines their functions and open space purposes.

1989
Boulder residents vote to increase sales tax by 0.33 percent for a period of 15 years to accelerate open space preservation.

1990

1997
Boulder residents vote to extend the 0.33 percent sales tax through 2018 and to authorize an additional $45 million in bonds.

2000

2001
City Council consolidates the Mountain Parks division in the city's Parks and Recreation Department and the Open Space Department to form the current Open Space and Mountain Parks (OSMP) Department. The merger brought 6,555 acres of Mountain Parks' lands, including Boulder's signature Flatirons, under the protection of the city charter and its open space purposes.

2002
The City of Boulder signs a Memorandum of Understanding with the United Tribes of Colorado that commits the City to the preservation of cultural resources on OSMP lands and the intention to protect areas of religious and cultural significance.

2003
Voters increase sales tax by 0.15 percent through 2019 to fund continued land acquisitions and maintenance.

2010

2013
The September 2013 flood brought historic rainfall to the region and caused severe flooding and extensive damage to the Boulder Valley including OSMP trails, trailheads, irrigation facilities and fences. The flood caused ecological changes and significantly impacted landscapes and visitor infrastructure. The City of Boulder, including OSMP, has been actively engaged in flood recovery to repair and restore its resources.

AN OPEN SPACE LEGACY OF ACQUISITIONS

1930s

During the Great Depression, the CCC makes improvements to the city's mountain parks with supplies provided by the City of Boulder. The CCC builds roads, bridges, guard rails, trails, picnic tables, fireplaces, a shelter house in Panorama Park, a Boy Scout cabin on Green Mountain, and in 1934, the Sunrise Amphitheater on top of Flagstaff Mountain.

1940

To help complement the CCC's work, the National Park Service creates a Master Plan for Boulder's Mountain Parks system.

1937

1950

Boulder continues to develop its Mountain Parks system, including Flagstaff Summit, Chautauqua Mesa, Baird Park, Bluebell Canyon Area, Buckingham Park, Panorama Park and Left Hand Park.

1937-1941

1950-1960

Spurred by the completion of the Boulder-Denver Turnpike, Boulder's population grows, nearly doubling from 20,000 in 1950 to 38,000 in 1960.

1959

Boulder residents vote to amend the city charter, establishing a 'Blue Line' amendment that limits city water delivery expansion and service to only those areas below 5,700 feet. This led to support for important local land preservation issues.

1960

Voters support a bond issue to conserve 160 acres of land on Enchanted Mesa, from development.

1962

1973

The Boulder City Council passes an ordinance to create the Open Space Board of Trustees, an advisory board to City Council, to set policies and priorities for acquisition and management of Open Space land.

1971

Boulder voters approve an amendment to the Boulder City Charter that authorizes the city to incur debt to acquire open space, allowing for an expanded land acquisition program.

1960-1970

Boulder's population again nearly doubles from 38,000 in 1960 to 67,000 in 1970.

1970

The new Open Space Board of Trustees recommends an open space program plan. "The Open Space Board of Trustees...hereby recommends that the City Council adopt this Open Space Operating Plan as the "discipline" for future implementation of the program of acquisition, conservation, preservation and protection of open space real property or interests in such property." The open space purposes laid out in the plan, which were later included in the city charter, continue to help guide Boulder's open space management.

1974

Boulder citizens vote to become the first city in the nation to tax itself for the acquisition, management, and maintenance of open space land.

1967

2016

Boulder City Council passes Resolution 1190 that recognizes the harm done to indigenous peoples and acknowledges that "we have a shared responsibility to forge a path forward to address the past and continuing harm to Indigenous People and the land."

Boulder residents vote to extend the 0.33 percent sales tax, which was set to expire in 2018. Two-thirds, or 0.22 percent, will go to acquire and maintain open space. The remaining 0.11 percent will fund other city services. In 2035, the 0.22 percent open space sales tax will drop to 0.10 percent and remain in perpetuity.

2013

In collaboration with community stakeholders, the City of Boulder celebrates 50 years since the passage of the country's first municipal sales tax to fund open space purposes, along with funding to improve city transportation infrastructure.

2017

City of Boulder Open Space and Mountain Parks will begin working with the Boulder community on an integrated, systemwide master plan that builds on the past and anticipates the future. The planning process will foster shared community values to develop and prioritize strategies for wise open space stewardship and service delivery over the next decade.

2018

History of Open Space and Mountain Parks

For about 14,000 years, people have lived in the Boulder Valley. Over the generations, indigenous peoples developed a special connection with the area's diverse rolling plains, mountain foothills, stream corridors and unique geological features. With westward American expansion, indigenous communities that long lived on the area's special lands were forcibly removed from their ancestral homes with which they still have a special connection today.

With the discovery of gold in 1858, American settlers began coming to Boulder in great numbers, growing a frontier economy that changed the lands through city expansion, agriculture, market hunting, mining and industrial transportation. In response to expanding development impacts and increased demand for cultural venues, the City of Boulder purchased Batchelder Ranch near the base of the Flatirons in 1898 for the formation of the Colorado Chautauqua. With the purchase, Boulder residents began investing in the preservation and enjoyment of nature that continues today.

In the 30 years following the 1898 land purchase, the city acquired 5,000 acres of public land. That land included Chautauqua, Buckingham Park in Lefthand Canyon and much of the mountain backdrop, including Flagstaff and the Flatirons. Those acquisitions helped the city to form Boulder Mountain Parks. During this time, Frederick Law Olmsted Jr. – a well-known landscape architect – was commissioned to develop a report that was published in 1910 and included his recommendations for parks, waterways, irrigation, sewage and streets. His concluding comments included the "caution not to spoil what a bountiful nature has provided." (Olmsted Jr., 1910)

During the Great Depression of the 1930s, the Civilian Conservation Corps (CCC) improved the city's Mountain Parks system by building trails, shelters, picnic tables and fireplaces, along with an amphitheater on Flagstaff Mountain. In 1937, a Master Plan for Boulder's Mountain Parks system was developed by the National Park Service (NPS). The naturalistic design efforts of the NPS brought many of the ideas in the Olmsted report for Boulder to life and provided connections to nature for the Boulder community. To this day, this iconic landscape helps define the physical setting and cultural identity of the Boulder community.

The city's environmental ethic was further expressed in 1959 when Boulder's charter was amended by a vote of the people to include a "Blue Line," set at the western edge of the city that represented the elevation above which city water or sewer would not be provided – thereby limiting development. The Blue Line amendment was approved by 76 percent of Boulder residents, an indication of the community's strong interest in the preservation of Boulder's mountain backdrop.

Table 1.1: History of Open Space and Mountain Parks

1859
Homesteaders begin settling on lands that became part of today's Open Space and Mountain Parks system. Early transportation routes like wagon roads, including Gregory Canyon Road, are built.

1898
Boulder residents vote to approve a bond issue to purchase 75 acres near the base of the Flatirons for the Colorado Chautauqua

1907
Boulder receives 1,600 acres of land on Flagstaff Mountain.

1910
Frederick Law Olmsted Jr. delivers a report, "The Improvements of Boulder, Colorado" that encourages the city to preserve its mountain backdrop and areas along its major waterways.

1912
Boulder purchases 1,200 acres of land along its mountain backdrop for $1.25 per acre. This purchase, along with the land obtained in 1907, helps Boulder to begin building a "Mountain Parks" system.

1920
Boulder purchases land to help prevent the Red Rocks and the Flatirons from being mined by stone quarries and other commercial uses.

1930[5]
During the Great Depression, the Civilian Conservation Corps (CCC) makes improvements to the city's Mountain Parks with supplies provided by the City of Boulder. The CCC builds roads, bridges, guard rails, trails, picnic tables, fireplaces, a shelter house in Panorama Park and a Boy Scout cabin on Green Mountain. In 1934, the Sunrise Amphitheatre is built on top of Flagstaff Mountain.

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To help complement the CCC's work, the National Park Service creates a Master Plan for Boulder's Mountain Parks system.

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Boulder continues to develop its Boulder Mountain Parks system, including Flagstaff Summit, Chautauqua Mesa, Baird Park, Bluebell Canyon Area, Buckingham Park, Panorama Park and Left Hand Park.

1950-1960
Spurred by the completion of the Boulder-Denver Turnpike, Boulder's population grows, nearly doubling from 20,000 in 1950 to 38,000 in 1960.

1959
Boulder residents vote to amend the city charter, establishing a "Blue Line" amendment that limits city water delivery expansion and service to areas below 5,700 feet. This amendment was supported by local organizations and residents who later also advocated on important local land preservation issues.

1960-1970
Boulder's population again nearly doubles – increasing from 38,000 in 1960 to 67,000 in 1970.

1962
Voters support a bond issue to conserve 160 acres of land on Enchanted Mesa, just south of the Chautauqua Auditorium, from development

1967
Boulder citizens vote to become the first city in the nation to tax itself for the acquisition, management and maintenance of open space land. The .40-percent sales tax passes with 61 percent of the vote.

1971
Boulder voters approve an amendment to the Boulder City Charter that authorizes the city to incur debt to acquire open space, allowing for an expanded land acquisition program.

1973
The Boulder City Council passes an ordinance to create the Open Space Board of Trustees, an advisory board to City Council, to set policies and priorities for the acquisition and management of open space land.

1974
The new Open Space Board of Trustees recommends an open space program plan. "The Open Space Board of Trustees...hereby recommends that the City Council adopt this Open Space Operating Plan as the "discipline" for future implementation of the program of acquisition, conservation, preservation and protection of open space real property or interests in such property." The open space purposes laid out in the plan, which were later included in the city charter, continue to help guide Boulder's open space management.

1978
The City of Boulder and Boulder County jointly adopt the Boulder Valley Comprehensive Plan (BVCP), which includes elements of the 1974 open space program plan. The BVCP states that open space shall provide "an important framework for land use planning in the Boulder Valley."

1986
Boulder voters approve a city charter amendment to provide more permanent protection for open space lands. While the City Council voted to approve an ordinance creating the Open Space Board of Trustees in 1973, this voter-approved charter amendment clearly establishes the role of the board and the Open Space Department in Boulder's City Charter and defines their functions and open space purposes.

1989
Boulder residents vote to increase sales taxes by 0.33 percent for a period of 15 years to accelerate open space preservation.

1997
Boulder residents vote to extend the 0.33 percent sales tax through 2018 and to authorize an additional $45 million in bonds.

2001
City Council consolidates the Mountain Parks division in the city's Parks and Recreation Department and the Open Space Department to form the current Open Space and Mountain Parks (OSMP) Department. The merger brought 6,555 acres of Mountain Parks' lands, including Boulder's signature Flatirons, under the protection of the city charter and its open space purposes.

2002
The City of Boulder signs a Memorandum of Understanding with the United Tribes of Colorado that commits the City to the preservation of cultural resources on OSMP lands and the intention to protect areas of religious and cultural significance.

2003
Voters increase sales taxes by 0.15 percent through 2019 to fund continued land acquisitions and maintenance

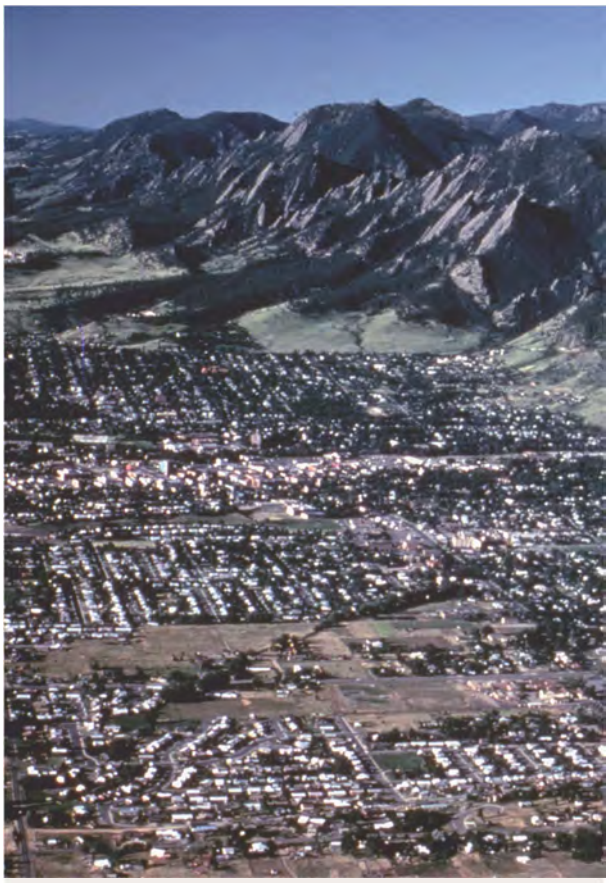
2013
The September 2013 flood brought massive rainfall to the region and caused severe flooding and extensive damage to the Boulder Valley including OSMP trails, trailheads, irrigation facilities and fences. The flood caused ecological changes and significantly impacted landscapes and visitor infrastructure. The City of Boulder, including OSMP, has been actively engaged in flood recovery to repair and restore its resources.

2013
Boulder residents vote to extend the 0.33 percent sales tax, which was set to expire in 2018. Two-thirds, or 0.22 percent, will go to acquire and maintain open space. The remaining 0.11 percent will fund other city services. In 2035, the 0.22 percent open space sales tax will drop to 0.10 percent and remain in perpetuity.

2016
Boulder City Council passes Resolution 1190 that recognizes the harm done to indigenous peoples and acknowledges that "we have a shared responsibility to forge a path forward to address the past and continuing harm to Indigenous People and the land."

2017
In collaboration with community stakeholders, the City of Boulder celebrates the 50th anniversary of Boulder residents passing the nation's first municipal sales tax to fund open space purposes, along with funding to improve city transportation infrastructure.

2018
OSMP will begin working with the Boulder community on an integrated, systemwide master plan that builds on the past and anticipates the future. The planning process will foster shared community values to develop and prioritize strategies for wise open space stewardship and service delivery over the next decade.



In 1967, Boulder voters made history by approving a 0.40 percent sales tax specifically to buy and care for open space lands. OSMP Image

By shopping in Boulder, you support open space. For every $100 spent in the City of Boulder, $0.88 funds open space.

In 1967, Boulder voters made history by approving a 0.40-percent sales tax specifically to buy and care for natural lands. This referendum marked the first time voters in any U.S. city voted to tax themselves in support of open space. With the advent of the open space tax, the grasslands and farmlands around Boulder were incorporated into a broader vision for connecting people with open space.

The rate of acquisition was given a further boost in 1971 when voters approved a charter amendment, allowing the city to issue bonds for the acquisition of open space land. Obtaining bonding authority for open space was another City of Boulder "first," and it allowed the city to arrange the financing for the purchase of larger, more expensive properties. From 1960 to 1978, the city's open space lands tripled from about 5,000 to about 15,000 acres, and a greenbelt stretching around Boulder began to form.

In 1973, the Open Space Board of Trustees (OSBT) was created through an ordinance passed by the Boulder City Council to set policies and priorities for the acquisition and management of open space land. In 1974, the OSBT recommended adoption of an open space program plan including defined open space purposes. The open space purposes laid out in the plan, most of which were later included in the city charter, continue to help guide Boulder's open space management.

In 1989, 76 percent of voters supported a ballot initiative for an added 0.33-percent sales tax for 15 years to accelerate open space protection. In 1997, just seven years into the 15-year tax, voters supported extending the 0.33-percent tax until 2018.

The city's open space increased by more than 20,000 acres between 1978 and 1999. In 1999, City Council approved what was known as the Open Space/Real Estate Department's first Acquisition Plan. In 2003, voters approved an additional 0.15-percent sales tax for a period of 15 years to support open space protection as outlined in the Acquisition Plan. In 2013, Boulder residents voted to extend the 0.33-percent sales tax, which was set to expire in 2018. Two-thirds, or 0.22-percent, of the tax funds the acquisition and maintenance of open space while the remaining 0.11-percent funds other city services.

Acquisitions Today

Acquisition of land for open space has long played a role in managing and shaping the urban and rural landscape of Boulder, as open space preservation is central to values held by past and current residents. Through the planning process for the Boulder Valley Comprehensive Plan, the City of Boulder and Boulder County agreed that to preserve and enhance the area's unique regional identity, both entities needed to partner in maintaining an open land buffer separating development in the Boulder Valley from neighboring communities. Currently, the City of Boulder spans 25.8 square miles surrounded by 71 square miles of city open space. Boulder's population – about 107,000 today – has grown by 10,137 people since 2000. Nearby municipalities, without regulatory growth boundaries, have expanded at much faster rates. As Boulder's open space system matures, the land acquisition phase grows closer to completion and city residents, according to a **2016 Resident Survey**, no longer consider "growth management" as the most important purpose for the city's open space program. In response, we are emphasizing acquisitions that assist the city in improving stewardship and enjoyment of the community's existing open space system.

Today, the Open Space and Mountain Parks Department has preserved open space values on more than 45,000 acres of open space for nature preservation, agriculture, passive recreation, urban shaping and scenic beauty. In all acquisitions, the City of Boulder has sought to purchase both the mineral and water rights, which has helped to sustain local agriculture and to fulfill city open space charter purposes throughout the city's public land system. In addition to acquisitions, our real estate staff manages the city's Conservation Easement program, which includes annual monitoring, enforcement and resolving violations related to conservation agreements. Staff also provides services and consultations to the department and other city staff on real estate issues and needs on the city's open space system, such as encroachments, access, surveys, appraisals and property title reviews. This success is built upon enduring community support, staff expertise, a reliance on the city charter and long-term relationships with landowners. **See the Acquisitions over Time map.**

We use multiple real estate and acquisition tools to protect lands as city open space:

- **Fee Acquisitions:** About 80 percent – or 36,400 acres – of all of our acquisitions have been completed through a fee-simple purchase. This method allows the city greater control over the management of the properties' resources, and provides increased flexibility in decisions related to visitor access, agricultural management, ecological restoration and other management issues. After a property is acquired, a resource assessment is conducted, and property management recommendations are developed and approved as a means of protecting the property's open space values and determining the appropriate level of public use. Resource assessments and management planning are to be completed prior to opening newly acquired properties to public access.

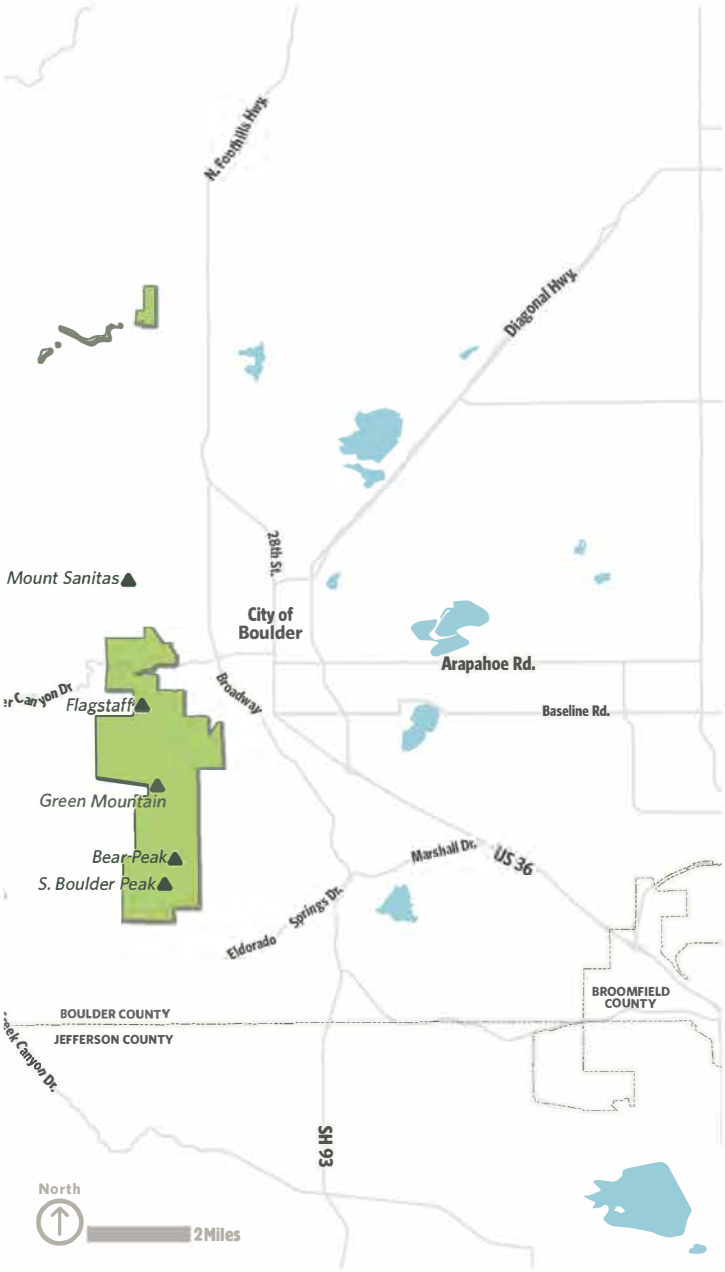
ACQUISITIONS OVER TIME

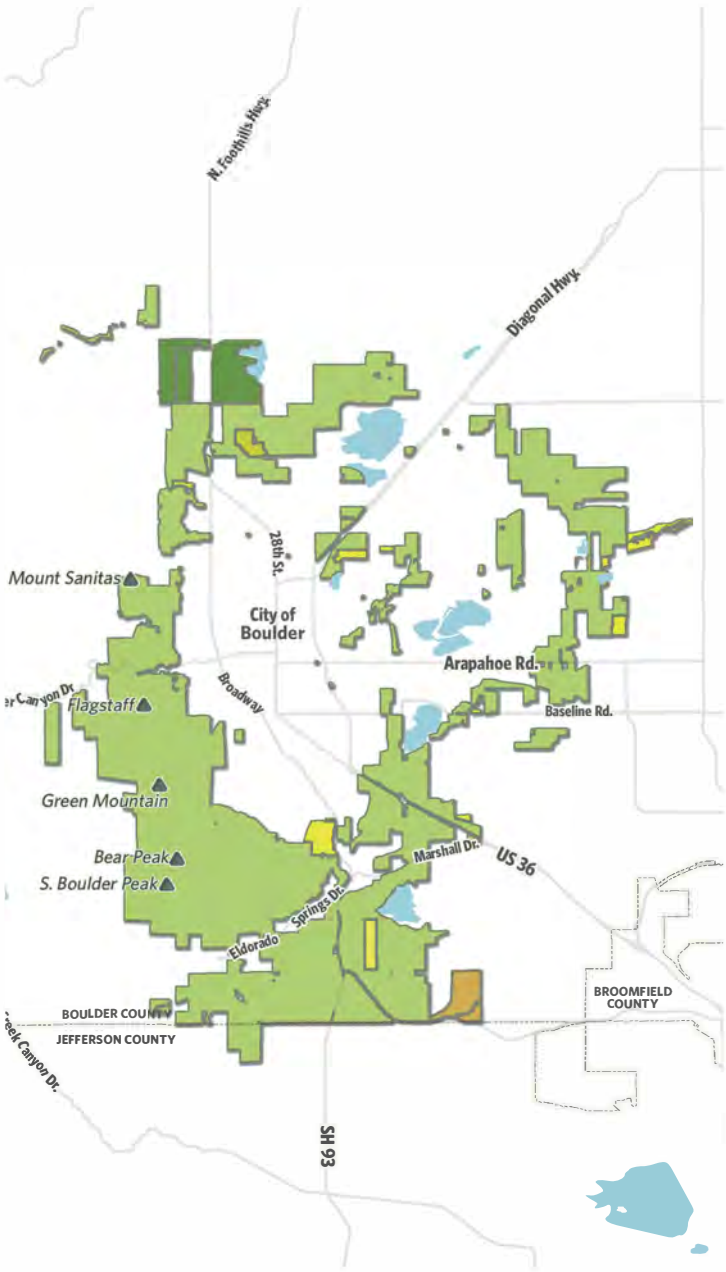
Pre-1967

In 1967, Boulder voters made history by approving a 0.40 percent sales tax specifically to buy and care for natural lands.

1967-1992

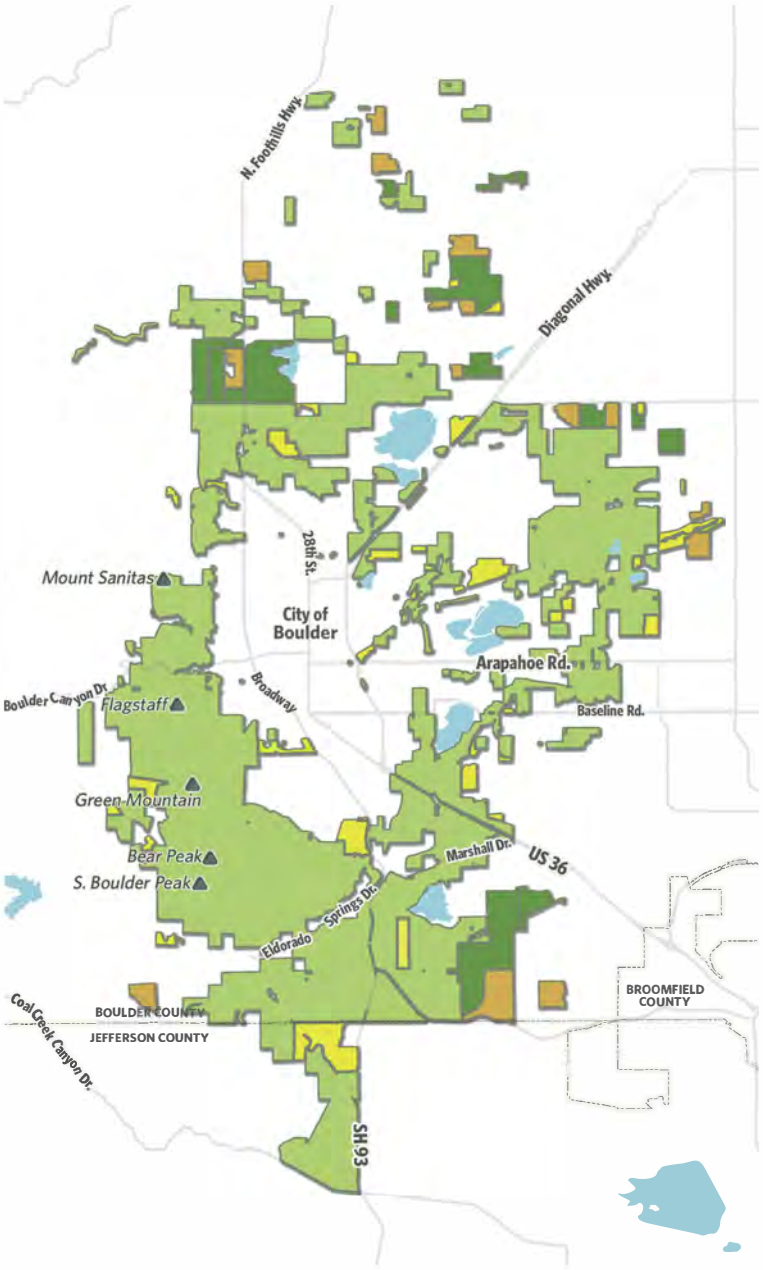
25 years of acquisitions after 1967 tax approval.





1992-2017

50 years of acquisitions after 1967 tax approval.



From 1960 to 1978, the city's open space lands tripled from about 5,000 to about 15,000 acres, and a greenbelt stretching around Boulder began to form.

LEGEND

- Fee Acquisition - OSMP
- Fee Acquisition - Joint
- Easement - OSMP
- Easement - Joint

- **Conservation Easements**: We oversee 8,100 acres of conservation easements (CE). CEs and Development Rights Agreements (DRA) are legally enforceable agreements between the city/OSMP and landowners. These agreements protect the open space values of a property by restricting commercial or residential development or other types of land use deemed incompatible with open space conservation while allowing the owner to retain ownership of the property.
- **Acquisition Partnerships:** The city has participated in several joint open space acquisition and land management projects for both fee acquisitions and conservation easements with Boulder County Parks and Open Space, Jefferson County Open Space, the Town of Superior and the State of Colorado and will continue to explore additional joint acquisitions with other local governments on a case-by-case basis. Strategic partnerships allow our department and our partners to share costs by participating in the acquisition and management of parcels of mutual interest.
- **Dedications:** Occasionally, the city has acquired property interests through the city or county development review process. Dedications, or gifts, of land to open space tend to be relatively small, and are often trail or scenic easements rather than fee ownership. We have acquired interest in about 60 parcels through the dedication of properties ranging in size from 700 square feet (0.016 acres) to 17 acres.
- **Mineral and Water Rights:** For decades, it has been the approach of OSMP to acquire oil, gas, mineral and water rights as part of any new land acquisition or, if the opportunity exists, to acquire them separately. Water-rights acquisitions provide water necessary to fulfill city open space charter purposes, including agricultural stewardship. Oil, gas and mineral rights acquisitions help to better control mineral development in the Boulder area that would cause detrimental impacts to city open space and adjacent properties. However, in some cases, OSMP was not able to acquire the oil, gas and mineral rights when it purchased the surface land. This property dynamic is known as a "severed mineral estate" or the "split estate." OSMP is evaluating and analyzing its overall oil, gas and mineral holdings to help determine and prioritize additional acquisitions to protect Boulder's open space.
- **Trail Easements:** In circumstances where the city is primarily interested in public access or a trail connection, an easement that specifically allows the construction of a trail linkage or public access through a private property can be negotiated. Like CEs, these purpose-specific acquisitions offer the city an opportunity to use its funding efficiently while minimally affecting private property owners.
- **Condemnation:** Condemnation involves the transfer of a property from a private owner to the government for civic or public use. Typically, monetary compensation is awarded, with or without the owner's consent. In the case of a "friendly condemnation," the government and the private party agree to the condemnation process to determine the appropriate value for a property. The city uses condemnation very infrequently. Since 1968, 10 properties and about 950 acres have been acquired through condemnation.

As the city's open space system matures, our real estate staff has begun favoring fee acquisition over the purchase of conservation easements. Although the initial cost of obtaining a conservation easement or development rights agreement is typically lower than fee ownership, these purchases come with an ongoing cost and obligation to monitor landowner compliance with the terms and conditions of the agreements. Additionally, on conservation easement-protected properties, the city typically has less opportunity to actively restore ecological conditions, provide public access or facilitate recreational and educational opportunities. For these reasons, we have increased the pace of acquiring ownership of properties already encumbered by CEs and DRAs.

Our Acquisition Plan guides our acquisitions program, which has been updated several times since its creation in 1999. The plan and subsequent updates take into consideration goals and policies of the Boulder Valley Comprehensive Plan (BVCP), acquisition policies in the council-approved Open Space Long Range Management Policies (LRMP), and goals set forth in our other plans, including acquisitions to support trail linkages or habitat connectivity along riparian corridors. Although water and mineral rights acquisitions have the potential to contribute to the role we play in growth and resource management, these acquisitions are guided by LRMP as they are not addressed in the Acquisitions Plan or subsequent updates.

When the Acquisition Plan was last updated and approved by council in 2013, the pace and nature of acquisitions were changing (Table 1.2). Under the plan, instead of expanding the system outward, a greater emphasis has been placed on acquisitions that serve to connect, or "fill in" missing pieces and gaps of open space. **Today, it is estimated about 5,000 acres remain to be acquired to fulfill a vision of a comprehensive open space system.** This analysis suggests that although our open space system is nearing completion and the pace of acquisitions is slowing, we still need to continue to acquire priority pieces of land.

Table 1.2: Acquisition by Decade since 1967 Sales Tax

DECADE	NUMBER OF ACQUISITIONS	ACRES ACQUIRED OR PROTECTED
1967 - 1977	68	8,312
1978 - 1987	112	7,554
1988 - 1997	112	9,167
1998 - 2007	100	12,107
2008 - 2017	18	1,850

2

BOULDER'S OPEN SPACE AND MOUNTAIN PARKS TODAY: AN INTRODUCTION

Looking west into sunset toward Doudy Draw and Eldorado Mountain. Photo by Phillip Yates

Ecologically rich and geographically impressive landscapes comprise the Open Space and Mountain Parks (OSMP) system. This chapter introduces the reader to these places, provides an overview of Boulder's open space and summarizes some of the ways residents and visitors enjoy Boulder's outdoor environment. More information on all topics can be found in subsequent chapters.

SNAPSHOT

The City of Boulder spans over 25 square miles surrounded with an impressive 71 square miles of city open space. **The diverse and unique landscapes of Boulder's Open Space and Mountain Parks System are highly valued by the community.**

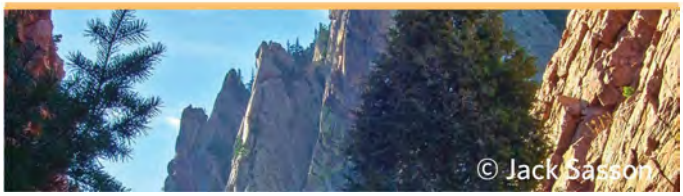
A VISUAL TOUR OF THE ECOSYSTEMS ON OSMP-MANAGED LAND

Mixed Conifer Forests and Woodlands 4,244 ACRES

Tallgrass Prairie 6,000 ACRES

Ponderosa Pine Woodlands and Savannahs 3,461 ACRES

Wetland and Riparian Areas 2,700 ACRES



Cliffs and Talus 660 ACRES

Black-Tailed Prairie Dog and Associates 3,585 ACRES

Foothills and Montane Riparian Areas 269 ACRES

Area Highlight: White Rocks 60 ACRES

Mixed Grass Prairie 9,850 ACRES

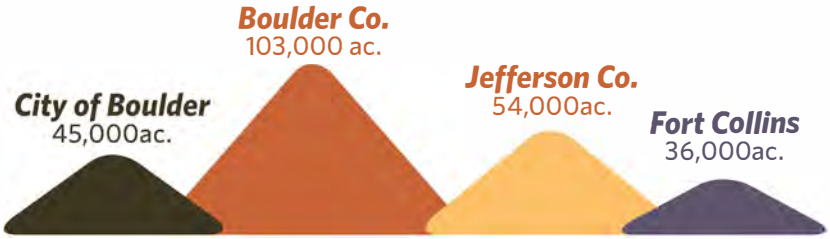
Agriculture 15,000 ACRES

BOULDER'S OPEN SPACE AND MOUNTAIN PARKS SYSTEM TODAY: AN INTRODUCTION

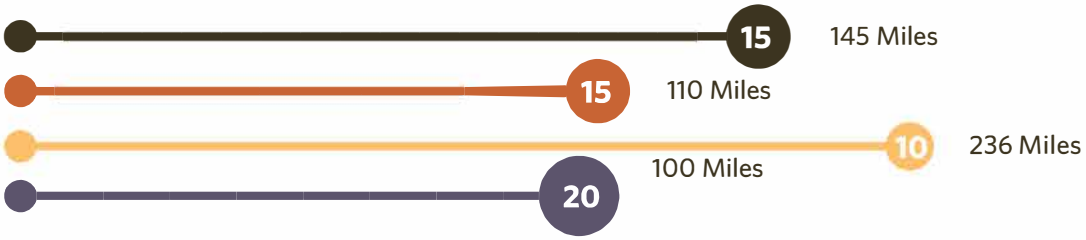
A NETWORK OF PUBLIC LANDS

Boulder's open space system is at **the heart of a large network of city, county and federal lands** that supports wildlife movement and watershed health beyond city boundaries.

TOTAL ACRES MANAGED



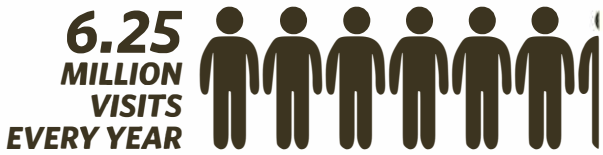
MILES OF TRAIL MANAGED



NUMBER OF RECREATION TYPES

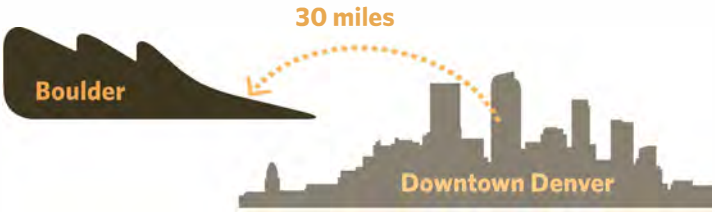
WHO VISITS OPEN SPACE?

According to 2016-2017 estimates, the OSMP system receives about 6.25 million visits annually.



This increase - up from an estimated 4.7 million in 2004-2005 - is similar to rates of visitation growth for nearby Jefferson County Open Space. For some OSMP sites, visitation increased faster than others. It more than doubled at Chautauqua in the same time period.

Most OSMP visitors live in the City of Boulder or Boulder County. Of those **visitors who live outside of the city or Boulder County**, most are residents of **the Denver metropolitan area.**



Demographics of **OSMP's visitors reflect** those of **the City of Boulder's population.**

Boulder's Lands

No matter the perspective, the natural areas of Boulder play a powerful role in shaping the identity of the Boulder Valley. Visitors to the City of Boulder remember a beautiful mountain backdrop against expansive plains. Neighbors take an evening stroll through tallgrass prairie, exploring the remarkable abundance and diversity of native wildflowers. Friends hike to the top of South Boulder Peak, passing over creeks and through cool forests, or bike across rolling grasslands and mesa tops. Bears traverse scree fields. Raptors perch in cliff faces and songbirds nest in the tallgrass prairie. Residents of nearby towns find solace in the beautiful peaks to the west.

The value of these natural areas is made even more remarkable by the fact that we neighbor an extensive network of county, state and federal public lands. Federal agencies, including the U.S. Forest Service (USFS), the U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS) and the Bureau of Land Management (BLM) manage several million acres of public lands in Colorado. Boulder County and Jefferson County open space properties, along with natural lands protected by Boulder's neighboring municipalities, help to create continuous corridors of protected lands, stretching from the plains to the high peaks. Cooperative management of these contiguous lands offers the potential to leverage conservation opportunities while offering residents and visitors opportunities to connect to the natural world. Learn more about Boulder's natural heritage in **Chapter 5.**

Photo by Tomasz Kucharski

Agriculture **15,000 ACRES**

Primary uses of our agricultural land include hay production and livestock grazing. Annual crops grown on 300 to 600 acres currently include wheat, corn and barley. Agricultural lands provide access to local food, water and cultural resources, adding to the resiliency of both local and regional communities. ***Go see it:*** **East Boulder Teller Farms Trail**

Photo by Dave Sutherland

Tallgrass Prairie **6,000 ACRES**

The tallgrass community is dominated by big bluestem grass and includes 5,650 acres of xeric tallgrass prairie and 350 acres of mesic bluestem prairie. This open landscape is exceptional for viewing wildflowers, wildlife and fall colors.
Go see it: **Spring Brook Loop North Trail**

Photo by Jennelle Freeston

Mixed Grass Prairie Mosaic **9,850 ACRES**

Found across the Great Plains, this is the most commonly occurring mixedgrass community in North America. This dominant cover type includes open plains with big sky views to the east, north and south. ***Go see it:*** **Sage Trail**

Photo by Jack Sasson

Mixed Conifer Forests & Woodlands **4,244 ACRES**

Douglas fir and ponderosa pine comprise these lower and upper montane woodlands. Cool and dark forests include dense vegetation that can be found on steep slopes at higher elevations. This terrain includes steep trails that can be strenuous to climb. ***Go see it:*** **Chapman Drive Trail**

Black-Tailed Prairie Dog and Associates **3,585 ACRES**

Black-tailed prairie dogs are a "keystone" species due to their support of associated species. ***Go see it:*** **Cottonwood Trail**

Ponderosa Pine Woodlands and Savannahs **3,461 ACRES**

Ponderosa pine dominates these lower montane or transitional woodlands, ranging from open and "park-like" to dense at higher elevations. This ecosystem forms the western wildland-urban interface for the City of Boulder with trees and elevation that provide cool shade during hot summer days.
Go see it: **North Fork Shanahan Trail**

Wetland and Riparian Areas **2,700 ACRES**

Riparian areas are transitional areas between creeks and drier upland habitat. Although they comprise less than 2 percent of the state's land cover, riparian areas supply habitat for about 80 percent of birds, mammals, reptiles, amphibians and fish native to Colorado. ***Go see it:*** **South Boulder Creek Trail**

Cliffs and Talus **660 ACRES**

The Flatirons and surrounding rock faces that create the most recognizable features of Boulder's natural setting are cliffs and talus. OSMP helps protect important wildlife habitats in these areas while also providing visitors the opportunity to experience these geological features. ***Go see it:*** **Royal Arch Trail**

Foothills and Montane Riparian **269 ACRES**

Riparian woodlands and shrublands occur along streams and drainages at higher elevations. This landscape is typically cool and wet with steep trails through dense vegetation.
Go see it: **Gregory Canyon Trail**

White Rocks **60 ACRES**

The White Rocks area is a natural landmark in Boulder County featuring unique environmental conditions that support rare plant species typically not found in the region. This area includes 50-foot high cliffs of light-colored Fox Hill sandstone and unusual turtle back surfaces.
Go see it: **East Boulder White Rocks Trail**

The Boulder Community

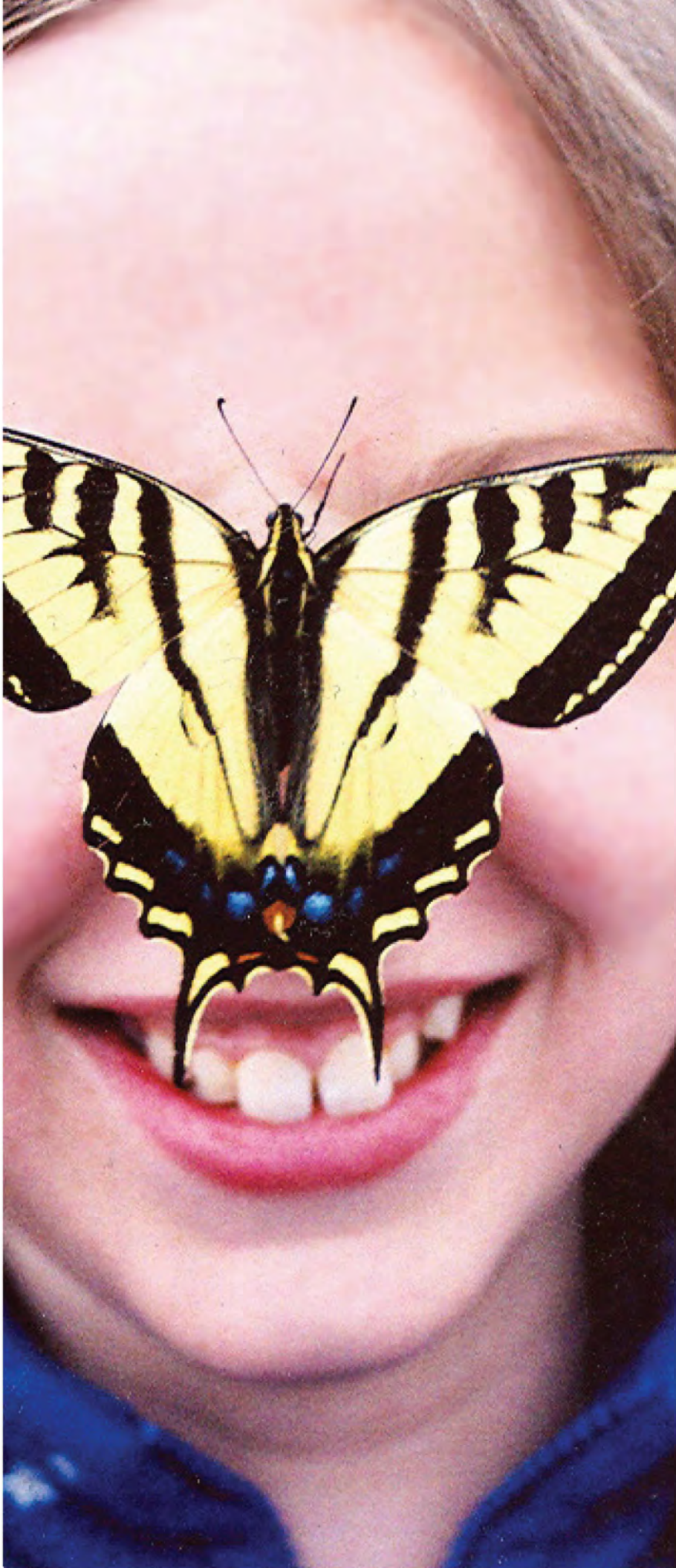
Crowd of families gather at a Meadow Music concert in Chautauqua Park. © Lisa Dierauf

Our community has preserved a natural landscape almost three times as large as the urban landscape, helping to safeguard natural areas that rank among the most diverse in the western United States. Our community's open space provides crucial habitat for a range of wildlife species while also giving community members access to the outdoors, fostering health and well-being and supporting Boulder's reputation as an outdoor recreation haven.

Even if you never step foot on OSMP lands, you can still take in the excellent scenic views, which residents identify as a primary purpose of Boulder's open space system, according to Open Space and Mountain Parks' 2016 Resident Survey. These lands also provide a powerful recruitment tool for businesses wanting attractive lifestyle amenities for employees, and inspire tourism from around the state, country and world. **In Colorado, outdoor recreation contributes more than $34.5 billion in annual economic activity**, according to the **2014 Colorado's Statewide Comprehensive Outdoor Recreation Plan (SCORP)**, conducted by Colorado Parks and Wildlife (CPW) (Colorado Parks and Wildlife, 2014).

Boulder has a relatively young population (median age 28), and many of Boulder's residents are white (88.5 percent), followed by Hispanic or Latinx (8.6 percent). Similar to trends in Boulder County and the Denver metropolitan region, Boulder has seen a small but significant increase in the Hispanic or Latinx population. OSMP staff offers educational programming, in both English and Spanish, to enhance an environmental stewardship ethic in the community, and to ensure that all people are welcome on open space.

Learn more about future population and demographic trends in **Chapter 12.**

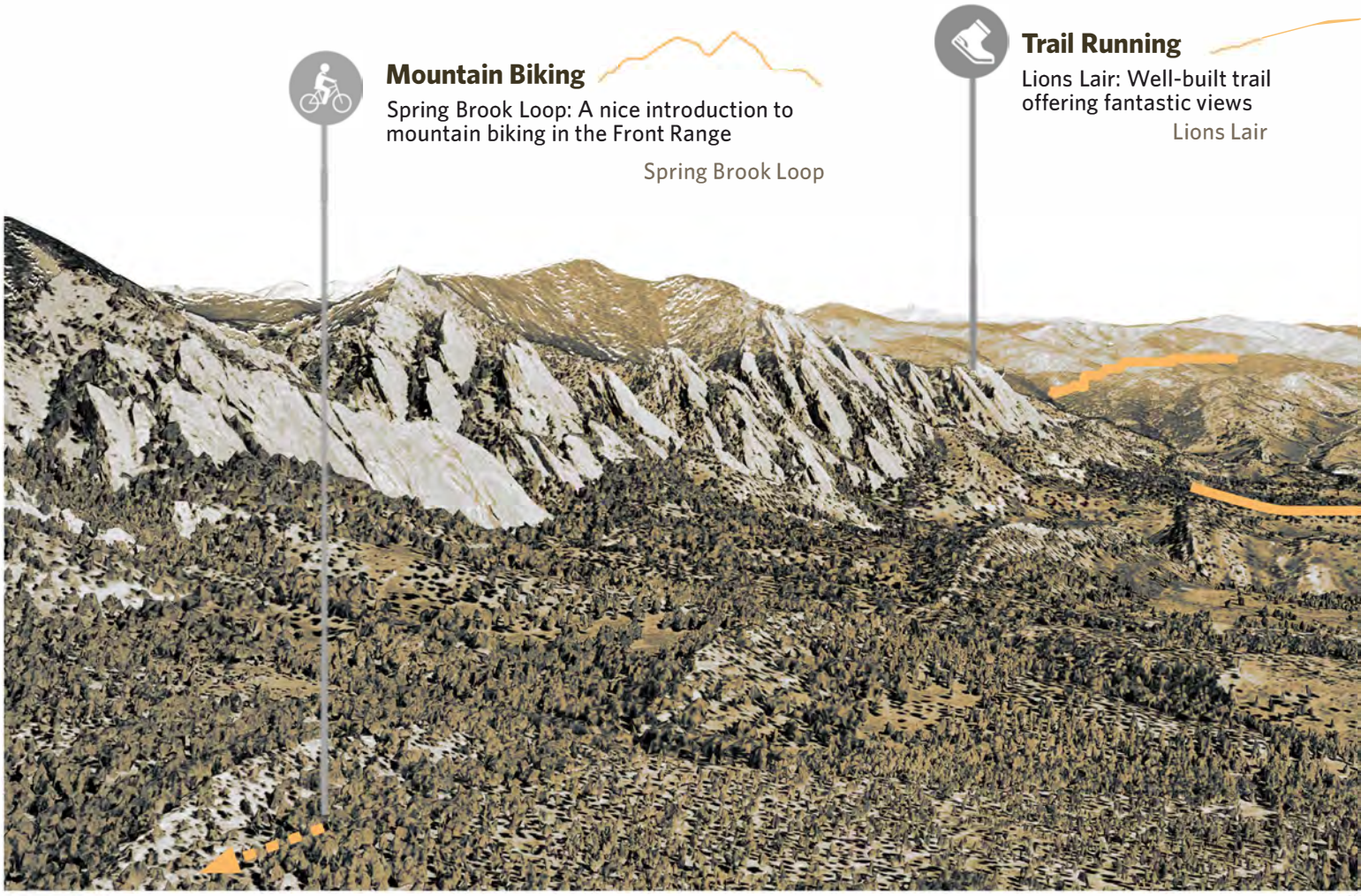


Young girl with a Tiger Swallowtail butterfly perched on her face. ©Thorne Nature Experience

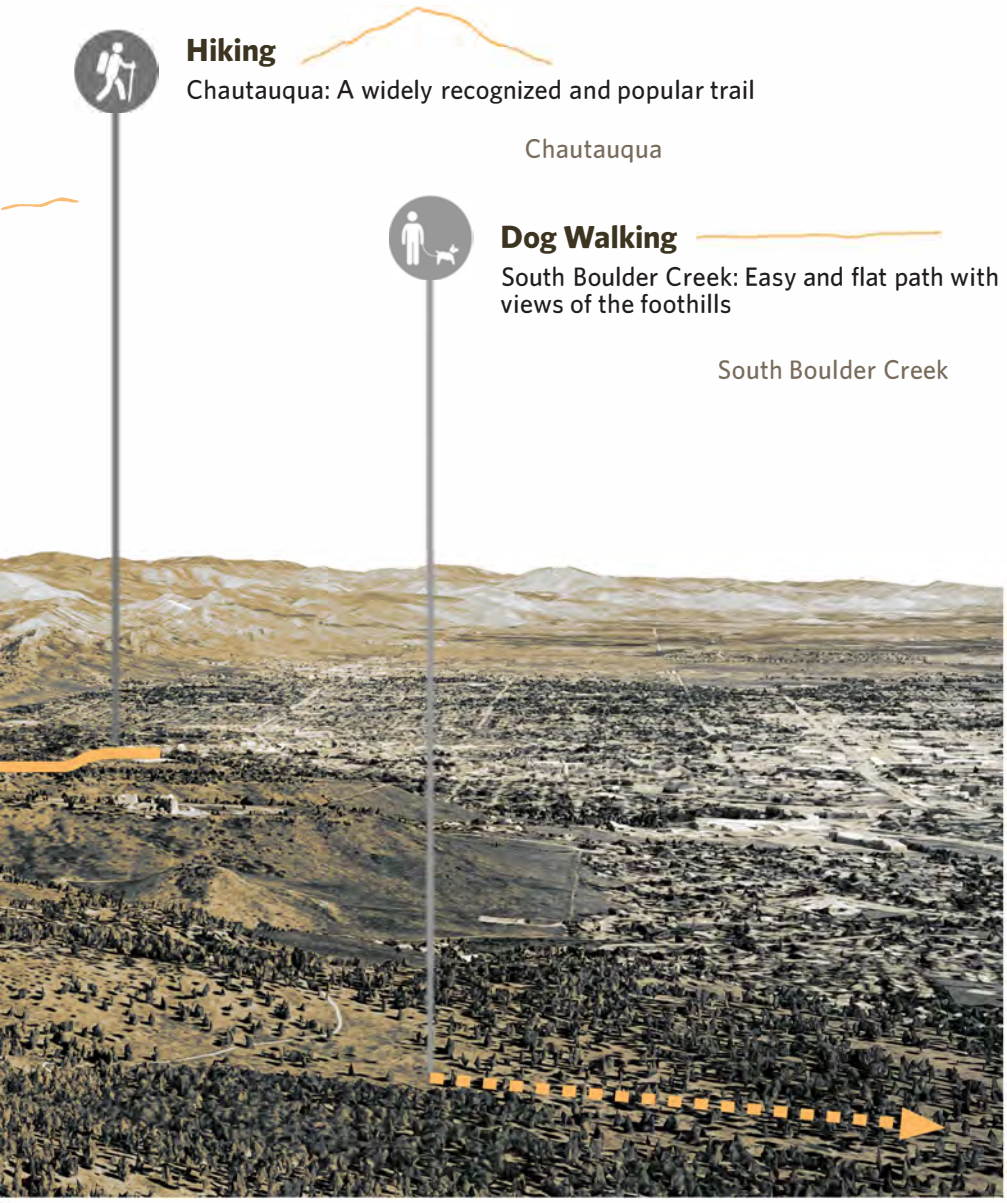
OSMP Visitors

CPW's **SCORP study** suggests that regional population growth is increasing participation in outdoor recreation. Based on data collected from 2016 to 2017, OSMP human dimensions staff estimate that OSMP's 45,000 acres accommodate approximately 6.25 million visits annually, up from 4.7 million in 2005 (Leslie, 2018). This current estimate is similar to the roughly 6.9 million annual visits to nearby Jefferson County's 54,000 acres of open space, which have seen similar rates of increase in past years.

OSMP staff will release an in-depth report in May 2018 that further describes how current visitation patterns vary by location, time of day, day of the week, or time. The report will also describe visitor demographics, activities, levels of conflict and other important characteristics that help staff facilitate high-quality experiences out on the land.



Identified below are four popular activities in Boulder, according to the **2016 Resident Survey**, and approximate popular locations for these activities. View the full list of popular activities in Boulder and the State of Colorado in **Chapter 8**.



AT A GLANCE

Previous visitation studies indicate that most visitors live in the City of Boulder or Boulder County. Of those visitors who live outside of the city or Boulder County, most are residents of the Denver metropolitan area (Giolitto, 2012). In May 2018, OSMP will release updated information about OSMP visitor characteristics.

Popular recreation activities on the open space system include hiking, running, dog walking, biking, climbing and observing nature/wildlife, according to our 2016 Resident Survey.

Boulder open space is also complemented by city parks, city recreation programs, the Boulder Reservoir, city community centers and regional open space systems surrounding Boulder. For example, the Eldorado Canyon Trail links Eldorado Canyon State Park to Boulder County's Walker Ranch through City of Boulder open space. Within an hour's drive of downtown Boulder, recreation opportunities include access to Rocky Mountain National Park and a diversity of parks managed by Boulder County Parks and Open Space and Jefferson County Open Space.

See **Chapter 8** for more information about the many ways to enjoy OSMP. You can plan your visit on our trail system by visiting **OSMPTrails.org.**

3

PURPOSES, PLANS, POLICIES AND REGULATIONS

Participants at a public meeting provide input for the North Trail Study Area Management Plan © Phillip Yates

This chapter introduces the major existing plans, policies and regulations used to guide the delivery of the Open Space and Mountain Parks (OSMP) Department's services to the Boulder community. This foundation of existing guidance will inform broad, systemwide strategies in the forthcoming Master Plan. Highlights from some of these plans and policies are also illustrated in Chapter 12 to inform discussions about what the future of open space may hold.

SNAPSHOT

The **City of Boulder Charter** is the guiding document for the management of city-owned open space. The Master Plan will not make recommendations to change this guidance. The voter-approved character is paramount to who the department is and how our staff serve the community and its legacy land system.

OPEN SPACE PURPOSES IN THE CITY CHARTER

According to Section 176 of the charter, open space land shall be acquired, maintained, preserved, retained, and used only for the following purposes:

Natural areas and features or species of special value

Water, landscapes and ecosystems

Passive recreation

Agriculture

Limiting sprawl

Urban shaping

Floodplain protection

Aesthetics and quality of life

PURPOSES, PLANS, POLICIES AND REGULATIONS

PLANNING FOR CHARTER PURPOSES

The Boulder Valley Comprehensive Plan and existing OSMP plans provide guidance at various scales for the delivery of OSMP's services to the Boulder community.

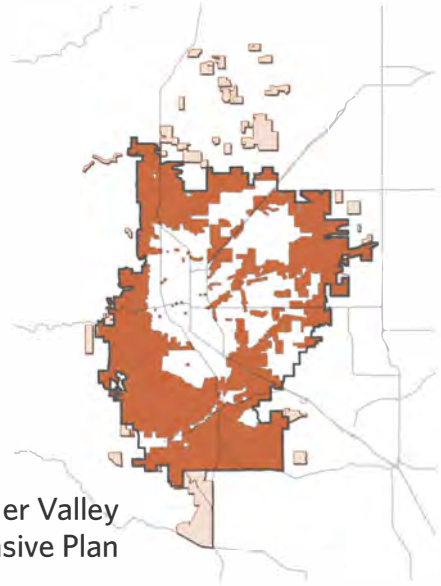
Boulder Valley Comprehensive Plan (BVCP)

The BVCP is developed and jointly adopted by the City of Boulder and Boulder County to guide land use decisions in the Boulder Valley. The BVCP supports the community's vision for balancing development and preservation of the Boulder Valley. Integral to the BVCP are the core values and guidance to achieve sustainability, intergovernmental cooperation, organized urban development, protection of open space and other policies.

OSMP Plans

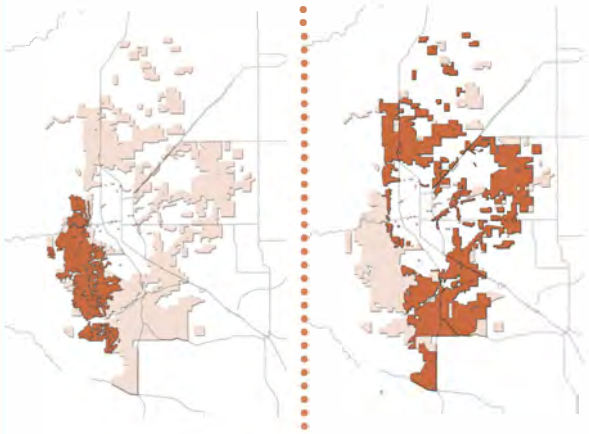
Since 1986, OSMP staff and the Boulder community have developed numerous plans to provide both general and specific guidance to inform the management of the city's open space lands and resources in accordance with the city charter. Existing OSMP plans provide guidance for managing resources and visitation.

Boulder Valley Extent



Boulder Valley Comprehensive Plan

Examples of OSMP Plans



Forest Ecosystem Management Plan

Grassland Ecosystem Management Plan

SCOPE OF THE MASTER PLAN

The forthcoming Master Plan will be a broad strategy document for the OSMP system. Therefore, the scope of that effort will not include detailed recommendations to change specific guidance contained in existing plans or regulations. Rather, this foundation of past work will provide an opportunity to affirm existing policies and, as needed, make general recommendations to update certain plans or policies to bring them into alignment with any new guidance that emerges in the Master Plan process.

Most importantly, the Master Plan will not make recommendations to change Boulder's City Charter. The voter-approved charter is paramount to who the department is and how our staff serves the community and its legacy land system.

City Charter

The Boulder City Charter is the primary document used to guide the management of city-owned open space. In 1986, Boulder voters approved amendments to the charter establishing and describing the functions of our department and the Open Space Board of Trustees (OSBT). The charter also defines the purposes of the city's open space lands, which focus upon the preservation and management of:

- Natural areas and features or species of special value;
- Water, landscapes and ecosystems;
- Passive recreation;
- Agriculture;
- Limiting sprawl;
- Urban shaping;
- Floodplain protection; and
- Aesthetics and quality of life

These open space purposes provide both the foundation and principle guidance for the development of other plans and policies. **Article XII of the City of Boulder Charter** contains the sections addressing open space and its purposes.

Regulations

OSMP regulations are important to protect sensitive or special resources, public safety and the enjoyment of activities and serve as a management tool for implementing the city charter. Regulations protect the flora and fauna while preserving ecosystem integrity and providing for long-term visitor experience on OSMP.

Regulations in city code also define when and why properties may be closed to public. Currently, roughly 12,600 acres of the OSMP system are closed to public access on an on-going basis. Of these, roughly 5,600 acres are conservation easements under private ownership where public access generally not expected. The remaining properties (roughly 7,000 acres) are closed for reasons including resource protection, public safety, newly acquired or terms defined in acquisition agreements, life estates or joint management agreements with other land managers. Temporary, seasonal wildlife closures are explored more in **Chapter 5.**

In similar contexts across the country, less than 1 percent of all natural resource violations are caught by rangers and other resource protection professionals. Boulder is no exception, and the protection of OSMP lands relies on a partnership between rangers and the community of Boulder. Currently, our ranger naturalists have more than 85 regulations they are responsible for enforcing on OSMP lands.

Unfortunately, this complexity often makes it difficult to share regulations with visitors, whether through trailhead signs or otherwise. Our staff fabricates and maintains an extensive portfolio of regulatory signs installed throughout the system. When so many regulations are presented to visitors, visitors may become overloaded with information and miss some of the key things OSMP would like them to know. Balancing the need for regulations to protect the ecosystems, wildlife habitat and the aesthetic value for visitors is difficult.

Currently, our 85 regulations can be organized into the following categories:

- **Wildlife protection**, including off-trail limitations in Habitat Conservation Areas (HCAs) and seasonal area closures for nesting birds (see **Chapter 5** for more on closures);
- **Resource protection** measures that prohibit, for example, damaging property, collecting fossils and cutting trees;
- **Trail stewardship**, including muddy trail closures;
- **Public safety** measures surrounding weapons, firearms and safe trail etiquette;
- **Fire safety** including fireworks, campfires and smoking;
- **Oil and gas** regulations;
- **Range management** including grazing and horses;
- **Activities allowed only in designated areas**, such as fishing, camping, bolted climbing, horseback riding, mountain biking or dog walking including voice and sight control;
- **Limitations on other uses** include unmanned aerial vehicles or drones, model glider flying, hot air balloons and geocaching;
- **Prohibited activities** such as graffiti, fixed-heel skiing, hunting, littering, dumping and motorized vehicles;
- **Commercial use**, including permitting for competitive events, photography, filming and for-profit group trips;
- **Visitor parking**, including curfews and fees; and
- **Other prohibited conduct**, such as trespassing or use of alcohol, marijuana and glass containers.

More information on these regulations can be found **here.** In addition, policies, plans and regulations define activities that are not allowed on OSMP lands because they do not fit the criteria for passive recreation. These include:

- Motorized vehicles (e-bikes)*
- Hunting
- Organized sports, competitive events
- Paintball games
- Swimming (prohibited in lakes and ponds)
- Drones
- Commercial use without a permit
- Launching or landing of hot air balloons

*The City of Boulder complies with the federal Americans with Disabilities Act (ADA). In meeting the goal of accessibility, we work to ensure that visitors experiencing disabilities will be afforded experiences and opportunities commensurate with other visitors to the greatest extent practical.

City and County Planning Context

Figure 3.1 shows the relationship of the current plan and policy documents that guide the management of our department.

We deliver services within a broad and integrated municipal governance model. To foster integrated operations, the city manager provides all city departments and staff guidance in the form of following a shared vision and set of values.

Citywide Vision: Service excellence for an inspired future.

Citywide Values:

- Customer Service;
- Respect;
- Integrity;
- Collaboration; and
- Innovation.

For a more in-depth description of the city's Vision and Values, please refer to our **city culture webpage**. You can also see how OSMP staff applies the vision and values to our work in **Chapter 4.**

SUSTAINABILITY FRAMEWORK

The City of Boulder is continuously working to fulfill its vision. The Sustainability Framework helps to provide a common language for all city departments, the local community and the Boulder City Council about what makes a great community.

The Sustainability Framework aligns city government with a wide range of community priorities, to evaluate whether expectations are being met and to adjust, if necessary. To

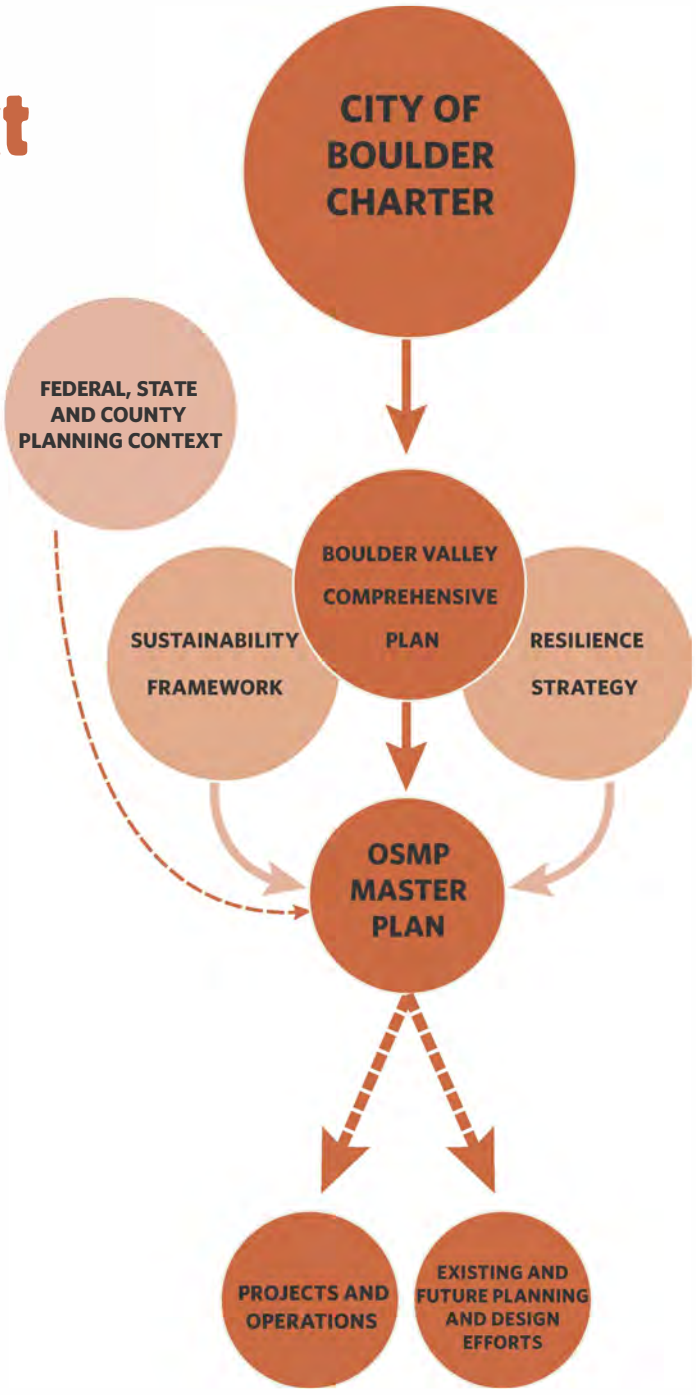


Figure 3.1: City and County Planning Context

realize the city's vision of "service excellence for an inspired future," the Sustainability Framework establishes seven broad outcome categories. The annual budget, as well as strategic plans and master plans, develop strategies to achieve those outcomes.

Elements of the Sustainability Framework are:

- Safe Community;
- Healthy and Socially Thriving Community;
- Livable Community;
- Accessible and Connected Community;
- Environmentally Sustainable Community;
- Economically Vital Community; and
- Good Governance.

We integrate the Sustainability Framework into our planning efforts and will continue to do so in the development of our department's Master Plan and other future plans.

Read the full **City of Boulder Sustainability Framework.**

BOULDER VALLEY COMPREHENSIVE PLAN (BVCP)

The BVCP is developed and jointly adopted by the City of Boulder and Boulder County to guide land use decisions in the Boulder Valley. Intended to integrate a range of community service areas, the BVCP provides high-level policies and goals to protect the natural environment of the Boulder Valley while fostering a livable, vibrant and sustainable community. Adopted in 1977, the City of Boulder and Boulder County update the plan periodically, most recently doing so in 2017. Figure 3.2 shows which OSMP managed lands are within the BVCP planning area.

The BVCP supports the community's vision for balancing development and preservation of the Boulder Valley. The BVCP reflects the city's Sustainability Framework. This arrangement allows the city to evaluate whether expectations are being met and to identify where the city needs to make adjustments. Master plans, strategic plans and the city's annual capital and operation budget outline the strategies designed to achieve the BVCP's goals.

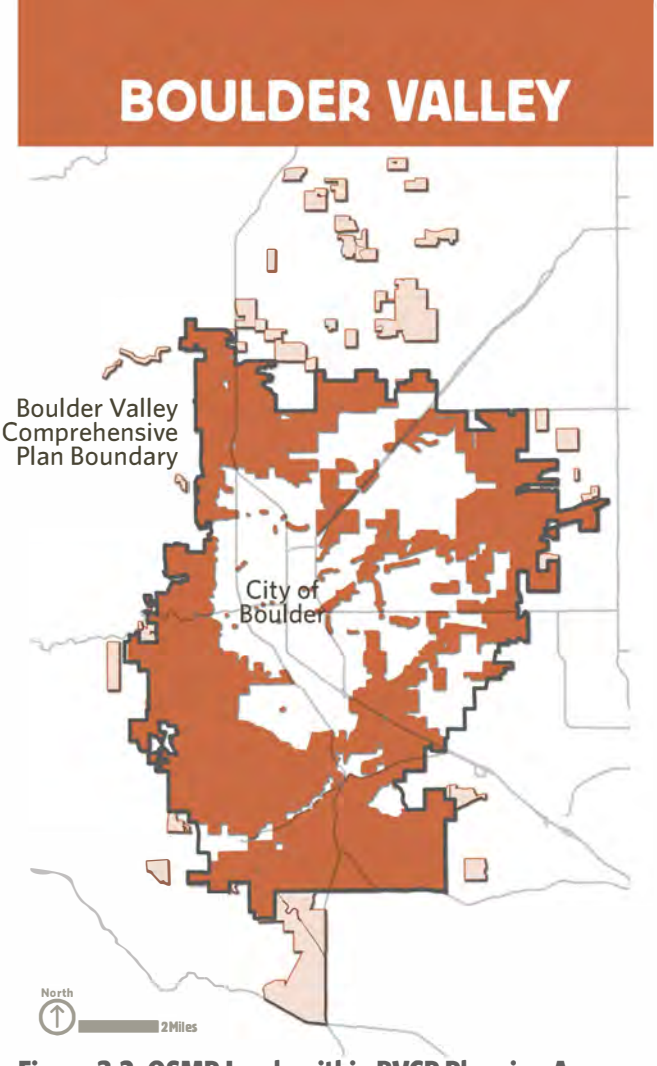


Figure 3.2: OSMP Lands within BVCP Planning Area

Integral to the BVCP are the core values and guidance to achieve sustainability, intergovernmental cooperation, organized urban development and protection of open space. Within the BVCP, locations that support natural ecosystems or native plants and animals that possess important ecological, biological or geological values are defined as Boulder Valley Natural Ecosystems. The Boulder Valley Ecosystem Map designates most city open space as "natural ecosystems."

CLIMATE COMMITMENT

Approved by City Council in 2016, Boulder's Climate Commitment seeks to rapidly transition Boulder to a clean energy economy and lifestyle through innovative strategies, products and services that dramatically reduce greenhouse gas emissions, enhance our community's resilience and support a vital and equitable economy. The Climate Commitment is not the job of any single or subset of city programs, but rather a set of commitments to action for the entire city government. The goals of the Climate Commitment are:

1. An 80-percent reduction in community greenhouse gas emissions below 2005 levels by 2050;
2. One hundred percent renewable electricity by 2030; and
3. An 80-percent reduction in organization greenhouse gas emissions below 2008 levels by 2030.

Divided into three focus areas (Energy, Resources and Ecosystems), the City of Boulder's Climate Commitment recognizes the need for a comprehensive strategy. Of its focus areas, energy is the primary near-term focus because of the critical importance of reducing our consumption of fossil fuels. Simultaneously, the city and our community continue to explore ways to address the impact of resource use on emissions and how ecosystem management can enhance the emission-minimizing services provided by natural systems. The focus area of "Ecosystems, especially Wildland and Agricultural Ecosystems" is particularly relevant to our department.

Boulder's Climate Commitment describes the focus on ecosystems as follows:

Ecosystems: The under appreciated regulators of greenhouse gas (GHG) emissions are the different natural ecosystems that can reduce emissions and even remove or "sequester" carbon dioxide (CO_2) out of the atmosphere. Living trees, for example, capture atmospheric carbon while also buffering temperature and retaining water. The three areas of action within the Ecosystems focus area are Urban, Wildland and Agricultural.

Read the full **City of Boulder Climate Commitment**.

RESILIENCE STRATEGY

In the wake of severe flooding in Boulder and across the Front Range in 2013, the City of Boulder completed its resilience strategy in 2016. The strategy takes a comprehensive view of Boulder's resilience challenges and opportunities and provides strategies to bolster our community's preparedness to respond to future challenges.

The Resilience Strategy identifies the following main action areas:

1. Prepare all segments of our community for uncertainty and disruption by encouraging community preparedness, creating a culture of risk awareness and personalizing resilience;
2. Capitalize on the collective problem-solving and creativity of our community by leveraging advances in data, research and observations to address emerging resilience challenges; and
3. Embed resilience into city operations and systems by transforming our approach to community resilience.

Read the full **City of Boulder Resilience Strategy.**

BOULDER COUNTY COMPREHENSIVE PLAN (BCCP)

The Boulder County Planning Commission adopted the BCCP with guidance from various county boards including the Board of County Commissioners. It serves as Boulder County's overarching policy guidance when making land-use decisions, acquiring open space and managing lands. The BCCP is comprised of several elements, each addressing a different aspect of county service delivery.

BOULDER COUNTY

The guiding principles of the BCCP are:

1. Growth should be channeled to municipalities;
2. Agricultural lands should be protected; and
3. Preservation of our environmental and natural resources should be a high priority in making land-use decisions.

In addition to the Environmental Resources Element, the BCCP includes elements describing policies for open space, cultural resources and agriculture elements that are relevant to our owned and managed open space lands in unincorporated Boulder County (88 percent of OSMP lands). Figure 3.3 shows OSMP lands within the BCCP planning area.

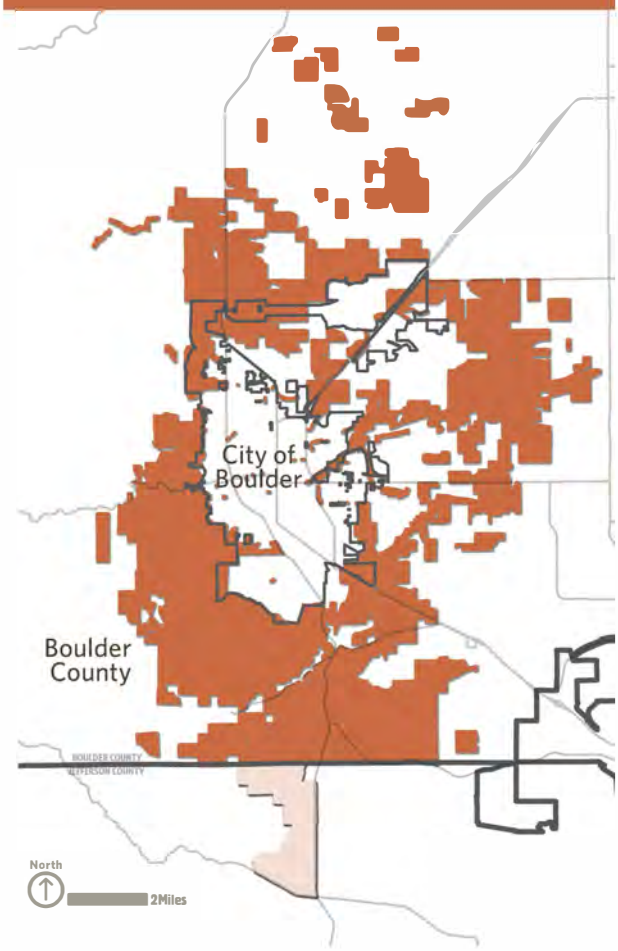


Figure 3.3: OSMP Lands within BCCP Planning Area

The open space element includes definitions and functions of open space land acquired and managed by Boulder County as well as a description of the methods used to fund the county's acquisition of open space. The open space element also includes policies addressing acquisition, resource management, scenic area protection, recreational use and rural character preservation, along with community buffering, trails, partnerships and decision making.

The BCCP environmental resources element designates species of special concern and areas of important habitat at two scales — "site-specific" and "landscape." At the site-specific scale, the BCCP designates critical wildlife habitats, rare plant areas, wetlands, riparian and significant natural communities. Environmental resources designated at the landscape-scale include natural areas and natural landmarks. As part of the 2017 update to the BVCP, we must consider the environmental resources element of the BCCP in our planning, decision-making and management.

View the entire **BCCP**.

Open Space and Mountain Parks Planning

Our department plans provide guidance at various scales for certain resource types and visitor opportunities. Through the years, the planning approaches we've used have varied and continue to evolve. The following sections provide an overview of our current planning framework. Additional highlights of these plans and related policies are illustrated in **Chapter 12**.

HISTORICAL PLANS

Planning documents for the management of our open space system existed well before city residents passed the nation's first open space sales tax in 1967, which was instrumental in building the city's Open Space and Mountain Parks Department. The Olmsted report (1910) and the National Park Service Master Plan for the Mountain Parks (1937) were formative documents in helping to shape the city's Mountain Parks system. Soon after the passage of the 1967 open space sales tax, the Boulder City Council approved an open space plan largely focused on acquiring priority pieces of land to expand the open space system. That plan included open space purposes that were later included in the city charter and continue to help guide Boulder's open space management.

LONG RANGE MANAGEMENT POLICIES (LRMP)

The **LRMP**, approved by the OSBT and City Council in 1995 provides general policy direction for the management of open space lands. In 1999, a similar effort to provide general guidance for the then separate Boulder Mountain Parks division was completed and approved by the Parks and Recreation Advisory Board and can be read in its entirety **here.**

PLANNING FOR CHARTER PURPOSES

Since 1986, our staff and the Boulder community have developed 15 plans that guide the management of the open space system and its resources in accordance with the city charter. To assess whether our existing plans adequately address the charter purposes, our staff analyzed the major goals or objectives of these departmental planning documents in relation to the primary charter purposes they fulfill. Since some of the charter purposes include similar or overlapping terminology, our staff developed specific "primary purpose" definitions and succinct titles for **each of the charter purposes**. The definitions determine what primary charter purpose is fulfilled by each plan's major goals or objectives, recognizing that the actual purposes described in the charter are nuanced and several charter purposes may be fulfilled by goals or objectives.

Summary **Table 3.1** identifies charter purpose b, the preservation of water, landscapes and ecosystems, as a major goal for our plans, followed closely by charter purpose h, aesthetics and quality of life. Passive recreation, shown as charter purpose c, is next, followed by d, agriculture, and a, natural areas and features or species of special value.

We identify charter purposes e, limiting sprawl, and f, urban shaping, as major goals within only one of our department plans.

A golden yellow sunset over the silhouette of the Flatirons and the Front Range. © Klaus Girk

Table 3.1: Planning for Charter Purposes

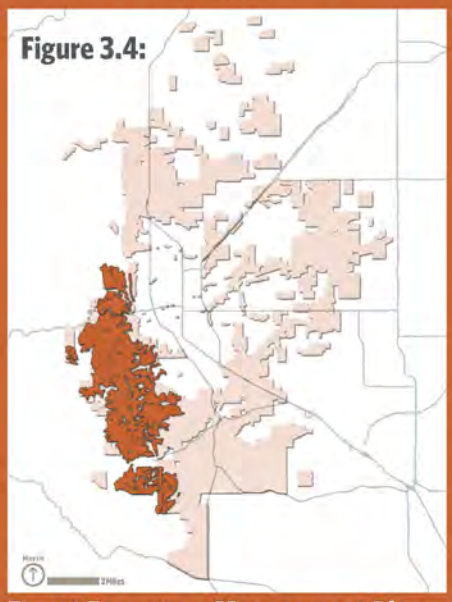
OSMP PLAN GOALS AND OBJECTIVES	CHARTER PURPOSE
	a Natural areas and features or species of special value; b Water, landscapes and ecosystems; c Passive Recreation; d Agriculture; e Limiting Sprawl; f Urban Shaping; g Floodplain Protection; h Aesthetics and Quality of Life
Maintain, restore and preserve native ecosystems.	a
Restore and improve natural, cultural, passive recreational, and agricultural resources where suitable.	a
Restore and conserve the native flora and fauna (of the Colorado Tallgrass Prairie) to approximate pre-settlement conditions.	a
Maintain natural ecological processes in the tallgrass communities.	a
Encourage scientific research consistent with the basic purpose of the (Colorado Tallgrass Prairie) natural area.	a
Pursue acquisition of areas with critical ecological value and that complement or provide continuity with existing open space.	b
Recognize and protect significant historic, archaeological and ethnographic values.	b
Conduct educational and interpretive programs to instill an appreciation for the balance of natural processes and respect for life in its many forms.	b
Improve large habitat blocks to sustain the Grassland Plan targets.	b
Improve ecological processes and conditions to acceptable levels as defined by the Grassland Plan.	b
Restore and conserve wetlands, riparian areas, creeks and ponds.	b
Implement Grassland Plan monitoring to continue effective strategies and refine or abandon ineffective ones.	b
Attract external funding sources for grassland conservation.	b
Preserve ecological systems and land resources that provide habitat for native plants and animals.	b
Maintain or enhance native species, their communities and the ecological processes that sustain them.	b
Acquire and maintain lands consistent with the charter open space purposes and the Area Management Plan goals.	b
Manage and preserve natural and cultural resources.	b
Restore and sustain the ecological health of Sombrero Marsh.	b
Where there are real or potential conflicts between nature and human use in the Boulder Mountain Parks, preference will be given to sustaining nature; both for its intrinsic values and its value as a component of human experience.	b

OSMP Plan Goals and Objectives identified in this list come from the following list of plans:

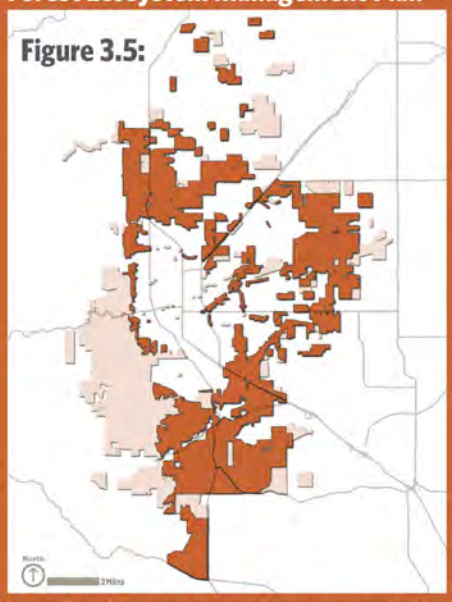
- Open Space Long Range Management Policies
- Grassland Ecosystem Management Plan
- Forest Ecosystem Management Plan
- Agricultural Resources Management Plan
- Boulder Mountain Parks Resource Protection and Visitor Use Plan
- OSMP Acquisitions Update 2013-2019
- Visitor Master Plan
- Trail Study Area Plans/Area Management Plans
- Sombrero Marsh Site Management Plan
- Colorado Tallgrass Prairie Management Plan

OSMP PLAN GOALS AND OBJECTIVES	CHARTER PURPOSE							
	a Natural areas and features or species of special value	b Water, landscapes and ecosystems	c Passive Recreation	d Agriculture	e Limiting Sprawl	f Urban Shaping	g Floodplain Protection	h Aesthetics and Quality of Life
Provide for aesthetic enjoyment and provide for a passive recreation experience.			c					h
Open Space-developed facilities include passive recreation amenities, such as parking areas, comfort stations, picnic areas, regulation boards, trailheads, trails and bridges.			c					
Provide and maintain highly functional and sustainable visitor facilities.			c					
Ensure compatibility of passive recreational activities with long-term resource protection.			c					
Partner with the community in passive recreation decision-making and stewardship.			c					
Acquire the lands or interests to provide access to the city's open space lands and relieve the adverse effects of crowding upon resources and the visitor experience.			c					
Improve the quality of visitor experiences and increase the sustainability of trails and trailheads while conserving resources.			c					
Balance and integrate the activities of nature and people in accordance with the Boulder City Charter.			c					
Environmental and economic sustainability in the planning and implementation of agricultural activities.				d				
Integrate sustainable agricultural land uses with ecological conservation objectives.				d				
Maintain and enhance the city's agricultural operations and relationships with ranchers and farmers.				d				
Integrate agricultural, scenic, cultural and ecological stewardship.				d				
Support and enrich opportunities for people to connect with agriculture.				d				
Maintain sustainable agricultural operations by balancing economic and natural resource considerations.				d				
Use land preservation to support the city's Climate Action Plan.					e			
Enhance the aesthetic value of open space in supporting an urban form that attracts employers and residents.						f		
Create opportunities to encourage the public to participate in accomplishing the purposes of open space.								h
Maintain or enhance the quality of the visitor experience.								h
Coordinate open space acquisitions with other compatible community needs.								h
Demonstrate a "best value approach" for public funds.								h
Balance the protection of open space near the city with acquisitions farther away.								h
Reduce the wildlife risk to forest and human communities.								h
Manage and preserve land for passive recreation use, for its aesthetic or passive recreational value, and for its contribution to the quality of life of the community.								h
Use education and outreach to help accomplish management goals.								h
Use the outdoors for teaching children and adults about wetland ecology, environmental restoration and land stewardship.								h
Encourage education and interpretation of tallgrass prairie relicts.								h
Maintain Boulder Mountain Parks as a place of inspiration, natural wonders, spiritual renewal and educational benefit for the community.								h
Inform and engage the community in setting policy and managing the park.								h

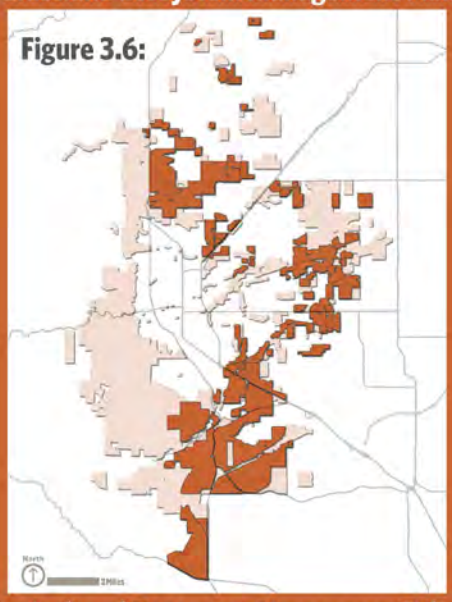
RESOURCE MANAGEMENT PLANNING AREAS



Forest Ecosystem Management Plan



Grassland Ecosystem Management Plan



Agricultural Resources Management Plan

These charter purposes are less of a focus for our department, but are a major focal point in the citywide BVCP. Charter purpose g, floodplain protection, was not specifically identified as a main goal or objective in any of our plans – although our plans do address the protection of wetlands and riparian areas and unique features. In addition, floodplain programs and collaboration with Boulder County provide guidance on floodplain protection.

SYSTEMWIDE MANAGEMENT PLANS

An **Acquisition Plan** was developed in 1999, and updated in 2001, 2005 and 2013 to guide strategic investments in land and water acquisition. This plan is based on the city charter purposes for open space and is well aligned with the BVCP Sustainability Framework.

Resource plans such as the **Grassland Ecosystem Management Plan** (Grassland Plan) and the **Forest Ecosystem Management Plan** (FEMP) provide specific management direction to ensure the ecological sustainability of our ecological systems. The Grassland Plan, approved by City Council in 2010, created grassland conservation targets to understand, manage and monitor the grassland system. Conservation targets include:

- Mixedgrass prairie mosaic;
- Xeric tallgrass prairie;
- Agricultural operations;
- Black-tailed prairie dog;
- Wetlands- including ponds;
- Riparian areas- including creeks; and
- Mesic bluestem prairie.

Best opportunity areas (BOAs) for conservation and restoration across multiple targets were also identified to set priorities for where conservation actions are likely

to have the greatest benefit and implementation areas were determined.

The FEMP, approved by City Council in 1999, had the primary goals of:

1. Maintaining or enhancing native plant and animal species, their communities, and the ecological processes that sustain them; and
2. Reducing the wildfire risk to forest and human communities.

The OSBT and City Council also recently approved our **Agricultural Resources Management Plan** (Ag Plan) that outlines a long-term community vision to ensure sustainable and thriving agricultural operations on the open space system. The main goals are to:

- Maintain and enhance the city's agricultural operations and relationships with current and future ranchers and farmers;
- Integrate agricultural, scenic, cultural and ecological stewardship; and
- Support and enrich opportunities for people to connect with agriculture.

The **2005 Visitor Master Plan** (VMP) provides a framework for providing high-quality visitor experiences, visitor facilities and visitor services while ensuring that OSMP lands are protected and preserved for future generations. The VMP's goals are primarily focused on improving visitor experience and include:

1. Maintaining or enhancing the quality of the visitor experience when engaged in passive recreational activities, such as hiking, climbing and bicycling;
2. Improving access by providing and maintaining highly functional and sustainable visitor facilities that support visitor access to appropriate destinations and add to the quality of their experience;
3. Ensuring that passive recreational activities and facilities are compatible with long-term protection of natural, agricultural and cultural resources; and
4. Partnering with the community in passive recreation decision making and stewardship efforts.

Boulder Mountain Parks Resource Protection and Visitor Use Plan was approved by the Parks and Recreation Advisory Board in 1999 prior to the consolidation of Open Space and Mountain Parks and describes a vision, mission, set of guiding principles and several broad action paths for the management of the Mountain Parks. This provided important ideas for several systemwide OSMP plans as well as for geographic planning for the mountain parks area.

GEOGRAPHIC AREA PLANS

Before its consolidation with Mountain Parks in 2001, the Open Space and Real Estate Department embarked upon zonal planning, preparing plans for the **North Boulder Valley** and the **South Boulder Creek** areas. Those plans were approved by the OSBT in 1997 and 1998, respectively.

Guided by the VMP, past Trail Study Area (TSA) plans have integrated and applied direction from the VMP and resource plans at a more local scale. We completed and are currently implementing the following four TSA Plans:

- the **Marshall Mesa/Southern Grasslands TSA** (2005),
- the **Eldorado Mountain/Doudy Draw TSA** (2006),
- the **West TSA** (2011), and
- the **North TSA** (2016).

A view of a marsh with bulrushes, algae and duckweed on Short-Milne property. OSMP Image

A New Systemwide Master Plan

The Master Plan will be the department's first plan that integrates all city charter purposes across our entire portfolio of land and water. It is also intended to be forward thinking, offering a vision for the next 50 years. It will provide internal and external benefits and build on the success and knowledge of past plans. The master planning process will identify and confirm what the community cares about most in relation to the open space system. It will also assist our staff to align service delivery with community values.

We envision the Master Plan as an engaging, easy-to-use document that identifies major focus areas that respond to community values and **OSMP's charter purposes**, and provides primary, systemwide guidance that aligns with and links together our existing plans. The process will also identify measurable strategies that establish an integrated vision for the next decade.

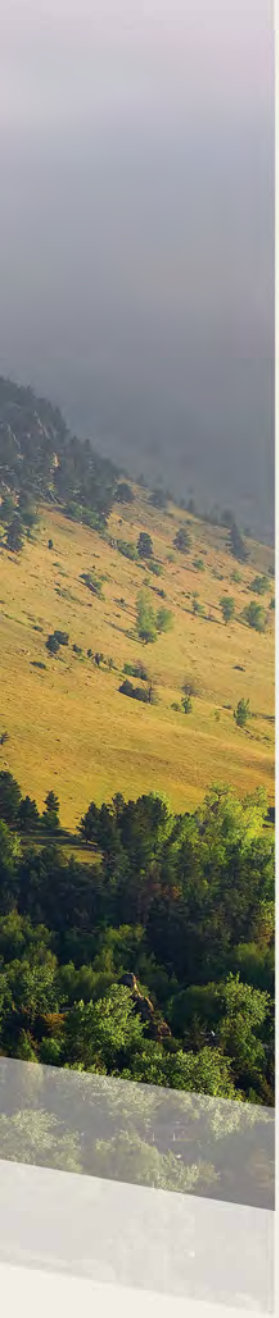
Work planning and budget processes also support staff and community values. Therefore, the master planning process and final products for the plan will provide clear priorities that staff and the community can track and understand. For example, priorities for resource stewardship, visitor connections with nature and internal operational services will be strategically combined within a framework that anticipates long-, medium- and short-term goals. The Master Plan will also include recommendations for updates to the BVCP and make general recommendations to update certain plans or policies to bring them into alignment with any new guidance that emerges in the Master Plan process.

As part of this master planning process, we will explore approaches to planning that incorporate all aspects of service delivery. We will re-evaluate our approach to planning to ensure our plans deliver on the values identified in the Master Plan. For example, we will incorporate industry best practices, exploring a geographic and site-specific approach to planning and design. This approach may resemble previous management plans developed for the North Boulder Valley and South Boulder Creek areas.

Our existing plans typically have a planning horizon of about 12 years; however, the reality of our staff resources, timing and unforeseen events (e.g., the 2013 flood) mean plans can exist without updates for up to 20 years. The upcoming Master Plan will integrate the city's best practices for plan updates with departmental operations and budgeting practices. Each version of the Master Plan will have a planning horizon of 10 to 12 years and be updated every five to six years to refresh commitments within the time-frame of a six-year citywide capital improvement program (CIP). See **Chapter 4** for more on CIP planning.

4

FINANCES AND CENTRAL OPERATIONS



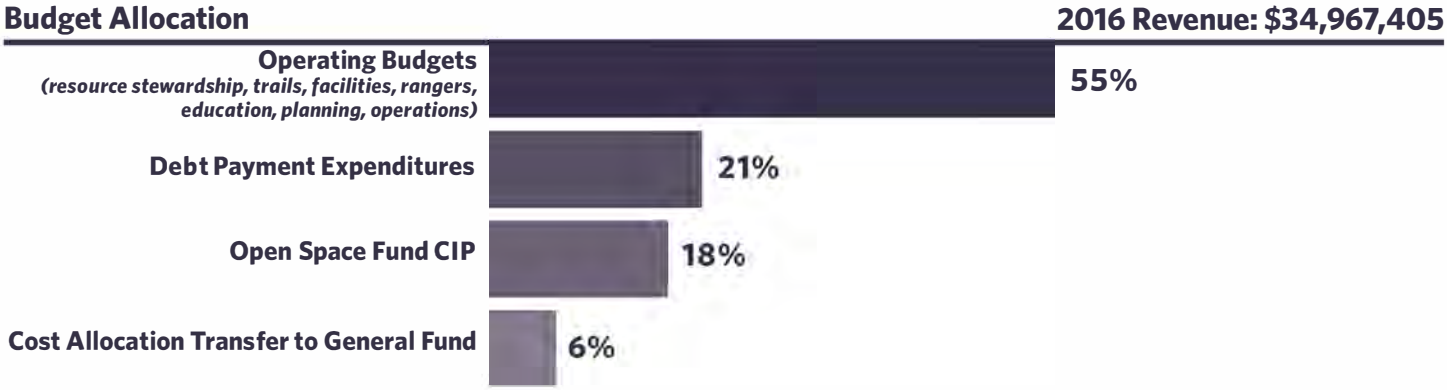
Aerial view of Settlers' Park and Red Rocks in early morning with mist clinging to hillsides.
© Doug Goodin

This chapter addresses how our staff works to fulfill open space purposes in the Boulder City Charter. It describes revenues, spending, and the way we structure our work process to provide critical services to the Boulder community and its natural environment.

SNAPSHOT

As we steward both public funds and public lands, our staff is dedicated to fulfilling the voter-approved charter regarding the conservation of open space. We are held accountable on delivery of these services by the Open Space Board of Trustees (OSBT), City Council and city residents. To meet these needs, **OSMP staff partner with many groups in the region and manage funds carefully.**

OSMP'S REVENUE & BUDGET ALLOCATION



CAPITAL IMPROVEMENTS PROGRAM

Additionally, OSMP is included in citywide CIP project types including:

FINANCES AND CENTRAL OPERATIONS

OSMP CAPITAL IMPROVEMENT BUDGET*

YEAR	ACQUISITION BUDGET IN CIP**	OTHER INVESTMENTS IN CIP	TOTAL CIP	% CIP DEVOTED TO ACQUISITION
2005	$3,700,000	$250,000	$3,950,000	**94%**
2006	$3,700,000	$450,000	$4,150,000	**89%**
2007	$3,530,000	$450,000	$3,980,000	**89%**
2008	$3,530,000	$450,000	$3,980,000	**89%**
2009	$3,700,000	$450,000	$4,150,000	**89%**
2010	$3,700,000	$450,000	$4,150,000	**89%**
2011	$1,872,165	$450,000	$2,322,165	**81%**
2012	$3,700,000	$1,960,000	$5,660,000	**65%**
2013	$3,700,000	$1,000,000	$4,700,000	**79%**
2014	$5,700,000	$1,310,000	$7,010,000	**81%**
2015	$5,700,000	$1,908,700	$7,608,700	**75%**
2016	$5,700,000	$5,790,300	$11,490,300	**50%**
2017	$5,000,000	$4,530,000	$9,530,000	**52%**
2018	$4,920,000	$4,160,000	$9,080,000	**54%**

SUMMARY OF EXISTING CONDITIONS

88% of funding for OSMP comes from three citizen approved **sales tax increments.**

These citizen-approved measures were carefully designed to sunset at certain times to account for declining acquisition needs over time. Therefore, as planned, our revenues will decline as some of these tax increments expire. Currently, the open space fund is supported by a **0.88-percent** sales tax increment. **By 2035, that increment will be 0.50 percent** and will remain in perpetuity to support ongoing OSMP operations.

In the past, **acquisitions** were the primary capital expenditure... **Since 1898, nearly $650 million* has been spent to acquire more than 45,000 acres.**

But, only about **5,000** acres of priority acquisitions remain. As the system has grown, more funds are devoted to maintenance.

not adjusted for inflation

****This amount only reflects acquisition dollars programmed into the CIP. The total acquisitions budget for OSMP also includes annual debt service, including payments against past bonds.***

Finances and Funding

ECONOMIC CONDITIONS

In 2006, after a period of frequently declining revenues, the Boulder City Council appointed a Blue Ribbon Commission to study revenue policy issues confronting the city. The commission's 2008 report to council identified strategies and practices to stabilize revenues over the short- and long-term.

Recommendations included:

1. Renewal of expiring sales taxes without a sunset;
2. Removal of Taxpayer Bill of Rights (TABOR) limitations on property tax;
3. Review of taxes and fees to ensure that growth pays its own way;
4. Diversification of revenues;
5. Review of fees for appropriate cost recovery; and
6. Leveraging diverse funding and revenue opportunities.

Since that time, many of these recommendations have been implemented and the city has experienced steady revenue growth. In 2013 and 2014, a cross-departmental team completed the update of the city's **Comprehensive Financial Strategy**, an evolution of the original Blue Ribbon Commission work that re-emphasized the importance of financial discipline, "Priority-Based Budgeting" and a balanced budget. As a result of this work, the city's financial forecasting model now predicts an annual, citywide revenue shortfall by 2030 if the pattern of recent expenditures continues. Controlling expenses will be key to minimizing associated risks.

In addition, our department heavily depends on sales tax revenues and will need to continue to explore other revenues and financial strategies to ensure a healthy financial outlook. For example, city analysts show that sales tax revenue is down overall for the City of Boulder, directly related to a significant increase in internet sales and a shift from spending on goods to spending on experiences. Staff will continue to closely monitor this trend.

REVENUES

Three citizen-approved sales tax increments (Table 4.1) provide 88 percent of all our current funding, evidence that City of Boulder residents continue to recognize the value of open space to the community. By approving tax increases on a regular basis, Boulder residents have created a remarkable legacy for themselves and future generations.

Table 4.1: Citizen-Approved Open Space Sales Tax Increments

YEAR	AMOUNT	TERMS
1967	0.40%	Approved in perpetuity
1989	0.33%	Will be reduced to 0.22% on January 1, 2019, then reduced again on January 1, 2035 to 0.10% and exist in perpetuity
2003	0.15%	Will be repurposed for transportation uses as of January 1, 2020, and repurposed again for general city purposes as of January 1, 2030, and expire on December 31, 2031

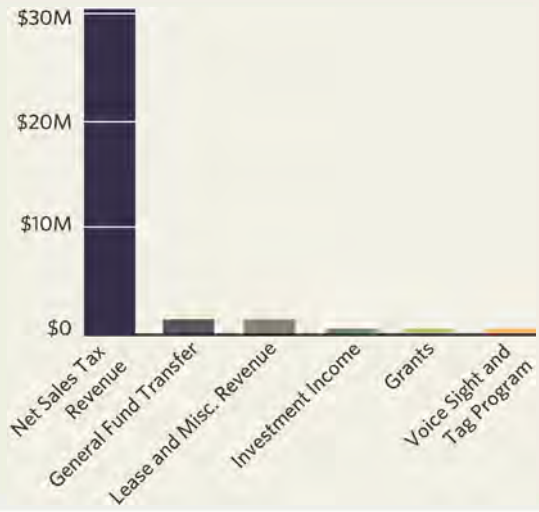
These citizen-approved measures were designed to sunset at certain times to account for declining acquisition needs over time. Therefore, as planned, our revenues will decline as some of these tax increments expire. Currently, the open space fund is supported by a 0.88-percent sales tax increment. By 2035, that increment will be 0.50 percent and will remain in perpetuity to support ongoing Open Space and Mountain Parks (OSMP) operations.

Sales tax revenue also can be a volatile funding source that puts departments at some risk if relied upon heavily. In response to this unpredictability and the tax sunsets, we ensure a balanced annual budget by reducing or scheduling spending over time, developing conservative budgets and building capacity to respond to economic change. Our department has also increased reserve funds to more than $5 million to account for these and other economic fluctuations. This amount will cover 18 to 20 percent of annual operating and debt expenses, more than what the city requires or holds in reserve for its general fund.

Another important financial strategy is diversifying funding streams. In addition to the dedicated sales tax, our funding also comes from the city's general fund, state lottery funds, grants and fees for parking, facility rentals, commercial and special use permits, Voice and Sight permits, agricultural leases and other property leases as shown in Figure 4.1. We will continue to leverage alternative funding sources to meet departmental needs.

88 percent of all current funding for OSMP comes from net sales tax revenue. As some of these tax increments expire, OSMP revenues will decline.

Figure 4.1: OSMP 2016 Revenue



Through a voter-approved ballot measure, we issued a $10-million General Obligation Bond in 2014 to support real estate acquisition. The bond allows our department to issue another $23 million in debt to support acquisition purposes. To take on future debt, we estimate debt service in future years and produce debt schedules for the life of the bond when the debt is issued.

SPENDING

Following State of Colorado regulations, the City of Boulder budget is appropriated annually. It is also aligned with city guidelines and practices. OSMP staff hosts a rigorous internal process to prioritize investments based on the annual work program, city and department priorities, and the OSMP budget guiding principles, which emphasize:

- Taking care of what we have;
- Playing by the rules; and
- Promoting safety at all times.

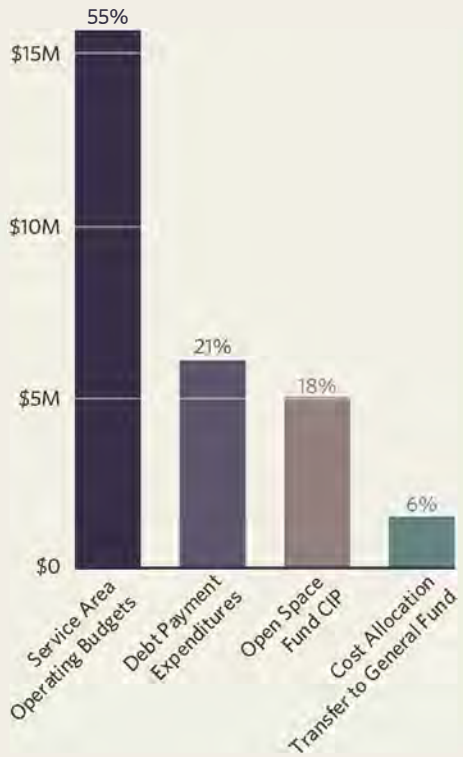
Over the coming years, we anticipate ongoing investments in condition assessments, work planning and project management tools to enhance this process. We are also improving our ability to forecast multi-year work planning and budget needs in alignment with the city's capital improvements program. For example, we are incorporating best practices to document the condition of assets and anticipate ongoing costs to maintain ecosystem enhancements, new trails and other facilities. These improvements will help forecast total budget needs over the long term.

Our budget includes capital and operating costs, debt payments, and proportional payments to the City of Boulder's General Fund to cover citywide services such as human resources and information technology.

The department's budget for 2016, described in Figure 4.2, includes budgets for our four major service areas:

- Resources and Stewardship;
- Community Connections and Partnerships;
- Trails and Facilities; and
- Central Services.

Figure 4.2: 2016 Budget Allocation



CAPITAL IMPROVEMENT CATEGORIES

We define CIP projects as any major project requiring the expenditure of public funds – over and above operation expenditures – for the purchase, construction or replacement of the physical assets of the community. This broad definition includes major planning studies, projects that are bondable, new or expanded physical facilities as well as the land necessary for the project. CIP projects fall into one of the following five categories:

New capital project if resulting in the construction or acquisition of a new asset;

Capital enhancement if resulting in the expansion or significant improvement of an existing facility or asset;

Capital maintenance for the repair, replacement or renovation of an existing asset;

Land and asset acquisition for the purchase of real property, such as land, mineral or water rights, or permanent easements; or

Capital planning studies that result in the development of a study or plan intended to identify, plan or prepare for the construction or acquisition of capital assets or capital projects.

Across all departments, the city is spending the majority, more than 77 percent, of its 2018 capital funds on capital maintenance and enhancement of its existing assets.

CITYWIDE CAPITAL IMPROVEMENTS PROGRAM

The City of Boulder's Capital Improvement Program (CIP) is a six-year plan for public investments in physical improvements. The CIP provides a forecast of funds available for capital projects, and identifies all planned capital improvement projects and their estimated costs over the six-year period. Allocations are made according to the **CIP's guiding principles**, which include alignment with the city's Sustainability Framework.

The CIP's first year program is adopted by the Boulder City Council as the "Capital Budget," and serves as a counterpart to the annual Operating Budget. Although we only appropriate fiscal resources in the first year of the CIP, the succeeding five years of the CIP are important in providing a longer-term plan for setting spending priorities, scheduling projects in a logical sequence, and coordinating and targeting capital improvement projects for all city departments.

Citywide, the CIP is an essential implementation tool for carrying out the Boulder Valley Comprehensive Plan's policies for the orderly and efficient provision of urban facilities and services. **In 2018, all city departments, combined, will spend more than 77 percent of the combined capital funds on capital maintenance and enhancement of its existing assets. In other words, the current CIP focuses on taking care of what the city already owns, with an emphasis on making improvements to its core service areas.**

OUR CAPITAL IMPROVEMENTS PROGRAM

For our department, CIP projects typically include acquisitions, large-scale plans – such as the master plan - major trail work, farm-site improvements and major restoration or ecological systems work as well as implementation of past plans, such as Trail Study Area Plans. Over the course of our history, much of the funding within the department's CIP supported the acquisition of new property. Before the flood in 2013, acquisitions historically made up 80 to 90 percent of the department's overall capital improvements budget. New business needs and revised budget practices have reduced that percentage. For example, while total CIP spending for acquisitions has increased in the last decade, due in part to rising land values, acquisitions accounted for roughly half of the capital budget for our department in the last three years. This shift also reflects a gradual decline in land available for acquisition. Refer to Table 4.2.

Table 4.2: OSMP Capital Improvement Budget*

YEAR	ACQUISITION BUDGET IN CIP**	OTHER INVESTMENTS IN CIP	TOTAL CIP	% CIP DEVOTED TO ACQUISITION
2005	$3,700,000	$250,000	$3,950,000	94%
2006	$3,700,000	$450,000	$4,150,000	89%
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2012	$3,700,000	$1,960,000	$5,660,000	65%
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2015	$5,700,000	$1,908,700	$7,608,700	75%
2016	$5,700,000	$5,790,300	$11,490,300	50%
2017	$5,000,000	$4,530,000	$9,530,000	52%
2018	$4,920,000	$4,160,000	$9,080,000	54%

Since 1898, a total of $649,700,397 has been spent to acquire the city's open space system. This figure represents the cost of the acquisition at the time of purchase and has not been adjusted for inflation.

****This amount only reflects acquisition dollars programmed into the CIP. The total acquisitions budget for OSMP also includes annual debt service, including payments against past bonds.***

While acquisitions remain an integral part of the business of the department, we incorporate new properties into a system that requires significant ongoing maintenance of physical and other resources. Work is ongoing to fully understand the deferred maintenance for all facility types across the system. Meanwhile, the current 2018-2023 CIP includes an increased investment in capital stewardship, such as enhancement and capital maintenance, as demonstrated in the creation of capital projects to support existing facilities and major trail maintenance as well as ecological and cultural resources restoration.

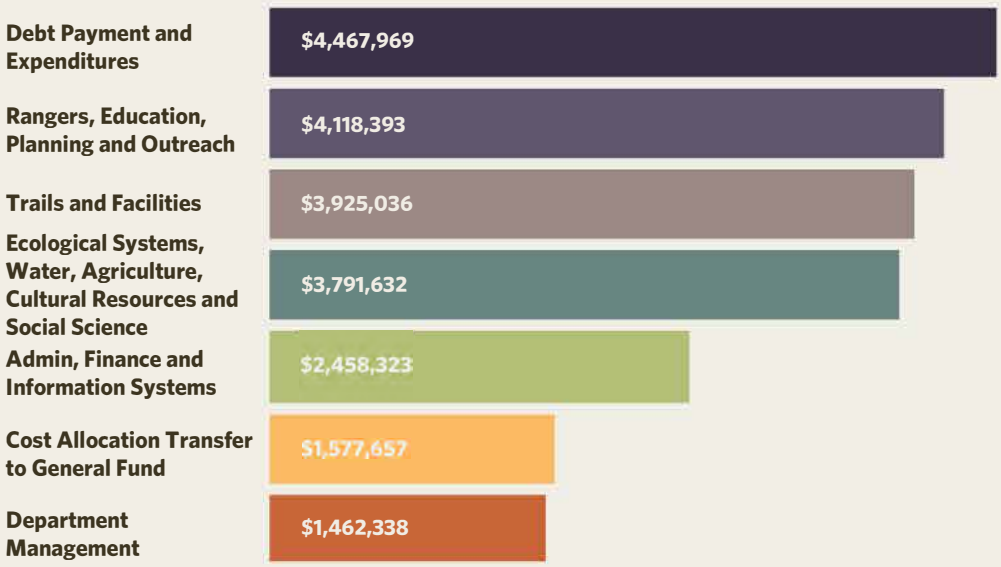
OPERATING EXPENSES

In addition to this capital budget, we maintain an operating budget to account for staffing and other ongoing costs described in Figure 4.3. As of 2017, we employ more than 125 Full-Time Equivalent (FTE) staff members as well as up to 300 seasonal and temporary staff members to support field operations annually.

This number includes recent job reclassifications in accordance with the Affordable Care Act. For example, 16 seasonal positions were reclassified to 0.75 partial year standard FTE (12 FTE total) as well as about 70 seasonal staff members to temporary positions. OSMP will continue to monitor employee salaries and job roles to ensure accurate job classifications and compliance with federal law.

As the amount of land available to acquire in the Boulder Valley decreases, more staff members have also been hired to support operations and maintenance. In 2017, we devoted 44 percent of FTEs and 87 percent of seasonal and temporary staff to maintaining assets and systems. In addition to the $1.1 million for capital maintenance set aside in the department's CIP budget for 2018, over half of the service area operating budgets will be devoted to asset and systems maintenance.

Figure 4.3: 2016 OSMP Operating Expenses (Actuals)



Approach to Work Planning

As we steward both public funds and public lands, our staff is dedicated to fulfilling the community-approved charter regarding the conservation of open space. In fact, we are held accountable on delivery of the broad charter policy statements by the **Open Space Board of Trustees** and the Boulder City Council. Figure 4.4 describes how we conduct business in this framework.

The City of Boulder's concept for a high performing government is reflected in the city's organizational vision for "service excellence for an inspired future." The organizational vision includes demonstrating consistent and professional service, welcoming diverse perspectives and backgrounds and treating all with respect and dignity. The city supports creativity as stewards of the public's trust. A shared dedication to public service, community collaboration and the sum of individual contributions leads to great results.

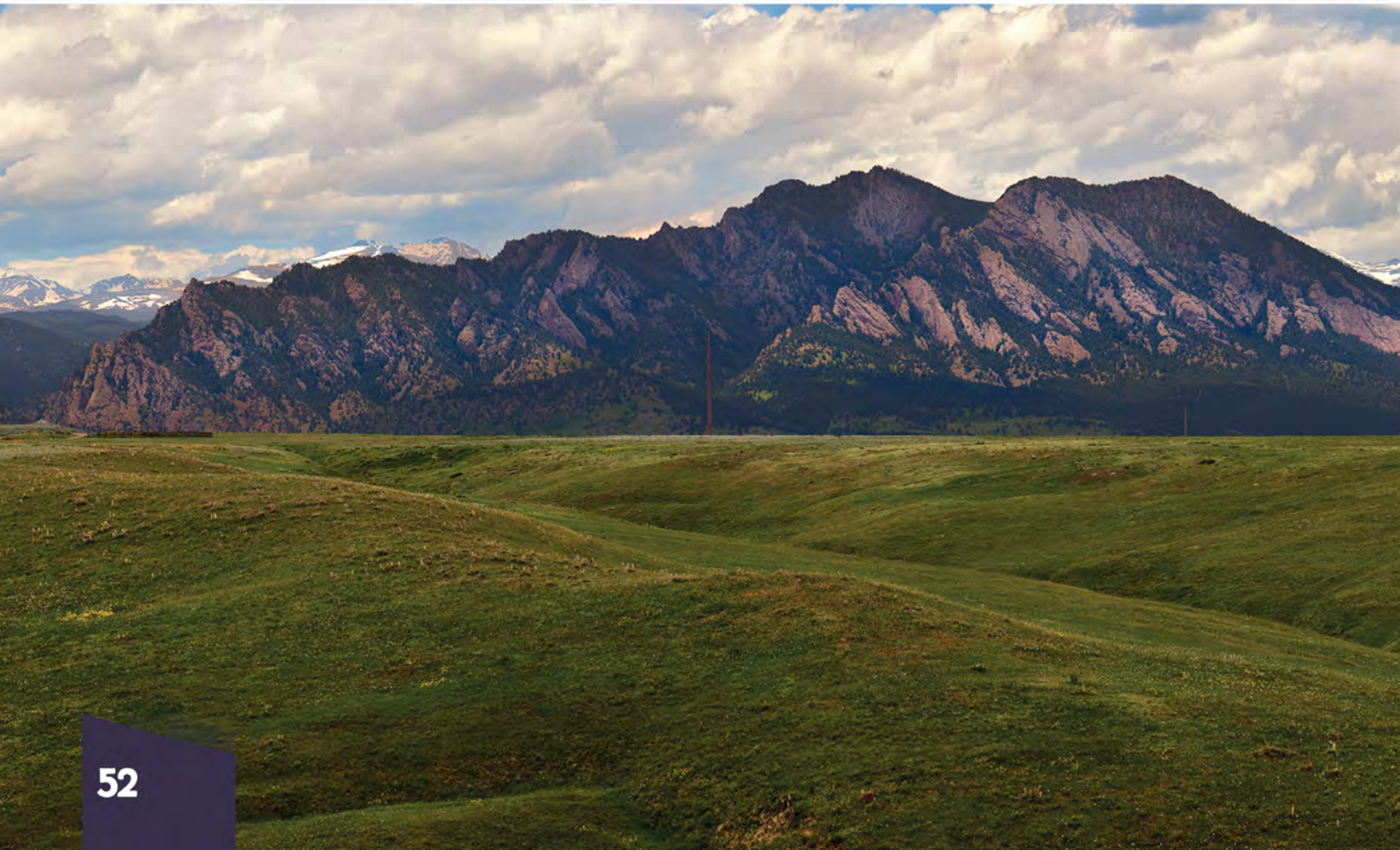
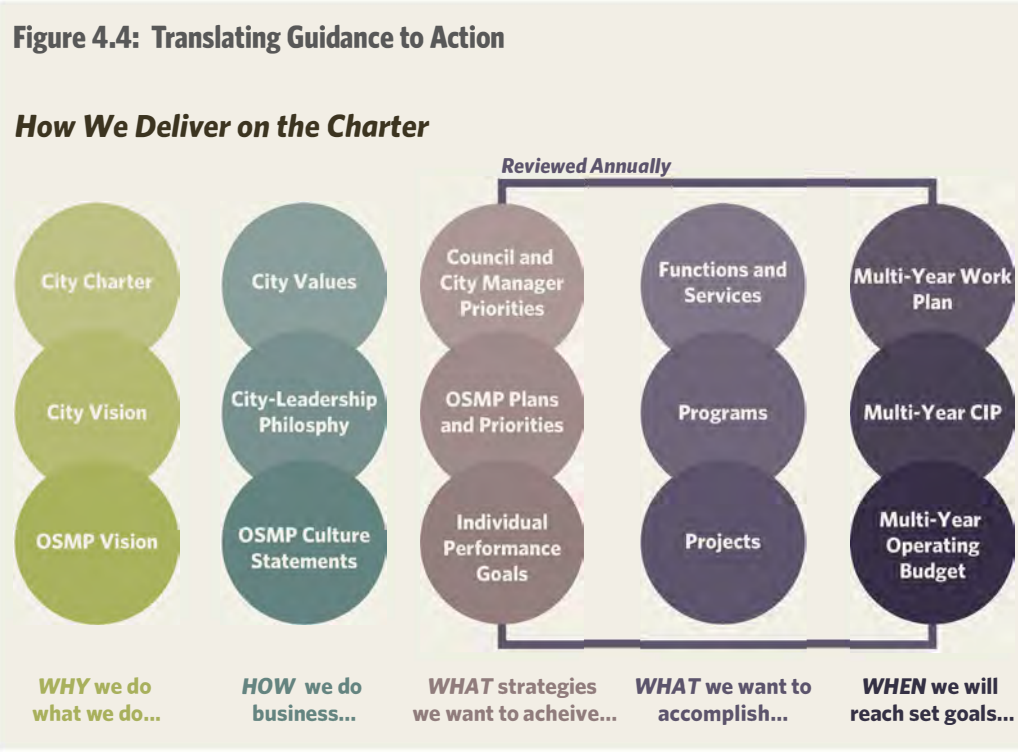


Figure 4.4: Translating Guidance to Action



Panorama of the Boulder foothills, from Eldorado Canyon, South Boulder Peak, Bear Peak, Green Mountain, Flatirons, taken from the prairies.
© Doug Goodin

Open Space Board of Trustees

The Boulder City Council appoints five members to the Open Space Board of Trustees, which was initially created through a city ordinance in 1973. In 1986, Boulder residents voted to amend the city charter to provide more open space protections by clearly establishing the role of the board in Boulder's City Charter, along with defining open space purposes. Trustees must be residents of the city and serve for a five-year term. Board meetings are held at least once a month and are open to the public.

The Open Space Board of Trustees advises our department and City Council in the following areas:

- Open space programs and activities;
- Open space fund and budget review;
- Licenses and permits; and
- Reviews activities related to implementation or changes to the Boulder Valley Comprehensive Plan.

In addition, the OSBT must provide affirmative action on land acquisitions and disposals.

Partnerships

A variety of critical partnerships expands the breadth and depth of the services staff can provide and contribute to a collective vision for our city. In fact, our staff engages with more than 250 partners to provide educational and outreach opportunities to our community. These and all partnerships effectively demonstrate the alignment that exists between the city and community members, particularly as it relates to mutually shared values regarding open space. Partnership types vary widely, and include:

- City departments;
- Government agencies;
- Businesses and nonprofits;
- Stakeholders;
- Community members;
- Ranchers and farmers;
- Private landowners;
- Advocacy organizations who work on state and national topics;
- Community-based organizations that represent a community or a significant segment of a community, and engage in meeting human, educational, environmental or public safety community needs; and
- Educational institutions including pre-K, primary, secondary and higher education/ post-secondary education.

We have agreements between the city and a variety of partners to effectively deliver open space services to the community. These agreements affect both city-owned lands and lands owned by others. Some partnerships are ongoing and require formal execution of agreements. Other partnerships are brief and arranged through less formal avenues including verbal agreements. Formal partnerships are structured through intergovernmental agreements (IGAs), letters of intent, memoranda of agreement or understanding, contracts, leases, conservation easements and other mechanisms. Examples of both formal and informal partnerships are listed to the right.

Additional partnerships are described in future chapters.

Partnership Examples

There exists a potential public-private partnership with the **Boulder Open Space Conservancy** (BOSC), a new, independent nonprofit organization. Through the anticipated public-private partnership, BOSC provides philanthropic, value-added funding to develop services beyond what the department currently provides and helps community members and visitors connect with city open space. The nonprofit, which was created through the initiative of community members who value Boulder open space, also leverages community support to help OSMP address emerging trends, such as climate change and resilience.

We also lease approximately 15,000 acres of city-owned land managed as open space to about 25 to 30 **farmers and ranchers.**

We have had a long-time partnership with the state's **Colorado Natural Areas Program within Colorado Parks and Wildlife**, through the designation of four state natural areas by OSBT, City Council, the State Parks Board and the Boulder County Commissioners. These natural areas are an important example of a partnership to highlight and conserve ecological systems and elements at a local and regional level.

Flatirons Climbing Council (FCC) is a community-based organization focused on the stewardship of the Flatirons, a world-class rock climbing destination. FCC and OSMP have had an agreement since 2003 allowing FCC to update and replace existing climbing hardware and place new fixed anchors in the Flatirons, making rock climbing more safe and accessible. In addition, FCC engages the community by sponsoring trail and restoration projects and providing volunteers for OSMP.

Ready to Work (RTW) is an employment assistance program of Bridge House, a Boulder-based nonprofit organization. Bridge House's mission is to address immediate survival needs of people experiencing homelessness and low-income individuals. It also provides resources that lead to employment, housing, personal stability and healing. OSMP partners with Bridge House to provide individuals in the RTW program paid job-training opportunities in department services, such as vegetation management, trail building and maintenance and forest restoration. This work helps program participants along their pathway to self-sufficiency.

Thorne Nature Experience is a longstanding, local nonprofit organization that offers summer camps and outdoor education school programs for Boulder and Denver-Metro area elementary school children. Since 2001, OSMP has collaborated with the Boulder Valley School District (BVSD) and Thorne Nature Experience through a Sombrero Marsh partnership. OSMP provides trails and visitor facilities on OSMP property at the marsh, and expertise in educational program development and native plant landscaping so that Thorne can provide outdoor wetland field trips for BVSD second-grade classes. BVSD maintains an educational center on the land where Thorne bases its operations.

A 20-year IGA with **Boulder County** establishes management responsibilities for nine properties acquired jointly by the city and county. Under this agreement, the city manages three of the properties (2,222 acres) and the county manages six (1,279 acres). The IGA expires in 2037.

We also manage Sawhill Ponds and Mesa Reservoir under the conditions of two, 20-year leases with **Colorado Parks and Wildlife**. These two leases run through 2035.

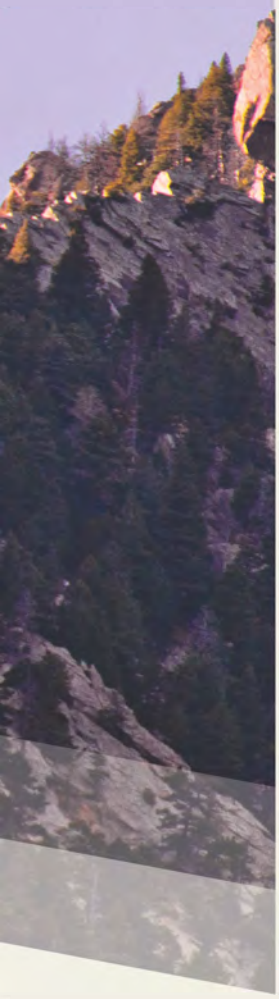
We also hold a conservation easement over the privately-owned **Boulder Community Hospital and IBM properties**.

5

NATURAL RESOURCES

RELEVANT CHARTER PURPOSES:

- 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
- Preservation of water resources in their natural or traditional state, scenic areas or vistas, wildlife habitats, or fragile ecosystems
- Preservation of land for passive recreational use, such as hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing



Close up of Devil's Thumb and crags along the Towers of the Moon.
© Jack Sasson

The natural landscapes and the flora and fauna of Boulder's open space lands contribute significantly to the community's quality of life. This chapter describes the terrain of Boulder's open space lands, its geologic formations and flora and fauna, along with the long-term investments in nature that our staff and the community make through conservation and restoration practices.

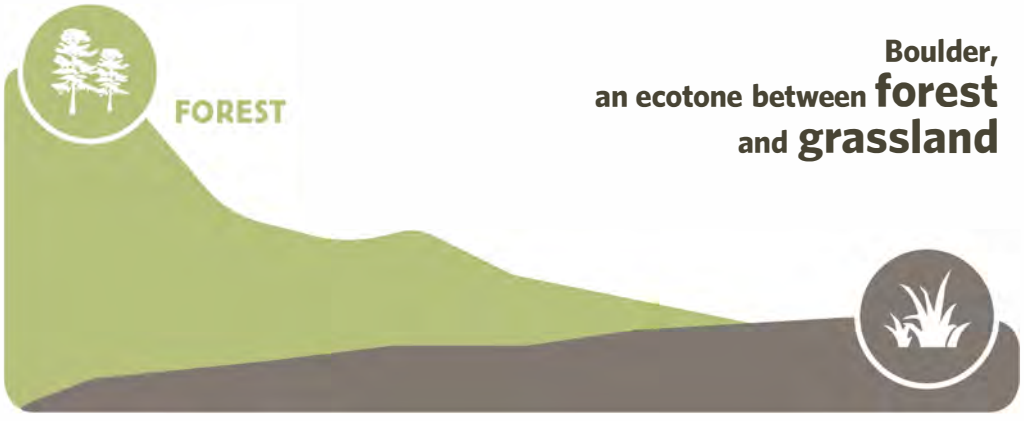
SNAPSHOT

Through its many local and regional partnerships, OSMP manages and preserves habitat for ecosystems and animals considered rare locally, nationally and even globally, a benefit whose positive effects contribute significantly to Boulder's quality of life.

WHERE PLAINS MEET MOUNTAINS

Two continental-scale ecoregions, the Central Great Plains and the Southern Rocky Mountains, merge within Boulder's open space system. These unique environmental conditions include cliffs and canyons, mountain peaks and rolling prairies, and foothill mesas dissected by ephemeral and perennial creeks.

Historically, the foothills and mountainous areas comprised the City of Boulder Mountain Parks. These areas primarily supported mixed conifer and pine forests, foothill shrub lands, and scattered trees with grasslands on rugged and rocky terrain. More recently, lands managed by OSMP have expanded to encompass areas east of the foothills characterized by low relief and rolling hills.



Boulder, an ecotone between forest and grassland

Bell's twinpod

Townsend's big-eared bat

Sideoats grama

Preble's meadow jumping mouse

Mountain Lion

NATURAL RESOURCES

Photo by Jack Sasson

FOREST

A range of forested communities exist in close proximity across the system. For management purposes, forests are divided into five conservation targets:

- Mixed Conifer Forests and Woodlands
- Ponderosa Pine Woodlands and Savannahs
- Cliffs and Talus
- Foothills and Montane Riparian
- Foothills and Montane Forest Openings

© Ann Duncan

GRASSLANDS

About 24,000 acres have been acquired to advance the charter purposes. Grasslands are divided into eight conservation targets:

- Mixedgrass Prairie Mosaic
- Xeric Tallgrass Prairie
- Mesic Bluestem Prairie
- Riparian Areas
- Wetlands
- Agricultural Operations
- White Rocks
- Black-Tailed Prairie Dog and Associates

SUMMARY OF EXISTING CONDITIONS

The current condition of the forests is evaluated by reporting the status of management and monitoring objectives. Most forest objectives have been rated as **fair or in good condition**.

Grasslands have more than 50 indicators to track the status of their condition. Conditions are **especially good in the south and west** part of the grasslands planning area and **significant improvements have been made in the northern part**.

OSMP assists the recovery of ecosystems that have been degraded. **Active restoration projects total more than 500 acres of grasslands, wetlands and riparian ecosystems**. As of 2017, we have also treated over 1,400 acres of forested land and completed about 75 percent of all projects called for in the Forest Ecology Management Plan.

Where The Plains Meet Mountains

GEOGRAPHY

Two continental-scale ecological regions, the Great Plains and the Southern Rocky Mountains, merge within Boulder's Open Space and Mountain Parks (OSMP). The transition in the topography, elevation, moisture, temperature and soils creates an "ecotone," a region of mixing between biological communities. Here, many different landforms and associated habitats provide food, water and shelter for an unusually diverse community of plant and animal species, including rare plant and wildlife species. These species include endemic species – those found only in this location – some of which are sensitive, imperiled, threatened or endangered.

TERRAIN

OSMP's landscape includes geologic formations that are unusual, spectacular, historically important and scientifically valuable. Examples include the Flatirons, White Rocks, Royal Arch, Red Rocks and the Hogbacks.

Other distinctive features include caves, arches, cliffs, talus slopes, floodplains, streams, flat-topped outwash mesas, rolling plains, shale barrens, sandstone outcrops and canyons. Of special geological significance are the sharply tilting rocks of the Fountain Formation that form the iconic Flatirons and the backdrop to the City of Boulder. Rock found in the Lyons Sandstone formation that is quarried for building and landscape materials (more information **here**) provides evidence of the erosion of the Ancestral Rocky Mountain Range.

SOILS

Most soils on OSMP-managed lands were formed from sediments transported by rivers, slopes or wind except for mountain and foothill soils, which were derived from granite, sandstone and shale. Riverine sediment, known for its higher water content, is found extensively across the OSMP system. Clay soils are also present (Soil Survey Staff, n.d.).

Like neighboring Boulder County Parks and Open Space (BCPOS) properties, our soils likely have millions of tons of sequestered carbon in topsoil and standing vegetation (Easter & Williams, 2014), reflecting the success of Boulder's open space programs in preserving some of the largest remaining untilled grasslands and significant low-elevation forested areas in the heavily populated Front Range of Colorado.

Some OSMP lands have been historically mined or quarried for coal, sandstone and gravel, and have been utilized for oil and gas production (see **Chapter 1** for more information). Other threats to soils on OSMP lands include soil loss due to erosion (Beals & Hartley & Prevéy & Seastedt, 2014), as well as potentially direct or indirect contamination related to agricultural and pest management activities.


Photo by Frank Beck


Photo by Lynn Riedel

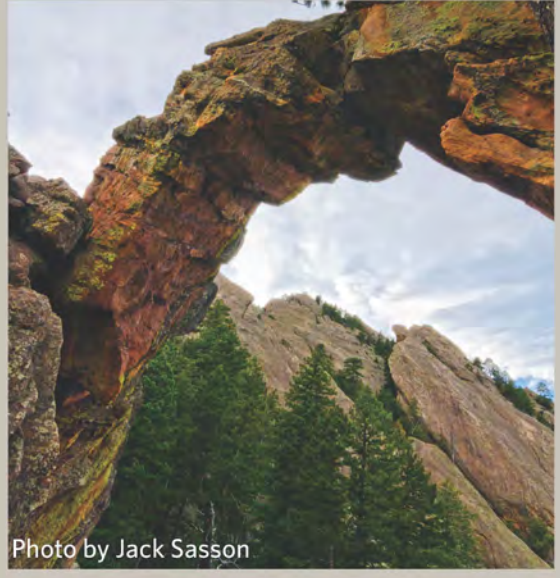


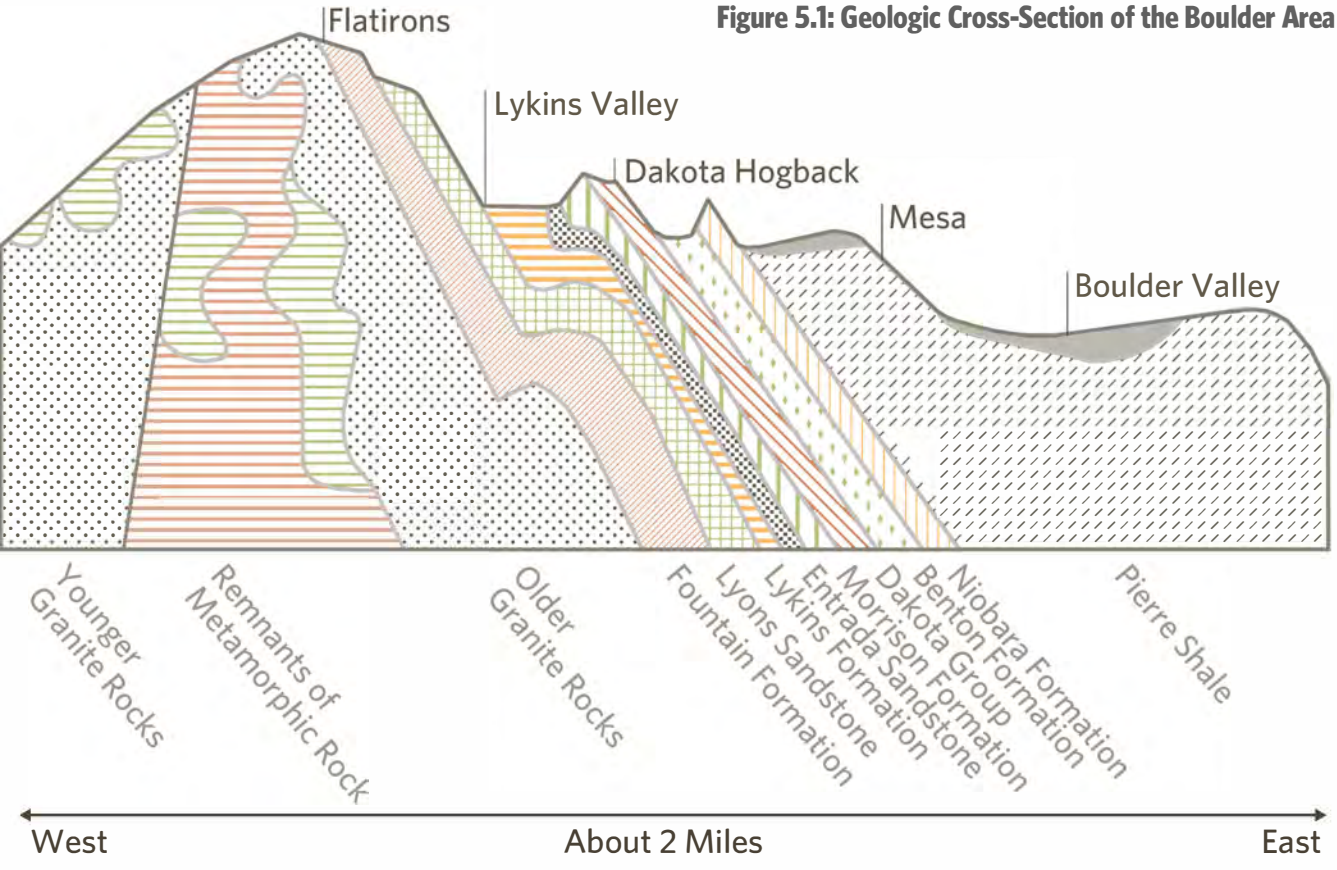
Photo by Jack Sasson

Clockwise from top: the Flatirons, Royal Arch, Hogbacks, Red Rocks and the White Rocks.


Photo by Frank Beck


Photo by Ann Duncan

Figure 5.1: Geologic Cross-Section of the Boulder Area



Thickness not to scale. Adapted from Runnells (1976) by E. Keefe.

Biodiversity

OSMP plays an important role in sustaining biological diversity throughout Colorado and even the world. Although these lands represent less than 10 percent of all land area in Boulder County and less than 0.1 percent of all land in the state, Boulder's public lands support more than 60 percent of the native plant species found in Boulder County and more than 26 percent of the plant species found statewide.

According to documentation compiled by staff, at least 64 mammal species and 142 species of breeding birds inhabit Boulder's open space system. Refer to Table 5.1.

Boulder County's unique geography supports high biodiversity. For example, an elevational change of nearly 3,000 feet occurs in Boulder where the plains meet the wall-like Flatirons. North- and south-facing slopes create differences in moisture and sun exposure, and precipitation increases with elevation. The Continental Divide creates a relatively wet and cool environment in juxtaposition to the semi-arid plains. These variable conditions in close proximity to each other support a wide range of habitats, which in turn support high biodiversity.

We manage lands that are home to plants also typical of eastern, northern, southern and Rocky Mountain plant communities (Weber & Wittman, 2012). For example, desert species more typical of New Mexico and Arizona expanded north along the arid, north-south trending hogbacks, while species of today's eastern deciduous forest, present in greater numbers on the Front Range when climates were cooler and moister, persist in north-facing canyons.

We play a vital role in conserving habitats for many animals considered rare in the state, nation and even around the world. This is reflected by the large areas of OSMP mapped as High or Very High Biodiversity Areas by **Colorado State University's Natural Heritage Program**. Table 5.2 gives some examples of rare fauna that Boulder's open space system supports.

What is biodiversity?

It's short for "biological diversity." It describes the variety of organisms that an ecosystem supports – or the number of species of plants and animals within and among locations.

Why does it matter?

More diverse ecosystems are typically more productive and resistant or resilient to change. The more variety or diversity, the better. Biodiversity boosts ecosystem health, productivity and resilience. Healthier ecosystems withstand natural disasters and stresses better, and they sustain more forms of life into the future. More diverse ecosystems often host rare species with unique characteristics and can be especially beautiful in form, texture and color.

Why do OSMP lands host such high biodiversity?

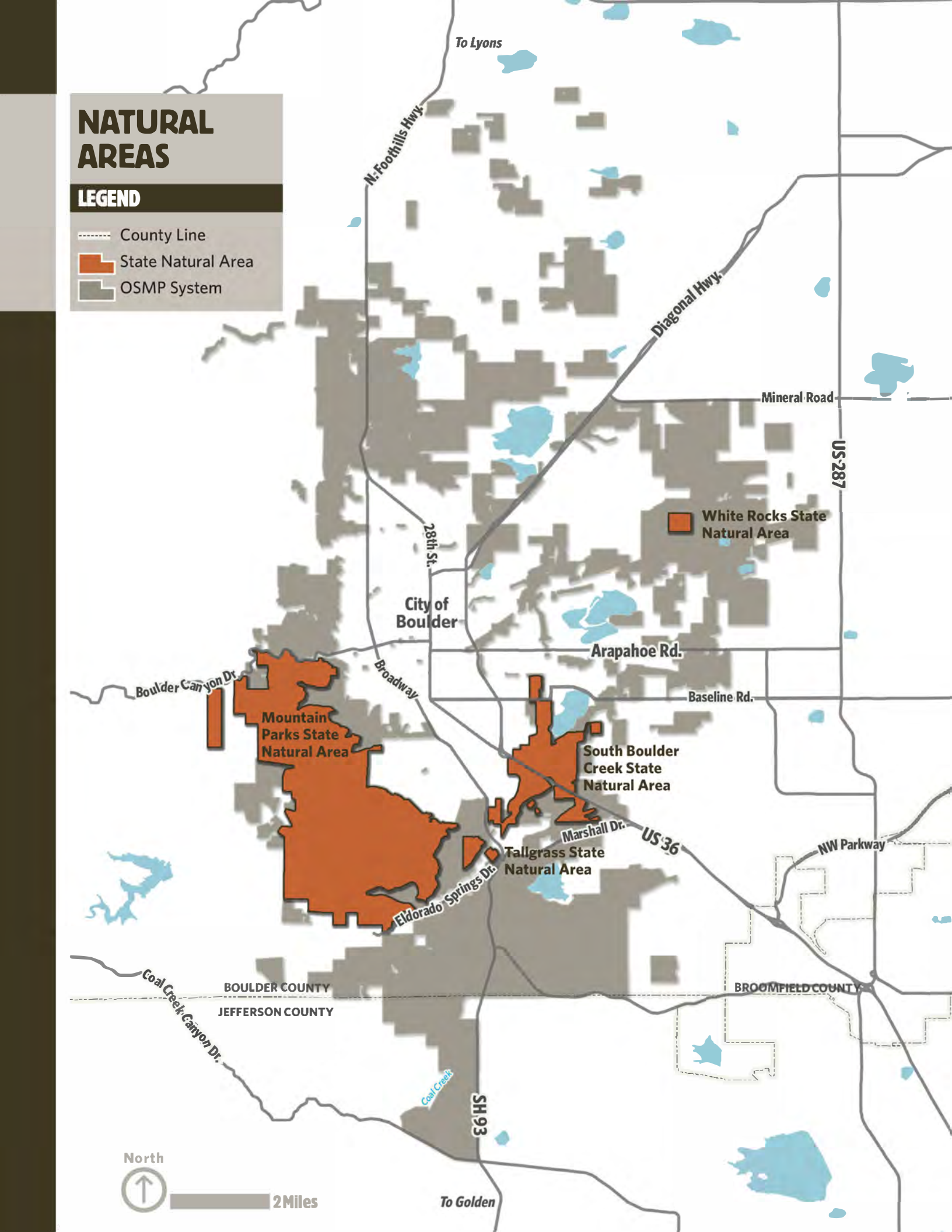
Boulder lies where the plains meet the mountains, which yields high moisture and lots of microhabitats or pockets of unique growing conditions. This setting supports a wider range of species compared to more uniform habitats or environments.

Table 5.1: Species Diversity by Group

GROUP	NUMBER OF NATIVE SPECIES	NUMBER OF NON-NATIVE SPECIES	TOTAL NUMBER OF SPECIES
Plants (Vascular)	741	275	**1,016**
Mammals	61	3	**64**
Birds	~ 303	5	**308**
Butterflies	~ 131	~ 1	**132**
Reptiles Amphibians	~ 21	1	**22**
Fish	~ 18	16	**34**

Table 5.2: Fauna of conservation concern (unusual, spectacular, historically important, scientifically valuable or unique), or that represent outstanding or rare examples of native species. This list is not comprehensive. *CPW = Colorado Parks and Wildlife

COMMON NAME	SCIENTIFIC NAME	STATUS	STATUS ON OSMP
Northern Leopard Frog	***Lithobates pipiens***	*CPW Species of concern	Rare/declining
Greater Short-horned Lizard	***Phrynosoma douglassii***	CPW Species of Special Concern	Rare
Six-lined Racerunner	***Cnemidophorus sexlineatus viridis***	CPW Species of Special Concern	Restriced to White Rocks
American Bittern	***Botaurus lentiginosus***	CPW Species of Special Concern	Rare
Bald Eagle	***Haliaeetus leucocephalus***	Federally protected by The Bald and Golden Eagle Protection Act	Two nesting pairs + additional wintering
Golden Eagle	***Aquila chrysaetos***	Federally protected by The Bald and Golden Eagle Protection Act	Several nesting pairs
Peregrine Falcon	***Falco peregrinus***	CPW Species of Special Concern	Several nesting pairs
Prairie Falcon	***Falco mexicanus***	CPW Species of Special Concern	Several nesting pairs
Northern Harrier	***Circus cyaneus***	CPW Species of Special Concern	Rare/declining
Ferruginous Hawk	***Buteo regalis***	CPW Species of Special Concern	Over-wintering individuals
Burrowing Owl	***Athene cunicularia***	CPW Threatened	Several nesting pairs
Flammulated Owl	***Otus flammeolus***	CPW Species of Special Concern	Uncommon; in mature forests
Long-eared Owl	***Asio otus***	CPW Species of Special Concern	Rare
Short-eared Owl	***Asio flammeus***	CPW Species of special concern	Very rare
Grasshopper Sparrow	***Ammodramus savannarum***	CPW Species of Special Concern	Rare; requires large, intact blocks of grassland habitat
Lewis's Woodpecker	***Melanerpes lewis***	CPW Species of Special Concern	Rare; in recent burn areas
Plains Topminnow	***Fundulus sciadicus***	CPW Endangered	Rare
Northern Redbelly Dace	***Phoxinus eos***	CPW Endangered	Rare
Mining bee	***Macrotera opuntiae***	Unknown	Rare; only White Rocks
Hops Azure	***Celastrina humulus***	Imperiled	Rare
Regal Fritillary	***(Speyeria idalia)***	Colorado Natural Heritage Program State Imperiled	Very Rare
Grassland Skippers ***(Arogos, Cross Line, Ottoe, Two-spotted)***	***Atrytone arogos, Polites origenes, Hepseria ottoe, Euphyes bimacula***	Species of Special Concern/ some imperiled	Rare; but occurs in high-quality bluestem grass and native sedge communities
Townsend's Big-eared bat	***Corynorhinus townsendii***	CPW Species of Special Concern	Very rare
Fringed Myotis	***Myotisthysanodes thysanodes***	CPW Species of Special Concern	Rare
Preble's meadow jumping mouse	***Zapus hudsonius***	United States Endangered Species Act Listed Threatened	Rare; except in critical habitat along South Boulder Creek
Abert's Squirrel	***Sciurus aberti***	CPW Species of Special Concern	Uncommon; in high quality ponderosa pine forest
North American Beaver	***Castor canadensis***	CPW Species of Special Concern	Uncommon; in high quality riparian areas
Northern River Otter	***Lontra canadensis***	CPW Threatened	Very rare; one confirmed sighting
Ringtail	***Bassariscus astutus***	CPW Species of Special Concern	Rare; recently confirmed presence
Milk Snake	***Lampropeltis trangulum***	CPW Species of Special Concern	Rare
Smooth Green Snake	***Pheodrys vernalis***	CPW Species of Special Concern	Rare


NATURAL AREAS
LEGEND
County Line
State Natural Area
OSMP System
To Lyons
N. Foothills Hwy.
Diagonal Hwy.
Mineral Road
US-287
White Rocks State Natural Area
28th St.
City of Boulder
Arapahoe Rd.
Broadway
Boulder Canyon Dr.
Baseline Rd.
Mountain Parks State Natural Area
South Boulder Creek State Natural Area
Marshall Dr.
US 36
NW Parkway
Tallgrass State Natural Area
Eldorado Springs Dr.
Coal Creek Canyon Dr.
BOULDER COUNTY
JEFFERSON COUNTY
BROOMFIELD COUNTY
Coal Creek
SH 93
North
2 Miles
To Golden

In addition, our regional significance is reflected by the designation of four State Natural Areas:

- South Boulder Creek Natural Area (1,193 acres);
- The Mountain Parks Natural Area (7,401 acres);
- Colorado Tallgrass Natural Area (269 acres); and
- White Rocks Natural Area (105 acres).

More information on: **Colorado Natural Areas Program**.

CONSERVING LARGE BLOCKS OF HABITAT AND WILDLIFE CORRIDORS

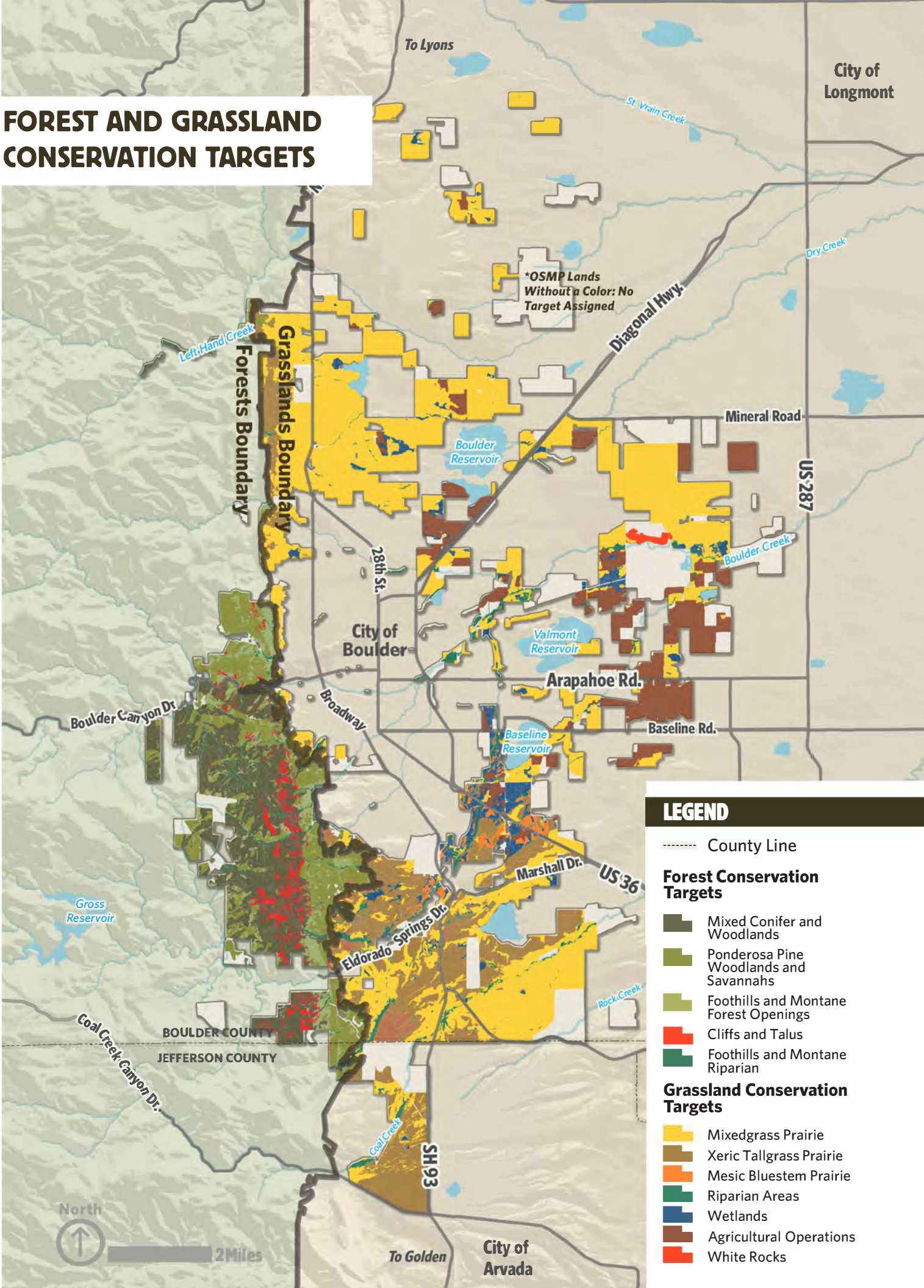
Many of OSMP's natural areas can be described as large, intact habitat blocks. Large blocks of intact native habitats are important because they:

- Support a wide range of plant and animal species;
- Contribute to the overall quality and function of natural systems; and
- Have high resiliency to stressors and disturbances.

For example, based on annual field observations used to calculate **Partner in Flight Conservation Scores**, large blocks of grassland habitat on OSMP lands support healthier grassland bird communities than small grassland blocks surrounded by urbanized areas. The prevalence of large habitat blocks on the open space system is also reflected by the designation of 15,000 acres of land as Habitat Conservation Areas (HCAs) in **OSMP's Visitor Master Plan**.

In addition, the city's protected lands act as key movement corridors for wildlife traveling among the prairie grasslands, forested foothills and mountains to the west. Maintaining effective habitat corridors encourages movement between separate wildlife populations, promoting increased genetic diversity and species health. Effective wildlife corridors also reduce the effects of urban development and road infrastructure on wildlife health and survival. One of the few remaining undeveloped wildlife corridors in the Front Range connects the prairie to the alpine tundra on an east-west axis through the Doudy Draw area of the OSMP system. It is a critical corridor for species like the mountain lion that need a vast area and a variety of habitats for survival.

FOREST AND GRASSLAND CONSERVATION TARGETS



LEGEND

- County Line

Forest Conservation Targets

- Mixed Conifer and Woodlands
- Ponderosa Pine Woodlands and Savannahs
- Foothills and Montane Forest Openings
- Cliffs and Talus
- Foothills and Montane Riparian

Grassland Conservation Targets

- Mixedgrass Prairie
- Xeric Tallgrass Prairie
- Mesic Bluestem Prairie
- Riparian Areas
- Wetlands
- Agricultural Operations
- White Rocks

FOREST CONSERVATION TARGETS*

For management purposes, we divide forested areas into five "conservation targets." Conservation targets represent the native species, natural communities and ecological systems that make up the biodiversity of the open space system. They can be used to focus planning efforts and set management objectives.

Mixed Conifer Forests and Woodlands

4,242 acres

Lower and upper montane woodland co-dominated by tree stands of Douglas-fir and ponderosa pine, with other conifer types scattered throughout. Forms the largest intact habitat blocks in forested areas. Dense canopy, mesic conditions and relatively infrequent disturbance make it a large contributor to overall biodiversity. Understory growth can be limited due to heavy canopy cover.

Ponderosa Pine Woodlands and Savannahs

3,461 acres

Lower montane or transitional woodland dominated by ponderosa pine. Low-density tree stands and proximity to grasslands provide for greater and unique understory, including diverse grasses, forbs and shrubs.

Foothills and Montane Forest Openings

1,146 acres

Diverse mix of vegetation patches including ecotonal meadows at the grassland/forest edge and open space surrounded by trees in the forest interior. Forms a unique habitat that supports plant and animal species from both grassland and montane forest.

Cliffs and Talus

660 acres

Includes the Flatirons and the surrounding rock faces that create the most recognizable features of Boulder's natural setting. Composed of sedimentary sandstone rock and very minimal vegetation, primarily shrubs. Rare and sensitive species such as ferns and moss can be found in crevices and on rock faces.

Foothills and Montane Riparian

269 acres

Riparian woodlands and shrublands that occur along streams and drainages at higher elevations. Generally composed of very dense vegetation, which provides for exceptional biodiversity and rare species in the region.

***Forest Ecosystem Management Management Plan (FEMP)**
****Grassland Ecosystem Management Plan (Grassland Plan).**
*****The extent of the area occupied by black-tailed prairie dogs fluctuates. As of 2016, 3,585 acres were inhabited.**

GRASSLAND CONSERVATION TARGETS**

For management purposes, we divide the grasslands into a set of eight conservation targets.

Mixedgrass Prairie Mosaic

9,850 acres

Most commonly occurring mixed-grass community in North America and found across the Great Plains. About 40 percent of the Grassland Planning Area consists of this mid - height species. 60 acres of "Shale Barrens" is also present.

Xeric Tallgrass Prairie

5,650 acres

Upland tallgrass community, dominated by big bluestem grass. Found in the vicinity of the forest edge and on mesas extending eastward. Considered rare and imperiled globally.

Mesic Bluestem Prairie

350 acres

Tallgrass community, dominated by big bluestem grass. Occurs along riparian areas and ancient river beds. Considered rare and critically imperiled.

Riparian Areas

1,200 acres

Transition area from wetland to terrestrial. Typically occurs adjacent to creeks and rivers or along shorelines of lakes and reservoirs. Dominated by trees and shrubs.

Wetlands

1,500 acres

Inundated or saturated soils with select plants that have adapted to a low oxygen environment. Uncommon across the mostly arid Colorado Front Range.

Agricultural Operations

5,400 acres irrigated

Primary uses of agricultural land are hay production and livestock grazing. Annual crops grown on 300 - 600 acres currently include wheat, corn and barley.

White Rocks

60 acres

Natural landmark in Boulder County featuring exposed "Fox Hill" sandstone. Unique environmental conditions support rare plant species typically not occurring in the region.

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Considered a "keystone" species due to their support of associated species.

Two Major Ecosystems

FORESTS

OVERVIEW

Across the OSMP system, a range of forest communities exists in relatively close proximity. These communities include:

- Open, low elevation ponderosa pine stands;
- Dense lodgepole pine and mixed conifer forests;
- Stands of Colorado blue spruce; and
- Paper birch, a rare occurrence in Colorado.

Ponderosa pine forests, seen and easily accessed from Boulder neighborhoods and downtown, form the western wildland-urban interface. These forests are part of a large, fairly unfragmented, forested landscape that provides important habitat value and movement corridors.

DISTURBANCE

Fires and the succession of different tree species constantly shape forests. The timing of fires has changed the structure of these forests over time. Pre-settlement (before 1840) forests around Boulder burned more frequently and had more open forest canopies and less fuel to carry a fire (Kaufman & Veblen & Romme, 2006)(Sherriff & Platt & Veblen & Schoennagel & Gartner, 2014). One study (Veblen, 1996) showed the low elevation forest stands historically burned every eight to 14 years. **Fire suppression over the past 150 years created dense forests and increased the likelihood of high intensity, catastrophic wildfires.**

Mountain pine beetle and grazing by livestock and native ungulates are also important sources of forest disturbance in Boulder.

KEY RESOURCES

Boulder's forested mountain backdrop supports more than 30 different rare plant species or communities as well as sensitive wildlife species such as Abert's squirrel, songbirds, dusky grouse and flammulated owls.

In the foothills, riparian habitats support a diverse shrub-nesting bird community and the federally-threatened Preble's meadow jumping mouse. These foothill riparian areas also provide a water source for bats and act as movement corridors for large mammals like mule deer, elk, black bear, bobcats and mountain lions. **Golden eagles, prairie falcons and peregrine falcons nest in cliffs along the Flatirons in such a density that the region is considered one of the prime raptor nesting areas in Colorado.** Additionally, the Flatirons provide roost habitat that allow female bats of CPW Species of Special Concern, like the Townsend's big-eared bat and fringed myotis, to effectively raise their young.

disturbance

What is disturbance?

An event that causes stress and change in an ecosystem is considered a "disturbance." Examples include fires, floods and windstorms. Disturbances can be good or bad. Some have negative impacts to vegetation and wildlife while other disturbances benefit species that are adapted to these events.

What is a "disturbance regime"?

It describes the historic pattern of disturbance events that affect an ecosystem. When natural disturbance regimes are interrupted, ecosystems will often change in undesirable ways. For example, when fires are suppressed, vegetation stands can become overgrown causing future fires to burn especially hot, killing even fire-resistant plants and sterilizing soils.

VISITOR EXPERIENCE

Visitors to this landscape often experience a short and quickly ascending hike through open grasslands into ponderosa pine tree stands with minimal understory vegetation and pockets of forest openings. Once under the ponderosa pine canopy, recreational trails become more difficult due to slope and elevation increases and rocky terrain. These trails provide for a more rigorous and technical experience, but remain popular recreation areas due to the cooler temperatures in summer, scenic vistas and bird watching.

Additionally, cooler temperatures can be found in the dense vegetative understory of north-facing slopes and riparian areas. Our visitors can experience impressive rock formations up close by hiking along rugged and steep trails to their bases. More adventurous visitors experience the thrill, and sometimes the simple solitude, of climbing, bouldering or rock scrambling up towering cliffs, following any of the hundreds of established bolted or traditional routes. As popular rock climbing destinations, these strenuous endeavors require proper equipment as well as experience and skill to safely ascend.

For those interested in the geology of these unique rock formations, we provide several self-guided tours that can be downloaded from our **website**.

CURRENT CONDITION

We evaluate the current condition of our forests by reporting the status (poor, fair, good) of the 31 management and monitoring objectives identified in the Forest Ecosystem Management Plan (FEMP). We have rated most of these objectives as fair or good condition. However, while analysis is on-going, we have tentatively rated progress toward two of these objectives as poor:

1. Reduce abundance and occurrences of high-priority invasive, non-native species present on city lands; and
2. Prevent the establishment and spread of invasive, non-native species previously not encountered on city lands.

Table 5.3 describes the state of the forests, when we combine the condition of the 31 management objectives into four categories (poor, fair, good, very good).

Table 5.3: State of the Forests

CATEGORY	CONDITION	EXPLANATION
Abiotic (soils)	Fair	Some soil erosion and compaction in treated forest stands.
Vegetation	Fair	Non-native species invasion has been a problem, but rare plant communities are in good condition.
Wildfire mitigation	Good	Successfully maintaining fuel breaks, fire road access and open-canopy forest stands.
Wildlife	Fair/Good	Maintained/created large snags and observed increased abundance of breeding bird species.
OVERALL STATE OF THE FORESTS	**FAIR**	**Fire management is on track, but non-native species are a problem**

GRASSLANDS

OVERVIEW

Boulder's unique and extensive grasslands lie where the Central High Plains meet the foothills of the Southern Rocky Mountains. OSMP acquired 24,000 acres of this ecoregion to protect the agricultural, ecological, recreational and scenic values in a rapidly developing region.

Especially notable are the tallgrass prairies, which include xeric tallgrass and mesic bluestem tallgrass. **When the last ice age ended about 10,000 years ago, Colorado's stands of tallgrass prairie could not withstand the increased temperatures and were replaced by drought-tolerant grasses. Around Boulder, however, remnants or "relicts," of this ecosystem remain.**

Primarily located in the southern grasslands of the open space system, xeric tallgrass prairie is a rare and globally imperiled community type dominated by big bluestem grass. As the most prevalent tallgrass community on our system, it is found across 5,650 acres from the forest edge to the eastern fringes of the Boulder Valley mesas, where tallgrass prairie and montane species blend to create a unique and rare plant association.

Mesic bluestem prairie, an especially rare type of tallgrass, occupies 350 acres along riparian areas. Southern Boulder County and northern Jefferson County may have the largest areas of xeric tallgrass communities remaining in Colorado. The largest remnants of mesic bluestem prairie in the state occur in Boulder.

Switch grass stand on Davidson Mesa xeric tallgrass prairie in fall.

Fall colors on Shanahan tallgrass prairie with bluestem grass turning red in the foreground.

In our mixedgrass prairie, tall-, medium- and short-statured prairie species blend to form a distinctive set of plant associations. According to the Colorado State Wildlife Action Plan (Colorado Parks and Wildlife, 2015), mixed grass prairie most commonly occurs as small patches interspersed among shortgrass prairie and sandsage, or in mesic areas near the foothills such as in the Boulder Valley. Due to fire suppression, overgrazing and conversion to agricultural uses, the range of this habitat has decreased dramatically across Colorado.

Boulder's shale barrens – included in our mixed grass prairie conservation target – also contribute significantly to the biological diversity of the region and the state. These barrens provide habitat for a large portion of Bell's twinpod populations along the northern Front Range of Colorado. This globally rare and state imperiled Colorado endemic species does not occur anywhere else in the world, and is identified as a conservation target by The Nature Conservancy's Central Shortgrass Prairie Ecoregional Plan (Neely et al., 2006).

Usually vegetated with shrubs or trees, riparian areas transition from aquatic to terrestrial and typically occur adjacent to creeks and rivers or along shorelines of lakes and reservoirs. Across the OSMP system, riparian areas are more prevalent in the grasslands than in the forests. Wetlands are relatively uncommon across the mostly arid Colorado Front Range. Irrigation ditches have both enhanced and impaired riparian and wetland areas. For more information, please review **page 117** of our Agricultural Resources Management Plan.

DISTURBANCE

Disturbance regimes in grasslands have changed significantly over the past 150 years. Before the 1850s, natural and human-caused fires burned foothills grassland communities every five to 30 years (Sherriff & Veblen, 2007). However, many of Boulder's grasslands have not burned in decades, with notable exceptions being the Olde Stage fire of 2009, the Plainview Fire of 2006 and the Wonderland Fire of 2002. Grassland fires can maintain grassland health by altering nutrient cycling, preventing woody species encroachment and encouraging seed germination.

Spatial patterns, seasonality and intensities of pre-settlement grazing by bison, deer and elk differ from those of post-settlement livestock grazing managed with pasture fencing and water source redistribution. In areas of heavy livestock grazing, or where a lack of ungulate grazing and fire occur, native plant species diversity is typically lower, and shrubs and trees are more common.

Another source of natural disturbance is prairie dog digging, burrowing and grazing. Prairie dogs are often considered "keystone" species, providing prey and landscape structure for associated species, and supporting a healthy native plant community in some sites. However, in highly fragmented urban or agricultural areas where prairie dogs cannot move or migrate naturally, population densities of prairie dog colonies increase, which can impact grassland health through extended periods of unusually high grazing pressure from the prairie dogs (Johnson & Collinge, 2004). This cycle combined with tilling and livestock grazing creates a highly degraded landscape and can lead to episodes of plague infection and extensive mortality of prairie dogs in Boulder County.

While OSMP staff developed area-based recommendations on prairie dog habitat conservation in the Grassland Plan, we also prioritized some areas of grasslands and agricultural operations as desired prairie dog-free zones. In 2016, our staff found that, **despite large, historic reductions in black-tailed prairie dogs throughout their range, they inhabited 3,585 acres of OSMP's grassland habitat – the largest extent of occupation since systemwide mapping began in 1996.**

Agricultural practices and long-term prairie dog occupation stressed and degraded the health of these grasslands. The photograph on the top shows the effects of long-term prairie dog digging, burrowing, and grazing in a dry site. On the bottom, an invasion by Canada thistle and teasel affect the condition of a relatively wet site.

KEY RESOURCES

The grasslands support more than 800 species of vascular plants and a diversity of wildlife (City of Boulder, 2010. Chapter 2, Appendix D). Taller stature grassland patches are important habitat for some bird and small mammal species, while

other species prefer short stature vegetation, including those associated with black-tailed prairie dog colonies, such as burrowing owls and horned larks. Riparian areas are particularly important, providing habitat for more than 80-percent of the system's wildlife and plants, including two rare and federally threatened species, despite only representing about 2 percent of the entire system.

Some notable grassland plants include Bell's twinpod, Western wheatgrass, New Mexico feathergrass, sideoats grama, big bluestem, little bluestem, blue grama, buffalo grass, Ute ladies'-tresses orchid, yellow Indian grass, dwarf leadplant and narrow-leaved milkweed.

Some notable grassland animals include olive-backed hispid pocket mouse, bobolinks, grasshopper sparrow, Wilson's snipes, American badger, burrowing owl, elk, northern harriers, Swainson's hawks, ferruginous hawk, prairie falcons and northern leopard frog.

VISITOR EXPERIENCE

OSMP's grasslands see high visitation as they support many diverse and easily accessible recreation opportunities including hiking, running, biking, horseback riding, bird watching and wheelchair access. The open landscape provides for exceptional views with abundant wildflower displays and plenty of opportunities for wildlife viewing, photography and study.

Located primarily in the northern and southern portion of the land system, mixedgrass prairie is the most dominant type of grassland on the open space and mountain parks system. For those looking for a casual experience hiking through open plains or along wooded rivers and creeks, this rolling terrain offers accessible trails with expansive vistas. While in the southern grasslands, our visitors likely experience the more prevalent mixed grass prairie and xeric tallgrass communities, with their shorter stature, and colorful mixture of grasses rather than the taller, lusher mesic big bluestem communities found sparsely along riparian and wetland areas. This open landscape is exceptional for viewing wildflowers and wildlife. In the fall, big bluestem and other native grasses create a colorful display across the grasslands.

Our visitors experience creeks and wetland areas in the grasslands as foothills streams flatten out and combine with man-made irrigation ditches to carry water from the mountains out onto the plains. Please read **Chapter 6** for more information. In the summer, recreational activities along riparian areas are popular as the trees and water provide for a cool, breezy and well-shaded experience in an otherwise exposed and hot prairie. Wetlands are favorite destinations for birdwatchers. Wetlands also provide habitat for sensitive species in decline, like northern leopard frogs. Sombrero Marsh, one of the few natural, permanent water bodies in Boulder County, provides a unique opportunity to experience and learn about the wetland ecosystem in the Boulder area. The "Thorne Nature Experience," a nature center located next to the Sombrero Marsh, provides educational and community programs for children and adults throughout the year.

CURRENT CONDITION

The Grassland Plan identified more than 50 ecological indicators to track the status of conservation targets. Below, we report the status as of 2010 to provide a complete systemwide look at the state of the grasslands (Table 5.4). Conditions are especially good in the south and west part of the grassland planning area, and grasslands in the northern part of the planning area have seen significant improvements following release from long-term grazing pressures and effects from a large-scale wildfire.

Table 5.4: State of the Grasslands

KEY ATTRIBUTE	CONDITION	EXPLANATION
Landscape Context		
Connectivity	Fair	Specific to wetland and riparian areas, habitat is fragmented in places and vegetation buffer width is narrower than desired.
Fire regime	Fair	Upland grassland fire return intervals are too long to evaluate in a 10-year planning horizon.
Habitat effectiveness	Good	Number of bald eagle nest sites is as targeted.
Habitat structure	Poor	These indicators are specific to riparian.
Prairie dog occupancy	Fair/Good	Total acreage occupied is good, but distribution of prairie dogs in conflict areas is fair.
Size		
Agricultural production	Good	Acres in agricultural production is in the acceptable range.
Block size	Good	Some large blocks of grassland habitat are protected. Block size is a crucial attribute contributing to quality and function of natural systems.
Relative protected area	Very Good	This indicator is specific to White Rocks.
Condition		
Habitat Structure	Poor	Specific to riparian areas, the presence of exotic species and the interruption of disturbance regimes has caused even-aged canopies deviations of geomorphology from desired conditions.
Animal composition	Fair	Number of ponds that support native frogs is much lower than desired. Butterfly and bird occurrence and diversity is lower than desired.
Physical and chemical soil regimes	Unknown	
Vegetation and soils condition	Good	Grazed areas are in good condition.
Vegetation composition and structure	Fair	Native species richness is fair, but native species abundance is lower than desired.
Water quality	Unknown	
OVERALL STATE OF THE GRASSLANDS	**FAIR**	**Lowest ratings are related to exotic plant species, native frogs and the quality of riparian areas.**

Stewardship

We invest in a range of strategies to conserve and restore spectacular natural areas, important wildlife habitats and fragile ecosystems. In 2017, we expect to have spent roughly $1 million in major ecological maintenance and restoration projects, representing about 25 percent of total capital improvements budget for the year. Additional stewardship efforts are funded out of our operating budget (see **Chapter 4**). We also work with peer agencies and the community on ecological restoration projects, bearing long-term dividends for the flora, fauna and people of Boulder Valley (see list at the end of this chapter).

FOREST RESTORATION

We use forest-thinning techniques to reduce the risk of wildfire to forest and human communities and maintain or enhance native forest habitats. Although forest management existed historically in the mountain parks, with large areas of thinning in the late 1970s and early 1980s, recent thinning and burning operations started around 1995. **In 1999, the FEMP identified projects needed to increase ecological functioning and decrease wildfire risk to the community. As of 2017, we have treated more than 1,400 acres of forested land and completed about 75 percent of all FEMP projects**.

Currently, we have the capacity to treat an average of 150 acres annually. Finding an outlet for wood, chips and slash is often a limiting factor in completing forest restoration projects.

Prescribed burning is another important tool for managing forests. Implementing prescribed burns is challenging due to public perception, air-quality constraints, availability of resources and limited seasonal burn windows. A focus on collaborative projects over the years has facilitated our ability to interact with forest managers across the county. As a result, we secured more than $275,000 in grant funds, implemented cross-boundary projects to improve large areas of forest and expanded available resources for large collaborative efforts like prescribed burns. Our forest program continues to benefit from a long-standing working relationship with the City of Boulder Fire Department's Wildland Division. Many of the issues that we and other agencies managing Front Range forests currently face will continue and may be further exacerbated by changes in climate. **Minimizing the threat of extreme wildfire events, forest pest outbreaks – such as the recent outbreaks of mountain pine beetles at higher elevations – and non-native species establishment will continue to be a focus of our forest management.** We also monitor native vegetation and sensitive wildlife like forest owls, forest hawks and Abert's squirrels to ensure that forest restoration activities do not negatively impact wildlife.

Within ponderosa pine forests, vegetation management at select ponds improves habitat conditions for northern leopard frogs – a species whose population is declining across its historical western range and that is also considered a species of greatest conservation concern by Colorado Parks and Wildlife (State Wildlife Action Plan, 2015).

GRASSLAND AND RIPARIAN AREA RESTORATION

Ecological restoration provides solutions to some of the most difficult conservation challenges facing OSMP. Restoration opportunities occur in areas where vegetation condition and structure and overall ecosystem function are considered to be outside the range of acceptability but capable of being restored with a reasonable investment of resources.

Currently, there are 11 active restoration projects on more than 500 acres of OSMP's grasslands, wetlands and riparian ecosystems. Restoration projects are completed for a variety of goals, including improving native plant communities, improving conditions for rare or declining species such as northern leopard frog or to revegetate eroded or denuded areas. For restoration projects, our staff largely relies on commercial seed and plants or uses locally sourced plant material. Desired native species, especially local genotypes of those species, are often unavailable from commercial sources. To partially fill the need for seed and native plants with local genotypes for use to vegetate restoration projects, our staff and volunteers organize about 15 seed collections on our managed lands every year and collect herbaceous and woody plant materials for further propagation at several government and commercial operations. Restoration staff also revegetates undesignated trails, maps vegetation and monitors rare plants. Management and control of non-native and invasive species play an important role in restoration across the OSMP system.

VEGETATION MANAGEMENT

The function of OSMP's vegetation management program is to mitigate the impacts of invasive plant species (Table 5.5) to Boulder's open space lands by promoting healthy ecosystems that provide greater natural diversity. The program's long-term, high-level goal is to establish and maintain diverse stands of native plant species that are most resistant to noxious and invasive plant species, more adaptable to change and respond positively following disturbance. The vegetation management program also plays an important role in improving and maintaining OSMP properties that were historically converted from native plant communities to agricultural plant communities. These include agricultural properties not currently leased or areas not used by lessees due to poor vegetative condition. These properties often get overrun by noxious weeds and are managed by the vegetation management program with the long-term goal of re-establishing resilient plant communities that will compete with the noxious weeds as well as provide suitable conditions for agricultural operations.

This program also tracks and manages noxious weed species as defined by the Colorado Noxious Weed Act (Table 5.6), which prioritizes management goals (eradicate, contain, suppress) for species on the A, B, C and Watch lists. Currently, 20 A and B list species designated by the state for eradication are present on OSMP. Severity ranges from three absinth wormwood plants in one location to 29,000 Mediterranean Sage plants across and within the northern tier of the system. Most of these mandated species are managed individually via mechanical means and their extent across Colorado is tracked by the state. Other listed species identified by the Colorado Noxious Weed Act are addressed at the ecosystem level described above.

Table 5.5: Examples of Non-Native Species Managed

CATEGORY	EXAMPLE SPECIES	SYSTEMS MOST AT RISK	IMPLICATIONS
Perennial Pasture Grass Species	Tall oatgrass, perennial rhizomatous invasive grasses	Foothills Forest and openings, Xeric Tallgrass	Species can outcompete native plants, forming monocultures
	Reed canarygrass	Wetland, Plains Riparian	Species can outcompete native plants, forming monocultures
Trees	Russian olive, Siberian elm, others	Irrigated and floodplain grasslands	Changes open grasslands to dense shrublands
	Crack willow	Plains Riparian	Creates unnatural deep shade
Shrubs	Buckthorn, honeysuckle, wayfaring, others	Plains and Foothills Riparian	Species can outcompete native plants, forming monocultures
	Cotoneaster, sweetbriar rose, others	Foothills Forest and openings, Plains grasslands, idle agricultural lands	Species competes with native plants, occasionally forming monocultures
Forbs	Common/Cutleaf teasel	Wetlands, Riparian, Mesic Bluestem and idle agricultural lands	Species can outcompete native plants, forming monocultures
	Sulfur cinquefoil, Mediterranean sage, Dalmatian toadflax	Foothills Forest and openings, Mixedgrass, Xeric Tallgrass, idle agricultural lands	Species can outcompete native plants, forming monocultures

Table 5.6: 2017 State of Colorado List A Species

COMMON NAME	SCIENTIFIC NAME	OCCURRENCES	APPROXIMATE ACREAGE
Bohemian knotweed	***Polygonum bohemica***	Eight wetland/riparian occurrences	<.25 acres
Hairy willow-herb	***Epilobium hirsutum***	Multiple wetland/riparian occurrences	> 30,000 plants scattered over 150 acres
Mediterranean sage	***Salvia aethiopsis***	Widely scattered across northern tier of OSMP	> 29,000 plants scattered over 4,000 acres
Myrtle spurge	***Euphorbia myrsinites***	Primarily lands west of Highway 93/36	~38 acres
Orange hawkweed	***Hieracium aurantiacum***	Damen property (Foothills)	5 plants
Purple loosestrife	***Lythrum salicaria***	Multiple wetland/riparian and irrigation ditch sites	> 30,000 plants scattered over 150 acres

Herd of cows moving along a trail at Marshall Mesa. © Dave Sutherland

CATTLE GRAZING

Grazing by cattle occurs on about 13,500 acres of OSMP-managed land. Cattle grazing on OSMP helps conserve our agricultural ranching heritage, helps meet vegetation management goals and supports the charter purpose of "preservation of agricultural uses and land suitable for agricultural production."

The use of prescriptive grazing to manage invasive species is also the primary alternative to herbicides or other more labor-intensive management techniques. On native grasslands, we have developed grazing strategies to improve the vegetation composition and maintain resistance to invasions. Grazing has been particularly beneficial in mesic tallgrass vegetation communities for the control of introduced pasture grasses that can otherwise dominate. We are also examining the effects of prescriptive spring grazing on controlling the spread of an invasive tall oatgrass (***Arrhenatherum elatius***) in tallgrass prairies and forest understories.

Finally, properly timed cattle grazing, along with irrigation and haying, are key components of Ute ladies'-tresses orchid habitat management, a federally threatened plant species. The South Boulder Creek area hosts one of the largest populations of the species in the world.

HAYING

Coordination between natural resources and agricultural staff with our lessees allows effective management of grassland habitats. Haying activities are timed to facilitate maintenance and restoration of high-quality wildlife habitat in native grasslands and agricultural landscapes. For example, bobolinks are ground-nesting songbirds that regularly use irrigated hayfields for nesting. About 583 acres of land are protected for bobolinks by delaying mowing operations to avoid their breeding season, which ends around July 15.

WILDLIFE CLOSURES

With the help of more than 60 dedicated volunteers, we manage some of the highest-quality cliff-nesting raptor habitats in the western United States. As shown in Table 5.7, protection measures have resulted in the birds' high levels of nesting success and breeding productivity as compared to other areas.

In addition, **cliffs in the city's open space system support one of 12 known Townsend's big-eared bat maternity colonies in Colorado. Thus, it is of statewide importance to conserve these resources.**

To maintain or increase effective habitat for wildlife, we work with the community and city decision makers to monitor wildlife activity and implement temporary closures for specific parts of Boulder's open space system. These temporary closures usually occur during sensitive timeframes to minimize human disturbance to wildlife during times of the year that they are most sensitive (e.g., breeding) (Table 5.8). In the 2016 resident survey, 85 percent of those surveyed felt it was acceptable to close areas seasonally to protect wildlife. Effective monitoring of raptors and bats would not be possible without community volunteers who visit sites weekly and provide data that allow us to manage seasonal closures. To limit temporary impacts on our visitors, we lift seasonal closures early if monitoring indicates that raptors have successfully raised young and vacated the territory or if a nesting attempt did not occur.

In OSMP's grasslands, we manage our visitor access through seasonal, protective closures in several high-quality breeding grassland bird habitats as well as locations of nesting raptors including northern harriers, osprey, burrowing owl and bald eagle (Table 5.9).

Table 5.7: Nest Success and Breeding Productivity for Three Species of Cliff-nesting Raptors.

	Open Space & Mountain Parks	Pinnacles National Park	Rocky Mountain Region	Snake River National Conservation Area	Colorado
NESTING SUCCESS (%)					
Prairie Falcon	84	78		64	
Peregrine Falcon	81		73		64
Golden Eagle	75			60	
PRODUCTIVITY					
Prairie Falcon	2.9	2.7		2.5	
Peregrine Falcon	2.0		1.5		1.4
Golden Eagle	1.0			1.6	

Table 5.8: Seasonal Closures Enacted by OSMP

CLOSURE TYPE	NUMBER OF DAYS	TOTAL SIZE (ACRES)	NUMBER OF DIFFERENT CLOSURES
Bat	150 to 365	4.8	5
Grassland Birds	90	1,951	5
Raptor	165 to 270	4,559	24

Table 5.9: Nesting Success and Breeding Productivity of Grassland Nesting Raptors on OSMP, 2010-2015

	NUMBER OF SITES	TOTAL NESTING ATTEMPTS	NESTING SUCCESS %
Bald Eagle	2	14	71
Burrowing Owl	6	19	97
Northern Harrier	1	1	100
Osprey	3	18	67

INTEGRATED STEWARDSHIP, MONITORING AND RESEARCH

The following illustration highlights a range of collaborative management practices underway to restore and preserve our diverse ecological resources. In addition, to increase the basic understanding of the open space lands and resources in a given year, our staff typically conducts at least 40 monitoring projects. Volunteers contribute thousands of hours annually to help with monitoring on projects to help us understand wildlife behavior, track wildlife use of habitat areas on OSMP, measure the timing of plant blooms and count flowering rare plants. We also connect with the community through our **Funded Research Program**. Over the last 20 years, our department has funded more than 100 research projects to gather foundational information and incorporate it into our resource plans. In 2017, we hosted the first Front Range Open Space Research Symposium, a one-day event designed to share research results among researchers, peer agencies and the community.

Forests

A range of forested communities exist in relatively close proximity across the system.

Forest Restoration

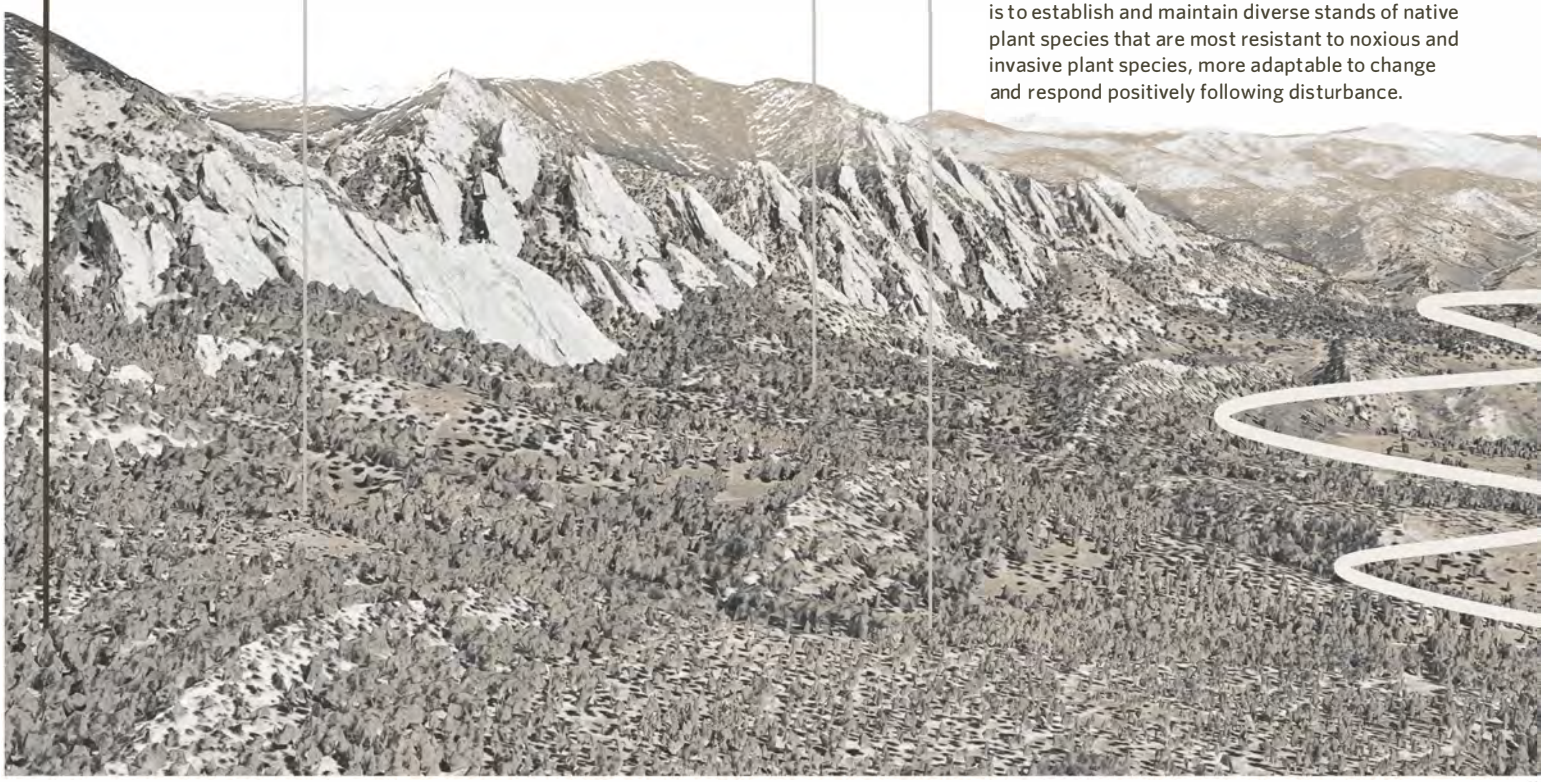
In 1999, the FEMP identified projects needed to increase ecological functioning and decrease wildfire risk to the community. As of 2017, we have treated more than 1,400 acres of forested land and completed about 75 percent of all FEMP projects.

Wildlife Closures

With the help of more than 60 dedicated volunteers, we manage some of the highest-quality cliff-nesting raptor habitats in the western United States. Protection measures have resulted in the birds' high levels of nesting success and breeding productivity as compared to other areas.

Vegetation Management

The function of OSMP's vegetation management program is to mitigate the impacts of invasive plant species to Boulder's open space lands by promoting healthy ecosystems that provide greater natural diversity. The program's long-term, high-level goal is to establish and maintain diverse stands of native plant species that are most resistant to noxious and invasive plant species, more adaptable to change and respond positively following disturbance.



Grasslands

A range of grassland types exist, providing food and habitat to the many species that call them home.

Haying

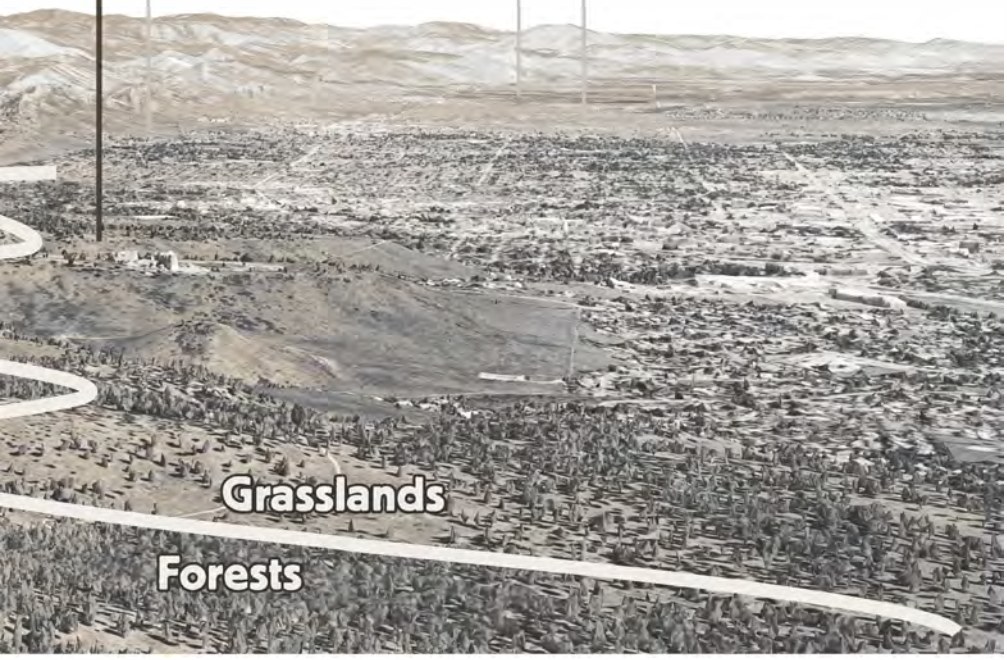
Coordination between natural resources and agricultural staff with our lessees allows effective management of grassland habitats. Haying activities are timed to facilitate maintenance and restoration of high-quality wildlife habitat in native grasslands and agricultural landscapes.

Grassland & Riparian Restoration

Currently, there are 11 active restoration projects over 500 acres of OSMP's grasslands, wetlands and riparian ecosystems. Restoration projects are completed for a variety of goals, including improving native plant communities, enhancing conditions for rare or declining species such as northern leopard frog or to revegetate eroded or denuded areas.

Cattle Grazing

Grazing by cattle occurs on about 13,500 acres of OSMP-managed land. Cattle grazing on OSMP helps conserve our agricultural ranching heritage, helps meet vegetation management goals and supports the charter purpose of "preservation of agricultural uses and land suitable for agricultural production."



PARTNERING WITH THE COMMUNITY

We foster inclusive open space stewardship in the community through outreach, education, volunteerism and service-learning programs (see Chapter 9). The activities to the left illustrate examples of stewardship activities, but do not represent a comprehensive list. In addition, we partner with other agency and nonprofits to preserve and enhance ecological integrity and ensure compliance with a variety of relevant local, state and federal regulations. Partners include:

- U.S. Fish and Wildlife Service;
- Colorado Parks and Wildlife;
- Colorado Natural Areas Program;
- Colorado Water Conservation Board;
- Colorado Natural Heritage Program;
- Jefferson County Open Space;
- Boulder County Parks and Open Space;
- Boulder County Nature Association;
- Boulder County Audubon;
- Flatirons Climbing Council;
- Front Range Climbing Stewards;
- Volunteers for Outdoor Colorado;
- Boulder Mountain Bike Alliance;
- Wildland Restoration Volunteers;
- CU Boulder;
- CSU; and
- many others.

6

WATER AND FLOODPLAIN MANAGEMENT

RELEVANT CHARTER PURPOSES:

- Preservation of water resources in their natural or traditional state, scenic areas or vistas, wildlife habitats, or fragile ecosystems
- Utilization of land to prevent encroachment on floodplains

Cloudless winter day at Sawhill Ponds. © Emilie Gunderson

A purpose of Open Space and Mountain Parks (OSMP) is to preserve water resources in their natural or traditional state. Another purpose of OSMP is to prevent encroachment into floodplains. In the 30 years since the City of Boulder described the goals for open space land in its charter, we have made progress toward realizing these aspirations.

SNAPSHOT

The City Charter identifies both the **preservation of water resources in their natural or traditional state, and the preservation of wildlife habitats and fragile ecosystems as purposes of open space**. We must **protect and maintain both natural aquatic systems and riparian habitats as well as the engineered infrastructure of acquired water resources**, including the extensive network of irrigation infrastructure used for agriculture.

WATERSHEDS

OSMP-managed lands include areas from **three watersheds**:

- **St. Vrain Creek**
- **Middle S. Platte-Cherry Creek**
- **Clear Creek**

OSMP's **water resources provide many benefits** to the Boulder community:

- **Fish and wildlife habitat**
- **Flood storage and attenuation**
- **Groundwater re- and discharge**
- **Shoreline stabilization**
- **Sediment retention**
- **Connections with nature**
- **Research and education**
- **Economic benefits**
- **Atmospheric maintenance**

Water-related areas preserved by OSMP can be classified into the following five categories:

PERENNIAL CREEKS EPHEMERAL CREEKS

The acquisition and management of OSMP lands support perennial, intermittent and ephemeral streams. Numbers below indicate total linear miles in BVCP Area preserved by OSMP.

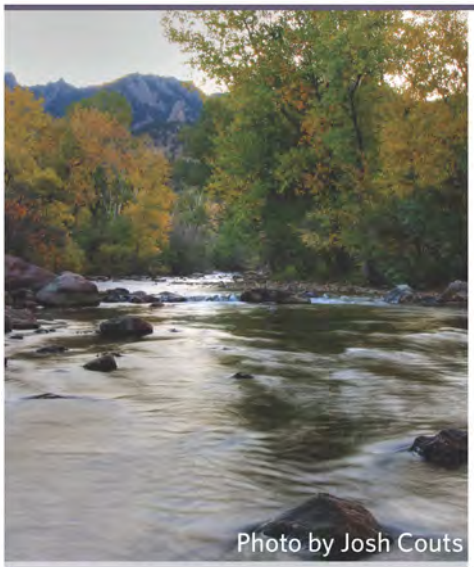


Photo by Josh Couts

37 Miles Preserved

OSMP's stewardship of these streams allows for the management of native fish species and healthy riparian corridors.

Photo by Dave Sutherland

140 Miles Preserved

Located at the origins of drainages, ephemeral creeks play a vital role in the health of a watershed.

WATER AND FLOODPLAIN MANAGEMENT

PONDS AND RESERVOIRS

438 Acres Preserved

Most open water ponds on lands managed by OSMP are man-made but not all. Sombrero Marsh may have been the only year-round body of open water in the Boulder Valley at the time of settlement.

FLOODPLAIN AREAS

2,462 Acres Preserved

OSMP stewardship of floodplain areas is critical to riparian conservation and restoration efforts, and helps lessen the risk of and damage from flooding.

DITCHES

79 Miles Preserved

Ditches are a vital part of the city's agricultural industry and heritage. They also help sustain ecological health.

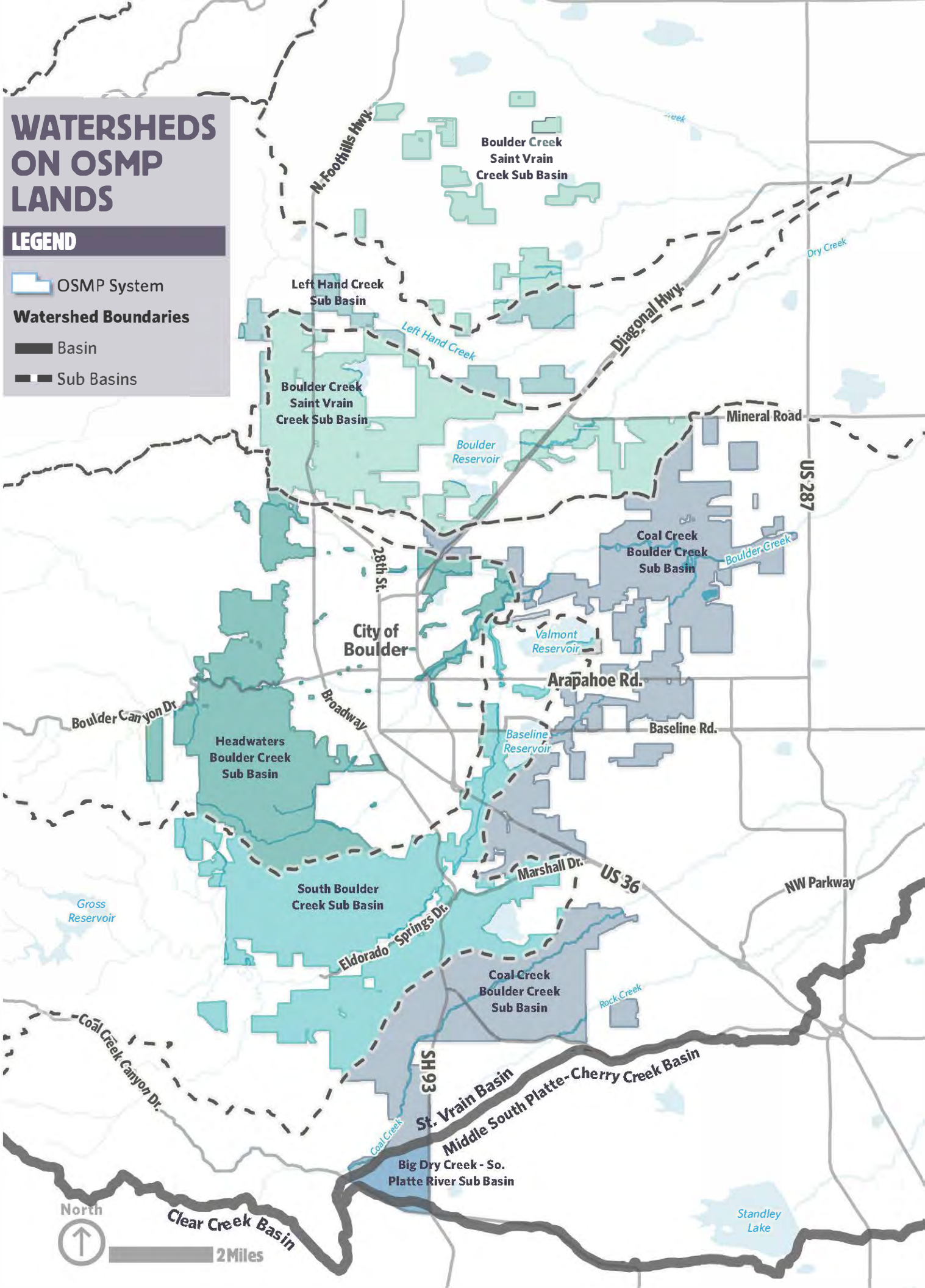
SUMMARY OF EXISTING CONDITIONS

More than 1,000 acres of wetland habitat have been acquired in Boulder Valley. OSMP owns 73 percent of the floodplain around Boulder, reducing flood risk.

Acquisition of these areas provides the City with the ability to improve and maintain ecological conditions, and provides some control over the types of activities that occur in these areas.

Riparian areas on OSMP lands are in poor condition. Water diversion, impoundments, channelization, and land use upstream of and on OSMP land has altered the natural hydrologic and hydraulic regime in the creeks. However, we are working on opportunities to restore these vital habitat areas. For example, this restoration includes:

- Working with the Colorado Water Conservation Board and U.S. Fish and Wildlife Service (USFWS) and
- Joining with Denver Water and Colorado Parks and Wildlife (CPW).


WATERSHEDS ON OSMP LANDS
LEGEND
OSMP System
Watershed Boundaries
Basin
Sub Basins
N. Foothills Hwy.
Boulder Creek Saint Vrain Creek Sub Basin
Left Hand Creek Sub Basin
Left Hand Creek
Diagonal Hwy.
Dry Creek
Boulder Creek Saint Vrain Creek Sub Basin
Boulder Reservoir
Mineral Road
US-287
28th St.
Coal Creek Boulder Creek Sub Basin
Boulder Creek
City of Boulder
Valmont Reservoir
Arapahoe Rd.
Broadway
Boulder Canyon Dr.
Headwaters Boulder Creek Sub Basin
Baseline Reservoir
Baseline Rd.
South Boulder Creek Sub Basin
Marshall Dr.
US 36
NW Parkway
Gross Reservoir
Eldorado Springs Dr.
Coal Creek Boulder Creek Sub Basin
Rock Creek
Coal Creek Canyon Dr.
SH 93
St. Vrain Basin
Middle South Platte-Cherry Creek Basin
Coal Creek
Big Dry Creek - So. Platte River Sub Basin
Clear Creek Basin
Standley Lake
North
2 Miles

Water Use in Colorado

Water has figuratively shaped Colorado's agriculture industry and literally shaped its landscape. With a semi-arid climate and a diverse geography, access to limited water requires significant infrastructure for distribution and the expertise to effectively manage and conserve it.

Colorado's water supply is primarily obtained through snowmelt that flows from the mountains during spring runoff, filling rivers and reservoirs. The collected water is then diverted through a network of tunnels and ditches to reach populated areas along the western and eastern slopes of the Rocky Mountains. Multiple trans-mountain diversions – such as a 13 mile-long tunnel beneath Rocky Mountain National Park – transfer water from the Western Slope. That region receives about 80-percent of Colorado's rainfall, but much of it is transferred to the Front Range, where 80-percent of Colorado's population lives.

Since the late 1800s, developers and settlers have diverted water from creeks and rivers for agricultural, municipal and industrial uses. The redistribution of water altered vegetation and wildlife habitats in both the areas from where the water was diverted and the areas to where it was sent. As population and industry grew, so too have the demands on limited water resources.

Colorado water law establishes water as a public resource that can be used for beneficial purposes through individual water rights.

The City of Boulder's Open Space and Mountain Parks Department owns water rights estimated to be worth between $60 million and $70 million. The department uses the water rights to support agricultural activities and sustain ecological health.

WATER AND OSMP

The city charter identifies both the preservation of water resources in their natural or traditional state and the preservation of wildlife habitats and fragile ecosystems as purposes of open space. This means that we must protect and maintain both natural aquatic systems and riparian habitats as well as the engineered infrastructure of acquired water resources including the extensive network of irrigation infrastructure used for agriculture. The department has not developed a comprehensive water management plan. However, direction in various resource plans – Grassland Ecosystem Management Plan (Grassland Plan), Forest Ecosystem Management Plan (FEMP) and the Agricultural Resources Management Plan (Ag Plan) – integrate the "waters of OSMP" and include recommended strategic actions about maintaining and improving the many functions and assets associated with these systems.

BENEFITS OF WETLAND AND RIPARIAN HABITAT

Aquatic, riparian and wetland ecological systems provide water, food and shelter to human and natural communities. These systems perform valuable ecosystem services that enhance environmental health and the quality of life in Boulder through provisioning habitat and cultural benefits. Water resources provide or support water purification and irrigated agriculture, including local food production.

In addition, the value and benefits of wetland and riparian habitat, include:

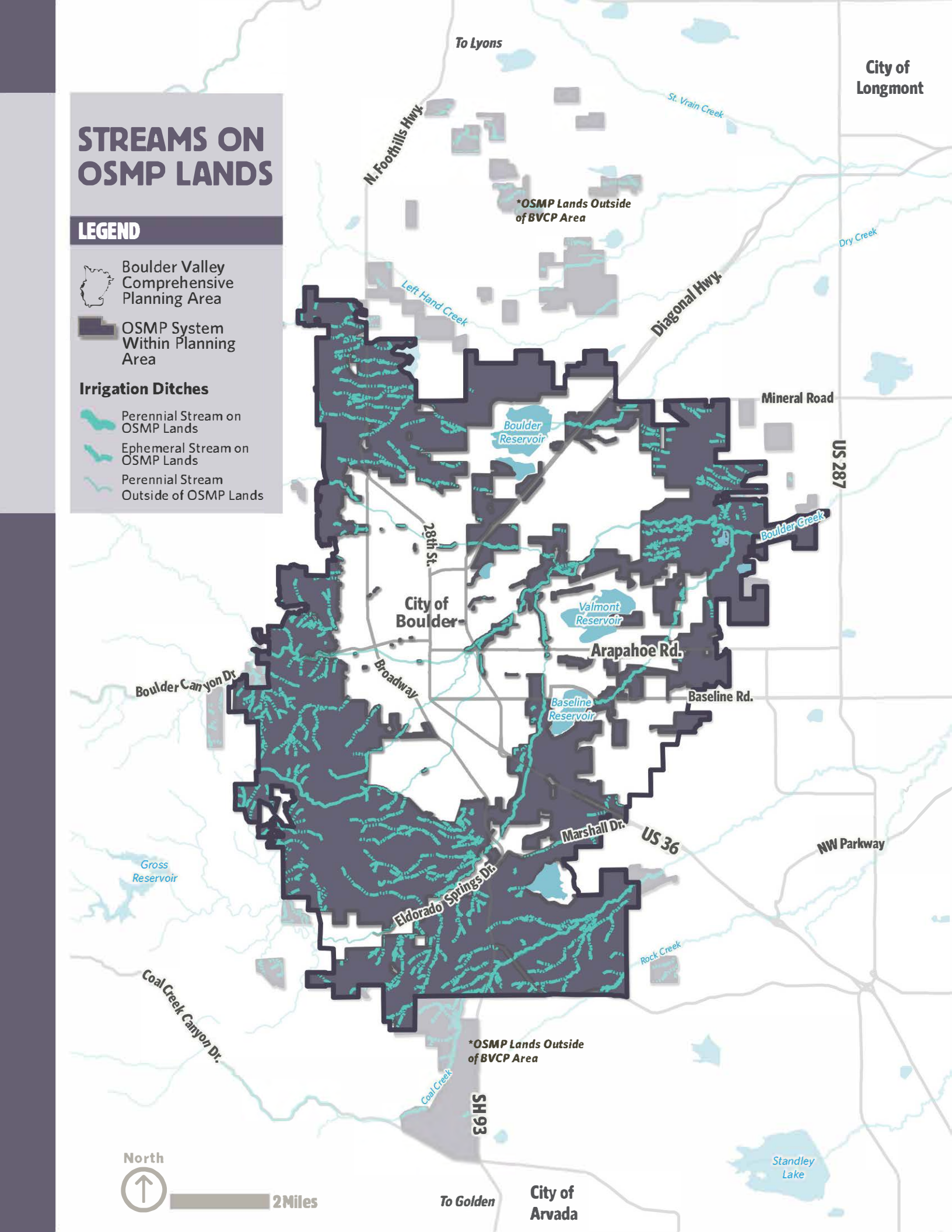
- Fish and wildlife habitat;
- Flood storage and attenuation;
- Groundwater recharge and discharge;
- Shoreline stabilization;
- Sediment, nutrient, pollutant trapping/retention;
- Connections with nature;
- Research and education; and
- Economic benefits.

HYDROLOGY

Hydrologic characteristics and features differ greatly between the plains landscape on the east side of Boulder's open space system and the steep foothills on the west side. Several perennial and intermittent streams – including Coal Creek, South Boulder Creek, Bear Canyon Creek, Skunk Creek, Boulder Creek, Fourmile Canyon Creek, Lefthand Creek and Dry Creek – traverse the lands that we manage. Mountain and foothill streams are often high-energy and steep, constrained by bedrock and dominated by gravel and bedrock substrates. East of the foothills, water moves more slowly through low-gradient streams and intermittent creeks with gravelly and sandy sediments. Human-built dams and diversion structures have altered the historic seasonal flow patterns of creeks and streams on OSMP for about 150 years.

WATERSHEDS

The land draining to each creek forms the creek's watershed. Nearly all of these small watersheds are tributary to the St. Vrain Creek, which is in turn tributary to the South Platte River. OSMP has acquired land in each of these smaller watersheds to help protect the waterways in the watershed. The **Watersheds on OSMP Lands Map** shows the watershed boundaries and resources in Boulder.


STREAMS ON OSMP LANDS
LEGEND
Boulder Valley Comprehensive Planning Area
OSMP System Within Planning Area
Irrigation Ditches
Perennial Stream on OSMP Lands
Ephemeral Stream on OSMP Lands
Perennial Stream Outside of OSMP Lands
To Lyons
City of Longmont
St. Vrain Creek
N. Foothills Hwy.
*OSMP Lands Outside of BVCP Area
Dry Creek
Left Hand Creek
Diagonal Hwy.
Mineral Road
Boulder Reservoir
US 287
Boulder Creek
28th St.
City of Boulder
Valmont Reservoir
Arapahoe Rd.
Broadway
Boulder Canyon Dr
Baseline Reservoir
Baseline Rd.
Marshall Dr.
US 36
NW Parkway
Gross Reservoir
Eldorado Springs Dr.
Rock Creek
Coal Creek Canyon Dr.
*OSMP Lands Outside of BVCP Area
Coal Creek
SH 93
Standley Lake
North
2 Miles
To Golden
City of Arvada

RIPARIAN AREAS

Riparian areas are transitional areas between creeks and drainages and the adjacent terrestrial upland. We manage about 1,500 acres of riparian areas. Historically, most of the riparian habitats in the Boulder Valley were located along the numerous mountain and foothills drainages and the larger creeks – Boulder Creek, South Boulder Creek and Coal Creek. Today, riparian areas have formed along agricultural irrigation ditches, increasing the total length and connectivity of riparian corridors into Boulder's grasslands. About 80 miles of mainstem ditches cross the open space system in the Boulder Valley – providing some riparian benefits and opportunities to work with the irrigation companies that own the ditches to maintain and enhance those benefits.

The acquisition and management of OSMP lands support perennial, intermittent and ephemeral streams. **OSMP has acquired land along about 56 percent of the total mileage of perennial streams and 78 percent of the total mileage of intermittent and ephemeral creeks and drainages in the Boulder Valley** (Figure 6.1 and 6.2). Acquisition of these areas provides the city with the ability to improve and maintain ecological conditions and provides some control over the types of activities that occur in these areas. Acquiring more than 36 miles of perennial creeks and 140 miles of ephemeral/intermittent creeks in the Boulder Valley affords us with significant opportunities to do this work and achieve two of our open space purposes – to preserve water resources in their natural or traditional state and prevent encroachment on floodplains.

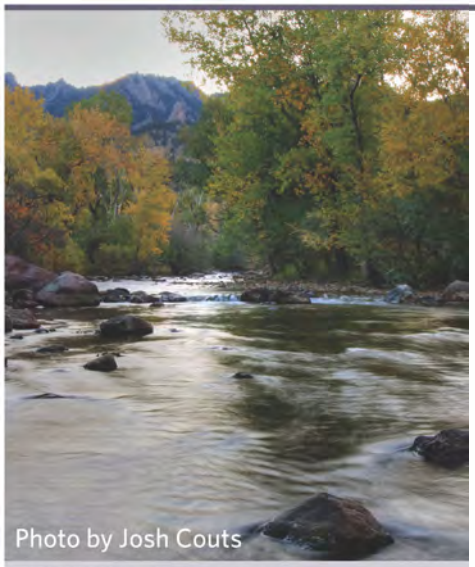
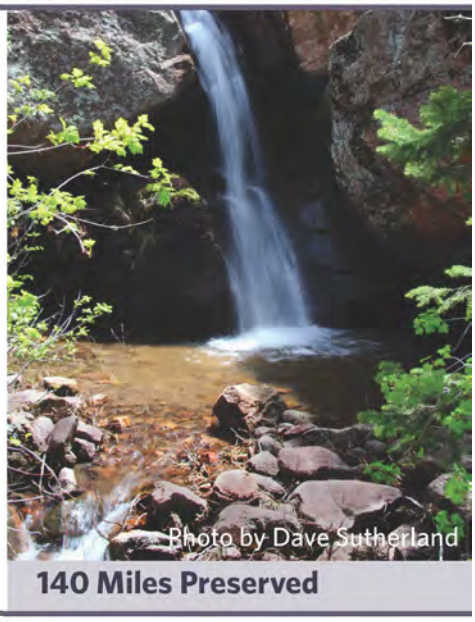


Figure 6.1: Acquisition and Management of Water in Natural State: Perennial Creek (ft)

Figure 6.2: Acquisition and Management of Water in Natural State: Ephemeral and Intermittent Creeks (ft)



According to an assessment made as part of the Grassland Plan, the riparian areas on OSMP lands are in poor condition. Water diversion, impoundments, channelization, and land use upstream of and on OSMP land has altered the natural hydrologic and hydraulic regime in the creeks. Instream flows are low, and some stretches of creek are isolated from the adjacent floodplain.

Several aquatic nuisance species – including New Zealand mud snail and invasive plants, such as crack willow and Eurasian water milfoil – affect the health of these riparian areas. Cottonwood trees have also not been regenerating at desirable rates, and native species of frogs make up only a small portion of the overall frog population in these sensitive habitats. The Grassland Plan assessed the condition of these riparian areas as poor because of these and other factors.

However, we are working on opportunities to restore these vital habitat areas, such as:

- **Working with the Colorado Water Conservation Board and U.S. Fish and Wildlife Service (USFWS), we recently restored about two miles of Boulder Creek, returning the significantly altered creek to more natural conditions.**
- The city also joined with Denver Water and Colorado Parks and Wildlife (CPW) to improve habitat along two miles of South Boulder Creek.
- In partnership with the Terra Foundation, Boulder County Audubon and the Boulder County Nature Association, we completed a collaborative restoration project along Coal Creek, which had a history of unmanaged livestock grazing and gravel mining in southern Boulder and northern Jefferson counties. The restoration project focused specifically on restoring the ecological health of the riparian shrublands and forest along the creek through fencing and revegetation. Since its completion, this group of staff, partners and volunteers has observed a significant increase in shrub-nesting bird diversity, habitat for elk and bald eagle nesting.

WETLANDS

Wetlands occur where soil is inundated or saturated long enough during the growing season to support special plants called hydrophytes. Hydrophytes are plants that can tolerate and even thrive with little or no oxygen in their root zone.

We manage more than 1,000 acres of wetland habitat.

In the Boulder Valley, wetlands are most commonly found along larger creeks, intermittent creeks and drainages, or in meadows supported by irrigation for agriculture, or locations on the landscape where groundwater is sufficiently close to the ground surface. Although less common, seeps and springs occur on the landscape where geology and topography allow groundwater to reach the soil surface.

Like the riparian areas, assessments made as part of the Grassland Plan found wetlands on OSMP lands are in poor condition. A prevalence of invasive plant species including teasel and Canada thistle – as well as the low number of wetlands supporting only native amphibians - contributed to this rating.

SOMBRERO MARSH: A UNIQUE RESOURCE AND COMMUNITY SUCCESS STORY

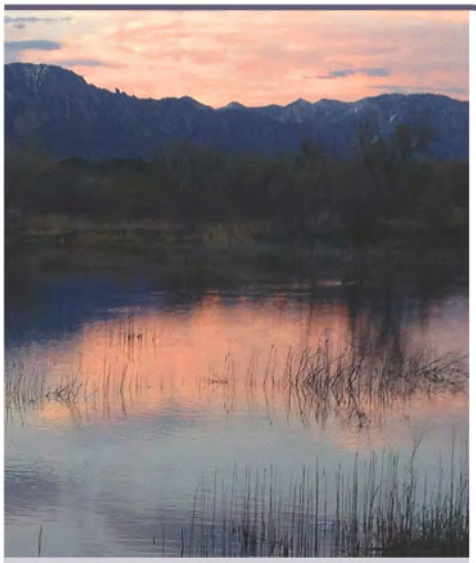
We are actively restoring many wetland areas on OSMP lands, and the story of Sombrero Marsh exemplifies this work. Sombrero Marsh may have been the only year-round natural body of open water in the Boulder Valley at the time of American settlement in the 1800s. Sombrero is a 20-acre brackish marsh, with seasonal salt flats that support unique wetland vegetation and nesting shore birds. The city acquired the marsh as open space through several separate acquisitions, and Boulder County controls about one-quarter of the marsh in a conservation easement dedicated as part of a rural subdivision. Before we acquired Sombrero Marsh, portions of the marsh were used as a landfill. We restored the marsh and incorporated several short trails and a boardwalk for use by the public, school groups and classes.

Sombrero Marsh in afternoon sun and distant view of Green Mountain. Photo by Dave Sutherland

RESERVOIRS AND PONDS

There are about 450 acres of open water distributed as reservoirs and ponds across Boulder's open space system. Most of these are man-made. In the context of the rest of Boulder Valley, OSMP owns a small percentage of all reservoirs, lakes and ponds (Figure 6.3).

Most of the open water acreage on OSMP land consists of former gravel mining pits, such as Sawhill Ponds. Many of the smaller open bodies of water on the system were developed and primarily used for field irrigation and livestock watering and operate under the constraints of the water rights associated with them.



438 Acres Preserved

Figure 6.3: Acquisition and Management of Reservoirs and Ponds (Acres)

FLOODPLAINS

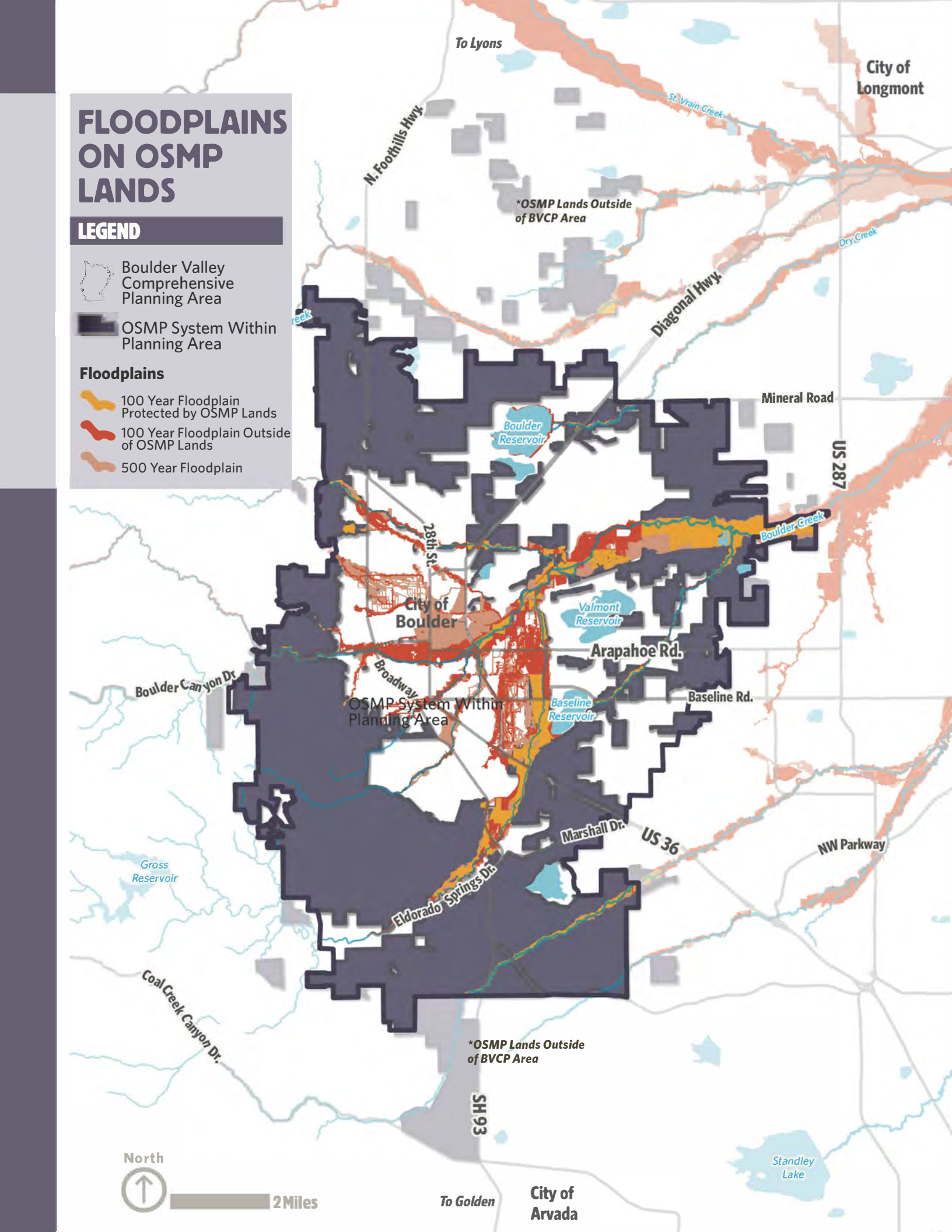
One of OSMP's charter purposes is the utilization of land to prevent encroachment on floodplains. A floodplain is the area adjacent to a river that is subject to flooding. OSMP currently owns 46 percent of the 100-year floodplain in the Boulder Valley. The acquisition of Boulder's open space system has prevented major development and infrastructure in Boulder Valley's floodplains, especially in the South Boulder Creek and Coal Creek floodplains.

OSMP currently owns 73 percent of the floodplain in the perimeter of land around Boulder (i.e., BVCP's Area III). By preventing development in most of the Boulder Valley floodplain, these protected lands reduce flood risk for the urban core (BVCP Area I), the most susceptible area to severe flooding events in terms of potential property damage or risk to life (Figure 6.4).

Figure 6.4: Preventing Encroachment on Floodplain

Stewardship of floodplain areas is critical to riparian conservation and restoration efforts, and helps lessen the risk of and damage from flooding.

2,462 Acres Preserved


FLOODPLAINS ON OSMP LANDS
LEGEND
Boulder Valley Comprehensive Planning Area
OSMP System Within Planning Area
Floodplains
100 Year Floodplain Protected by OSMP Lands
100 Year Floodplain Outside of OSMP Lands
500 Year Floodplain
To Lyons
City of Longmont
St. Vrain Creek
N. Foothills Hwy.
*OSMP Lands Outside of BVCP Area
Dry Creek
Diagonal Hwy.
Mineral Road
Boulder Reservoir
US 287
Boulder Creek
28th St.
City of Boulder
Valmont Reservoir
Arapahoe Rd.
Broadway
Boulder Canyon Dr.
OSMP System Within Planning Area
Baseline Reservoir
Baseline Rd.
Marshall Dr.
US 36
NW Parkway
Gross Reservoir
Eldorado Springs Dr.
Coal Creek Canyon Dr.
*OSMP Lands Outside of BVCP Area
SH 93
Standley Lake
North
2 Miles
To Golden
City of Arvada

2013 FLOOD

According to the Boulder Area Sustainability Network, Boulder is an especially flood-prone urban area because it lies at the base of Rocky Mountain foothills and the mouth of Boulder Canyon and has extensive infrastructure and development located within the 100-year floodplain. As a result, the risks to human safety and property are especially high.

In September 2013, the Front Range received a year's worth of rainfall within an eight-day period. All major creeks and irrigation ditches flooded, overwhelming the city's storm drainage and sewer system. This event was designated as a federal disaster. Boulder County was the hardest hit county: the flood caused $300 million of private property damage, affecting 14 percent of Boulder's households and leading to $27 million of municipal property damage.

The facilities and lands we manage were also greatly impacted. Estimated costs for OSMP infrastructure repair due to the flood are upward of $7 million, with trails and irrigation water delivery systems hardest hit. In addition, as members of many ditch companies, we contribute increased assessments to the costs of repair to the ditch companies' infrastructure.

The flood also affected the land itself, necessitating restoration of native vegetation channels and floodplains. These projects have a price tag of more than $2.5 million. With such high rebuilding costs, we have spent considerable resources seeking state and federal funding to help pay for repairs. Grants and reimbursements are anticipated to recoup the majority of our flood expenses. A huge volunteer effort also complemented city and partner funding, allowing us to accomplish a great deal and build new connections with the community.

While the 2013 flood had devastating effects on human infrastructure in Boulder, floods are natural processes with ecological benefits. Floods result in an exchange of nutrients and sediment between the creek and its adjacent floodplain benefiting both habitats. The scouring and deposition associated with flooding create new habitat adjacent to and within the creek and cleans sediment from fish spawning areas. Floods foster the regeneration of native riparian communities by establishing germination sites for cottonwood seed. This is particularly important on the lands we manage, where riparian communities lack young cottonwood seedlings and saplings needed to replace the mature cottonwood trees along perennial streams. In fact, the Grassland Plan has two indicators about flooding: Good condition requires at least one overbank flooding event during late May through June every 5 to 10 years; and good condition requires depositional bars in and along creeks to have 50 to 75 percent presence of cottonwood seedlings.

There have been major floods in Boulder in 1894, 1938, 1969, 1995 and 2013. However, the intensity of the 2013 flood and other recent extreme weather events appears to be due, at least in part, to climate change (Trenberth & Fasullo & Shepherd, 2015).

Water and Biodiversity

Wetlands and riparian areas provide habitat for a disproportionately high level of animal biodiversity relative to other habitats.

In Colorado, riparian areas support about 80 percent of native birds, mammals, reptiles, amphibians and native fish found in this region (Knopf, 1985).

Further, recent research on OSMP identifies riparian areas as vital habitat for nectaring butterflies (Colorado Natural Heritage Program [CNHP], 2017). Our staff works with Colorado Parks and Wildlife to maintain several ponds as native fish refugia – where state-threatened fish species can be protected from non-native predaceous fish that are common in creeks. Despite diminished flows caused by water diversion, creeks and water bodies in the open space system are still known to support 38 fish species. They also support a diversity of aquatic invertebrates, with South Boulder Creek being considered a state reference site exemplifying the rich and diverse aquatic invertebrate community.

Several rare butterfly species – including the arogos skipper, the regal fritillary and the two-spotted skipper – rely on wetland plant species for habitat. Bobolink, savannah sparrow, American bittern and northern harrier, all species of special concern in Boulder County, nest in wetlands. Creeks support habitat for aquatic organisms, including a variety of native and non-native fish, amphibians and invertebrates. Two federally managed wildlife species – bald eagles and Preble's meadow jumping mouse – are riparian obligates, meaning that they require high-quality riparian habitat to live. These wetlands and riparian areas also support stable populations of northern leopard frogs, a species of greatest conservation need in Colorado whose populations are declining across the western U.S.

Federally threatened Preble's meadow jumping mouse occupies both riparian habitat and habitat along ditches on the lands that we manage. The network of irrigation ditches in the Boulder Valley has resulted in riparian habitat in areas that were previously "high and dry" and created additional connections among naturally occurring riparian areas. Management practices to enhance Preble's habitat include winter and early spring grazing to protect shrub communities from potential damage from livestock grazing, and the fencing of many riparian corridors in Preble's habitat at other times of the year.

OSMP's wetland plant communities are also diverse in composition, structure and origin, ranging from the natural, closed-basin Sombrero Marsh, to irrigated hayfields, to open water stock ponds. The most common wetland plant types are wet meadow communities dominated by arctic rush (***Juncus arcticus subsp. ater***) or prairie cordgrass (***Spartina pectinata***), cattail marshes and ponds.

Boulder's riparian habitat exhibits similar diversity. In the foothills, riparian areas are found in steep, ephemeral drainages. On the plains, riparian corridors surround perennial streams and irrigation ditches. Shrubs, including chokecherry (***Padus virginiana subsp. melanocarpa***), American plum (***Prunus americana***), or skunkbrush (***Rhus trilobata subsp. aromatica***), dominate the riparian vegetation in the foothills. On the plains, native plains cottonwood and narrow-leaf cottonwood, along with non-native crack willow communities, are the most common woody species along perennial streams. Our wetland and riparian areas also support the federally threatened Ute ladies'-tresses orchid as well as several state-sensitive vegetation communities.

Developing seed pods on Ute Ladies'-Tresses Orchids. © Linda Mahoney

Water and Agriculture

WATER RIGHTS

OSMP owns water rights in more than 50 separate water entities, with full ownership of seven irrigation ditches and multiple reservoirs.

Under the "use it or lose it" principle of the Colorado water doctrine, water must be used in particular ways to preserve water rights. Some of these ways, called "beneficial" uses, include agricultural irrigation and stock-watering, municipal water supplies, power generation, recreation and instream flows.

Our staff participates as shareholders and board members of multiple ditch companies. Where we hold 100 percent of a given water right, we also provide ditch superintendent services, including ditch maintenance, operation and management. Where OSMP is a shareholder in irrigation companies and owns a proportional share of the water rights, the irrigation companies are responsible for the maintenance and operation of the ditches. Where irrigation ditches cross lands that we manage, easements allow the ditch company superintendents to access those properties.

IRRIGATION

OSMP owns and manages water rights in many of the ditches flowing across the Boulder Valley, helping to preserve the community's cultural history and agricultural heritage and meeting the charter purpose associated with the preservation of agriculture **(See Irrigation Ditches Map)**. We also lease both land and water to local farmers and ranchers. OSMP's water shares are distributed among about 25 separate agricultural leases. Lease holders are responsible for the day-to-day water management on the properties they lease. The lessee cleans irrigation laterals, adjusts water flows to various fields and coordinates the use of water with other users on shared laterals. We maintain and replace irrigation structures. If a property is irrigable but unleased, such as where prairie dog occupation has made an agricultural operation unattractive to lessees, irrigation responsibilities fall to our staff.

The existing network of water-delivery infrastructure diverts water from the four major streams in the Boulder Valley and distributes it to individual water rights owners and their properties. Irrigation ditch infrastructure typically includes a head gate that diverts water from the stream, a ditch or canal and a series of smaller diversion structures and laterals. The general condition of the infrastructure is "fair," based upon the latest condition assessment information from 2010. Repairs are anticipated as the system is aging, and multiple structures are nearing their functional life expectancy. Since lessees are responsible for the day-to-day operations, they are critical in informing OSMP of maintenance and infrastructure needs.

Our staff also assesses field conditions of the infrastructure, particularly during the irrigation season.

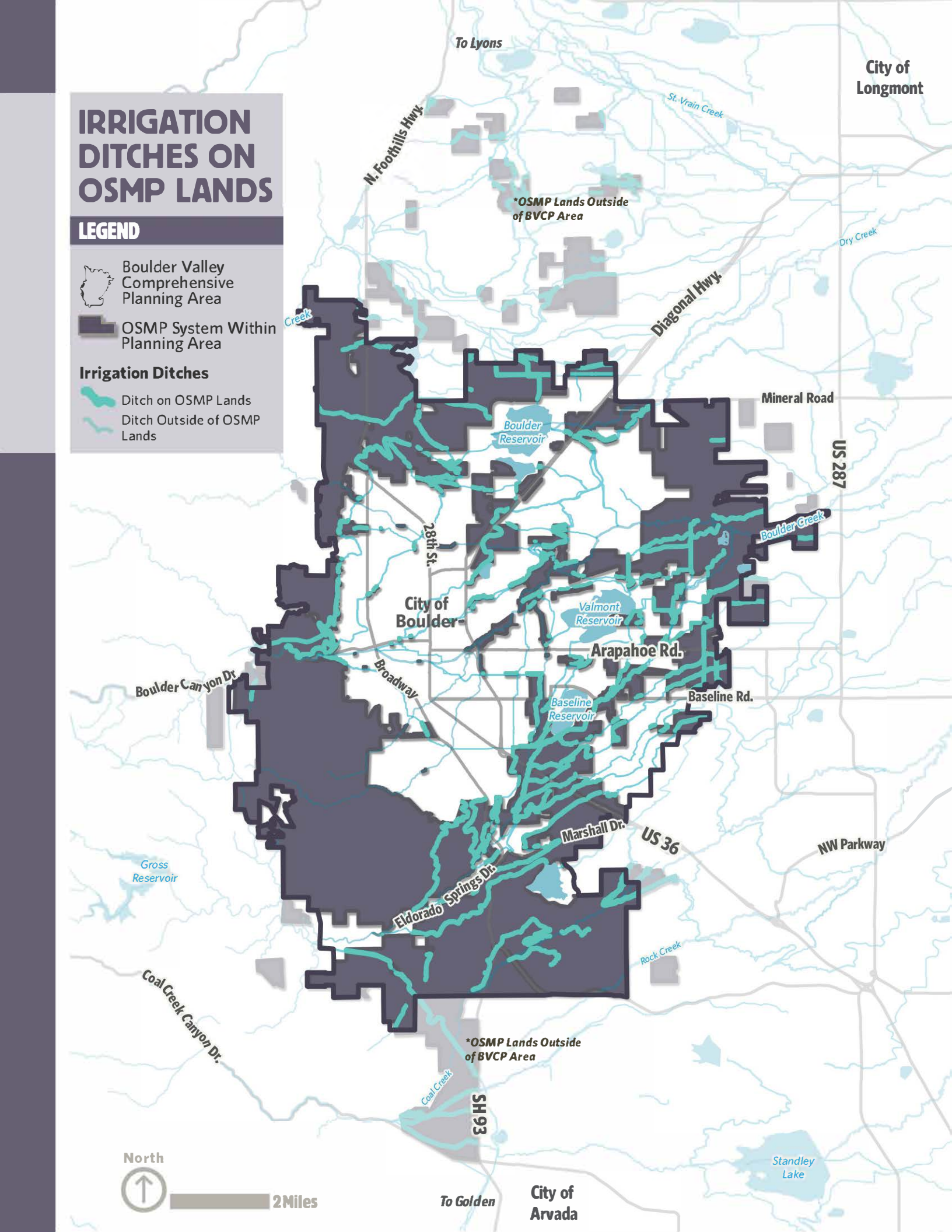
Irrigation water and the associated infrastructure are critical for several types of agriculture common on the lands, including hay production, annual crops and vegetable production.

The existing network of water delivery infrastructure and irrigation water used on open space is not only critical to agricultural production, but it also supports wetlands and unique wildlife habitats and vegetation communities.

Managing water for open space involves the simultaneous protection of the resource for agriculture, instream flows, wetlands, native flora and fauna, and recreation.

Figure 6.5: Acquisition and Management of Water in Natural State: Ditches (ft)

79 Miles Preserved


IRRIGATION DITCHES ON OSMP LANDS
LEGEND
Boulder Valley Comprehensive Planning Area
OSMP System Within Planning Area
Irrigation Ditches
Ditch on OSMP Lands
Ditch Outside of OSMP Lands
To Lyons
City of Longmont
St. Vrain Creek
N. Foothills Hwy.
*OSMP Lands Outside of BVCP Area
Dry Creek
Diagonal Hwy.
Mineral Road
US 287
Boulder Reservoir
28th St.
Boulder Creek
City of Boulder
Valmont Reservoir
Arapahoe Rd.
Broadway
Boulder Canyon Dr.
Baseline Reservoir
Baseline Rd.
Marshall Dr.
US 36
NW Parkway
Gross Reservoir
Eldorado Springs Dr.
Rock Creek
Coal Creek Canyon Dr.
*OSMP Lands Outside of BVCP Area
Coal Creek
SH 93
Standley Lake
North
2 Miles
To Golden
City of Arvada

7

AGRICULTURAL RESOURCES

RELEVANT CHARTER PURPOSE:

- **Preservation of agricultural uses and land suitable for agricultural production**

Early morning view of Doran Barn. © Steve Slater

One-third of Boulder's open space lands are leased to agricultural producers, resulting in strong partnerships and a shared land ethic. We aim to preserve agricultural uses of the land that are both ecologically healthy and beneficial for agricultural production.

This chapter provides a brief overview of Open Space and Mountain Parks' agricultural resources and agricultural management. For a more complete description of agricultural operations, ecological health and community connections, please see the recently approved Agricultural Resources Management Plan (Ag Plan) (2017) as well as Chapter 5, "Natural Resources," Chapter 6, "Water and Floodplain Management" and Chapter 9, "Connecting People with Nature" of this report.

SNAPSHOT

One third of OSMP lands are leased to agricultural producers, resulting in **strong partnerships and a shared land ethic.** We aim to preserve agricultural uses of the land that are both ecologically healthy and beneficial for agricultural production.

AGRICULTURAL PRODUCTION

For more than 150 years, OSMP lands and waters have been the foundation of agriculture in Boulder. Farmers and ranchers continue working these lands to provide food and other agricultural products. What remains is a wide range of structures, community relationships, ecosystems, and a scenic legacy of barns, farmhouses, ditches, hayfields and pastures.

It has been estimated that lessees do the work of **15 full time staff members**, saving the department more than **$1 million each year.**

AGRICULTURAL RESOURCES

SOILS

Maintaining healthy soils is critical for the long-term sustainability of agricultural lands and integrated ecosystems. Healthy and productive soils allow farmers to obtain high-crop yields with lower expenses and less damage to the environment.

AGRICULTURAL SYSTEMS

A small number of lessees market hay and livestock while other lessees sell their products off-site to a variety of markets including farmers markets and restaurants.

STRUCTURES

There are many agricultural structures, such as barns, pole barns, loafing sheds, residences, outbuildings and corrals that have historic value. They are often in poor condition because they are old and have not been regularly maintained.

AGRICULTURAL RESOURCES

Livestock

Hay production

Crop production

Vegetable production

AGRICULTURAL MANAGEMENT

The recently approved Agricultural Resources Management Plan strives to maintain and enhance agricultural-related values for the community by ensuring the long-term sustainability of agricultural operations. It also takes a conservation approach that supports the ecological health of lands managed by OSMP, and fosters key connections between the community and its agricultural lands.

Today, OSMP leases about 15,000 acres of working lands to dozens of farmers and ranchers, many of whom have been working these lands for more than 30 years. These long-term partnerships, which are beneficial to both the city and lessees, support the local agricultural heritage of Boulder Valley and provide for continuous stewardship of OSMP's working landscape.

PEST MANAGEMENT

OSMP has encouraged non-chemical pest management – where possible and with the least persistent and least toxic pesticides – when chemical treatment is determined to be necessary.

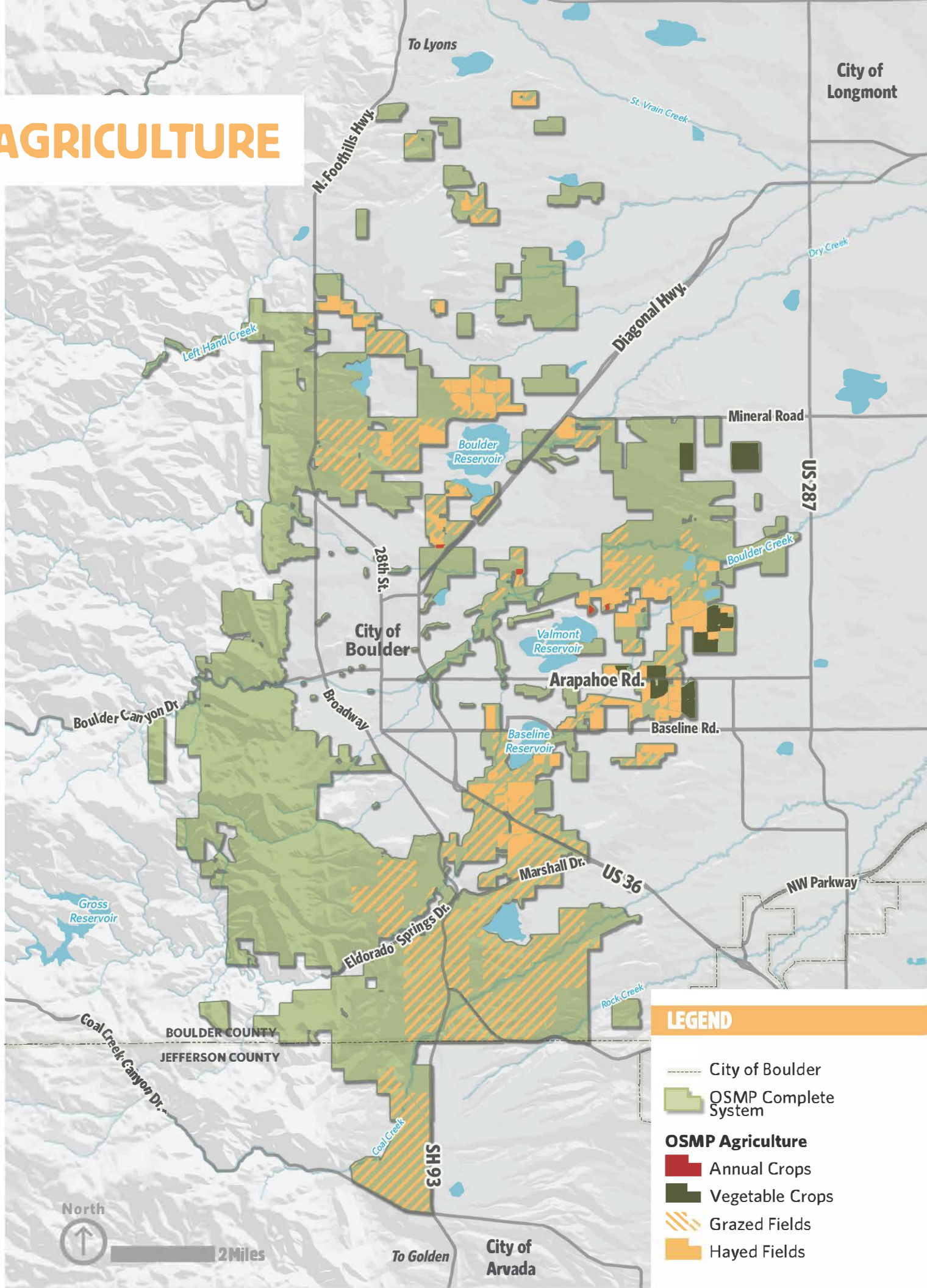
SUMMARY OF EXISTING CONDITIONS

Farmers produce diversified vegetables on only 30 acres of land. However, soil and water conditions on an additional 250 acres are capable of supporting diversified vegetable farming.

Lack of lands and labor are factors in preventing diversified veg farmers from expanding. The biggest inhibitors to expanding beef production are related to no local processing facility.

Estimated **maintenance costs for the 153 buildings with agricultural function is currently estimated to be $1.8 million**. This investment has been scheduled over the next ten years.

AGRICULTURE



LEGEND

- City of Boulder
- OSMP Complete System

OSMP Agriculture

- Annual Crops
- Vegetable Crops
- Grazed Fields
- Hayed Fields

Overview

The City of Boulder has a long history of working in partnership with agricultural operators to manage open space lands. Immediately following the passage of the first open space sales tax in 1967, the city relied almost entirely upon agricultural lessees for the day-to-day management of open space grasslands. Lessees continue to play a critical role in distributing water rights across our landscape and conducting routine maintenance on irrigation and agricultural infrastructure and managing open space lands through grazing and haying operations. **Today we lease 15,000 acres to agricultural producers - mostly for grazing - amounting to 40 percent of the land that OSMP owns in fee, to 26 ranchers and farmers.** Of the 15,000 acres, about 6,000 are irrigable, facilitating crop production - mostly hay - and livestock uses. In addition to the lands OSMP leases to ranchers and farmers, we also protect thousands of acres of agricultural land through conservation easement agreements. Within the Boulder Valley Comprehensive Plan (BVCP) area, OSMP owns or manages 9,599 acres of the 14,378 acres of the "significant agricultural lands" (67 percent) mapped in the Boulder County Comprehensive Plan (BCCP).

For more than 150 years, these lands and waters, combined with Boulder County open space agricultural lands, have been the foundation of agriculture in Boulder. Farmers and ranchers continue working these lands to provide food and other agricultural products. What remains is a wide range of structures, community relationships, ecosystems and a scenic legacy of farmhouses, barns, ditches, hayfields and pastures.

We maintain an agricultural program focused on production of food, feed and fiber. Environmental conditions, such as soil quality and water availability, limit most of the agricultural production on the lands that we manage to livestock grazing or hay/forage production. As a reflection of this, farmers produce diversified vegetables on only 30 acres of land. However, soil and water conditions on an additional 250 acres are capable of supporting diversified vegetable farming. Diversified vegetable farming refers to the farmers' desire to keep pastured livestock in conjunction with a vegetable farm. Produce unfit to market or surplus can be fed to pastured livestock, and crop aftermath can be grazed, resulting in either income or food. In addition to keeping livestock, some farmers incorporate fruit orchards and/or beekeeping.

In the future, we may work with interested lessees to convert some or all of these acres currently used for hay production to diversified vegetable farming (see **Agricultural Resources Management Plan**). The following table and previous map provide an overview of all current agricultural operations and the acreage they occupy.

Table 7.1: Agricultural Production

TYPE OF AGRICULTURAL PRODUCTION	ACRES FARMED/ RANCHED	NUMBER OF OPERATIONS
Livestock production	13,539	19
Hay production (grass alfalfa)	2,755	20
Annual crops (wheat, corn, barley, etc.)	665	2
Diversified vegetable farming	30	3

Production choices are made by the lessee. However, **the use of genetically modified organisms (GMOs) and transgenic crops is prohibited on OSMP-managed land.** Local markets often influence a lessees' choices about which agricultural commodities to produce.

We currently offer limited opportunities for direct on-site sales of agricultural products. A small number of lessees' market hay and livestock directly from OSMP properties while other lessees sell their products off-site to a variety of markets, including farmers markets, restaurants and Community Supported Agriculture (CSAs).

Agricultural Resources

SOILS

Maintaining healthy soils is critical for the long-term sustainability of agricultural lands and associated ecosystems. Healthy soils are those that store nutrients and water needed to support vegetation in rangelands or crops. In turn, vegetative cover prevents or minimizes soil erosion. Grazing, tilling and some integrated pest management practices can be detrimental to soil quality. As soil health declines on tilled lands, inputs such as fertilizers and pesticides are necessary to maintain productivity. However, these inputs are not a sustainable practice and may reduce resiliency. Healthy and productive soils, on the other hand, allow farmers to obtain high crop yields with lower expenses and less damage to the environment.

Local soils have varying levels of organic matter and biological activity due to historic and current cropping activities, grazing regimes and prairie dog occupation. Limitations in the past have prevented systematic measurement or monitoring of soil conditions, though this is now called for in the **Agricultural Resources Management Plan**. However, visual observations indicate soil health on perennial hayfields and pastures with managed grazing is generally good due to the naturally occurring vegetative cover. Continuously tilling fields for many years diminishes soil quality, which is evident throughout OSMP's agricultural lands. Drainage after intense weather events also presents problems for these agricultural fields.

AGRICULTURAL STRUCTURES

Agricultural structures, such as barns, pole barns, loafing sheds, residences, outbuildings and corrals support Boulder's agricultural practices. Many of these buildings have cultural or historic significance, effectively telling the larger history of Boulder's agricultural heritage. Most of OSMP's agricultural structures were constructed before the city's ownership and are in poor condition. In 2016, we collected specific information on the location, number, and condition of buildings across the open space system. The study estimated that over the next 10 years, maintenance costs for the 153 buildings with agricultural function would be roughly $1.8 million. We increased our investments in the stewardship of these assets in our most recent capital improvements plan.

Historic Knaus wooden barn with double rainbow. © Christian Nunes

Agricultural Management

The purpose of the recently approved Ag Plan is to maintain and enhance agricultural-related values for the community by ensuring the long-term sustainability of agricultural operations, taking a conservation approach that supports the ecological health of the lands that we manage, and fostering key connections between the community and its agricultural lands. The plan establishes clear guidance for implementation, including measures of success and monitoring efforts to track progress toward plan objectives.

PARTNERSHIPS WITH LESSEES

Today, we lease about 15,000 acres of working lands to 26 farmers and ranchers, many of whom have been working these lands for more than 30 years. These long-term partnerships, which are beneficial to both the city and lessees, support the local agricultural heritage of Boulder Valley and provide for continuous stewardship of our working landscape. These long-term partnerships also leverage the stewardship ethic and commitment of agricultural lessees because of their financial commitment to their agricultural operation and their desire and need to be good land stewards to remain financially viable. **We estimate that lessees do the work of 15 full-time staff members through their operation and maintenance of our irrigated lands and infrastructure, saving our department more than $1 million each year.**

Historically, the focus of the city's agricultural program has been to provide farmers and ranchers with the foundational resources of affordable land and access to water where available. Our staff currently provides technical support when requested by lessees and as capacity allows. Our lessees and other agricultural operators in Boulder Valley face resource-related barriers, including labor availability, the ability to expand operations due to funding and/or land limitations, and/or the ability to apply for grants. Some grants are only available to farmers and ranchers operating on private lands or with longer duration leases than the city allowed. To help alleviate some of these barriers, the Agricultural Resources Management Plan establishes opportunities for longer leases and recommends exploring the feasibility of providing additional resources to farmers and ranchers.

Farmer drives a horse-drawn agricultural implement with a team of draft horses to cut hay. ● Phillip Yates

Our agricultural leases outline the terms and conditions of access and other permitted uses. Lessees are typically provided greater access and permission for a wider variety of activities than our recreational visitors in their leased areas and along the ditches serving their leased areas. Some examples include: Off-trail access in Habitat Conservation Areas (HCAs), limited access to closed properties, management of off-leash working dogs in areas designated as dog-free or control zones, and off-road, all-terrain vehicle/vehicle/equipment use to help support their agricultural operations. Lessees must also agree to modify agricultural practices from time to time to accommodate the multiple objectives of the OSMP program.

Leases include a stewardship plan, which we review annually with each agricultural lessee to maintain good communication and working relationships, and to provide the opportunity to adaptively manage and address any issues/compliance with the stewardship plan.

Haystack Mountain, yellow cottonwood trees and hay fields covered with hay bales. Photo by Dave Sutherland

AGRICULTURAL LABOR FORCE

Many farmers and ranchers have been working the same lands for decades - some since before the city acquired the lands as open space. The lack of qualified labor, particularly for organic vegetable operations, is a limitation. The price of real estate and the lack of affordable rental properties available for farmworkers also make things difficult. In addition, **farmers are aging and there are fewer people who want to fill their boots.** This local trend on OSMP's leased lands is consistent with nationwide trends, and it impacts our ability to maintain working farms. Currently, we do not assist existing longtime lessees with succession or transition planning; however, we call for this need in our Ag Plan.

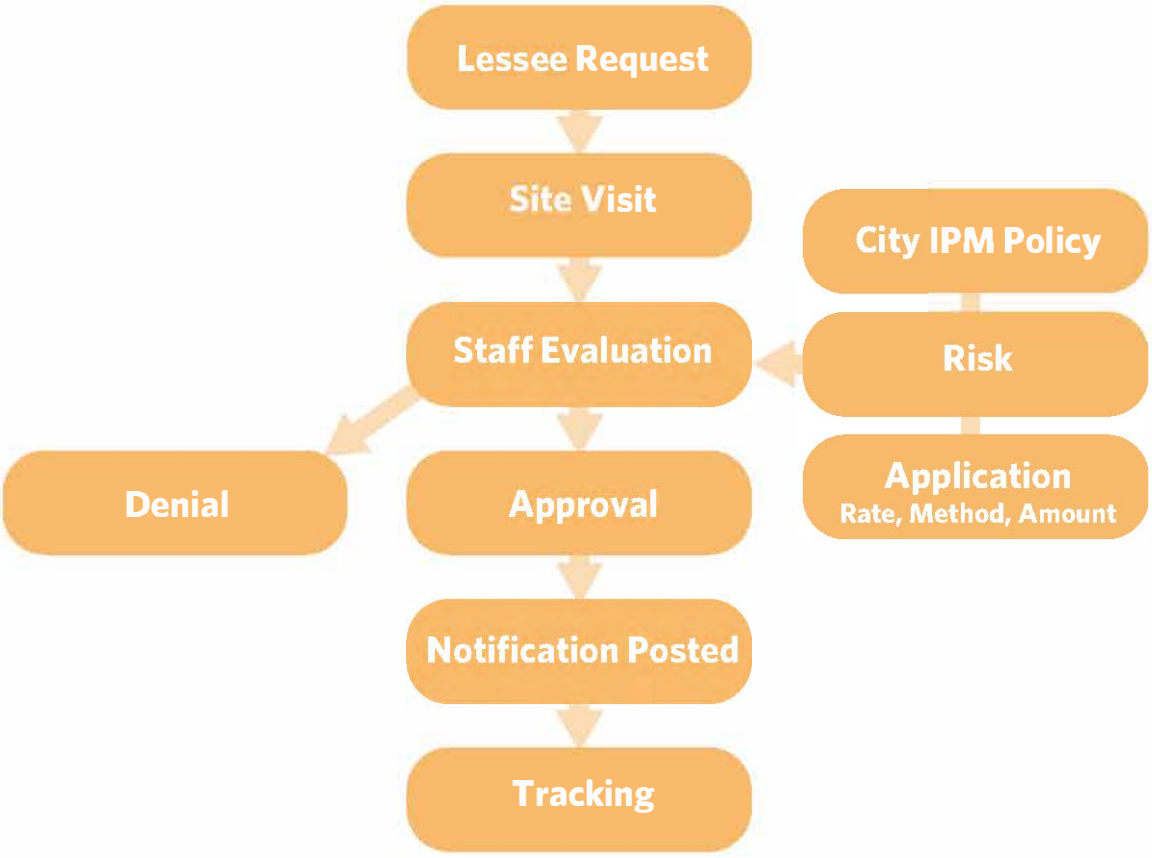
Babe Hogan rides horse, Toots, through a pasture, cleaning ditches. Photo by Julie Johnson

INTEGRATED PEST MANAGEMENT

We encourage non-chemical pest management, where possible. If chemical treatment is determined to be necessary, the least persistent and least toxic pesticides should be utilized. Our existing review and approval or denial process for chemical treatments is shown in Figure 7.1.

Lessees are required to provide the chemical name, application rate, target pest and acres proposed for treatment when making a request for pesticide application. Our staff often conducts site visits to verify pest presence and the severity of the infestation. Staff evaluates the proposed treatment to ensure consistency with the city's Integrated Pest Management (IPM) Policy, and we also consider the concentration, rate, and total amount of pesticide to be applied, the application method, as well as cumulative risk to non-target organisms, human health and the environment. Our staff approves or denies the proposed chemical treatment based on a consideration of these factors, and may recommend alternatives to the requested application, including reduced rates, the use of lower risk chemicals, or a change in the timing of application. Notifications of chemical application both on the city pesticide hotline and on-site are posted by our staff. The amount of pesticide product used at each site by target pest and lessee is tracked.

Figure 7.1: IPM Chemical Treatment Review Process



ECOLOGICAL INTEGRATION

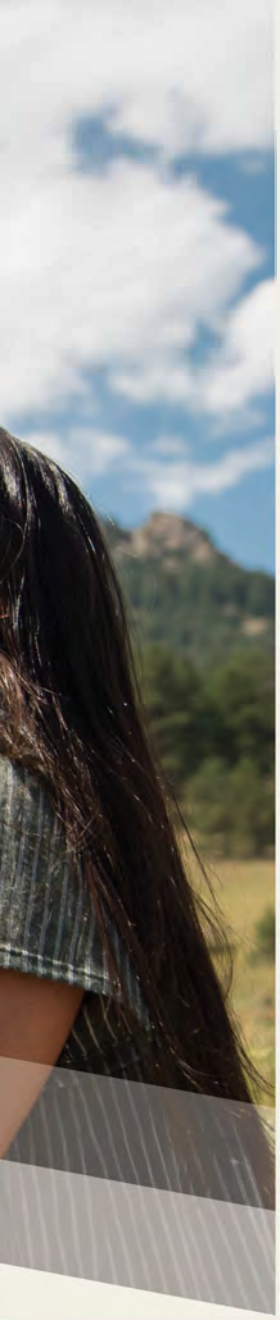
A focus of our agricultural management approach is the integration of agriculture with ecological stewardship. **We focus on using agricultural management practices that benefit ecological conditions and restore ecosystems whenever possible.** For example, on native grasslands we use grazing strategies to improve the vegetation community composition. Grazing has been particularly beneficial in mesic tallgrass vegetation communities for the control of introduced pasture grasses that can otherwise dominate. Properly timed cattle grazing, along with irrigation and haying are key components of Ute ladies'-tresses orchid habitat management, a federally threatened plant species. Our management of grassland and wetland habitats (e.g. compatible irrigation and timing of haying) facilitates maintenance and restoration of high-quality wildlife habitat within native grasslands, wetlands and agricultural landscapes. Preble's meadow jumping mouse is another federally threatened species whose habitat can be supported and impacts to its habitat minimized by our choice of agricultural practices.

8

VISITOR ENJOYMENT AND FACILITIES

RELEVANT CHARTER PURPOSES:

- Preservation of land for passive recreational use, such as hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing
- Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community.



Visitors experience the 2017 solar eclipse with the Flatirons in the distance. ©Philip Yates

For 120 years, the Boulder community has supported access to land around the city and the physical and mental benefits it affords. This chapter describes the many opportunities for experiencing Boulder's open space system and the extensive network of facilities, trails and amenities that support those experiences.

SNAPSHOT

For over 120 years, **open space has provided physical and mental benefits to the Boulder community** through passive recreation. An extensive network of facilities, trails and amenities provide tremendous value to the community. Every year, the OSMP system receives about 6.25 million visits.

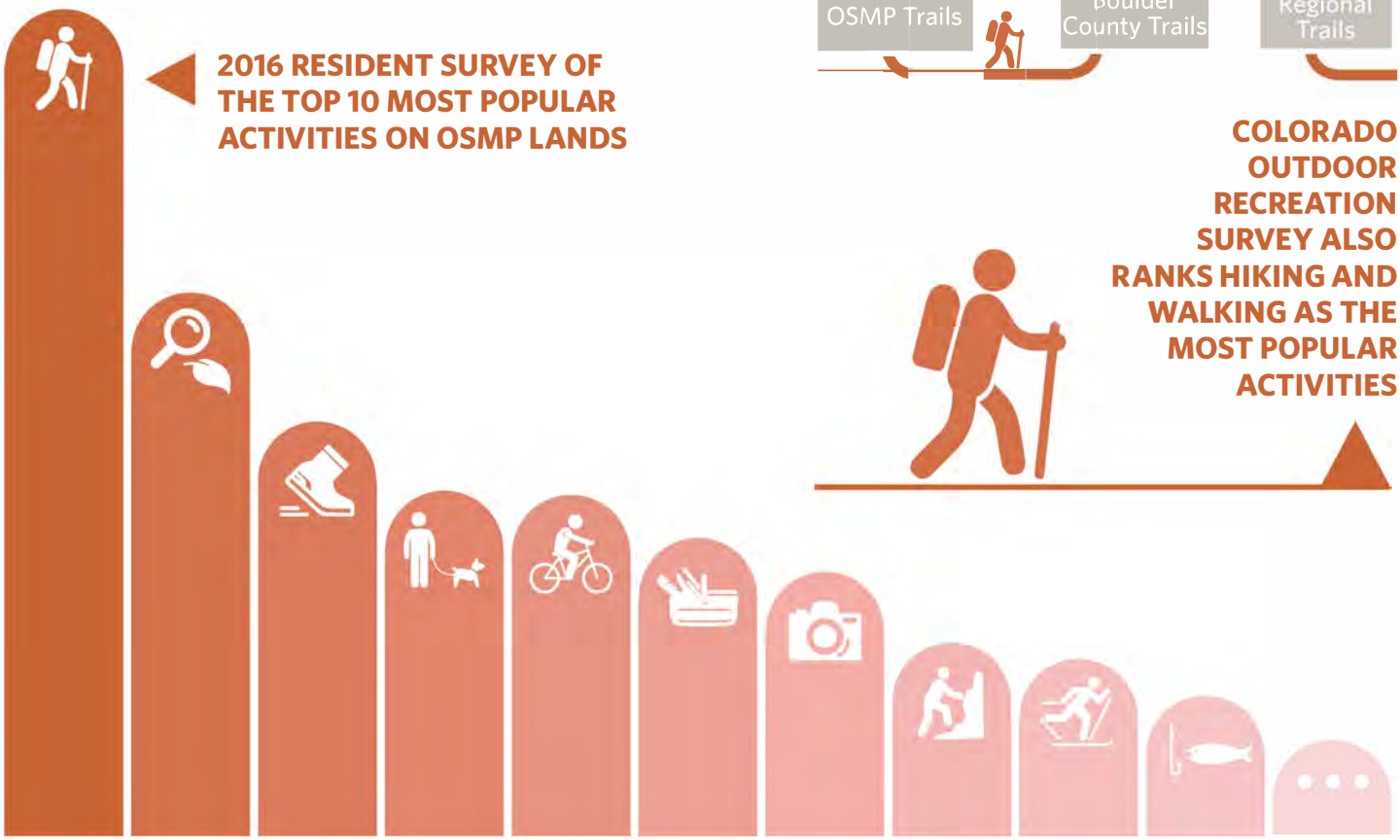
VISITOR ACTIVITIES

Visitor activities include: hiking, bicycling, rock climbing, dog walking, fishing, frisbee, geocaching, model glider flying, painting, swimming, trail running, tubing, visiting nature centers, picnicking and wading.

CONNECTED SYSTEM OF TRAILS

2016 RESIDENT SURVEY OF THE TOP 10 MOST POPULAR ACTIVITIES ON OSMP LANDS

COLORADO OUTDOOR RECREATION SURVEY ALSO RANKS HIKING AND WALKING AS THE MOST POPULAR ACTIVITIES



VISITOR ENJOYMENT AND FACILITIES

Nature and Welcome Centers

VISITOR FACILITIES & AMENITIES

Today, through a coordinated system of facilities, trails and amenities, OSMP facilitates a range of visitor experiences – from concentrated use areas with facilities like picnic tables, restrooms and group shelters to more remote settings in other parts of the system.

Gathering Areas

Scenic Viewpoints

Trails, Trailheads and Access Points

TRAILS & FACILITY MANAGEMENT			
	More than 235 Structures	More than 2,800 signs on the system, plus thousands of boundary signs Signs	37 Trailheads and 73 Access Points

SUMMARY OF EXISTING CONDITIONS

Visitor Enjoyment While visitation grows, most visitors still report positive experiences on OSMP lands. Some residents and visitors perceive crowding in some areas, however, which can also have impacts to natural and cultural resources. Inclusion, accessibility and youth engagement remain important.

Visitor Infrastructure A full condition assessment of all visitor infrastructure has not been completed. Trail condition monitoring suggests that 39 percent of the trail system only needs cyclic maintenance; 42 percent needs preventive maintenance; and 19 percent needs major repair.

Additional OSMP Facilities OSMP also manages a portfolio of other assets including those with agricultural or historic functions and values, staff facilities, and residential properties that have accumulated over a number of past acquisitions (often, these residential properties are leased out). Deferred maintenance on this part of the asset portfolio is estimated at $5.2 million and has been scheduled out over the next 10 years.

Visitor Enjoyment:
THEN AND NOW

In 1910, a report by Frederick Law Olmsted Jr. highlighted the value of Boulder's natural areas, particularly the Flatirons for their contribution to the quality of life for the citizens of Boulder:

"***In the great tract of unspoiled foot-hill scenery lying above and beyond the Chautauqua grounds, Boulder has a priceless possession... as paths and well planned roads are gradually extended through the tract it will become possible for anyone to traverse in the course of two hours' leisurely walking or driving, as beautiful, wild, and refreshing scenery as any that thousands upon thousands of busy, hard-working Americans spend largely of their money and time to enjoy by traveling thousands of miles from home."***

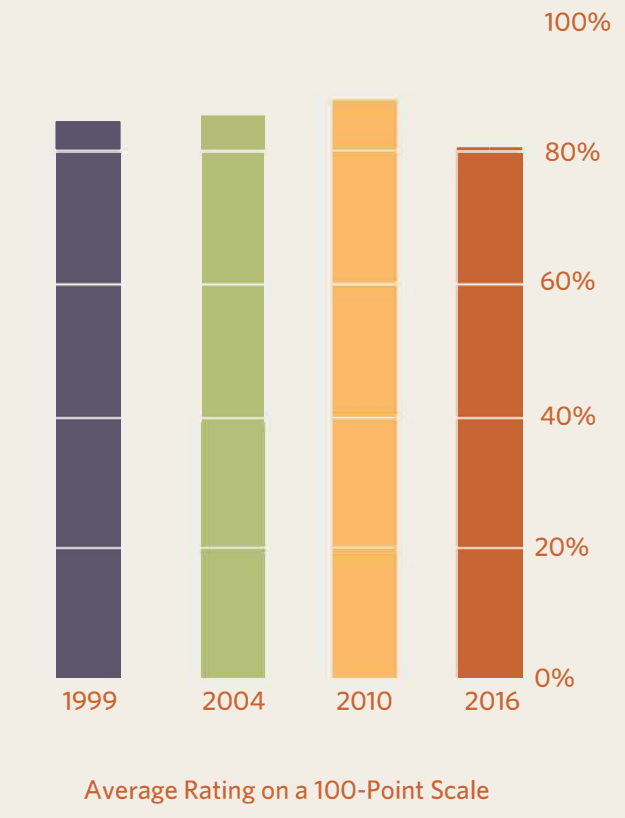
The **2005 Visitor Master Plan** (VMP) confirmed this early commitment to land management for the purpose of our visitors' enjoyment and community well-being. The VMP laid out Open Space and Mountain Parks' framework for decisions to foster the continuation of a high-quality visitor experience while also working to protect and preserve the lands for future generations. It also presented learning opportunities about what the full range of our visitor experiences can entail including:

- Extend a sense of welcome;
- Enhance visitor access;
- Connection with the land;
- Access to destinations;
- Variety of passive recreational activities;
- Focus on visitor safety; and
- Encouraging low-impact visitor use

Today, we continue to advance this model, and strive to provide youth, families, an aging population and underserved demographics with equal opportunities to connect with nature "for anyone to traverse," as Olmsted described. In all recent resident surveys conducted by OSMP, respondents on average rated their experiences on our open space lands as very good or excellent (Figure 8.1).

When you visit OSMP areas, what is the overall quality of your experience? 2016 Resident Survey

Figure 8.1: Overall Experience in OSMP Areas



Respondents also found most interactions with other visitors to be positive (Figure 8.2). For example, on-site surveys over the last decade suggest that **only about 4 percent to 7 percent of respondents experience a low degree of conflict with other users** on a visit, a level consistent with what Boulder County Parks and Open Space (BCPOS) and Jefferson County Parks and Open Space report.

research spotlight

Visitor experiences are the perceptions, feelings and reactions that a visitor has before, during and after a visit to an area. The visitor experience begins the moment someone decides to visit Open Space and Mountain Parks (OSMP). Typically, this includes studying potential sites online or through friends, and deciding when and where to go, and learning how to get there. For some visitors whose primary purpose is sight seeing, traveling through or near open space via car, bus, cycling or walking is the experience itself.

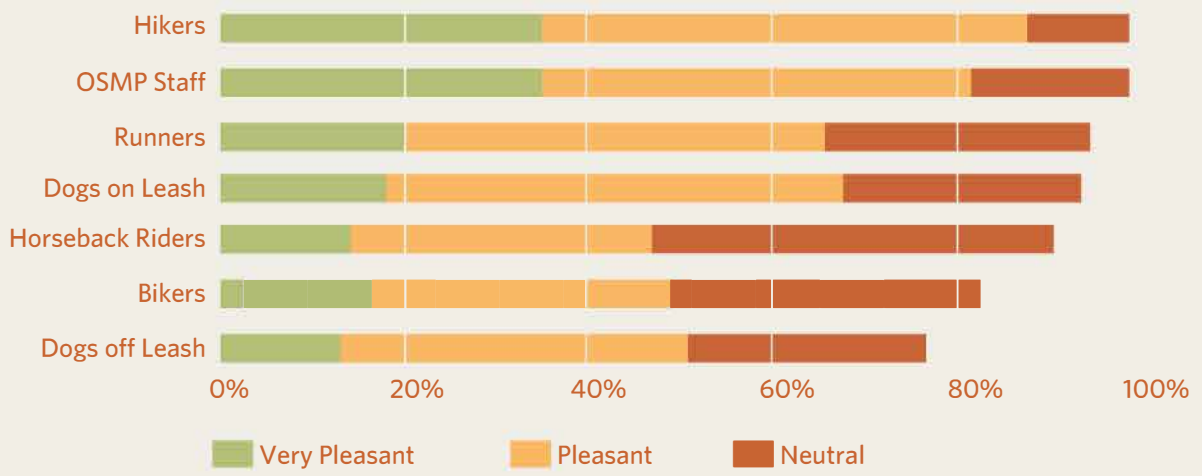
Two relevant research studies are currently underway to advance our understanding of community needs and our visitors' experiences. The first, a study exploring indicators of quality visitor experiences, will benefit OSMP in the following way:

1. **We will have a list of potential indicators, informed by public participation, that may be appropriate to include in a future quantitative study to measure what our visitors view as important when experiencing OSMP; and**
2. **Results will help us gauge what factors strengthen or diminish quality visitor experiences.**

The second study seeks to understand visitors' motivations, their familiarity and experiences with outdoor activities, their skill level and ability, along with the importance of recreation activities to their lifestyle. These studies will inform future management decisions about how best to understand and provide for high-quality experiences on lands that we manage.

When you have interacted with other visitors on OSMP, would you say your experience has generally been pleasant or unpleasant with each of the types of visitors listed? 2016 Resident Survey

Figure 8.2: Interactions with Other Visitors in OSMP Areas



Activities on OSMP Lands

We encourage connections between people and the natural world and provide for activities that range from hiking, climbing, running, biking and horseback riding, to bird watching, picnicking and graduation photos at Chautauqua. These activities are an integral part of how the Boulder community connects with its surrounding natural lands. In a recent survey, residents highlighted the scenic beauty of the lands, which includes the Flatirons, prairies and rolling hills of the Front Range, as the No. 1 reason for supporting open space. Boulder's connection to the land is integral to its identity.

Through a **permitting system**, OSMP also allows commercial use activities, including commercial photography and filming, guiding, outfitting, weddings and other uses. This range of commercial activity expands the range of recreation activities for visitors to enjoy while also supporting the business community. We also provide many opportunities for people experiencing disabilities to enjoy open space. We affirm our commitment to creating an inclusive community in the recently published **accessibility guide**.

Boulder's diverse landscape reflects the diversity of current activities available to visitors. The list on the next page highlights some of the activities our visitors are able to enjoy.

CONNECTING SPIRITUALLY WITH THE LAND

The City of Boulder is welcoming of indigenous peoples on Open Space and Mountain Parks land, and we seek to support community members' spiritual connections with the land. We welcome community members to conduct ceremonial practices without fire or temporary structures on open space lands open to the public. If more than 25 people attend a ceremony, the Boulder Revised Code requires that the event sponsor fill out a free, special-use permit. We do that to ensure everyone is treated consistently, and organizers are fully aware of OSMP rules that help protect ceremony attendees, open space visitors and the area's natural resources.

OPPORTUNITIES FOR SWEAT LODGES AND TIPIS ON OPEN SPACE

As part of a Memorandum of Understanding (MOU) the City of Boulder signed with 13 Native American tribes in 2002, the City of Boulder provides tribal members the opportunity to erect temporary structures – such as sweat lodges or tipis – on OSMP lands and on Valmont Butte in east Boulder. For more information, please contact OSMP at 303-441-3440.

ENJOYING OPEN SPACE AND MOUNTAIN PARKS

To the local Boulder community, the Front Range describes the area that stretches from the foothills of the Rockies to the east of Boulder. The greenbelt around Boulder is home to some of the most scenic land along the Front Range, encompassing the iconic Flatirons, grasslands, mountain foothill communities and working agricultural landscapes. This varied terrain offers many great opportunities to experience the outdoors. In fact, there is so much, it can be hard to decide where to start. The following guide lists examples of the many adventures Boulders OSMP offers. There are many more activities, including:

- Enjoying your own recreation activity
- Volunteering to steward the land
- Obtaining a commercial permit to support your business activity
- Holding your wedding at one of our scenic locations
- Finding inspiration to use the land in a school program
- Participating in a hike led by OSMP naturalists.

No matter who you are, there is likely an activity that will meet your personal goals for exploring the Front Range area and deepening your connection with nature. To learn more about visiting our open space, please visit **OSMP.org.**

ENJOYING OUTDOOR ACTIVITIES ACROSS THE SYSTEM

- Hiking
- Trail running/jogging
- Photography
- Picnicking
- Traditional climbing/ bouldering
- Cross-country skiing
- Snowshoeing
- Orienteering
- Viewing natural features
- Virtual Geocaching
- Relaxing, meditating, escaping heat, noise, etc.
- Wheel-chair use
- Nature study
- Agricultural property visit or specific event
- Birding/wildlife viewing
- Exploring nature
- Guided opportunities for people experiencing disabilities
- Botanizing
- Inspiration for artwork (painting, sculpture, quilting, etc.)
- Star Gazing
- Painting, drawing

WHAT IS PASSIVE RECREATION?

Passive recreation is identified as a purpose of the Open Space and Mountain Parks Department in the Boulder City Charter. It is different from developed or active recreation. Passive recreation requires minimal construction of developed facilities to support passive recreation activities. On the other hand, developed or active recreation requires the construction of more infrastructure like athletic fields, playgrounds and swimming pools.

ENJOYING OUTDOOR ACTIVITIES ON SPECIFIC TRAILS

- Bicycling
- Dog walking
- Horseback riding
- Strollers/joggers
- In-line skates
- Wheeled boards (e.g. skateboards)

ENJOYING OUTDOOR ACTIVITIES IN SPECIFIC AREAS

To provide high-quality recreation opportunities in locations that can handle the impacts, these activities are allowed only at appropriate sites.

- Visiting nature centers
- Dog walking
- Bolted climbing
- Fishing
- Wading
- Model glider flying
- Tubing, kayaking
- Canoeing
- Sledding
- Graduation photographs
- Weddings
- Fixed-heel skiing and snowboarding
- Hang/paragliding
- Camping at 4th-of-July campground
- Swimming in creeks
- Attending special events including outdoor concerts
- Barbecuing in designated areas or provided grills

ENJOYING OUTDOOR PROGRAMS BY OUR STAFF AND VOLUNTEERS

- Nature play
- Forest Bathing
- Environmental Education programs
- Outdoors skills programs
- Scientific research
- Visiting historic sites / history-themed
- Volunteering for restoration, trail or farms projects
- Volunteering for wildlife monitoring, bike patrol or bear sitting programs

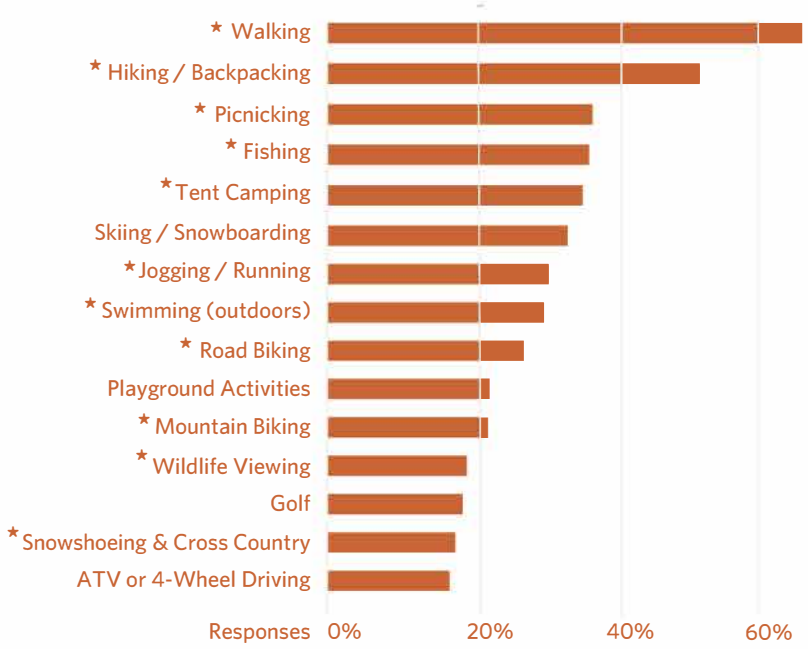
MOST POPULAR ACTIVITIES

OSMP's 2016 Resident Survey asked community members what activities they preferred to participate in out of hiking or walking, running, biking, dog walking, climbing, fishing, picnicking, winter sports, observing nature and wildlife, photography and painting. The top primary activities most frequently participated in were hiking/walking (66 percent), running (10 percent), dog walking (10 percent), and biking (8 percent). Reference Figure 8.4 on the following page. Visitors that responded to a 2011 – 2012 on-site visitor survey had similar responses.

These popular activities are also typical recreation activities across the U.S. and Colorado and are reflective of Colorado Parks and Wildlife's 2014 Statewide Comprehensive Outdoor Recreation Plan (SCORP), which highlights statewide recreation activities. Reference Figure 8.3. We support all but four of the 15 most popular outdoor activities in Colorado.

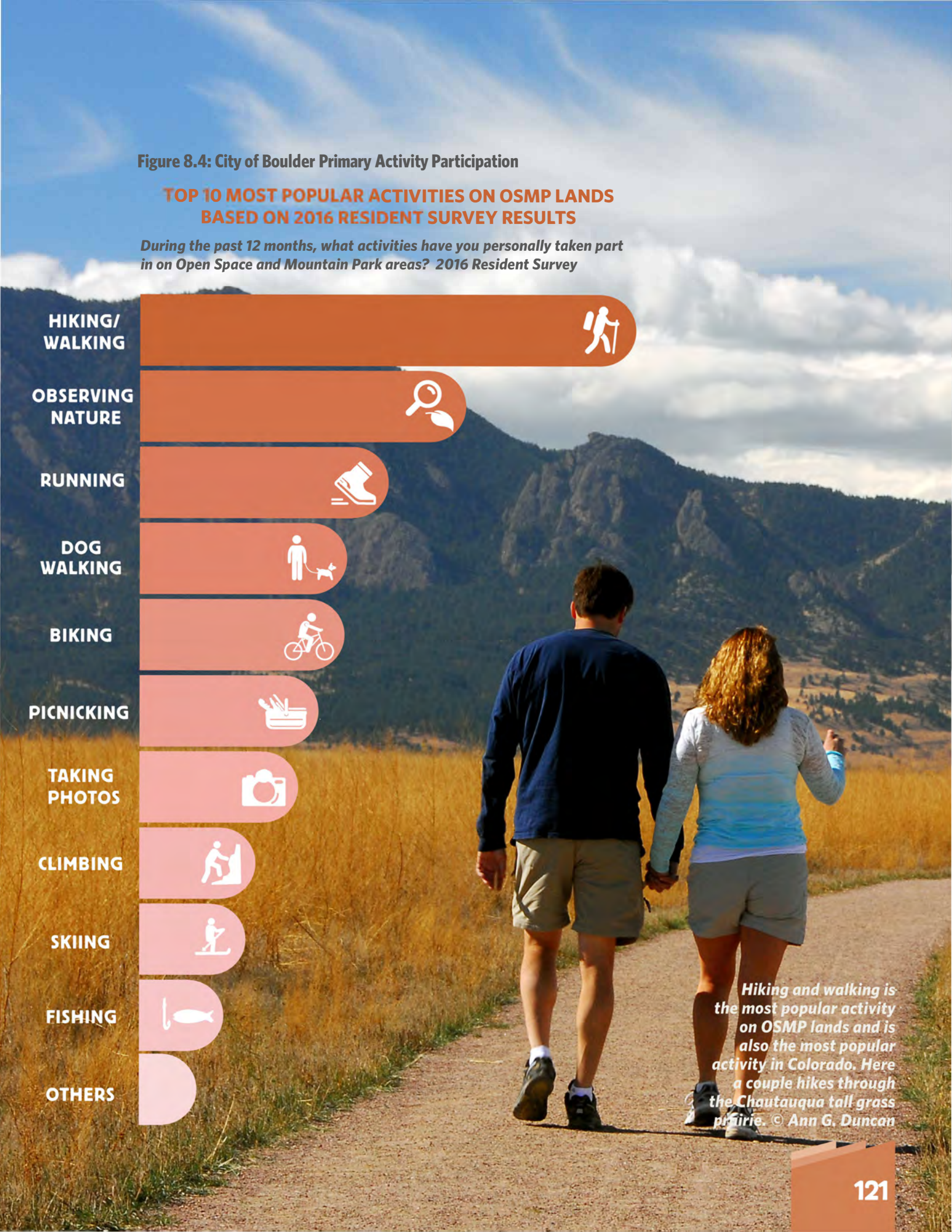
Other activities on OSMP lands have long traditions even if they are not the most popular activities. For example, 30 percent of residents recently reported picnicking on OSMP lands in the last year, which represents an increase from previous years. The findings are consistent with the statewide survey that found walking, hiking/backpacking and picnicking make up the three most popular outdoor recreation activities throughout the state. Fishing ranks fourth statewide, with the activity attracting roughly 10 percent of city residents to designated locations. Horseback riding, an important tradition for the community, is also welcome on specific trails on OSMP lands.

Figure 8.3: Colorado's Most Popular Activities in 2012



*** OSMP LANDS SUPPORT ALL BUT FOUR OF THE MOST POPULAR OUTDOOR ACTIVITIES IN COLORADO**

Figure 8.4: City of Boulder Primary Activity Participation



Hiking and walking is the most popular activity on OSMP lands and is also the most popular activity in Colorado. Here a couple hikes through the Chautauqua tall grass prairie. © Ann G. Duncan

Visitor-Use Patterns

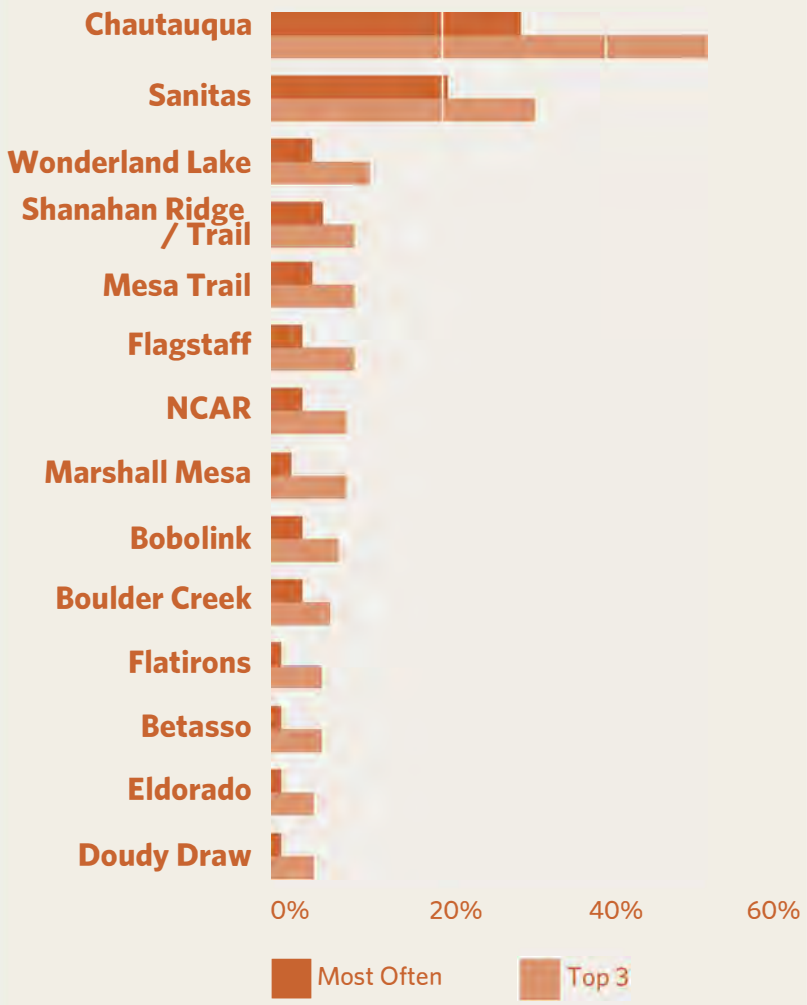
As described in **Chapter 2**, visitation across the system has increased 34 percent since 2005. For some OSMP sites, visitation increased faster than others. It more than doubled at Chautauqua in the same time period.. We have a commitment to understanding use levels and patterns, and we will complete an updated study on system visitation in May 2018.

According to existing data, we know that visitation varies geographically across our system, across seasons and by time of day. According to the **2016 Resident Survey**, the sites that residents tended to use most often were Chautauqua and Sanitas (Figure 8.5). About half said Chautauqua was one of the three places that they visited most often, and a quarter said it was the most common place they had visited. About a third named Sanitas as one of their top three places to visit, and nearly 20 percent said it was the site they visited most often.

Visitation peaks in the summer season. In fact, July visitation is almost two times higher than December visitation. Visitation also peaks in the late afternoon on weekdays and late morning on weekends.

According to a 2004-2005 visitation study and the 2016 Resident Survey, nighttime use is also substantially lower than daytime use. In fact, systemwide, nighttime visitation (11 p.m. to 6 a.m.) has decreased since 2005, from 1.4% of total visitation to 0.66% (Leslie, 2018). More

Figure 8.5: Most Visited OSMP Areas



information about these patterns, including how use levels vary on certain trails, will be included in the forthcoming visitation report.

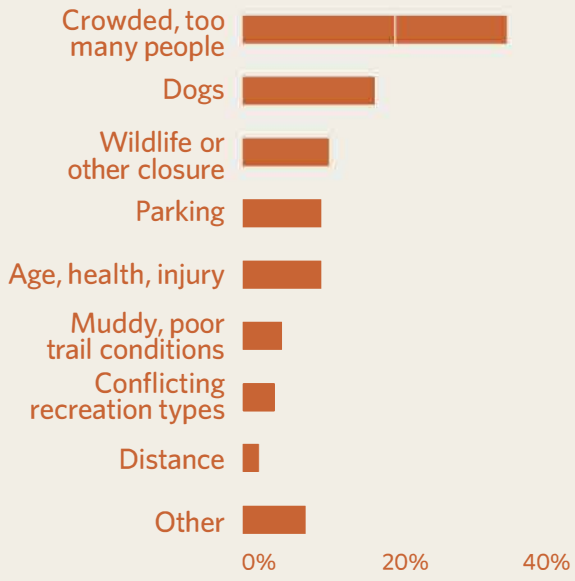
Because visitors are more likely to arrive during certain times of the year, days of the week and times of day, these peak use patterns can affect some visitors' experiences through perceived parking congestion and/or trail crowding. This effect can reduce the quality of those experiences and create related impacts for surrounding neighbors living on neighboring public streets. Conversely, depending on visitors' backgrounds and confidence exploring in nature, the presence of crowds can feel routine or reassuring. These varying perceptions of crowding are of interest to staff and have been studied by researchers around the globe.

We also know from the 2016 Resident Survey that there are areas in the OSMP system that some residents – 13 percent of survey respondents – report not visiting anymore, often as a result of perceived crowding. Those respondents were most likely to name Sanitas and Chautauqua as places they no longer visited. The most frequently mentioned reasons for discontinuing visits to these areas were crowding, issues with dogs, and wildlife or other closures, according to the 2016 Resident Survey. Refer to Figure 8.6. These results are similar to findings from the 2010 Resident Survey.

More information on visitation levels and patterns will be available in the forthcoming 2016/2017 Systemwide Visitor Survey.

Photo by Philip Yates

Figure 8.6: Reasons OSMP Areas Are No Longer Visited



What area(s) do you no longer visit and WHY? 2016 Resident Survey

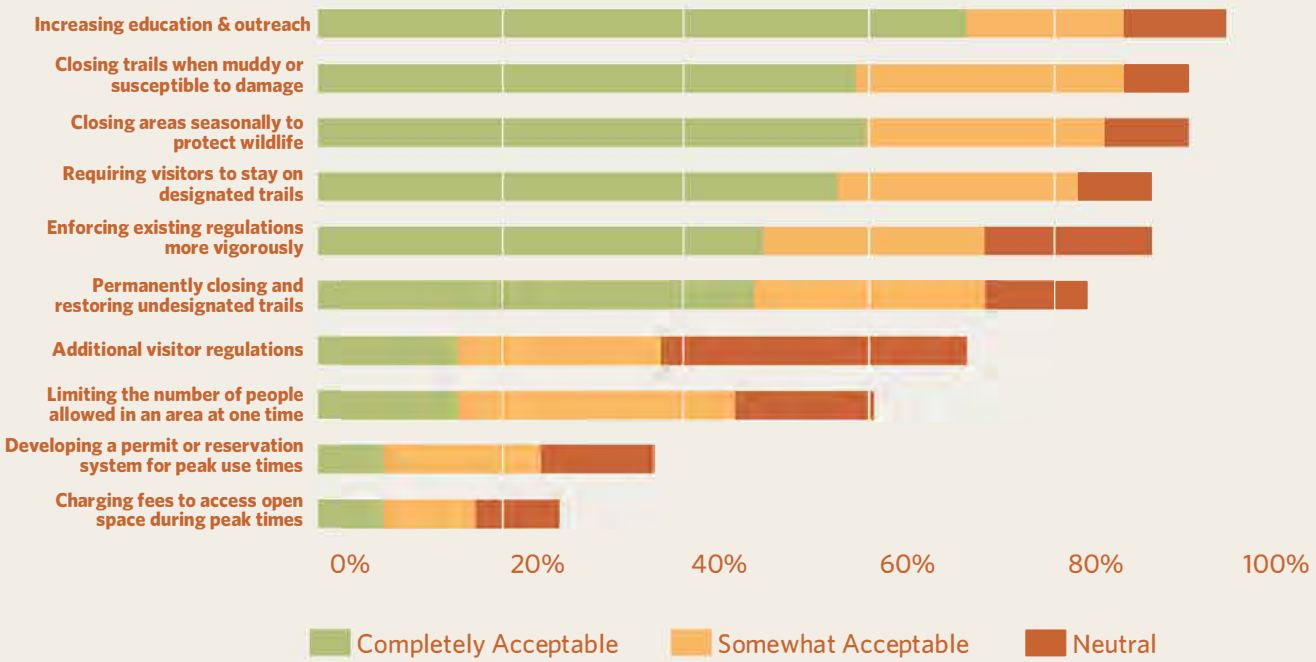
Recreation and Ecology

Nationwide, interest in outdoor recreation is on the rise. This trend has several benefits. Recreation promotes mental and physical health, provides economic benefits, and builds an ethic of nature appreciation and environmental stewardship. At the same time, stressors to the natural environment can compromise ecological health. These pressures – many of which need more study and understanding – can include fires, floods and windstorms (see **Chapter 5**). In addition, observations and research suggest that recreation may also affect natural resources, due to cumulative impacts of recreation activities on sensitive or fragile environments. In fact, a recent global review of science-based information showed 93 percent of all articles surveyed found at least one significant effect of recreation on animals, raising awareness that recreation activities "are not necessarily compatible for all species, in all locations" (Larson & Reed & Merenlender & Crooks, 2016). OSMP is committed to protecting our natural areas while preserving the land for passive recreational use, as noted in the city charter, as well as sponsoring research on the local impacts of recreation.

While the impacts of recreation on plants and wildlife is still an active area of research, Boulder residents do feel that their activities affect the land. In the 2016 Resident Survey, respondents were asked what impact, if any, they thought recreational activities had on plants and wildlife on OSMP lands. Very few thought that hiking or running had a severe or major impact, but over one-quarter of respondents thought these activities had at least a moderate impact. Residents were also asked how acceptable or unacceptable they would find OSMP management actions meant to protect these natural resources. These ratings can be found in Figure 8.7.

For decades, OSMP has managed the land using conservation principles to conserve and safeguard important natural areas- including the maintenance of both large habitat blocks and small/special habitat patches, the restoration of degraded ecosystems and undesignated trails, and the protection of rare and sensitive species. See a supporting report from the **2005 Visitor Master Plan** for more information.

Figure 8.7: Acceptance of Management Actions to Protect Natural Resources



Different management actions have been suggested to protect plants and wildlife. How acceptable or unacceptable are each of the following management actions? 2016 Resident Survey

As noted above, OSMP is committed to studying the effects of recreation on plants and animals, as documented in the dozens of independent studies conducted since the 1970s.

We highlight five of these studies to describe the range of topics and results discovered:

- The number of weed species is higher on older trails than younger trails (Potitio, 2000).
- Abert's squirrel is more common along trails (Reed 2016), likely because predators tend to avoid trails (Miller & Hobbs, 2000); dusky grouse are indifferent to trails.
- Trails create barriers for the movement of grassland insects (Collinge and Froman, 1988).
- The survival of grassland nesting birds increases with distance from trails (Miller & Knight & Miller, 1998).
- Prairie dogs spend less time foraging when dogs are present (Bekoff & Ickes, 1999).

The City of Boulder is not alone in grappling with the management challenges that high visitation creates. In fact, the **Interagency Visitor Use Management Council** was recently formed by six federal agencies to provide a consistent approach to visitor-use management that better serves the public, and sustains resources and quality visitor experiences. National parks around the country are experimenting with strategies to address topics such as crowding, congestion and related effects on visitor experience and resource conditions.

Visitor Transportation

The majority of visitors arrive at trailheads by car. **Most respondents to the 2016 Resident Survey considered vehicle parking important systemwide, but fewer than half of respondents rated the quality of parking very good or excellent.** At any given time, roughly 910 vehicles can be accommodated systemwide in OSMP-managed parking spaces, with additional parking available on adjacent public streets and privately-owned lots, such as at the National Center for Atmospheric Research. In addition, we have 14 designated horse trailer parking spots across five trailheads, with additional trailer parking possible at another 16 trailheads.

To help manage peak-use patterns and related congestion effects, OSMP manages a **paid-parking system** in the following areas:

Six locations on Flagstaff Mountain

- Gregory Canyon;
- Panorama Point;
- Crown Rock;
- Realization Point;
- Flagstaff Summit; and
- Lost Gulch Overlook.

And at the following southern trailheads

- Doudy Draw Trailhead;
- Flatirons Vista Trailhead;
- Greenbelt Plateau Trailhead;
- Marshall Mesa Trailhead;
- South Boulder Creek West Trailhead; and
- South Mesa Trailhead.

Parking for visitors living outside Boulder County requires a paid daily or annual parking permit. Staff is currently evaluating new technology and other options for finding efficiencies and improving the administration of this program.

At Chautauqua, some residents have reported going elsewhere due to perceived parking and trail congestion. OSMP has not conducted an integrated, detailed planning or design process to understand and address these and related issues at Chautauqua. However, the city developed a pilot in 2017 intended to shift visitors out of their cars and reduce parking congestion. The city offered free shuttles on weekends to Chautauqua while charging to park in and around the area to encourage this transition. This effort, called "**Park to Park**," is undergoing an evaluation to understand its effectiveness and determine next steps. The Park to Park effort was designed to address parking congestion issues near Chautauqua, and did not address the topic of crowding or congestion on OSMP trails. Our staff anticipates conducting future site planning for the area to explore a broader set of questions specific to Chautauqua.

Visitor Facilities and Amenities

To support the types and levels of activity on OSMP lands, our staff maintains a range of facilities, trails and amenities – from larger gathering areas with facilities like picnic tables, restrooms and group shelters to more basic settings and facilities in remote parts of Boulder's extensive and unique system. Most of the amenities are concentrated near trailhead parking while the remote areas are maintained in a more basic state. OSMP strives to ensure that all visitors can enjoy their experience on OSMP in a way that is most meaningful to them.

In early City of Boulder history, a 1937 plan for Boulder's Mountain Parks established trailhead areas, roads, picnicking opportunities, scenic pullouts, overlooks and other amenities to provide an enjoyable experience. The approach, which was considered novel for the time, included sustainable design through the use of local materials and patterns found in nature. The goal was to maintain the unique character of the landscape and accommodate needs of park visitors. The design approach characterizing this plan can still be seen in iconic national parks, including Yosemite and Grand Canyon, and in the Mountain Parks portion of the OSMP system.

The Civilian Conservation Corps (CCC) constructed this plan in full accordance with the style that would later be termed a naturalistic approach. You can still enjoy these CCC-era amenities at the Flagstaff gathering area and Green Mountain Lodge.

Today, our visitor facilities fall into four categories:

1. **Nature and Welcome Centers;**
2. **Gathering Areas;**
3. **Scenic Viewpoints (described in Chapter 10); and**
4. **Trails, Trailheads and Access Points.**

NATURE AND WELCOME CENTERS

We have two nature centers that help visitors engage with our knowledgeable staff and volunteers. They provide free maps, hiking suggestions, recommendations for recreation activities, educational programs, details regarding volunteer opportunities, and the latest information about trail conditions and wildlife closures.

- Located in Chautauqua Park, the Chautauqua Ranger Cottage is open every day from 9 a.m. to 4 p.m., with longer hours in the summer. The Ranger Cottage receives an estimated 60,000 visitors every year. OSMP outreach staff provides those visitors with information about how they can safely enjoy the system.
- The Flagstaff Summit Nature Center, located atop Flagstaff Mountain, is usually open from 10:30 a.m. to 4 p.m. Friday through Sunday, May through September. Our exceptional volunteers staff this nature center. These volunteers contributed more than 350 hours to its operation and facilitated more than 5,000 visitor contacts in 2016.

In addition, we manage the Cherryvale Administrative Building at 66 S. Cherryvale Road, which serves as a visitor contact center as well as the Foothills Nature Center at 4201 North Broadway, which currently serves the Junior Ranger program (as described in **Chapter 9**) and can be used for community meetings.


Photo by Philip Yates

GATHERING AREAS

We also maintain facilities throughout the system that support group gatherings in settings near town, many of which are part of a larger visitor-use area. Large gathering areas can include a combination of other facility or asset types, such as welcome centers, shelters, picnic areas, restrooms, parking and other facilities to support day uses such as family outings, field trips, events and other group gatherings. Examples include the Flagstaff Summit area, the Chautauqua area and the Wonderland Lake area.

Smaller gathering areas can be more out in the open and primarily include picnic facilities or a single shelter. A specific example includes **Sawhill Ponds**.

Whether large or small, some gathering areas include the following historic structures that can be rented to accommodate groups of up to 150 people.

- Sunrise Amphitheater: Constructed by the CCC from 1933 to 1934, the Amphitheater is a rustic outdoor facility made from local stone. It features a large circular area, a small stage and magnificent views.
- Stone Shelter: Originally known as the Flagstaff Shelter House, this facility was constructed by the Boulder Lions Club in 1933. It is a roofed, moss-rock structure with two inside picnic tables, one fireplace and open-air windows.
- Wood Shelter: The Wood Shelter – also known as the Jaycee Shelter – is located on the summit of Flagstaff Mountain across from the Stone Shelter. It is a covered, open-air wooden facility that is available for group picnics and other events.
- Green Mountain Lodge: Historic Green Mountain Lodge was built in 1935 by the CCC to be enjoyed by the people of Boulder for special events, camps, programs and parties. It is a historical landmark and is an element of the Boulder County Flagstaff Mountain Cultural Landscape District.
- Halfway House: Originally known as the Panorama Park Shelter House, the facility was rebuilt in 1933 by the CCC, replacing a structure that was originally built by the Lions Club in 1919. The Halfway House is a popular location for weddings and picnics and has a stone patio that affords views of the Flatirons and Boulder Valley.
- Bluebell Shelter: The Bluebell Shelter is a covered, open-air stone facility available for group picnics and other activities. It was constructed by the Lions Club in 1921.

TRAILS, TRAILHEADS AND ACCESS POINTS

A major component of managing the city's natural lands portfolio is providing diverse and meaningful opportunities for enjoyment and recreation as well as solitude, contemplation and inspiration. We seek to facilitate many of those opportunities with about 150 miles of trails that traverse a diverse range of landscapes, from steep mountain slopes in the west, to open grasslands to the north, east and south. We support visitors of all abilities and interests. The **Trails, Trailheads and Access Map** summarizes this extensive trail network.

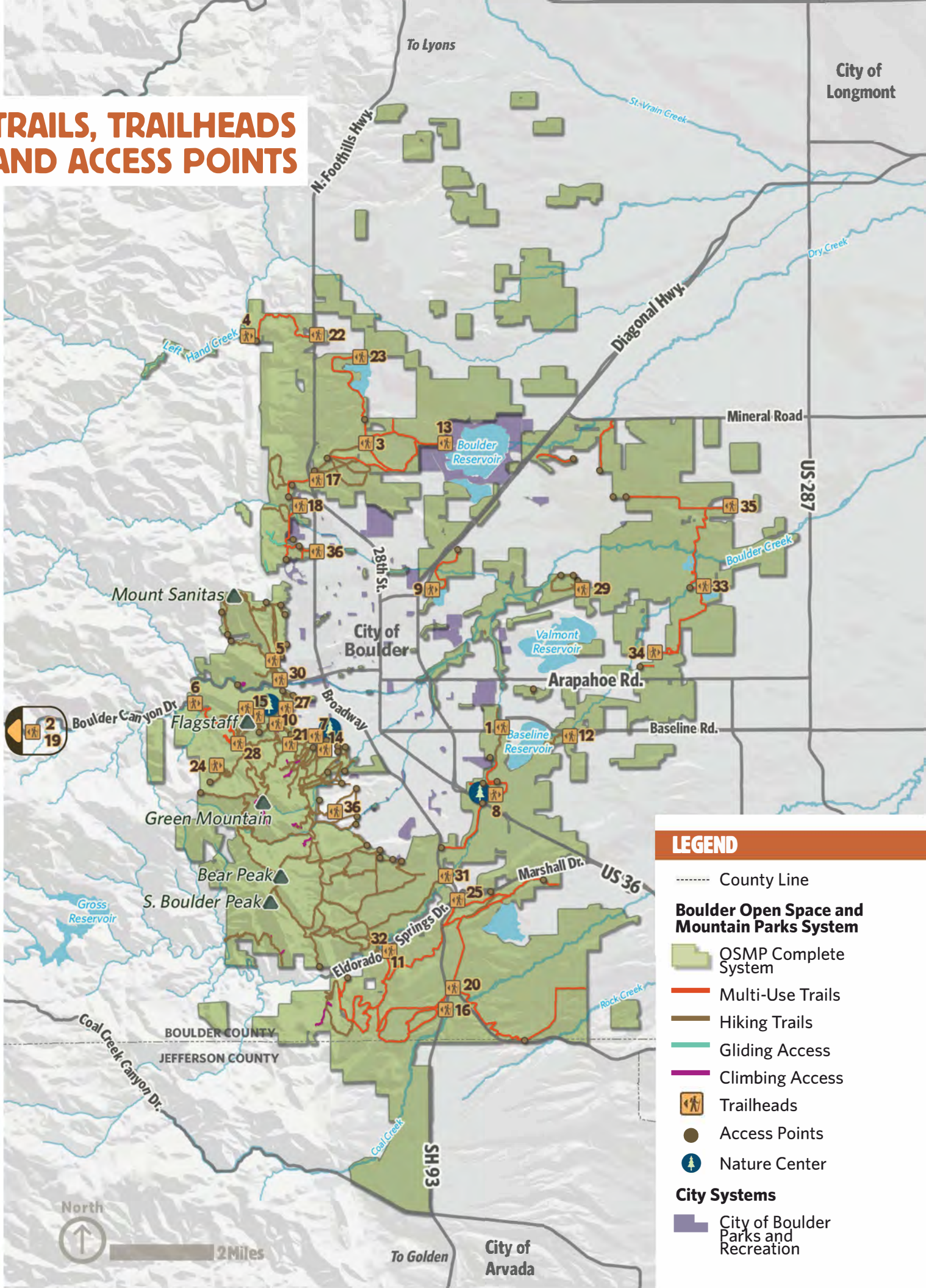
To encourage a range of activities, OSMP provides printed and digital trail guides – in addition to the **city trails website**, such as one for the **Mountain Parks**, that describes opportunities for a diverse array of activities and basic orientation. As a complement to city services and materials, private companies or organizations also have developed apps and websites to convey OSMP trail information. A number of private apps and websites share trail descriptions, routes, family-friendly recommendations, photos and trip statistics focused on primary activities, such as hiking, climbing, mountain biking or trail running, or identifying wildlife and plants. While OSMP encourages on-trail hiking, biking and horseback riding to protect plants and wildlife, visitors can move off trail in designated areas across the system to explore other ways of experiencing the landscape. In addition, almost 90 percent of trails are open to dogs. In some areas, dogs must be leashed and in other areas dogs can be off leash if they comply with OSMP regulations.

ACCESSIBLE TRAILS AND AMENITIES

In the Boulder community, one in five people on average are experiencing disability. We uphold and often go beyond federal, state and local requirements for accessibility to facilities and trails, including the Americans with Disabilities Act, the Architectural Barriers Act (ABA), the Forest Service Trail Accessibility Guide and others. Sometimes when the code is new or updated, it will take a while for staff to study the implications and what it will take to implement new standards. These requirements refer to the facility or trail that allows us to meet code definitions for what is perceived as an acceptable standard to encourage access for people experiencing disability. The code does not cover the whole spectrum of people experiencing disabilities but sets a standard to help increase opportunities for people experiencing disability to have access to places on a par with the whole community.

Photo by Philip Yates

TRAILS, TRAILHEADS AND ACCESS POINTS



LEGEND

- County Line

Boulder Open Space and Mountain Parks System

- OSMP Complete System
- Multi-Use Trails
- Hiking Trails
- Gliding Access
- Climbing Access
- Trailheads
- Access Points
- Nature Center

City Systems

- City of Boulder Parks and Recreation

Table 8.1: OSMP Trailheads

OSMP TRAILHEADS	PARKING FEE REQUIRED	MULTI-USE TRAILS	HIKING TRAILS	BICYCLE TRAILS	EQUESTRIAN TRAILS	TRAILS ACCESSED
1 Bobolink		✓		✓		South Boulder Creek Trail
2 Boulder Falls						Currently a closed trailhead
3 Boulder Valley Ranch		✓		✓	✓	Hidden Valley, Mesa Reservoir, Eagle and Sage Trails
4 Buckingham Park Picnic Area			✓			Lefthand Creek
5 Centennial Park			✓			Sanitas Valley, Dakota Ridge, Mount Sanitas, Centennial, Redrocks, and Anemone Trails
6 Chapman Drive		✓	✓	✓	✓	Tenderfoot Trail
7 Chautauqua Meadow			✓		✓	Mesa, Royal Arch, the Flatirons, Gregory Canyon, and Green Mountain Trails
8 Cherryvale		✓		✓	✓	South Boulder Creek Trail
9 Cottonwood			✓			Four Mile Canyon Creek and Hayden Lake Trails
10 Crown Rock	$		✓			Crown Rock and Gregory Canyon Trails
11 Doudy Draw	$	✓		✓	✓	Flatirons Vista, Community Ditch, Marshall Mesa, and Greenbelt Plateau Trails
12 Dry Creek			✓			Baseline Reservoir Trails
13 Eagle		✓		✓		Eagle, Sage, Mesa Reservoir, and Foothills Trails
14 Enchanted Mesa/McClintock			✓			Enchanted Mesa, Mesa Trail, and Woods Quarry Trails
15 Flagstaff Summit	$		✓			Boyscout, Ute, Range View, Flagstaff, and the Plains Overlook Trails
16 Flatirons Vista	$	✓		✓	✓	Doudy Draw, Community Ditch, Marshall Mesa Trails
17 Foothills	$	✓		✓		Hogback Ridge, Four Mile Creek, and Eagle Trails
18 Four-Mile Creek		✓		✓		Foothills and Wonderland Lake Trails
19 Fourth of July			✓			Lake Dorothy and Buckingham Campground Trails
20 Greenbelt Plateau	$	✓		✓	✓	Community Ditch Trail
21 Gregory Canyon	$		✓			Saddle Rock, Amphitheater, Crown Rock, Realization Point, Green Mountain, and Bluebell-Baird Trails
22 Interim Joder		✓		✓	✓	West of U.S. Highway 36
23 Left Hand		✓		✓	✓	Boulder Valley Ranch Trails
24 Lost Gulch Overlook	$		✓			Indian Peaks and Gold Hill Trails
25 Marshall Mesa	$	✓		✓	✓	Community Ditch Trail
26 NCAR			✓			Mesa, Chautauqua Park, and South Mesa Trails
27 Panorama Point/Halfway House	$		✓			Flagstaff Trail
28 Realization Point	$		✓			Ute, Range View, Tenderfoot Chapman Loop, Ranger, and Green Mountain Trails
29 Sawhill Ponds			✓		✓	There are several trails that wind among the ponds
30 Settlers Park/Red Rocks			✓			Anemone Hill and Centennial Trails
31 South Boulder Creek - West	$		✓		✓	Van Vleet Ranch, Big Bluestem and S. Boulder Creek Trails
32 South Mesa	$		✓		✓	Mesa, Shadow Canyon, Towhee, Homestead, South Boulder Creek, and Big Bluestem Trails
33 Teller Farms - North		✓		✓	✓	East Boulder Trail
34 Teller Farms - South		✓		✓	✓	East Boulder Trail
35 White Rocks/East Boulder Trail						East Boulder Trail
36 Wonderland Lake		✓		✓		Foothills Trail

People experiencing disabilities also connect with natural landscapes through a more diverse range of recreation activities. Often this is due to a growing awareness in the community of types of opportunities available, advances in technology and a greater variety of educational programs, supporting accessible types of activities. For example, people experiencing disabilities may use a sports wheelchair to increase the speed of their activity along a trail, use an electric bike to access steeper sections of trail, participate in a group event for downhill wheelchair racing that increases awareness, or walk along a trail that is designed to appeal to as many senses as possible. By facilitating these activities, we create an environment where disability is understood as a natural part of being a human, supporting an inclusive community with opportunities for all. More information on these principles can be found **here**.

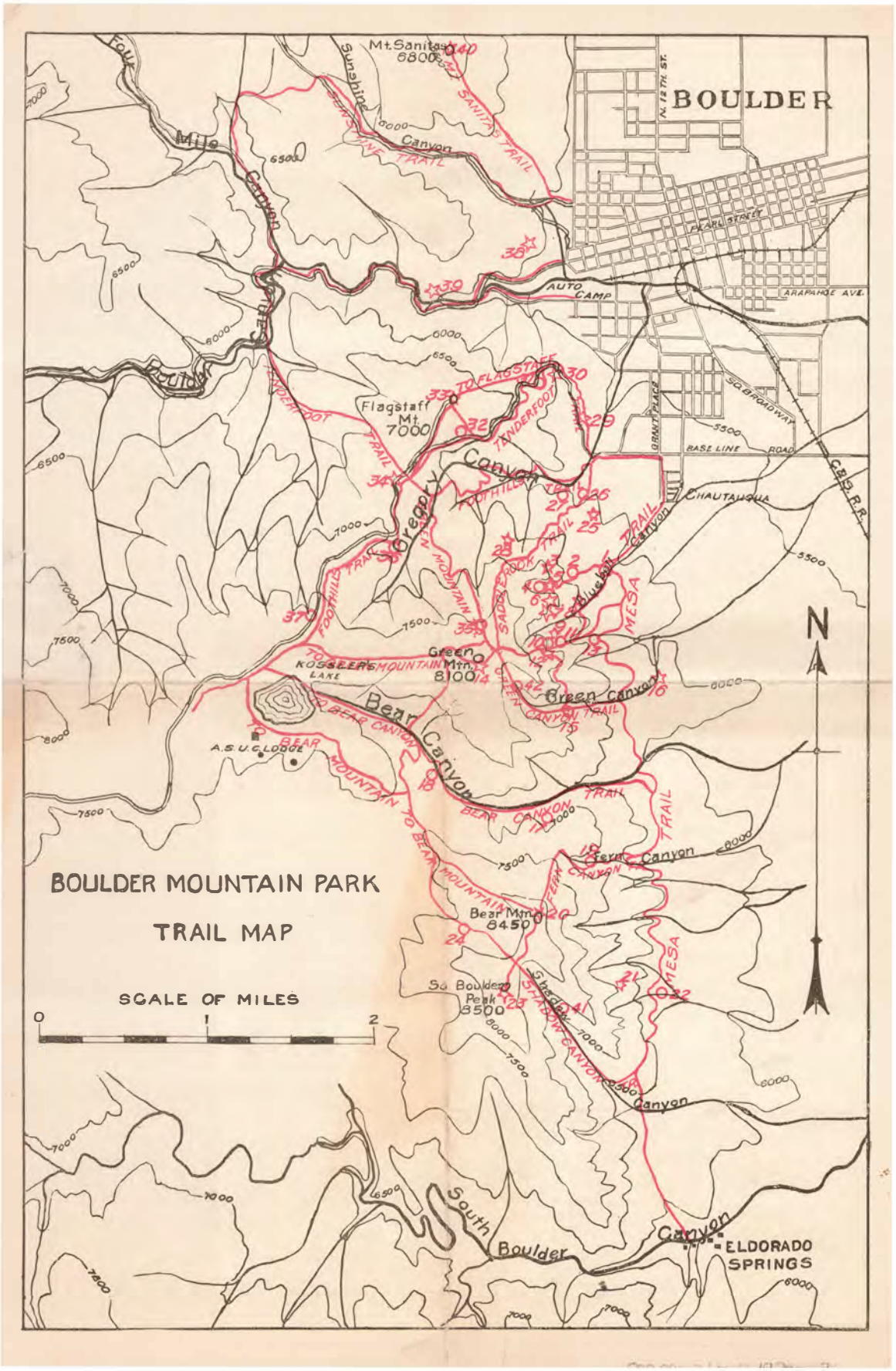
In 2015, we also published a guidebook for people experiencing disabilities called **"Boulder OSMP Accessible Trails and Sites."** Thirty sites and trails that increase opportunities for accessing our system are covered in the guidebook. The book was developed by a team that tested the sites for a range of accessible activities. Each location is described in terms of its natural and cultural history attractions as well as available facilities, including bathrooms and picnic areas. In support of this effort, a series of videos is available to convey the character of trails to help reduce stress and unknowns for visitors experiencing disability.

HISTORIC RECREATION TRAILS AND FACILITIES

Between the time Frederick Law Olmsted Jr. produced a 1910 report describing trail opportunities in the Flatirons area and the time the National Park Service (NPS) developed a master plan for Boulder's Mountain Parks in 1937, up to 50 miles of trails were created. Many of today's trails were adapted from historical routes like wagon roads, toll roads, logging roads and migratory trails. Other trails and roads were built in the early 20th century for recreation in the mountains.

These historic trails include:

- Sanitas;
- Sunshine;
- Tenderfoot;
- Flagstaff;
- Foothills;
- Green Mountain;
- Green Canyon;
- Saddle Rock;
- Bluebell Canyon;
- Bear Canyon;
- Gregory Canyon;
- Fern Canyon;
- Bear Mountain;
- Shadow Canyon;
- Mesa Trails; and
- Chapman Drive.



Boulder Chamber of Commerce. 1920-1929. "Boulder Mountain Park Trail map." Map on file at the Carnegie Library for Local History, Call No. BHS MAP COUNTY 1920s-2.

REGIONAL TRAILS

We work with partners to establish or enhance trail connections within and around Boulder County. Our partners include local municipalities, county governments, state and federal agencies, and community organizations. We assign regional trail projects to one of two categories depending upon their geographic scope. At the most local level, regional trail projects are generally in and around Boulder County. Partners often include other local municipalities, other City of Boulder departments or Boulder County departments. Many regional trails projects that we collaborate on are of this variety. Some examples of recent or ongoing projects include:

IBM Connector:

Completed in 2017, this linkage connects OSMP's Cottontail Trail to the city's Coot Lake Trail system and also connects to the Longmont to Boulder Regional Trail.

Boulder Creek Path Extension:

This project extends the Boulder Creek Trail to connect Betasso Preserve, a Boulder County Parks and Open Space-managed area, to OSMP's Chapman Drive Trailhead. Boulder County is the lead agency for this Colorado Department of Transportation (CDOT), city and county joint project.

Eldorado Canyon to Walker Ranch:

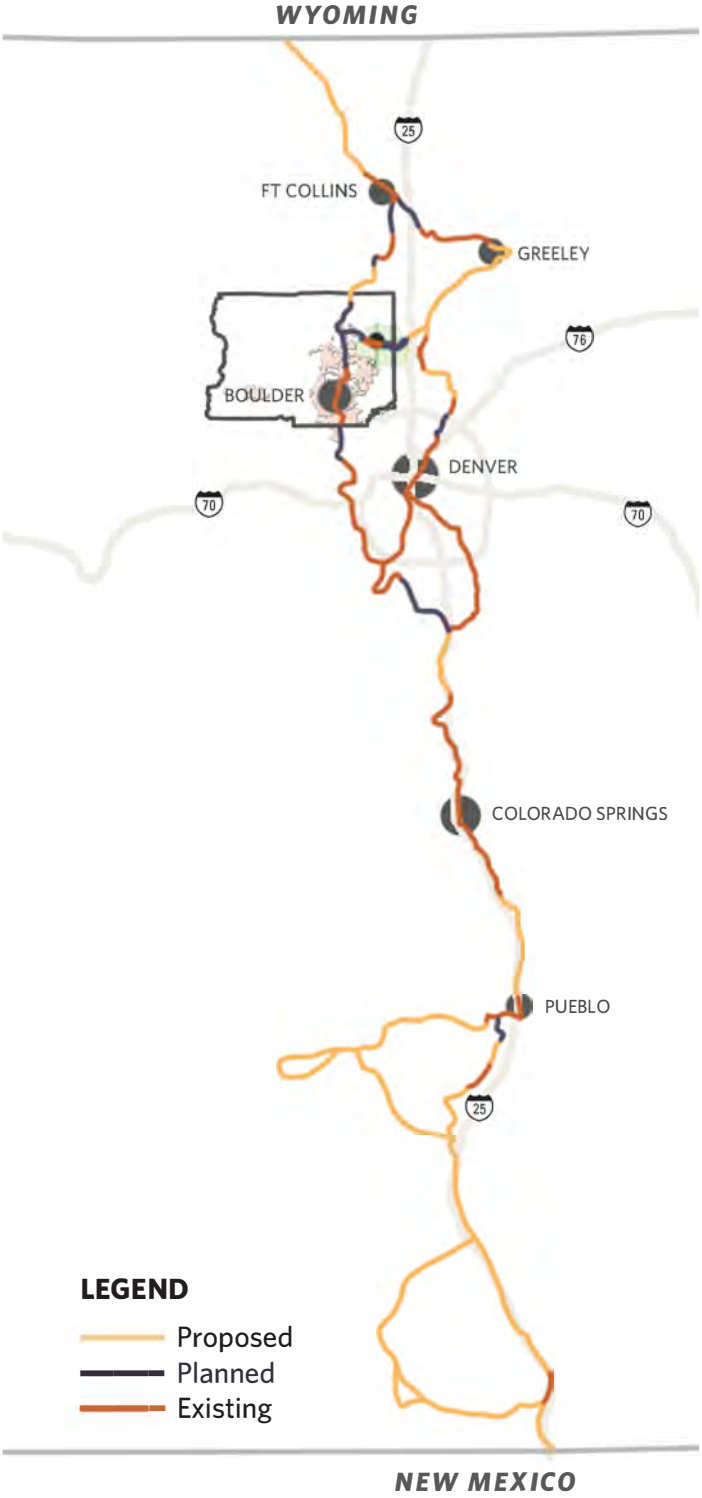
This project is looking at options for a multi-use trail to connect Eldorado Canyon State Park with Walker Ranch. Boulder County Parks and Open Space is leading the effort for this state, city and county joint project.

Larger regional trail projects look at connecting trails through multiple counties, with the goal of linking various public land destinations. These are often state or federal initiatives. Some examples of recent or ongoing projects include:

Colorado Front Range Trail:

The vision of this trail is to create a multipurpose trail from Wyoming to New Mexico along the Front Range of Colorado as shown in Figure 8.8. Colorado Parks and Wildlife is the lead for this project, with 15 other cities and 14 other counties acting as stakeholders.

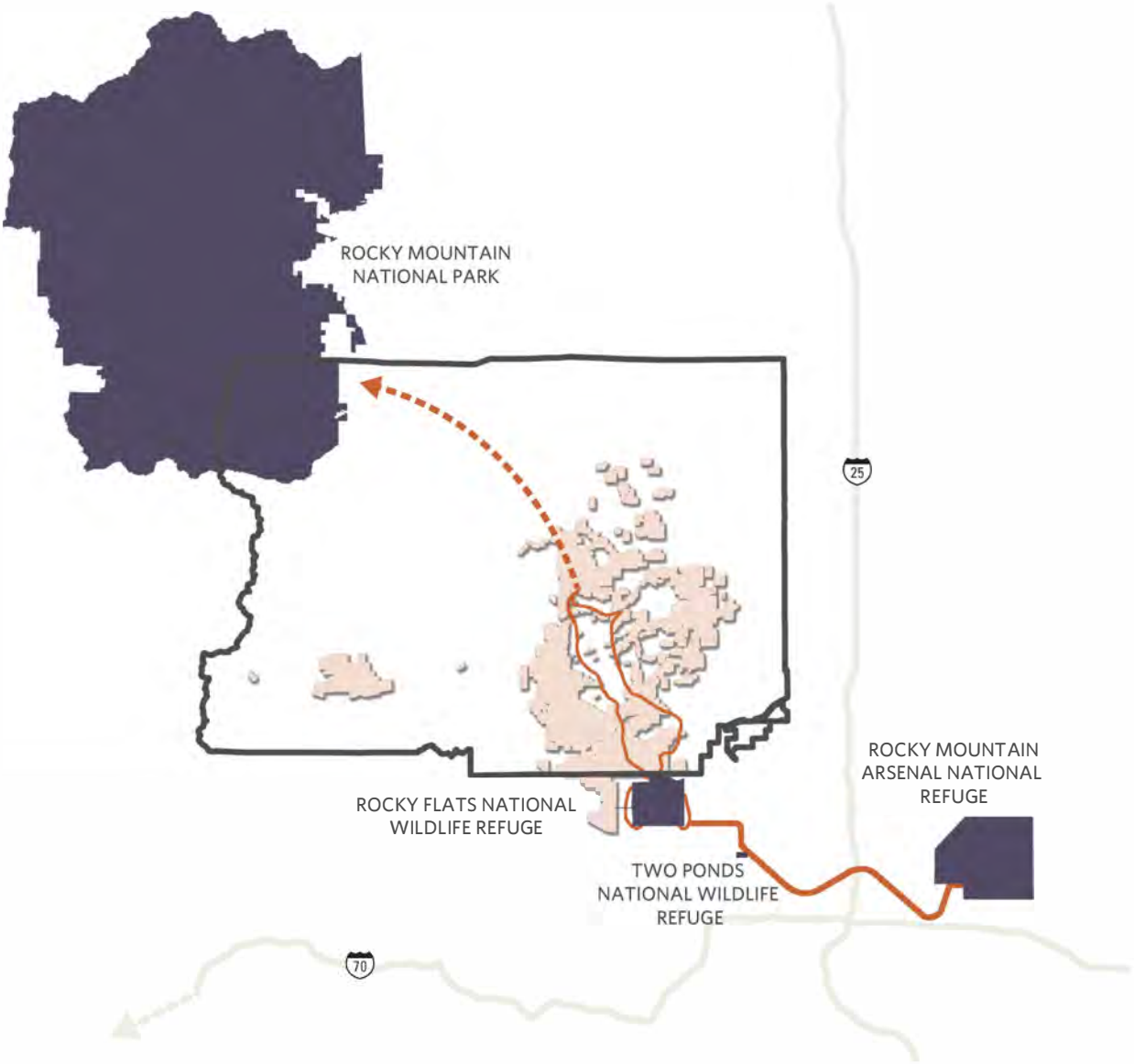
Figure 8.8: Conceptual Colorado Front Range Trail



Rocky Mountain Greenway:

The overarching goal of this multi-agency effort is to create regional trail connections between the Rocky Mountain Arsenal National Wildlife Refuge (NWR), Two Ponds NWR, Rocky Flats NWR and Rocky Mountain National Park as shown in Figure 8.9. Feasibility studies are underway, being led by the Federal Highways Administration, as well as grant-funded work to explore connections between OSMP lands, Rocky Flats NWR and Boulder County Parks and Open Space land.

Figure 8.9: Conceptual Rocky Mountain Greenway



Trails and Facility Management

Our staff supports visitor use and experiences through direct services to visitors, such as interpretive programming and rangering, as well as indirect services, including facility management and trail construction and maintenance. We maintain and operate an extensive and complex system of trails, facilities and other assets that enable visitors to experience OSMP-managed lands. We are responsible for the maintenance and management of a large portfolio of visitor infrastructure (summarized in Table 8.2).

Our staff strives to provide and maintain a range of facilities and amenities that are compatible with natural processes, and are aesthetically pleasing, functional, energy and water-efficient, cost-effective, accessible, and are as welcoming as possible to all segments of the population. To protect past investments in these assets and resources, ongoing investments in annual and cyclic maintenance, repair and revitalization are considered as part of a long-term management and maintenance program.

Our staff incorporates best practices to improve asset management systems in the absence of a centralized, citywide asset management system. This entails investing wisely in the facility portfolio to sustain those investments and avoid failure of critical assets like trails and bridges. Table 8.3 describes OSMP's classification of investment strategies.

VISITOR INFRASTRUCTURE

A full condition assessment of all visitor infrastructure has not been completed. Trail condition monitoring suggests that 39 percent of the trail system only needs Cyclic Maintenance; 42 percent needs Preventive Maintenance; and 19 percent needs Major Repair.

Table 8.2: OSMP Inventory of Visitor Infrastructure

ASSET TYPE	OSMP PORTFOLIO
Structures	More than 235
Designated Trailheads	About 150
Signs	More than 2,800 signs on the system, plus thousands of boundary signs
Trailheads	37
Recognized Access Points	73
Access to Recreation Facilities such as Picnic Tables	7

ADDITIONAL OSMP FACILITIES

OSMP also manages a portfolio of other assets including those with agricultural or historic functions and values, staff facilities, and residential properties that have accumulated over a number of past acquisitions. (often, these residential properties are leased out). Deferred maintenance on this part of the asset portfolio is estimated at $5.2 million and has been scheduled out over the next 10 years.

Table 8.3: Classification of OSMP Investment Strategies

POTENTIAL FACILITY INVESTMENT CATEGORIES	EXAMPLE ASSET TYPES
Trails	Trailheads, trails, kiosks, boardwalks
Access, Roads and Parking	Wayfinding signs, roads, gates, parking lots, overflow parking, parking lot signs, bollards, etc.
Gathering Areas and Overnight Areas – Major Facilities	Welcome centers, offices, kiosks, education centers, picnic shelters, shade structures, amphitheater, bathrooms, etc.
Gathering Areas and Overnight Areas – Minor Facilities	Signs, interpretive exhibits, fences, walls, swales, viewing platforms, picnic tables, benches, water fountains, garbage/recycling/composting containers, grills, fire rings, horse corral, bike racks, etc.
Overnight Facilities	Camp sites
Historic and Agricultural Buildings and Structures	Farmsteads, barns, agricultural outbuildings, silos, etc.
Housing	Historic homes, rental properties, staff housing, etc.
Offices	Staff offices and related assets
Maintenance	Maintenance shop, storage sheds, chemical storage, etc.
Utilities	Electric, sewer, water, wells, pump stations, solar arrays, etc.

TRAIL STEWARDSHIP

We currently use five concepts – based on the **Federal Trail Data Standards** framework – to classify, design, construct and maintain trails:

1. Trail Type: Reflects the predominant trail surface and mode of travel. OSMP primarily manages terra trails as opposed to snow or water trails although we blaze select trails for snow travel.
2. Trail Class: The prescribed scale of development for a trail, representing its intended design and management standards. There are five trail classes, ranging from the least developed (Trail Class 1) to the most developed (Trail Class 5).
3. Managed Uses: Refers to the modes of travel that we permit on a trail, based on its design and management.
4. Designed Use: The managed use of a trail requires the most demanding design, construction and maintenance parameters. In conjunction with the trail class, the designed use determines which design parameters will apply to a trail. We manage five Designed/Managed Use Types:
    - Authorized Motor Vehicle (for emergency response and maintenance access only);
    - Pedestrian/Hiker;
    - Equestrian;
    - Bicycle; and
    - Wheelchair Accessible.
5. Design Parameters: Technical guidelines exist for the survey, design, construction, maintenance and assessment of a trail based on its designed use and trail class. Design parameters reflect the design objectives for OSMP trails and determine the dominant physical criteria that most define their form. These criteria include tread width, surface type, grade, outslope, clearing and turn radius.

These fundamentals provide a means to record and communicate guidelines for trail design, construction, maintenance and use. When combined with management strategies and maintenance criteria, the trail fundamentals become Trail Management Objectives (TMOs), which document the intended purpose and management of an OSMP-designated trail. TMOs are the fundamental building blocks for OSMP trail management as they provide basic reference information for subsequent trail planning, management, condition surveys and reporting.

We recently finished an overhaul of systemwide TMOs and are developing a new trails database and asset-management system. Our staff now classifies trails according to the designed uses described in Table 8.4.

Trail condition monitoring and the framework described above form the foundation of an existing trail stewardship and maintenance program. Trail monitoring is designed to describe a set of physical aspects of the trail but does not address visitor experience. Overall, five studies are available offering evidence of the changing physical state of the trail system.

To determine whether the designated trail system was meeting established sustainability standards, a systematic inventory and assessment of trail conditions occurred during 2007-2008 and again during 2012-2013. In 2007, all designated trails – 125 miles at the time – were inventoried. The overall trail condition for physical trail sustainability and projected maintenance or resource needs was considered good overall but with 28 percent of the trail system classified as an area of concern. An area of concern refers to the portions of trail that were out of compliance with trail specifications or exhibited maintenance problems.

In 2012, all designated trails (66 miles) in the East, North and South Trail Study Areas (TSAs) were inventoried. The West TSA was not surveyed because many of the trails in the area were under active maintenance, rerouting or restoration, which makes it harder to compare the overall condition of the system over the five-year period. In 2007, the West TSA had the most problem areas with 42 percent of total mileage classified as areas of concern. Since the West was not surveyed in 2012, the average condition of the system in 2012 appears to improve with 20 percent of total trail mileage classified as an area of concern. However, the percent of total trail length with areas of concern about doubled in each surveyed TSA between 2007 and 2012 surveys.

- The East TSA increased from 9 percent of surveyed trails identified as areas of concern in 2007 to 16 percent in 2012.
- The North TSA increased from 13 percent of surveyed trails identified as areas of concern in 2007 to 32 percent in 2012.
- The South TSA increased from 6 percent of surveyed trails identified as areas of concern in 2007 to 13 percent in 2012.

Table 8.4: Trail Classification System (Designed Use)

USE	MILEAGE DESIGNED
Hiking	63
Mountain Biking	23
Authorized Motor Vehicle (Emergency Response and Maintenance Access Only)	44
Equestrian	20
Accessible	6

The most recent systemwide trail condition survey was conducted in 2015 to 2017. The methodology was improved to make results more useful for trail stewardship operations. While the metrics measured are consistent with other previous trail condition studies, the accuracy of data collection was improved and the analysis process to summarize the overall condition index was changed and is in a pilot phase to calibrate in 2017-2018.

Information about compliance with design standards (e.g. grade, width, outslope, surface firmness) and information about impacts (e.g. soil loss, braiding, mud) was combined with information about the condition of constructed features (e.g. bridges, stairs, retaining walls). The different indicators of trail condition were classified into condition management categories and color-coded in detailed maps.

Using the pilot system of summarization, the trail system conditions can be converted to a Condition Index Score ranging from 0 to 100. A score of 0 means the trail is 100 percent in need of Major Repairs. A score of 100 means the trail is only in need of Cyclic Maintenance and is in very good condition. Every trail segment now also has a baseline Condition Index Score that allows staff to prioritize work and track how condition changes over time.

Of the 150 miles surveyed, the pilot summarization suggests:

- **Thirty-nine percent of the trail system was classified as likely needing only Cyclic Maintenance;**
- **Forty-two percent of the trail system was classified as likely needing Preventive Maintenance; and**
- **Nineteen percent of the trail system was classified as likely needing Major Repair.**

While not all metrics were directly comparable to past surveys due to differences in measurement accuracy and changed design standards, results from comparable metrics show that some of the measured physical trail properties have changed between 2007 and 2015. Trail impact indicators, such as erosion, braiding and mud, have increased in the last 10 years while the percent of trail with overgrown vegetation has remained relatively constant.

There are likely many contributing causes to these changes including but not limited to increased visitation and damage to infrastructure from the 2013 flood event. It is important to note that the 2012 survey was done before flooding in 2013, which damaged much of the system. The 2017 survey was completed prior to many large flood-repair trail projects.

Regardless of the condition trends, visitors are positive about OSMP trail conditions (Cottrell, 2017). The physical condition of infrastructure does not mean that visitors do not enjoy using the trails. However, it can be an indicator of the future resources needed to maintain and keep the trail system functional.

As mentioned above, the 2013 flood had a drastic effect on the physical condition of parts of the trail system. Additionally, due to the limited timeframe for federal support, the flood shifted planning and operations focus to the repair of flood-damaged infrastructure, reducing overall capacity to maintain the system. OSMP has completed several major flood repair projects in the last four years. These projects brought many trails back to pre-flood conditions.

OSMP also manages many trails that were never designed to current industry standards for sustainable trail design. For example, over time people have hiked to destinations and followed others' paths to create undesignated trails that have been adopted as designated trails. Adopting and maintaining trails that were not designed and do not consider physical sustainability or high visitation in their current alignments often create an increased need for time-consuming and costly repairs and maintenance.

In response to the change in erosion, braiding and mud on our trail system, which indicates a need for continued maintenance and increasing the sustainability of trails, OSMP has started to expand its focus from TSA implementation and new construction to include a focus on maintenance and trail stewardship. In 2017, the trail program reorganized and dedicated staff toward taking care of existing infrastructure. As part of the shift toward stewardship, the trail volunteer program has grown considerably over the last five years and leverages community groups and individuals to help OSMP take care of trails.

Undesignated trails – which are also known as unofficial, informal, visitor-created or social trails – are also widespread through OSMP land and managing them is a critical component of the continued focus on stewardship. A systemwide survey of undesignated trails is in progress and will be completed in 2018. The last inventory was completed in 2012 and more than 181 miles of undesignated trails and roads were mapped. OSMP land has had more mileage of undesignated trails than designated trails for the last 10 years. Since 2012, the linear distance of undesignated trails in the Chautauqua area has increased from 4.2 miles to 6.3 miles.

Undesignated trails are of concern to land managers because their development can result in unwanted changes to the landscape through vegetation loss, soil erosion, weed proliferation, disturbance to wildlife and fragmentation of habitat blocks (D'Antonio, 2010) (Wimpey & Marion, 2011). From a social perspective, a web of informal trails creates a visually scarred landscape and may lead to visitor confusion and safety concerns (Marion & Olive, 2006).

Agriculture and Visitor Integration

To date, we focus on connecting the community with agricultural lands through passive recreation opportunities, providing visitors with the opportunity to travel through working lands while respecting the needs of lessees. There are about 40 miles of multi-use trails through working agricultural landscapes on lands managed by OSMP. The trail system takes visitors through rangeland and hayfields, providing opportunities for horseback riding, biking, dog walking, hiking and running. For more information on this aspect of our trail system, see the **Agricultural Resources Management Plan (Ag Plan)**.

Members of the public can also board horses at Boulder Valley Ranch, which provides a connection to ranching activities.

The public can also access many agricultural lands without visitor infrastructure. In some cases, visitors may not perceive that an area is open due to the fencing required for agricultural operation. In general, we encourage public access where there is visitor infrastructure to support passive recreational activities. OSMP has temporarily closed or limited access to agricultural properties only once or twice in the last decade due to potential crop damage or visitor safety concerns. For example, hayfields were temporarily closed when off-trail visitation damaged a hay crop before it was harvested.

The recent Ag Plan offers additional strategies for enhancing community connections to working landscapes, such as farm stands, farm events, agri-tourism and community farming. We also created service-learning programs, which provide volunteer opportunities in collaboration with farmers and ranchers, and offer education and outreach opportunities.

Haying on Teller Farm with tractor. OSMP Image

Volunteers spending a day outdoors for a National Trails Day Project. Photo by Phillip Yates

Partnering with the Community

Many groups in the community work closely with OSMP to advance a long-standing vision of collaboration between the department and the Boulder community. The tax-paying community not only owns the land, but many individuals and groups also want to work with us as stewards of the lands, providing expertise, program delivery and project assistance. More than 1,500 community members donate their time and expertise to the city by volunteering on OSMP projects each year. For example, the Flatirons Climbing Council holds an annual "Trash Bash," at which members pick up garbage, maintain climbing trails, work to define safe and enjoyable climbing routes, and communicate within their community on climbing route closures to protect raptors. This relationship is an example of collaboration between community members and OSMP to protect and enjoy the land. We describe further volunteer opportunities in more depth in **Chapter 9.**

There are many groups we partner with. A few examples include:

- **The annual lighting of the Boulder Star on Flagstaff Mountain, supported by the Boulder Chamber of Commerce;**
- **The Boulder Mountain Bike Patrol helps promote positive experiences on the trails. OSMP, BCPOS, U.S. Forest Service, City of Boulder Parks and Recreation, and Boulder Mountain Bike Alliance (BMA) support this multiagency program; and**
- **Front Range Climbing Stewards partner with the Access Fund to bring volunteers together to manage and restore climbing access trails in Boulder.**

Other partnerships are described in Chapter 4.

9

CONNECTING PEOPLE WITH NATURE

RELEVANT CHARTER PURPOSES:

- **Preservation of land for passive recreational use, such as hiking, photography or nature studies.**
- **Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community.**

Junior rangers walk along a trail to a work site. Photo: Phillip Yates

The scenic beauty of the lands surrounding the City of Boulder continues to draw people to the Boulder Valley as it has for thousands of years. Today we continue to enhance the community's connection with nature, inspiring a legacy of stewardship and creating enjoyable visitor experiences on the land. Through environmental education, outreach, volunteering, service learning, recreation activities, skill building and law enforcement, we foster enjoyment, protection of the land and improved quality of life for the community. We provide inclusive programs to engage Boulder's diverse community and all visitors, regardless of age, economic status or cultural identity. We also seek to engage youth and families with the outdoors, providing lasting and meaningful connections to nature.

SNAPSHOT

The Boulder community is connected and engaged with nature through **outreach, education, volunteerism and service-learning programs** that foster inclusive open space stewardship regardless of age, economic status or cultural identity.

PROGRAM OFFERINGS

Interpretive programs and recreation programming help connect residents and visitors to the land. Programs encourage land stewardship and awareness of the value of open lands. Environmental education encompasses a breadth of programs offered to provide opportunities for participants to connect with lands managed by OSMP.

COMMUNITY ENGAGEMENT

EDUCATION & OUTREACH	VOLUNTEER & SERVICE LEARNING	ENGAGING YOUTH & FAMILIES	RECREATION & SKILL BUILDING	INCLUSIVE OPPORTUNITIES FOR ALL
				
The 2016 Environmental Education programs served diverse audiences and underserved audiences through 189 Natural Selections hikes for 9,460 participants and 557 requested hikes for 9,306 participants.	The Junior Rangers program has included local teens in priority natural resource management projects since 1965.	In 2017 more than 6,000 students learned about local options for outdoor recreation and basic outdoor recreation skills through school assembly programs.	According to the community feedback from OSMP educational programming, 100 percent of respondents said they would attend another of these programs with OSMP.	In 2016, OSMP provided 67 bilingual presentations and connected with about 1,500 Spanish speakers through different programs and events.

CONNECTING PEOPLE WITH NATURE

VOLUNTEER OPPORTUNITIES

Volunteer services provide opportunities for public participation and collaboration in accomplishing departmental goals through the following programs:

Photo by Steve Mertz

- Trail monitoring
- Agricultural projects
- Wildlife observation
- Plant monitoring
- Outreach events

RANGERS ENGAGING THE COMMUNITY

OSMP currently employs 15 full-time rangers, each of whom have a Colorado Peace Officer Standards and Training, emergency medical, wildland fire and naturalist certifications.

SUMMARY OF EXISTING CONDITIONS

1,752 VOLUNTEERS CONTRIBUTED **19,313** HOURS.

This added **half a million** dollars in value to OSMP in 2016.

Rangers spend about 70 percent of their time in the field patrolling and providing customer service to the community and the natural areas.

Our community engagement and ranger naturalist programs are undergoing inventory, analysis and strategic planning to anticipate and respond to future needs.

Community Engagement

In 2017, Open Space and Mountain Parks (OSMP) developed a strategic plan to meet the community's needs for Community Engagement over the coming years. Five community services were identified that would best serve the residents of Boulder and visitors to OSMP:

- Environmental Education and Outreach;
- Recreation and Skill Building;
- Volunteering and Service Learning;
- Inclusiveness and Opportunities for All; and
- Youth and Family Engagement.

These community services are realized through the programs that are delivered across the system (Table 9.1). As the strategic plan rolls out over the next couple of years, OSMP will identify community needs and trends to update the programs, set goals and outcomes, and develop ways to measure success.

Recognizing that active relationships with the land are vital for human health, our environmental education and outreach programs provide opportunities for people to connect with OSMP lands – physically, mentally, emotionally and creatively – while also inspiring land stewardship.

Table 9.1: Strategic Services and Programs for Community Engagement

SERVICE: ENVIRONMENTAL EDUCATIONAL AND OUTREACH
Outreach
Interpretive Programs
Interpretive Facilities and Materials
SERVICE: RECREATION AND SKILL BUILDING
Recreational and Skill Building Programs and Activities
Programs for Dog Guardians
Arts Programs
SERVICE: VOLUNTEERING AND SERVICE LEARNING
Citywide Volunteer Cooperative
One-Day Projects
Ongoing Programs
Junior Rangers
SERVICE: INCLUSIVENESS AND OPPORTUNITIES FOR ALL
Programs for Visitors Experiencing Disabilities
Programs for Spanish-Speaking Communities
Programs for Under-Represented Communities
SERVICE: YOUTH AND FAMILY ENGAGEMENT
Youth-Friendly Educational Opportunities
Service Learning and Volunteer Opportunities for Youth
Youth Leadership

OSMP Image

Dedicated to enhancing visitors' experiences and quality of life for community members, we engage the public through the following services:

- Deliver learning opportunities on topics surrounding nature, culture, history, scenic landscape, working farms and recreation;
- Provide high-quality visitor experience opportunities and build confidence to explore nature through outdoor skills training and playing in nature;
- Engage residents and partners through volunteer opportunities that build community vitality;
- Develop service-learning opportunities so the community can experience working in nature;
- Provide the community with youth engagement and career-development programs;
- Provide connections to nature through programs that partner with schools, nonprofits and community-based organizations;
- Promote inclusiveness and universal access by providing culturally diverse and accessible opportunities;
- Provide a Community Rangering program to continue developing closer community relationships and provide better customer service;
- Provide the community with outdoor safety education; and
- Provide customer service to the community in the areas of emergency response, code enforcement, law enforcement and emergency medical services.

ENVIRONMENTAL EDUCATION AND OUTREACH

ENVIRONMENTAL EDUCATION

In 2016, we offered 189 Natural Selections public presentations for more than 9,460 participants, reaching diverse audiences and traditionally underserved populations. Responding to direct requests from community members, we led 557 requested hikes for 9,306 participants. The popularity of these programs is growing, and 3,500 subscribers currently ask for specific information regarding our program offerings. We also have education facilities for self-guided public learning with a range of nature centers, interpretive signs and brochures. In recent years, we installed new interpretive signs, an accessible walking trail and updated exhibits at the Flagstaff Nature Center.

Community feedback indicates educational programming is well received by those attending our community engagement programs. Based on a 2013 survey, participants gave programs an average rating of 9.5 out of 10. One-hundred percent of respondents said they would attend another hike with our staff. Teachers who were asked if their students received a valuable learning experience rated our programs 4.9 out of 5. Presenters received ratings of 3.9 out of 4 for enthusiasm, knowledge and rapport.

NATURAL SELECTIONS

OSMP's "Natural Selections" series offer an array of interpretive programs, enabling communities to connect with OSMP's lands while serving the health and well-being of participants and encouraging them to follow an ethic of land stewardship. Programs are open to all and they have varying themes, including ecology, geology, local history and night hikes. Learn about upcoming hikes by signing up for **"Natural Selections" email updates**.

Since 2013, OSMP has collaborated with the Boulder Philharmonic Orchestra to provide public nature hikes that explore how aspects of nature have inspired composers of classical music. During hikes, naturalists use portable speakers to bring the composers and the Boulder Philharmonic Orchestra's music into open space and nature. The partnership attracted the attention of the organizers of the Shaping How We Invest for Tomorrow (SHIFT) Festival of American Orchestras at the Kennedy Center. In March 2017, the Boulder Philharmonic Orchestra and OSMP were invited to participate on the national stage in Washington.

Boulder is a city nationally renowned for its emphasis on physical fitness and outdoor recreation pursuits. However, growing national trends point to a reduction in time spent outdoors by both adults and children who have fewer skills that build confidence to enjoy and appreciate nature. The increasing body of research suggests that a whole generation is being raised on indoor pursuits and is not learning how to fish or go birdwatching. This trend is especially true for underserved communities, families and youth.

With this trend in mind, OSMP fosters outdoor skills training and collective stewardship of the lands' resources. Excursions encourage having fun in nature, such as hiking up the Chautauqua Meadow to touch a 300-million-year-old Flatiron. The following programs highlight

opportunities for people of all ages to learn outdoor skills, to build confidence exploring nature and to observe "Leave No Trace" principles.

REQUESTED PROGRAMS

Boulder Valley School District (BVSD) and private and home schools collaborate with OSMP on **environmental programs for experiential learning opportunities** to support student achievement and to connect students with nature. For more than two decades, we have been providing programs to schools and community groups, including adult classes, scout troops, church groups, camps and community clubs. Led by our staff and/or trained volunteer naturalists, these programs meet the requesters' needs and are about topics, including ecology, biology, geology, etc. In 2016, OSMP provided 557 requested hikes, most of them for BVSD and the surrounding school districts to classes of all grade levels. Volunteer naturalists are critical to meeting requests for environmental education programs. Currently, 45 active volunteer naturalists lead these events. In 2016, volunteer naturalists led about 37 percent of the requested programs.

OUTREACH

Through outreach events, we create opportunities to recreate in and connect with nature. At the same time, these events build awareness and appreciation for OSMP, inspire healthier communities and help us preserve the land. An extensive menu of engaging outreach programs is tailored in a variety of formats to meet diverse audiences, promoting positive visitor experiences.

CHAUTAUQUA RANGER COTTAGE

With a close-up view of the iconic Flatirons, the **Ranger Cottage** is the most popular point of entry for exploration of Chautauqua Meadow and the mountain backdrop. Every year, the outreach team welcomes thousands of visitors at this venue, providing insights into safe and enjoyable excursions on the surrounding trails. The Ranger Cottage received more than 80,000 visits in 2016. As part of the daily flow of information, staff provided visitors with maps, hike suggestions, trail condition updates, safety issues, and updates on plants and animals in the area.

OUTREACH VENUES AND EVENTS

Since 2001, the number of face-to-face contacts at public events and trailheads typically ranges between 30,000 to 70,000 every year. At the Boulder Farmers Market, staff answers community questions about OSMP's programs and management. The "Wake Up the Bear" event hosted on the Pearl Street Mall educates at least 2,000 people about how to live safely with, and protect the lives of Boulder's bears. Additional venues enable outreach staff to invite the public to the trails and answer questions about recreation, wildlife, wildfire and volunteer opportunities with OSMP. The "Meadow Music" children's concert series and community events – such as the "Munchkin Masquerade," a Halloween event – help us create connections that inspire preservation of land and build awareness of city charter purposes for OSMP.

RECREATION AND SKILL BUILDING

FIRST DAY HIKE

On the first morning of the new year, people gather to go on OSMP's "First Hike" along the base of the Flatirons, with hike loop options for both beginner and experienced hikers. This hike is the first of many recreational activities that our staff leads throughout the year. OSMP also provides a "Triple Peak Challenge," which is an excursion offering for visitors who can hike all day long and who want to make it to the summits of South Boulder Peak, Bear Mountain and Green Mountain.

BOULDER TRAILS CHALLENGE

In 2017, OSMP began offering the **Boulder Trails Challenge**, a program to challenge people to visit all OSMP trails. Kids of all ages were also invited to participate in the program through Ranger Paula's Passport to Adventure. This program was developed in response to studies showing children can receive significant health and social benefits when they spend more time in nature. The program also helps children and their parents develop their own connection with Boulder open space while also providing them with healthy and fun recreational activities.

FOREST BATHING/MINDFULNESS

With roots in Japan, Shinrin Yoku – the art of forest bathing – is quickly growing in popularity around the world. OSMP's outreach team, recognizing this trend in connecting people to the benefits of nature, developed a forest-bathing program where participants can unplug, relax and use the land, trees and ecosystems to heal and add value to their lives.

GARDENING WITH NATIVE PLANTS

OSMP offers native plant demonstrations and learning gardens at the Ranger Cottage, Bluebell Picnic Shelter and Flagstaff Nature Center. These gardens showcase the benefit of native plants in a front or backyard. While native plants often need little water or care, few people are aware of how to grow them successfully in their own yards. Each year, OSMP leads six public training workshops to share information and growing tips. The programs are complemented by native plant gardening and pollinator handouts, distribution of free seeds from many local species, free surplus plants from the native plant garden at the Ranger Cottage, and a **detailed website** that categorizes more than 150 native plants with tips and tricks to grow each one.

OPEN SPACE AND MOUNTAIN PARKS AND THE ARTS

The **OSMP and the Arts Program** connects people to the land through the arts. **Since 2006, our staff has facilitated 155 experiential art programs for the community.** Art instructors offer programs for all skill levels. They interpret through various mediums, such as sculpture, watercolor, dance, writing, music, science illustration and nature journaling. The program hosts a bi-annual exhibit of community art at Boulder Library's Canyon Gallery. In 2017, 98 artists of all levels exhibited in this show. In 2010, the OSMP and the Arts Program received the Government Environmental Education Award from the Colorado Alliance of Environmental Education (CAEE).

VOICE AND SIGHT DOG EDUCATION

An estimated 1 to 2 million dogs visit OSMP each year, 60% of which enjoy off-leash experiences (Leslie, 2018). Positive experiences with dogs are facilitated on OSMP lands through education and outreach events that work with community dog owners to create safe and enjoyable visits. These programs help visitors reduce conflicts, promote safety, reduce impacts to natural resources and inspire more enjoyable experiences with canine companions on OSMP trails. In 2016, OSMP held 119 **Voice and Sight Education** programs for more than 2,300 participants.

Cash the dog displays Voice and Sight tag. OSMP Image

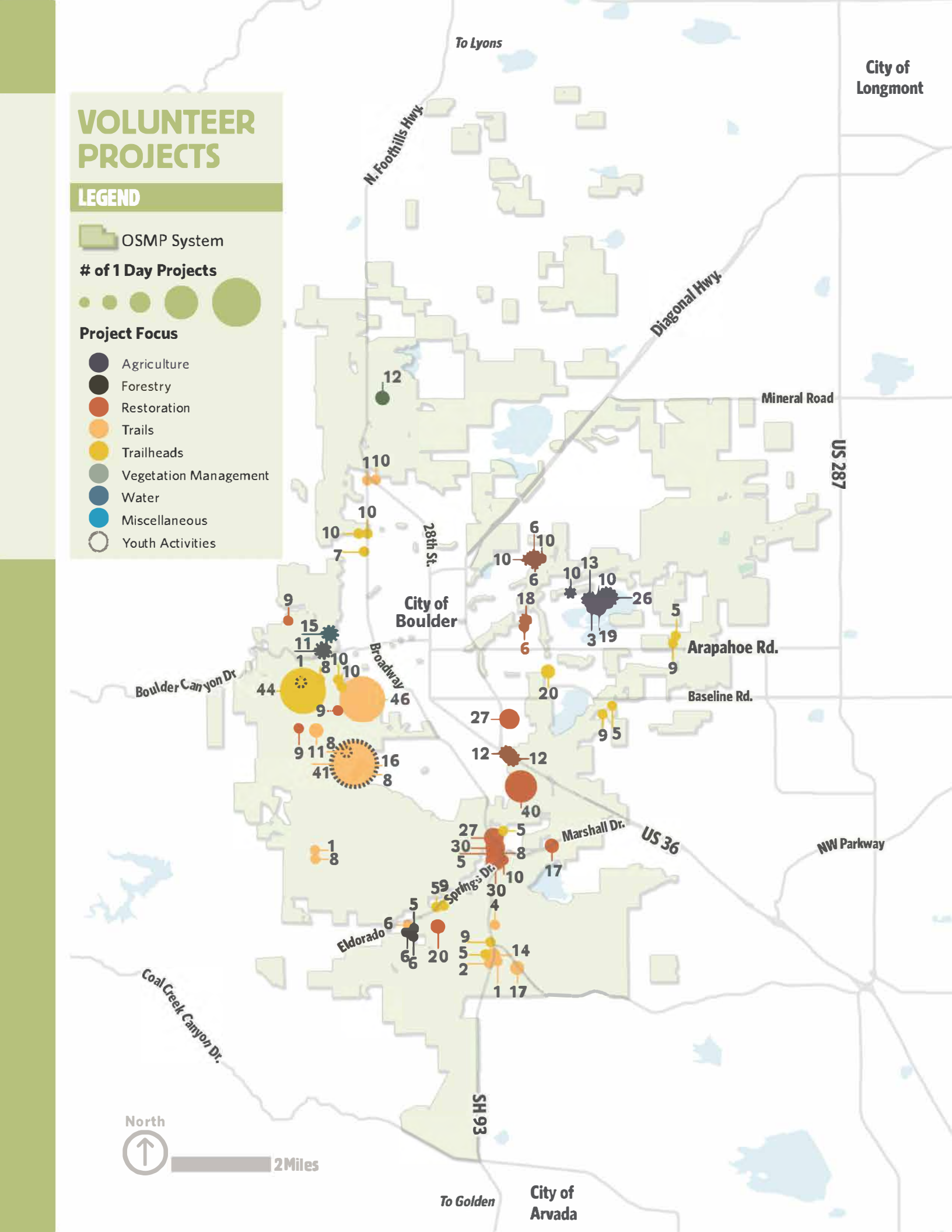
VOLUNTEER AND SERVICE LEARNING

VOLUNTEERS

Since the 1980s, OSMP offers long-running volunteer programs and individual projects for the community. Being a volunteer provides opportunities for community participation and collaboration in stewarding the land. By offering **various short-term and long-term programs**, the community can give back to the land with a variety of programs covering ecological restoration and trail work programs, trail monitoring, agricultural ditch maintenance, environmental education, bike patrol, wildlife observation, plant monitoring, outreach events and many other activities. These activities are a way the community can give back to the land they own – not just by enjoying it but by helping to protect it.

In 2016, 1,762 volunteers contributed more than 19,313 hours of work. Their volunteer time added over $500,000 in value to our department in 2016. In more than 95 percent of responses, volunteers and staff report being highly satisfied. In 2016, our volunteer services staff completed a strategic plan to examine capacity, recruitment and target key audiences. The plan identifies opportunities to offer more youth and family-friendly projects and programs into the future.

OSMP also supports public participation by offering two types of opportunities for volunteers – one-time projects and longer-term commitments to programs. The programs cover season-long, year-long or multi-year commitments. More than 350 volunteers have made these long-term commitments to OSMP.


VOLUNTEER PROJECTS
LEGEND
OSMP System
of 1 Day Projects
Project Focus
Agriculture
Forestry
Restoration
Trails
Trailheads
Vegetation Management
Water
Miscellaneous
Youth Activities
To Lyons
City of Longmont
N. Foothills Hwy.
Diagonal Hwy.
Mineral Road
US 287
28th St.
City of Boulder
Broadway
Boulder Canyon Dr
Arapahoe Rd.
Baseline Rd.
Marshall Dr.
US 36
NW Parkway
Spring; Dr.
Eldorado
Coal Creek Canyon Dr.
SH 93
To Golden
City of Arvada
North
2 Miles

In 2016, 19 program assignments included greeting visitors on the trails, monitoring wildlife and plants, assisting at outreach events, answering questions at visitor centers and leading interpretive hikes for youth (Table 9.2).

Volunteer projects are short-term commitments to assist with field-based projects. Example tasks include restoration, trail building, agricultural assistance, ditch maintenance, integrated pest management and forestry projects. In October 2016, volunteer coordinators and staff across the City of Boulder came together to create the Volunteer Cooperative's effort to support a community of service and a vision of an integrated network of resources and opportunities to increase community stewardship. The vision of the Volunteer Cooperative is an integrated network of resources and opportunities to increase community stewardship. The Volunteer Cooperative works together to increase collaboration and to ensure the highest-quality volunteer experience. For more information, please visit this **website**.

Refer to **Volunteer Projects Map.**

VOLUNTEER TRAIL STEWARDSHIP

The Trails Stewardship Volunteer Program is focused on meaningful trail construction and maintenance projects that connect volunteers to trails and our community's open space. **In 2017, OSMP completed 21 unique projects, including larger volunteer events for National Trails Day and National Public Lands Day. Together, those projects led to 2,502 volunteer hours, totaling about $60,000 in labor value.**

For decades, OSMP has participated in the American Hiking Society's National Trails Day. In 2016, more than 40 volunteers assisted with a reroute of the Mesa Trail, which sustained major damage during the 2013 floods. Volunteers supported OSMP by digging and hauling tons of dirt to create a sustainable reroute. When asked what they learned from the project, volunteers said they appreciated "the hard work that goes into trail maintenance." When asked what they most enjoyed about the National Trails Day project, one volunteer said that it was "team work and camaraderie" and "the satisfaction of finishing a portion of trail" that made it fun and satisfying.

INTERAGENCY BIKE PATROL

The Boulder Mountain Bike Patrol is a multi-agency program that includes support from OSMP, Boulder County Parks and Open Space (BCPOS), U.S. Forest Service (USFS), City of Boulder Parks and Recreation, and Boulder Mountainbike Alliance (BMA). Patrollers ride trails, assisting and educating mountain bikers and other park visitors. The goal is to promote a positive recreational experience on the trails. For more information, **click here**.

RAPTOR MONITORING

For more than 30 years, volunteers have monitored nest sites of golden eagles, bald eagles, prairie falcons, peregrine falcons and osprey on lands managed by OSMP. Raptor volunteers provide weekly information to our staff about the status of nesting pairs and also report closure violations. This program became a model of citizen monitoring nationwide. In 2016, a local videographer captured inspirational stories from volunteer raptor monitors in a video series called **"Safeguarding Boulder's Birds of Prey."**

Table 9.2: Ongoing Volunteer Programs in 2016

VOLUNTEER PROGRAM/ ASSIGNMENT	WORKGROUP & PARTNERSHIP SERVED	# OF VOLUNTEERS	SITE VISITS/ EVENTS	HOURS
Bat Monitors*	Ecological Systems, Rangers & Colorado Bat Society	47	158	1,567
Bear Care Team*	Ecological Systems, Rangers & Colorado Parks and Wildlife	26	8	120
Boulder Star*	City Manager's Office & Rangers	13	10	24
Butterfly Monitoring*	Butterfly Pavilion & Ecological Systems	5	23	72
Hayfield Monitors	Agriculture, Ecological Systems & Rangers	4	17	45
Herbarium	Ecological Systems	8	5	50
Hosts: Event Help (Meadow Music & Voice & Sight Events)	Community Engagement	8	12	60
Host: Flagstaff Nature Center	Community Engagement	17	122	350
Host: Ranger Cottage	Community Engagement	6	65	185
Mountain Bike Patrollers*	Community Engagement & Rangers	80	589	1,380
Native Garden Team	Community Engagement & Ecological Systems	12	10	167
Naturalists (including bear, mountain lion & coyote classroom programs)	Community Engagement	38	231	1,436
Open Space Board of Trustees	All	5	13	1,000
Phenology Monitors	Science Officer & Ecological Systems	12	85	250
Raptor Monitors*	Ecological Systems & Rangers	59	500	2,000
Resource Restoration Stewards	Ecological Systems	7	10	37
Staff Assistants: Admin & Interns	All	6	8	235
Staff Assistants: Vegetation Studies	Ecological Systems	3	110	163
Trail Guide/Park Patrollers	Community Engagement & Rangers	98	800	2,346

	Volunteer Training Hours	# of Volunteers	Site Visits/ Events	Hours
TOTAL	500	454	2,776	11,487

Partnership/collaboration program

SERVICE-LEARNING OPPORTUNITIES

OSMP provides learning opportunities through volunteer or paid service projects. Formal instruction, combined with service, gives participants real-life, experiential education that can lead to future careers in green jobs, including natural lands stewardship or recreation based programming.

JUNIOR RANGER PROGRAM

As the longest-standing, service-learning program in the department, the **Junior Ranger Program** has included local teens in priority recreation and natural resource management projects since 1965. Junior Rangers learn job skills, perform in a team environment and engage in stewardship-building opportunities. Motivated teens work together to make a difference for the land and their community.

OSMP selects candidates between 14 to 17 years old to join our Junior Rangers Program through a competitive application and interview process. They serve for one of two program sessions during the summer, completing a variety of parks maintenance work and recreation and land restoration projects.

In 2017, OSMP piloted the Junior Ranger Naturalist Program, which was developed with rangers from several different counties as part of ongoing collaboration with the international ranger community. The World Ranger Congress in Estes Park in 2016 was the catalyst for the creation of this program. The pilot program was such a success that OSMP has agreed to continue the summer program as part of the Junior Ranger Program.

This pilot program provided local teens an opportunity to work with rangers and other natural resource professionals to learn about core ranger duties and the diversity of work rangers do to protect natural resources. Rather than maintenance and restoration projects, for example, it centered on providing customer service to visitors and natural resource protection. This exciting, four-week program is an excellent opportunity to learn about natural resource stewardship, hone outdoor skills and explore careers as an outdoor professional. Training includes CPR/First Aid, search and rescue, outdoor survival, wildland fire ecology, leadership and public service, natural resource/visitor protection and enforcement, wildlife ecology and customer service. Junior Ranger Naturalists work with rangers from OSMP in partnership with Boulder County Parks and Open Space rangers. Participants also learn about the international community of rangers and help commemorate World Ranger Day, which is celebrated annually on July 31. World Ranger Day "both commemorates rangers killed or injured in the line of duty and celebrates the critical work Rangers do to protect the world's natural and cultural treasures," according to the International Ranger Federation. Upon successful completion of the program, participants will earn a Certificate in Outdoor Leadership.

SERVICE-LEARNING PROJECTS

OSMP provides customized one-day service learning volunteer projects for individuals, corporations, schools and organizations. We hold between 50 to 80 one-day volunteer projects every year based on community needs. The goal of every volunteer project is to provide a meaningful way for people of all ages to connect with their land. Each volunteer project includes instructions, a project/purpose overview, objectives, scope and a safety briefing from our staff as well as relevant educational information.

Nathan Gregory conducts census of ladies'-tresses orchids on Burke 1. Photo by Mike Crupi

Collaboration with Bridge House

OSMP manages two long-term work contracts with Bridge House Ready to Work (RTW) and Mile High Youth Corps (MHYC) of Denver to assist with providing practical skills-based learning across the city. Bridge House RTW provides a pathway to self-sufficiency for individuals experiencing homelessness through paid jobs and vocational training support services for individuals re-entering the workforce, in addition to stable housing. To meet shared goals, community volunteers work with Bridge House RTW crews for one-day projects, creating opportunities for crew members to work side-by-side with our volunteers. MHYC addresses employment and educational needs of youth, with a primary focus on conservation. In 2015-2016, MHYC contributed 2,176 hours on thinning projects at Teller Lakes.

ENGAGING YOUTH AND FAMILIES

OSMP strives to engage youth through educational programming, skill building and recreational opportunities. In describing the ever-growing divide between children and the outdoors, child advocacy expert Richard Louv directly links the lack of nature in the lives of today's younger generation – he calls it "nature-deficit" – to some of the most disturbing childhood trends, such as the rises in obesity, attention disorders and depression. Louv's book, "Last Child in the Woods," was the first book to bring together this growing body of research, indicating that direct exposure to nature is essential for healthy childhood

development, and for the physical and emotional health of children and adults. Louv's second publication directs attention toward adults, including parents, and describes how they are also affected by a deficit of nature. In response, OSMP staff is strategically working toward offering practical programs and simple ways to rebuild and strengthen the bond between people and nature.

MEADOW MUSIC

Meadow Music is composed of a short family hike followed by a nature music concert. OSMP has typically offered about 10 of these events each summer since 2001. Its popularity has significantly grown since then. Today, concerts now draw an average of 640 participants. The music urges families to get outside and offers some hiking tips, such as what to do if you see a mountain lion and how to prepare for Colorado weather.

NATURE PLAY

OSMP is providing a series of "Nature Play Dates," where families can explore the outdoors together in an unstructured setting and enjoy peeking under rocks and balancing on logs. The benefits of playing outdoors are huge, such as stirring children's creativity and helping them to build strong bodies. This is a stepping-stone effort with a greater goal of teaching parents and caregivers how to be comfortable in the outdoors on their own.

SCHOOL ASSEMBLIES

OSMP offers educational, music-based assemblies to schools where local naturalists/musicians conduct a program that encourages students to get into nature as an alternative to screen time. In 2017, OSMP provided this program to 17 schools. More than 6,000 students learned about local options for outdoor recreation and basic outdoor skills.

FISHING FUN FOR KIDS

To encourage angler skill building, each year we offer several, two-hour "Fishing Fun for Kids" programs for families and children. This program is best for children who have never been fishing or have limited fishing experience. Our naturalists lead participants in an exploration of fish adaptations and behaviors as well as places to go on open space to catch bass, sunfish, bluegill and carp. Equipment and bait are provided and the program is wheelchair accessible. Additionally, this program is also part of our Junior Ranger Naturalist Program, where high schoolers teach this program to 4- to 12-year-old kids.

GROWING UP BOULDER

Growing Up Boulder, a city initiative associated with the University of Colorado, engaged 95 children between 4 and 17 years old to help OSMP develop a long-term management plan. The goal was to understand current uses of Boulder's northern open space and to identify strategies that would help improve visitor experiences on 7,700 acres north of Boulder. Youth perspectives led to concrete changes to the plan and organizational shifts within OSMP, allowing for greater youth engagement in the future.

INCLUSIVE OPPORTUNITIES FOR ALL

REACHING SPANISH-SPEAKING COMMUNITIES

The Boulder area has diverse communities, with many community members who have limited English-speaking skills. Most, but not all, are native Spanish speakers. Efforts to engage the LatinX population over the last two decades have been well-received. **In 2016, the Spanish-speaking community invited our staff to participate in more LatinX events than ever before. A total of 67 bilingual presentations resulted in 1,500 connections with Spanish speakers through different programs, events and festivals.**

OSMP also collaborates with BVSD and private schools' bilingual programs, the I Have a Dream Foundation, Boulder County Head Start, Environment for the Americas, Casa de la Esperanza and the Latino Eco Festival for the Americas, My Second Home Preschool, New Horizons Preschool and many more. The department also has been asked to collaborate with Lafayette on a Great Outdoors Colorado (GOCO) grant implementation to reach out to and provide programming for Spanish-speaking families in these communities. Every year, Boulder's Intercambio de Comunidades also invites staff to guide a nature hike at their end-of-season picnic.

BILINGUAL FULL MOON FAMILY NATURE HIKE

Every spring, Boulder County Head Start hosts a "Full Moon Family Nature Hike" at Sawhill Ponds. Most of the families are Spanish-speaking or bilingual, and OSMP provides Spanish-speaking naturalists to guide the exploration into the twilight. The event is attended by 50 to 60 people of all ages, including parents and grandparents of the children in the Head Start program. For many families, it is their first experience with the open space system. The event is a leisurely meander through the ponds, where participants frequently stop to look at toads or Red-Winged Blackbirds or Canada Geese sitting on nests. Staff members give families plenty of room to explore and interact among themselves. The evening culminates as the full moon rises over the trees and lights visitors' way back to the parking lot. Many of the participants arrive unfamiliar with Open Space and Mountain Parks, but say that they will come back on their own, knowing that they are welcome.

CONNECTING THOSE EXPERIENCING DISABILITIES TO THE LAND

To help community members experiencing disabilities enjoy open space, we have updated our "**Boulder OSMP Accessible Trails and Sites**" guidebook, which provides information on our accessible trails and areas. As part of our work to connect community members with open space, we also provide presentations at retirement communities and adult daycare facilities.

In 2016, OSMP purchased seven additional wheelchairs and continued to lead experiential wheelchair hikes. Other programming has included accessible hikes, such as birdwatching with the Audubon Society and accessible flower hikes, along with presentations and field trips at the Colorado Open Space Alliance (COSA), Colorado's Advancing Environmental Education (CAEE) and the National Association of Interpretation (NAI) conferences.

Vijay Viswanathan trying out an adaptive one off, hand-crank mountain bike designed for people experiencing disabilities.
© Malcolm Daly

LGBTQIA+ OUTREACH

OSMP is working to connect LGBTQIA+ community members with nature. OSMP has worked with Lesbian, Gay, Bi-sexual, Transgender, Queer, Intersexed and Asexual (LGBTQIA+) organizations, such as TransYouth Education Services (TYES), to provide inclusive access to our trails and diverse natural landscapes.

MEMORY WALKS

OSMP partners with the Denver and Boulder Alzheimer's Association's SPARK program to provide nature programs for individuals with dementia and their families or caretakers. In expanding this program, OSMP also now offers sensory programs on a variety of trails, giving people the opportunity to be outside together and to enjoy their public land.

OSMP knows it still has work to do in creating more inclusive opportunities for our community to connect with their open space, and we are working closely with partners and the community to make that happen.

Ranger Naturalists

Since the early 20th century when a volunteer by the name of Mart Parsons patrolled Flagstaff Mountain, the city and community have worked together to enjoy and protect Boulder's open space system. Today, the strategic work of our **ranger naturalists** can be summarized by the four services described below:

- Community rangering;
- Education;
- Resource protection; and
- Public safety and well-being.

COMMUNITY RANGERING

For decades, our rangers have practiced "community rangering," working cooperatively with citizens to uphold regulations and support community values and livability. Rangers also provide services that connect visitors with the land, often through one-on-one encounters, such as responding to wildlife sightings, educating a family on poison ivy, providing directions or suggesting hikes, and answering questions about local plants and animals.

In cooperation with Boulder Emergency Services and Rocky Mountain Rescue group (RMR), rangers regularly respond to search-and-rescue calls throughout the OSMP system. Rangers work closely with the Boulder Police Department and the Boulder County Sheriff's Department on more serious emergency calls, including criminal and death investigations occurring on OSMP lands.

Rangers must be trained in these eight internationally recognized core areas:

- Basic ecology and conservation;
- Resource protection;
- Interpretation, education and information;
- Community and stakeholder relations;
- Technology and infrastructure maintenance;
- Emergency response;
- Operational planning and office, project and financial management; and
- Workplace communications and relations.

OSMP currently has 15 full-time rangers. We intend to be fully staffed by 2019, with a total of 19 rangers who all have a Colorado Peace Officer Standards and Training Certification, along with emergency medical, wildland fire and naturalist certifications. Additionally, as the budget allows, two to four limited-commission rangers support the fully commissioned rangers.

Rangers focus on promoting quality visitor experiences, protecting cultural and natural resources, and providing public safety. They accomplish this by:

- Regularly patrolling OSMP areas;
- Contacting visitors;
- Responding to illegal activity;
- Enforcing regulations;
- Addressing unsafe conditions;
- Responding to emergencies, including fires and flood;
- Helping with range management (i.e., moving cattle); and
- Providing emergency response, including search and rescue for injured and lost visitors to OSMP lands.

Rangers spend about 70 percent of their time in the field patrolling natural areas and providing customer service to the community. In the community rangering model, we train rangers to take a more focused and proactive approach to handling problems and complaints by spending more time in identified communities or sections of the system rather than on random patrols throughout the system. They also work with community members to identify and resolve issues of concern to the public.

Rangers conduct patrols on foot, on bike and on horseback throughout OSMP lands. Rangers' field operations require a ranger to be working every day of the week, including an on-call ranger for nighttime responses. Rangers also issue tickets or warnings for violations of OSMP regulations, including infractions in the parking-fee system. A large majority of the visitations to OSMP are in the Chautauqua and Flagstaff Mountain area. As a result, many visitors' complaints, emergency calls and other incidents that rangers respond to occur in this area. South Mesa and Shanahan Ridge areas are also highly visited and have a large number of incidents and calls for service.

RANGER-LED EDUCATION PROGRAMS

OSMP ranger naturalists are trained to deliver high-quality naturalist and interpretative environmental education programs to the community. Rangers must complete interpretive teaching courses where they develop and conduct environmental education programs for the public, organizations, special use groups and educational institutions. Examples include nature walks, youth programs, audio-visual programs, hikes and evening fireside talks. In 2016, rangers put on more than 40 programs. A ranger's interpretation is often a highlight of a visit to a park and helps foster the type of relationship the public has come to expect from the rangers. This relationship will continue to be a focus for OSMP.

Did you know rangers also work on resource protection projects?

In the southwestern part of Boulder's system, Townsend's big-eared bats use Mallory Cave as a maternity colony. Female bats cluster there to raise their young, and it is one of few known maternity roost locations throughout Colorado. Illegal access into the cave threatens this vulnerable species. In 2011, rangers led a collaborative effort to build a bat-friendly gate with both aesthetic and functional benefits. Since that time, research and volunteer monitoring have shown a continual increase in numbers of bats at the site.

Photo by Steve Mertz

PUBLIC SAFETY AND WELL-BEING

Our rangers also support the livability, safety and quality of life for the broader Boulder Valley community through safety and emergency response practices. This work helps connect residents with the larger natural landscape around them in practical, direct ways. For example, rangers are trained to handle critical incidents and natural disasters to ensure a proper response, with priority given to safety of life, stabilization and property conservation. We also partner with the Rocky Mountain Rescue Group, an all-volunteer organization trained and equipped for search-and-rescue on mountainous terrain and in all weather conditions. Founded in 1947, it is one of the oldest and most experienced mountain rescue teams in the country.

Another example includes the multiple initiatives designed to assist private landowners and neighborhoods in reducing the risk of fire and improving forest health. Our rangers are responsible for fire suppression on open space properties and collaborate with other OSMP staff, partners and community members on fire prevention and suppression throughout the Boulder Valley.

Sunshine-Knollwood Fire

In 2014, we collaborated with the City of Boulder Fire-Rescue Department and residents of the Knollwood subdivision on a forest-thinning project at the mouth of Sunshine Canyon near the Centennial Trailhead. This collaborative project was designed as a fire-mitigation project to create a fuel break between OSMP properties and the city.

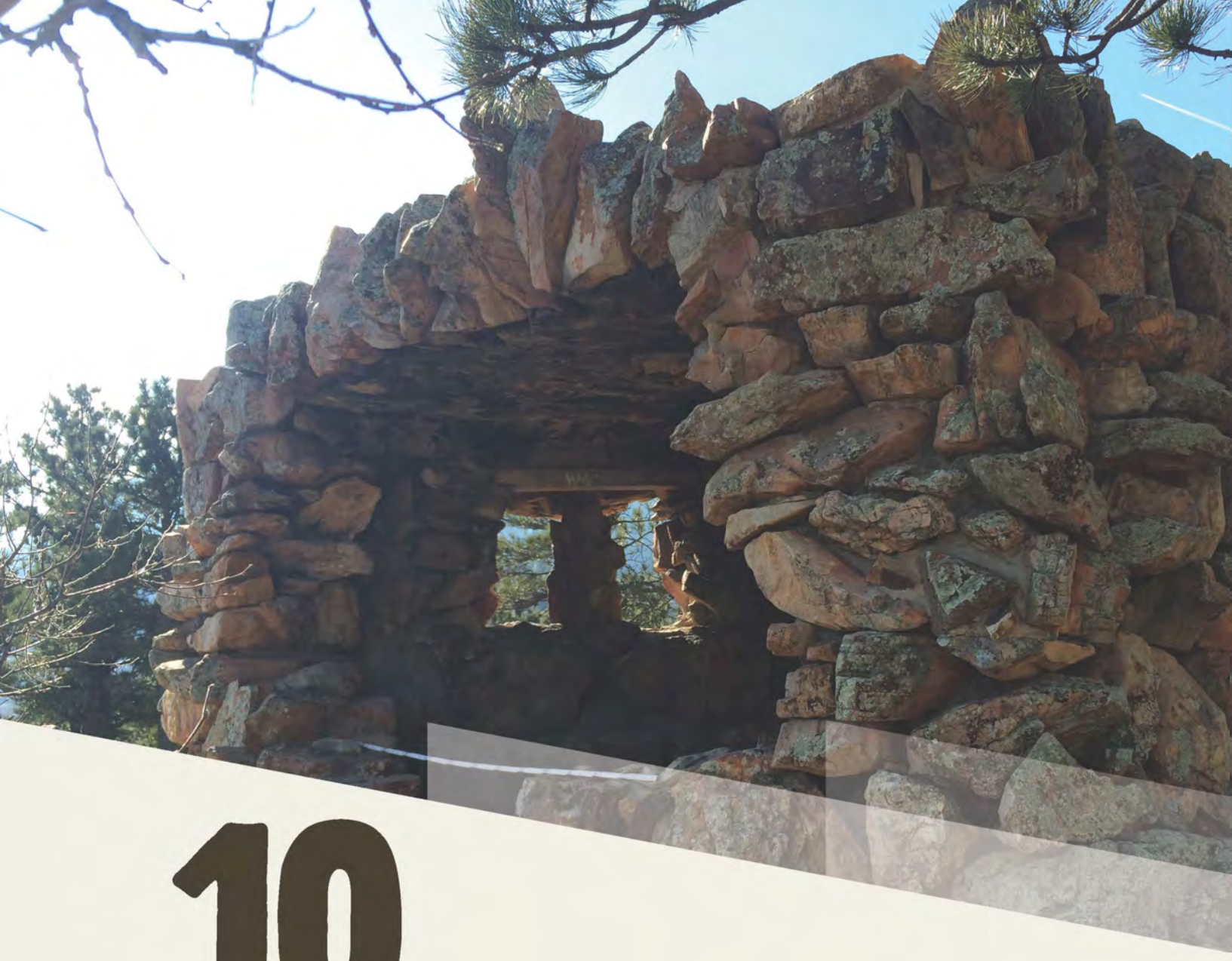
During a wildfire in March 2017, this thinning project achieved its purpose. It effectively buffered the Knollwood subdivision and city neighborhoods from the adjacent open space. Firefighters – including many of our rangers – used open space trails as firebreaks and kept the fire from moving east into the adjacent neighborhoods.

This project is just a small example of the extensive forest management work we have done across the open space system. We actively manage more than 1,500 acres of forest to help reduce fire risk and improve forest health in accordance with the city's Forest Ecosystem Management Plan (see **Chapter 5** for more information).

Firefighters work to put out a wildfire. © Heather Sherman

OSMP and Boulder Fire-Rescue Department staff work on the Knollwood fire mitigation project in 2013.

This photo shows land in the Knollwood treatment area that was burned in the Sunshine Fire. Note how many trees survived. Firefighters were able to manage the fire from existing trails (left side of picture).



10

CULTURAL RESOURCES

RELEVANT CHARTER PURPOSES:

- **Preservation of water resources in their natural or traditional state, scenic areas or vistas, wildlife habitats, or fragile ecosystems**
- **Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community**

Stone shelter in Dakota Ridge. OSMP Image

The cultural resources of Boulder's open space lands contribute significantly to Boulder's sense of place and character. This chapter provides a window into the cultural resources that Open Space and Mountain Parks (OSMP) stewards for the Boulder community, OSMP visitors and future generations. Drawing across multiple disciplines to understand the people of the past, we strive to protect important places and stories of Boulder's past by locating tangible cultural resources, evaluating their importance, preserving their significant characteristics and fulfilling their best uses.

SNAPSHOT

The cultural resources of **Boulder's open space lands contribute significantly to Boulder's sense of place and character.** Drawing across multiple disciplines to understand the people and landscapes of the past, we strive to protect important places and stories of Boulder's past by locating tangible cultural resources, evaluating their importance, preserving their significant characteristics and fulfilling their best uses.

THEMES THROUGH TIME

With more than 14,000 years of human presence across 45,000 acres, several significant themes developed describing the most tangible cultural resources on OSMP lands. These themes are broadly applicable across cultures and time, and have been demonstrated to be significant to history in Boulder or nationally.

Exploration and Settlement

Agriculture

Commerce and Production

Industry and Extraction

Engineering

Transportation and Wayfinding

Recreation and Entertainment

Tradition and Religion

1K

OSMP lands preserve critical elements of Boulder and Colorado history. While the OSMP system represents less than 10 percent of Boulder County, it contains all or parts of about 1,000 known cultural resources and uncounted scenic resources. Since 1980, **74 percent of OSMP lands has been inventoried for cultural resources**.

The oldest artifact found on OSMP lands is a Cody Complex arrowhead left by early bison hunters, estimated to be 6,000 and 7,000 years old.

CULTURAL RESOURCES

HISTORIC LANDMARKS

Hartnagle Farm
Dating to 1898, the Hartnagle Farm is also a late 19th century historic farm and dairy that is significant for its architecture and association with pioneer agriculture and the growth of agriculture in Boulder County.

1

Hunter-Kolb Farm
Dating to 1905, the Hunter-Kolb Farm is an early 20th-century historic farm that is significant for its architecture and association with the growth of agriculture in Boulder County.

2

CULTURAL LANDSCAPES

Chautauqua Historic District
Located at the base of the iconic Flatirons overlooking the Boulder Valley, the 40-acre Colorado Chautauqua has provided a variety of programs, such as concerts, debates and recreational activities since 1898. OSMP manages land within and surrounding this national historic landmark.

1

Flagstaff Mountain Cultural Landscape District
The Flagstaff Mountain Cultural Landscape District is a cultural landscape comprised of features related to recreation in the Boulder Mountain Parks.

2

Marshall Mesa Historic District
Marshall Mesa Historic District encompasses coal mining sites east of state Highway 93 that were active from 1859 through the 1940s. The first coal mines active in the state of Colorado were at Marshall Mesa.

3

SUMMARY OF EXISTING CONDITIONS

Initial estimates of deferred maintenance on historic structures suggest at least **$962,000 is needed in repairs**. This investment has been scheduled over the next ten years.

Further inventory and condition assessment of cultural resources is under way to understand broader investment needs to preserve and protect these important assets.

Cultural History

The Boulder community's relationship with the land and connections to nature have antecedents. People have lived on and enjoyed the lands now managed by OSMP for thousands of years. Their stories and pieces of the past they left behind inspire an appreciation of the diverse peoples and cultures through time and provide insights into their relationships with the land. The sights, scenes, colors and textures contained within the OSMP system shape the way people interact with natural areas, deepening the interplay among the beauty of Boulder's natural landscapes, history and cultural heritage.

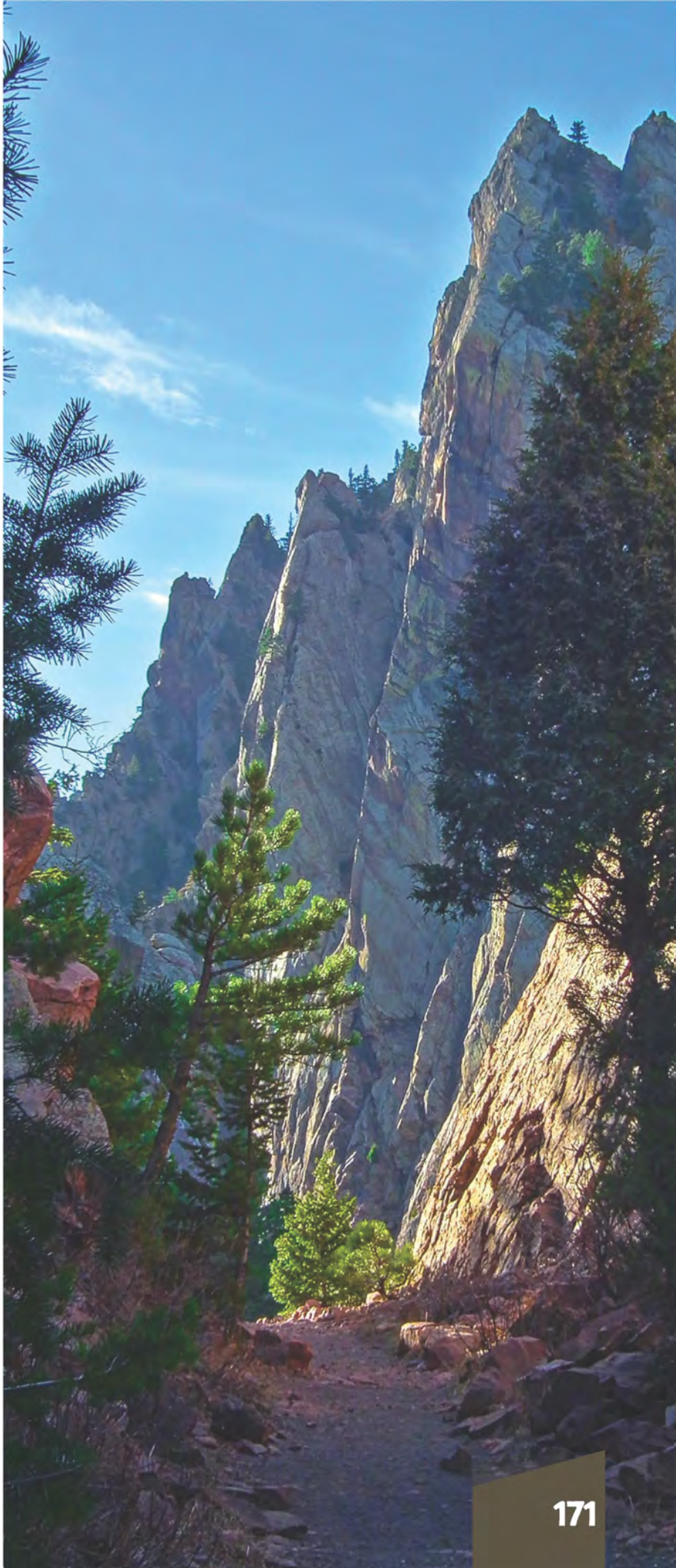
For OSMP, cultural resources refer to those tangible and intangible aspects of cultural systems, either living or dead and built or natural, that are valued by a culture. The most common and accessible types of cultural resources that OSMP manages are historic buildings, structures and objects as well as archaeological resources. A building is a resource created principally to shelter any form of human activity, like a house or barn. A structure is built for purposes other than creating shelter, such as a bridge or rock wall. An object is a construction that is primarily artistic in nature or small scale, like a statue or milepost. Archaeological resources refer to any material remains of human life or activities that are at least 50 years old and can provide scientific or humanistic understanding of the human past. Over the years, inventories or studies have been conducted on intangible cultural resources or traditional cultural knowledge and practices related to OSMP lands in addition to the oral histories collected through the Boulder Public Library's Maria Rogers Oral History program.

As previously described in **Chapter 5**, Boulder is located in an ecologically and resource-rich area. It sits at the interface of the High Plains and Foothills regions and at the confluence of major creeks that drain into the South Platte River Basin. Bounded by 1.7-billion-year-old rock to the west and 70-million-year-old sandstone and mudstone to the east, Boulder contains the history of two mountain uplifts and millions of years of fossilized life preserved in stone. Many geological strata in the Boulder area contain ideal stone types for stone tools, including cherts and quartzites for creating blade tools (Black, 2000) as well as sandstone or gneiss for creating grinding stones (Pelton, 2013). The diverse plant and animal communities are also densely distributed in Boulder County compared to other locales along the Southern Rocky Mountains. As people arrived throughout various times in the past, they could access environments with plentiful and stable resources.

People have lived and thrived on lands currently part of OSMP since arriving in the Boulder Valley after the most recent glacial period or Ice Age about 125,000 to 14,000 years ago. A rare cache of very early stone tools, the Mahaffy Cache, was unearthed within a half mile of OSMP lands. In a study jointly authored by Dr. Doug Bamforth, a University of Colorado professor of archaeology, and Dr. Robert M. Yohe II, protein residue from large game species that vanished from Colorado over 12,000 years ago has been detected (Yohe & Bamforth, 2013). People that left the stone tool cache behind traveled far to obtain the distinct materials in the cache, including tiger chert from northeast Utah and Kremmling chert from central Colorado, and invested substantial time in crafting the tools. From this time to about 8,000 years ago, people consistently relied on big-game hunting as they incorporated changing local food sources following the end of the Ice Age.

The earliest cultural artifacts found on OSMP lands include a fragment of a Folsom culture projectile point that dates to about 10,000 years ago (Gleichman and Black, 2001) and a projectile point that dates to about 6,000 years ago (Benedict, 1997). The climate in Colorado had dried by 7,500 years ago, (Feiler & Anderson, 1993), causing people to seek year-round homes at higher altitudes above and west of Boulder.

The Fowler Trail, named for the family that ran the famous swimming pool in the once popular summer resort in Eldorado Springs, cuts through Dakota Sandstone cliffs of Eldorado Canyon. © Jack Sasson



The Front Range and plains experienced a dramatic increase in human populations about 2,000 years ago. This period coincides with the emergence of cord-marked pottery, bow and arrow technology, and delineation of longer-term settlement areas. Cultural groups that are recognizable today were present in Boulder as early as 1,000 years ago. The material remains from both mountains and plains peoples are distinguishable in style and form. **The Ute were present in the Boulder Mountain Parks area 300 to 400 years ago and may have migrated seasonally to the area as early as 700 years ago based on linguistic evidence** (Miller, 1986). The Arapaho and Cheyenne migrated from the Great Lakes region 400 to 500 years ago and settled in eastern Wyoming and north-central Colorado (Eggan, 1955) (Hilger, 1952). The Arapaho and Cheyenne lived seasonally in the Boulder area until the mid-19th century. The Arapaho and Cheyenne were assigned territory south of the North Platte River, north of the Arkansas River and east of the Rocky Mountains through Section 5 of the Horse Creek Treaty or Fort Laramie Treaty of 1851 (National Park Service, 2017).

European and American explorers and fur trappers began visiting the Boulder area in the early 19th century (Ferris, 1983). Once free gold was discovered in the South Platte basin in 1858 and the Pikes Peak Gold Rush began in 1859, more than 100,000 people swarmed into Cheyenne and Arapaho territory (Brown, 1985). Gold-seeking prospectors led by Thomas Aikens, coming from Fort Saint Vrain, found their way to Boulder in October 1858. The party camped near the area known today as Settlers Park. Shortly after their arrival, Chief Niwot of a nearby Southern Arapaho camp near Valmont Butte told the party to leave. Eventually, an uneasy peace was reached after he was promised that the camp was temporary (Coel, 1988). After finding gold at Gold Run in January 1859, the party stayed and formed the Boulder City Town Company in February 1859. Boulder City grew quickly as commercial production increased to support mining camps in the mountains above. By July 1860, more than 850 men, women, and children lived in the greater Boulder area (Lambrecht, 2008).

Tensions rose as American settlers unlawfully occupied Tribal lands, escalating into increased attacks on major transportation routes, including the Overland, Cherokee and Smoky Hills trails. Federal agents attempted to relocate bands of the Arapaho and Cheyenne to a small reservation along the upper Arkansas River through the Treaty of Fort Wise in 1861. Terms of the Fort Wise Treaty went unmet, causing conflicts between American settlers and Tribes (Kappler et al., 1904). Other conflicts, such as the Dakota War of 1862, continued elsewhere in the Great Plains region, increasing tensions between American settlers and Tribes. Peace efforts stalled between the Colorado Territorial government and Tribal leaders. On Nov. 29, 1864, the First and Third Colorado Cavalry of United States Volunteers killed an estimated 230 Arapaho and Cheyenne people, mostly women and children, at Big Sandy Creek in southeastern Colorado. Forty-six men from Boulder County are known to have participated in the event known as the Sand Creek Massacre. The massacre was part of the Colorado War and the longer-standing Plains Indian Wars, which continued into the early 20th century. By 1870, American Indian Tribes that once called the Boulder Valley home were dispossessed from their territories to reservations in western Colorado, Oklahoma, Utah and Wyoming.

Boulder was incorporated as a city in 1871 and maintained a stable economy, serving neighboring mining towns as a supply and transportation hub for agriculture and mining. Homesteaders began settling on

South Boulder Creek as early as 1858. Gregory Canyon Road and Bear Canyon Road were constructed by 1861 to support transportation of supplies to and from nearby mining camps (Pettem, 1996). When the Colorado Central Railroad arrived in Boulder in 1873, transporting goods and people became more economical (Pettem, 1996). Sub-bituminous coal from the Northern Colorado coalfields near Marshall was mined in the winters from the 1860s through 1940s and transported to surrounding communities where the fuel could be sold for profit (Simmons & Gleichman & Sampson, 1995). As Boulder grew and became more accessible, travelers came from near and far to experience Boulder's amenities, including the Boulder Sanitarium, the Colorado Chautauqua and the Boulder Mountain Parks among others.

In 1898, the citizens of Boulder voted in favor of buying the Batchelder Ranch property, containing the present-day Chautauqua area. The land was purchased to create Texado Park, named after the Texas-based professors who started the Colorado Chautauqua and to house the new Chautauqua. The City of Boulder also purchased the eastern slope of Flagstaff Mountain and the Russell-Austin tract to provide outdoor recreation opportunities for Chautauqua visitors and residents. Immediately following the completion of the Dining Hall and Auditorium at Chautauqua, the City of Boulder was granted 1,800 acres of land adjacent to the Flagstaff Mountain property from Congress in 1907. Acquisition of the Boulder Mountain Parks was nearly complete after the City of Boulder purchased 1,200 acres of the Arapaho National Forest in 1912 for $1.25 an acre (Reilly-McNellan, 1995). The City of Boulder and local clubs – such as the Lions Club and Front Range Climbing Club and New Deal program workers – built and rebuilt roads, trails, shelters, lodges, ski hills and other recreation infrastructure for the Mountain Parks, from the construction of Flagstaff Road in 1906 through completion of the Mesa Ski Hill in 1940. By 1927, more than 50 miles of roads and trails had been constructed throughout the Boulder Mountain Parks (Boulder City Chamber of Commerce, 1927) (Randolph, 1920).

Late summer sunset view of Chautauqua Trail going up through the meadow toward the Flatirons. © Stephen Shelesk

In 1967, the citizens of Boulder had a wild idea: They voted to approve a .40-percent sales tax to acquire and maintain open space. It marked the first time in American history that citizens in any U.S. city specifically voted to tax themselves for open space. As taxes were extended to fund additional public lands acquisitions, the City of Boulder bought increasing amounts of land with profound ecological and cultural significance.

Significant Themes

With over 14,000 years of human presence across 45,000 acres, several significant themes describe the most tangible cultural resources on OSMP lands. A theme is a means of organizing complex ideas about human history into coherent patterns based on elements that have influenced the development of an area during one or more periods of prehistory or history. These themes are broadly applicable across cultures and time, and have been demonstrated to be significant to history in Boulder or nationally.

EXPLORATION AND SETTLEMENT

People have explored and settled in the Boulder Valley many times through the past. Traces of how groups entered the area and their immediate actions are important to understanding the past. Examples of historically important exploration and settlement properties on OSMP lands include:

- Graffiti on rock likely from a fur trapper or explorer in the mid-19th century;
- Findings of the Desert Side-Notched arrowhead, which is typically associated with historical Ute migrations throughout Colorado; and
- Homestead sites, such as the McGilvary Cabin, that date to initial settlement of American migrants in the 1860s.

COMMERCE AND PRODUCTION

Commerce and production of goods are essential economic activities in all parts of the past. On OSMP lands, commercial sites represent spaces that primarily facilitated the exchange of money and goods while production sites encompass the range of spaces in which raw materials would be processed into usable goods. Examples of historically and culturally important commercial and production properties on OSMP lands include:

- Chipped stone scatters where raw stone materials were worked into functional and recognizable blade tools; and
- Coal mining company stores near Marshall where labor or currency was exchanged for goods.

TRANSPORTATION AND WAYFINDING

Transportation creates critical infrastructure used to convey people and materials between places. Routes can be formal or informal and constructed or incidentally created. Transportation routes tell us about how people understand geography and their surroundings. Examples of historically and culturally important transportation and wayfinding properties on OSMP lands include:

- Culturally modified trees, which typically include peeled or blazed ponderosa pine tree trunks;
- Wagon and toll roads – such as the Boulder Canyon Wagon Road, which was in operation before 1860; and
- Masonry and sod house stagecoach stops that provided cover and respite for travelers before cars were invented and available.

RECREATION AND ENTERTAINMENT

Recreation is distinguishable from other themes in that activities are done for enjoyment away from work. Since 1898, city-owned public lands have supported a wide variety of recreation and entertainment activities. Examples of historically important recreation properties on OSMP lands include:

- The first golf course in Boulder, the Chautauqua Links, that operated from 1914 through 1919; and
- Sunrise Circle Amphitheater was constructed by the Civilian Conservation Corps (CCC) in 1934 for educational and cultural public programs.

AGRICULTURE

Both ranching and farming are important human activities that reflect early historical use of OSMP lands. These properties embody important periods and changes in agricultural production in Boulder County through pioneer agriculture (1859-1896), growth of agriculture (1897-1919) and new directions in agriculture (1920-1967) (Wolfenbarger, 2006). Examples of historically important agricultural properties on OSMP lands include:

- The Hogan Farmstead along South Boulder Road, where the Hogan family still works the same farmland from the 1860s;
- The Doudy-DeBacker-Dunn Ranch near the South Mesa Trailhead, site of the first grist mill in Boulder County dating to 1860; (Gleichman & Tucker & Griffits, 1993) and
- The Viele-Van Vleet Farm where Lynn Van Vleet bred famous Arabian horses in the 1940s.

HEALTH AND WELLNESS

The pursuit of health and wellness has historically been associated with Boulder since the 1890s and strongly influenced the economy and culture of the city. The most visible health and wellness institution is the Boulder Colorado Sanitarium, which operated between 1894 and 1957. Examples of historically important health and wellness properties on OSMP lands include:

- The Dakota Ridge Stone Arch, Shelter and Footbridge, features of interest constructed before 1920 for Boulder Sanitarium patients and visitors to get them outside and breathing the therapeutic air; and
- Bathing pools constructed by the CCC in 1936 in Bluebell Canyon.

INDUSTRY AND EXTRACTION

Industry and extraction properties are features of the built environment related to extraction of raw materials or resources and tell us about relationships between people, their environments and technology. Examples of historically important industry and extraction properties on OSMP lands include:

- Mount Sanitas Quarries that produced Lyons sandstone pieces for construction of many buildings on the University of Colorado Boulder campus in the early 20th century (Pettem & Raines, 1999);
- Logging camps in the western Boulder Mountain Parks, which document the history of timber extraction in the Boulder Mountain Parks since 1870; and
- Mining shafts and drainage passages that remain from extensive coal extraction on Marshall and Davidson mesas.

ENGINEERING

Engineered properties are components or features of the built environment that embody novel or are representative of historically important designs and construction methods. Important engineering properties are often considered significant under another area of significance. In Colorado, common examples of important engineered properties include water control, power generation, transportation, communication infrastructure and waste disposal. Examples of historically important engineered properties on OSMP lands include:

- Central Colorado Power Company Transmission Line that spans Boulder Canyon, Bear Canyon, and Shanahan Ridge toward South Boulder Creek. The line, constructed between 1907 and 1910, was the first to provide electricity from the historic Boulder Canyon Hydroelectric Plant to the Boulder community and its design made headlines at the time of its construction (Electrical World, 1907); and
- Silver Lake Ditch conveyed water from Silver Lake through five segments of wooden flumes that were pinned to the sheer rock walls of Boulder Canyon from 1888 to 1947. The design and construction of the wooden flumes are novel for the Front Range.

TRADITION AND RELIGION

Many cultures recognize traditional, religious or otherwise sacred locations related to their cosmology and cultural traditions. These locations can be difficult to characterize, but can be considered as specially designed features or designated spaces where individuals or a group of people come to perform acts of devotion, veneration, or other ceremonies and associated gathering activities. The importance of traditional or religious beliefs and their associated locations is not diminished by displacement from the location. Knowledge of some traditional and religious properties is not meant to be shared outside of specific cultural groups. Examples of traditional and religious properties on OSMP lands considered appropriate for discussion include:

- Valmont Butte, a volcanic dike near Boulder Creek that is partially owned and managed by OSMP, is considered a sacred place of prayer and contemplation to multiple tribes, including the Cheyenne, Arapaho, Ute and Lakota among others; and
- The Hartnagle Farm House, constructed in 1898, served as the Valmont Presbyterian Church for a short time under the tenure of Pastor Frank DaMetz.

Cultural Resources Policies and Plans

OSMP lands preserve critical elements of Boulder and Colorado history. While the OSMP system represents less than 10 percent of Boulder County, it contains all or parts of about 1,000 known cultural resources and uncounted scenic resources. Since 1980, 74 percent of OSMP lands has been inventoried for cultural resources. These inventories have documented more than 1,000 known cultural resources on or related to OSMP lands, 244 of which are considered historically significant based on the National Register of Historic Places eligibility criteria. Substantially more known and unknown resources on OSMP lands are likely to be historically and culturally significant and require investigation or reevaluation.

No comprehensive plan or strategy has been developed to guide management of all cultural and scenic resources across the system. Guidance on managing these resources is addressed in the OSMP's Long Range Management Policies (LRMP), past area management plans as well as agreements with the State of Colorado and several American Indian Tribal governments. For example, the following plans provide guidance for cultural resources management: Boulder Valley Comprehensive Plan (2017), Boulder County Comprehensive Plan Cultural Resources Element (1994), A Sense of Place, a Sense of Purpose: A Plan for the City of Boulder's Historic Preservation Program (2013), Open Space Cultural Resource Guidelines (1990), Open Space LRMP Policies (1995), OSMP Visitor Master Plan (2005), resource and area management plans, including the North Trail Study Area Plan (2016), Eldorado Mountain/ Doudy Draw Trail Study Area Plan (2006), Marshall Mesa/Southern Grasslands Trail Study Area Plan (2005) and the West Trail Study Area Plan (2011).

In response to City Council's 2016 Resolution 1190, (City of Boulder, 2016) which declared the second Monday of October as Indigenous Peoples Day, OSMP is participating in citywide efforts to engage more with American Indians to fulfill terms of the resolution and to move toward right relations.

DESIGNATED CULTURAL LANDMARKS AND LANDSCAPES

Through its mission to document and preserve important stories and places from the past, OSMP seeks designation of important places to history as historic landmarks, historic districts, historic properties, cultural landscapes and other appropriate designations. OSMP owns and actively manages seven designated historic resources and owns land within two designated historic resources. The current designations are not exhaustive of landmarks, districts and landscapes eligible for designation on OSMP lands. Designation of important historic and cultural properties is an ongoing priority of our Cultural Resources program.

Designation of important resources helps to recognize, preserve and protect important locations in local, state and national history. Designated resources may be provided with additional protections from development as well as eligible for preservation grants, tax

HISTORY HIGHLIGHT:

Franklin D. Roosevelt, the United States' 32nd president, created the CCC in April 1933 to curtail rampant unemployment among young men. Eventually providing work for more than 3 million men, the CCC's mission was to both create and revamp outdoor areas across the United States (Salmond, 1967). The CCC is credited with having restored or constructed thousands of recreation structures and for their development of a rustic architectural style based upon a combination of pioneer building skills and techniques, principles of the Arts and Crafts movement and the premise of harmony with the landscape (Tweed 1978).

break incentives and technical preservation assistance. Most importantly, designated resources are promoted within the community, making them visible venues to recognize and celebrate Boulder's rich cultural heritage.

CITY OF BOULDER HISTORIC LANDMARKS

The City of Boulder defines a historic landmark as an individual building or other feature or an integrated group of structures or features on a single lot or site having a special character and historical, architectural or aesthetic interest or value (City of Boulder, n.d.). OSMP owns and manages one City of Boulder Historic Landmark, the **Viele-Van Vleet Farmstead**, a historic farmstead that has been in continual use since its construction in the late 1880s. The farm includes 15 buildings and is significant for its vernacular architecture.

CITY OF BOULDER HISTORIC DISTRICTS

The City of Boulder defines a historic district as a contiguous area or discontiguous areas containing a number of sites, buildings, structures or features having a special character and historical, architectural or aesthetic interest or value and constituting a distinct section of the city (City of Boulder, n.d.). OSMP owns land within one City of Boulder Historic District, the **Chautauqua Historic District.** Located at the base of the iconic Flatirons overlooking the Boulder Valley, the 40-acre Colorado Chautauqua has provided a variety of programs, such as concerts, debates and recreational activities, since 1898. The district is significant for its distinct architecture from 1898 through 1930 and association with the larger Chautauqua movement, which promoted self-improvement and education in local communities. Frederick Law Olmsted Jr., the notable landscape designer of the early 1900s, considered the "wild" lands surrounding Chautauqua's formal landscape to heighten the aesthetic of Chautauqua. A portion of these "wild" lands owned by OSMP fall within the historic district and are managed collaboratively to maintain and enhance the integrity of the cultural landscape.

Since the Chautauqua Historic District was designated in 1978, it was designated by the United States Secretary of the Interior as a National Historic Landmark in 2006. Nationally significant historic places are designated as National Historic Landmarks because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. Colorado Chautauqua remains the only National Historic Landmark in Boulder County as well as the only operating Chautauqua west of the Mississippi River.

BOULDER COUNTY HISTORIC LANDMARKS

Boulder County defines a historic landmark as a structure, site or district which has been designated by the Historic Preservation Advisory Board because of its historic significance and importance to the county (Boulder County, n.d.) OSMP owns and manages two Boulder County

Historic Landmarks, the **Hunter-Kolb Farm** and the **Hartnagle Farm**. Dating to 1905, the Hunter-Kolb Farm is an early 20th-century historic farm that is significant for its architecture and association with the growth of agriculture in Boulder County. Dating to 1898, the Hartnagle Farm is also an early 20th-century historic farm and dairy that is significant for its architecture, and association with pioneer agriculture and the growth of agriculture in Boulder County. Both landmarks are undergoing rehabilitation for future use by agricultural tenants. Both farms are also considered eligible for inclusion to the National Register of Historic Places under the Agricultural Resources of Boulder County Multiple Property listing (Wolfenbarger, 2008).

BOULDER COUNTY HISTORIC DISTRICTS

Boulder County defines a historic district as a group of structures or sites, which make a coherent whole due to their similar historic significance (Boulder County, n.d.). OSMP owns and manages two Boulder County Historic Districts, the **Marshall Mesa Historic District** and the **Flagstaff Cultural Landscape District**. Marshall Mesa Historic District encompasses coal mining sites east of state Highway 93 that were active from 1859 through the 1940s. The first coal mines active in the state of Colorado were at Marshall Mesa (Smith, 1989).During the boom years of the 1860s and 1870s, the population of Marshall exceeded that of Boulder. The Marshall area was home to many important figures in local history as well as violent labor strikes in 1914 and 1927 (Sampson, 2008). An underground coal fire that had been burning since 1930 on Marshall Mesa was extinguished and revegetated in 2017. To learn more about Marshall and coal mining, download the **Walking through History on Marshall Mesa** brochure.

The Flagstaff Mountain Cultural Landscape District is a cultural landscape comprised of discontiguous features related to recreation in the Boulder Mountain Parks. The district included eight individual features, including the Bluebell Shelter and Stone Shelter built by the Lions Club, the Jaycees-built Wood Shelter, as well as five structures and buildings constructed or rebuilt by the Civilian Conservation Corps (CCC), such as the Halfway House, Sunrise Circle Amphitheater, Green Mountain Lodge, Morse Well and Chapman Drive. These recreation facilities have been in use since their construction between 1919 and 1935, serving a century's worth of visitors and tourists to the Boulder Mountain Parks. These features are symbolic of Boulder's characteristic outdoors experiences. Learn more and visit the features on a self-guided **Flagstaff Mountain History Hike**.

LISTINGS ON THE NATIONAL REGISTER OF HISTORIC PLACES

In addition to city and county-level registers of important places in history, the National Park Service administers a federal register of important places in history, the National Register of Historic Places. The National Register of Historic Places is the federal government's official list of districts, sites, buildings, structures, objects and cultural properties deemed worthy of preservation, which was created through the National Historic Preservation Act of 1966. Properties listed on the National Register of Historic Places are afforded no protections but receive other associated benefits of listing previously mentioned. OSMP owns and manages three properties listed on the National Register of Historic Places, including the **Fox Mine Office**, the **Fox Stone Barn** and the **Martha Weiser House**.

The Fox Mine Office is a single-story, vernacular masonry building once used as an office for the Fox Mine from 1883 through 1936. The Fox Mine was a large, long-lived and economically important mine in Marshall. The Fox Mine was considered to have an integral role in stabilizing the economies of Marshall, Boulder County and Colorado (Gleichman, 1996). While the building was removed from its original location and placed at its current location at the Hogan Farm before 1996, it is among the best-preserved buildings that represent this period of history at Marshall Mesa. The Fox Mine Office is significant for its association with the first coal mines in the state of Colorado at Marshall Mesa.

The Fox Stone Barn is a single-story, vernacular masonry building built by and used by the Fox family at the Fox Mine. It was constructed similar to the Fox Mine Office, using locally quarried buff sandstone. It has served multiple purposes through its 120-year history, such as a barn, granary and residence (Gleichman, 1996). The Fox Stone Barn, like the Fox Mine Office, was relocated to its current location on the Hogan Farm. The Fox Stone Barn is significant for its embodiment of pioneer agriculture and vernacular style in the Marshall area.

The Martha Weiser House is a two-story, wood frame house, which was built and lived in by Martha "Ricky" Weiser from its construction to her death. The house is an excellent example of a modern Contemporary-style residence in Boulder County. Boulder was experiencing rapid population growth when the house was designed and constructed, influencing many of the houses constructed in that time to follow Modern design trends. The house's character-defining features include a low-pitched butterfly roof, visible roof beams, open floor plan, natural materials, deep overhanging eaves and a strong horizontal emphasis among others (Chrisman, 2013).

OSMP Image

HISTORY HIGHLIGHT:

The home of open space and conservation proponent Ricky Weiser was placed on the National Register of Historic Places in October 2013. Ricky Weiser worked tirelessly to promote natural and cultural heritage conservation in Boulder and Colorado. The house was built in 1963 at the height of Boulder's Midcentury Modern architectural movement. She commissioned family friend and local master architect, L. Gale Abels (1927-1995), to design the house among the Fox Hills sandstone ledges of what is now the White Rocks State Natural Area in rural Boulder County, 8 miles northeast of the City of Boulder.

11

SCENIC RESOURCES

RELEVANT CHARTER PURPOSES:

- **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**
- **Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community**

Plains Cottonwood trees reflected in Teller Lake.
© Doug Goodin

This chapter provides a window into the scenic resources that the City of Boulder's Open Space and Mountain Parks (OSMP) Department stewards for the benefit of the Boulder community and visitors. Preservation of scenic areas and vistas is one of OSMP's chartered purposes. In the 2016 Resident Survey, residents revealed that "aesthetic purposes" is the most important reason for having Open Space and Mountain Parks. The landscape around Boulder and within the OSMP system provides for scenic qualities that are greatly appreciated by residents and visitors alike. As staff seek to understand and celebrate the relationships between people and the land, between culture and nature, so too, can residents, visitors, students and partners appreciate scenic qualities of the landscape for their contributions to an inspired quality of life.

SNAPSHOT

A flat-plains landscape consisting of long grasses, fenced field patterns, sweeping views of the Rockies and working farmlands transitions into rolling foothills of open areas punctuated by patches of ponderosa pine, within which boulders and bedrock exposures are visible. The landscape encompassing the OSMP system is particularly striking and preservation of Boulder's landscape is important. In the 2016 Resident Survey, residents revealed that **"aesthetic purposes" is the most important reason for having Open Space and Mountain Parks.**

LANDSCAPE CHARACTER ASSESSMENT

Landscape Features

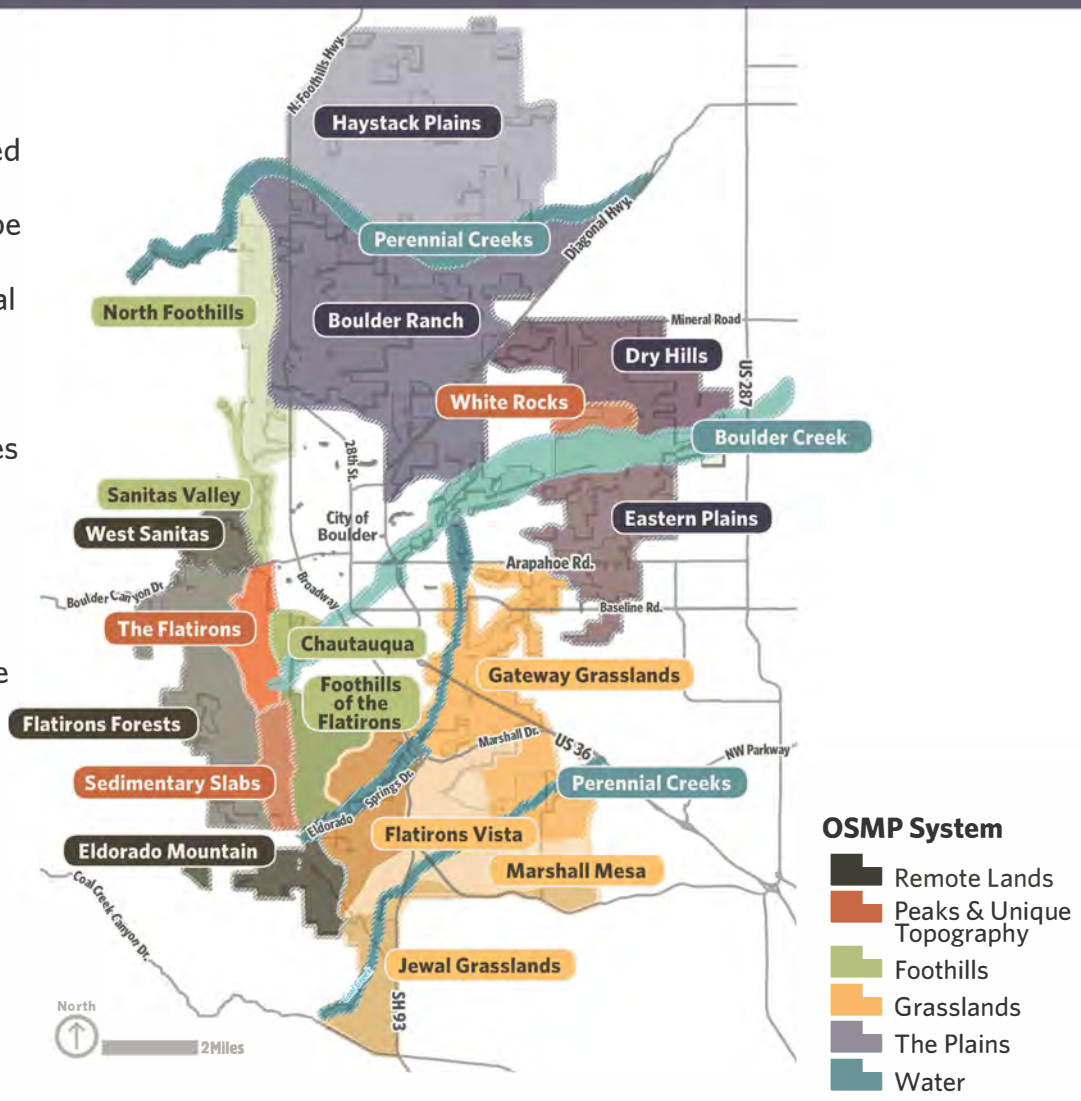
Character-giving features of OSMP lands range from the Flatirons, set into the foothills and visible for miles, to the vast prairies that mark the entrance from the east to the system. The range of features can be sorted into five categories to provide a starting point for articulating the landscape.

- Peaks and Unique Topography
  - Bear Peak
  - Doudy Draw
  - Flatirons
  - Marshall Mesa
  - South Boulder Peak
  - Boulder Creek
  - Devils Thumb
  - Foothills
  - Mesa Tops
  - White Rocks
  - Canyons
  - Drainages
  - Green Mountain
  - Piedmont
  - Chautauqua Meadow
  - Eldorado Mountain
  - Haystack Mountain
  - Mount Sanitas
  - Davidson Mesa
  - Flagstaff Mountain
  - Hogback Ridge
  - South Boulder Creek
- Recreation Features
  - Amphitheaters
  - Gathering Areas
  - Visitor Centers
  - Campgrounds
  - Pavilions
  - Lodges & Shelters
  - Wildlife Viewing Areas
  - Water Features
  - Trailheads
  - Access Points
  - Parking
  - Scenic Pullouts
  - Hard-Surface Paths
  - Soft-Surface Paths
  - Mountain Bike Trails
  - Rock Climbing Walls
  - Hang-gliding
  - Scenic Overlooks
- Natural Features
  - Cliffs & Talus
  - Rock Outcroppings
  - Ponderosa Pine
  - Mixed Conifer
  - Forest Opening
  - Cottonwoods
  - Lakes & Ponds
  - Streams & Wetlands
  - Waterfalls
  - Natural Springs
  - Tallgrass Prairie
  - Mixed Grass Prairie
- Agricultural Features
  - Grazed Lands
  - Dryland Crops
  - Ditches
  - Orchards
  - Diversified Croplands
  - Farmsteads
  - Ranches
  - Relics of Working Lands
  - Fences
  - Barns
- Cultural Features
  - Historic Structures
  - Isolated Settlements
  - Coal Mines
  - Stone Quarries
  - Gravel Extraction
  - Historic Timber Operations
  - Historic Trails & Routes
  - Railroads
  - Colorado Chautauqua
  - Mount Sanitas Sanitarium

SCENIC RESOURCES

Preliminary Landscape Types

The diversity of OSMP landscapes can be expressed as distinct types based on the patterns of the landscape features present and the visual composition of natural landscape and human context. The relationships of the major features, landforms, natural processes and views define each of OSMP's scenic landscape types. The preliminary types identified within the system have been mapped and will be refined over time to support scenic resource management.



SUMMARY OF EXISTING CONDITIONS

Preliminary findings of the landscape character assessment have been reported. To complement this assessment, a pilot scenic-view inventory using 17 viewpoints representing a wide-range of views across the system has been conducted. **Generally, scenic values across the systems are high.**

In the future, this pilot study will be expanded to evaluate scenic viewpoints across the OSMP system. This systemwide scenic view inventory, including scenic quality and view importance results, will be incorporated into the landscape character assessment to **support management decisions about how best to manage the scenic landscape character that supports Boulder's community identity**.

Overview

The landscape encompassing the OSMP system is particularly striking. A flat-plains landscape consisting of long grasses, fenced field patterns, sweeping views of the Rockies and working farmlands transitions into rolling foothills of open areas punctuated by patches of ponderosa pine, within which boulders and bedrock exposures are visible. In this area, National Park Service-designed trailheads, complete with rustic buildings lead to winding roads that traverse the foothills into steep, bouldered terrain that provide narrow views of the iconic Flatirons, surrounding peaks and the city below. The rocky uplands of the foothills transition into alpine tundra and mountainous peaks within the Indian Peaks Wilderness. The wilderness straddles the Continental Divide and several of its largest mountains are visible from the Boulder Valley.

The landscape character of Boulder's environs has increasingly been recognized both regionally and nationally over the last century. The 20th century encouraged the establishment of a culture of recreation that was often connected to health and general wellness as people from across the United States visited or relocated to the area. Interactions with the landscape around the city fostered an ethic of preservation among the residents of Boulder, from the 1910 Olmsted report calling for the preservation of the mountain backdrop, to the notable establishment of the "Blue Line," which restricts development above 5,750 feet (Plantico, 2008:4-9), to "Project Greenslope", a forest management initiative during the 1970s that sought to protect the mountain backdrop from the effects of mountain pine beetle. The "Blue Line" policy was guided primarily by aesthetic concerns about the impacts of development to the character of the foothills above the community. In recent decades, acquisitions have helped to conserve the farmlands and grasslands that surround the north, east and south sides of the City.

Methods of Evaluation

Preservation of Boulder's scenic landscape character is one of OSMP's chartered purposes. Resident and visitor experiences within the OSMP system are largely informed by visual considerations. For example, residents appreciate the ability to view the Flatirons from their yard or the downtown mall and often choose to recreate in aesthetically pleasing areas. Visitors often take time away from recreation activities to appreciate scenery through interaction with formal and informal features, such as overlooks, benches, gathering areas, trails and trailheads. The community enjoys access and proximity to nature and the scenic views, beauty, peace and experience provided by OSMP areas either through driving and seeing OSMP lands, by enjoying views out from within the city's urban core or by getting out on OSMP lands to see close-up views or panoramic vistas. Because the Boulder community seeks experiences based on scenery and landscape features, it is important for OSMP to understand baseline conditions in order to manage scenic quality and fulfill the purposes of the Boulder City Charter.

Before 2016, there had been no direct effort on the part of OSMP to formally inventory and evaluate its scenic resources. This is not unusual, as scenic management of landscape character and views is a recent practice, especially for local municipalities. Furthermore, OSMP does not currently have a protocol in place for managing such resources on a systemwide basis. The lack of formal inventory and evaluation does not imply that scenic value was not considered by OSMP in the past. Management of the landscape has always been undertaken with an eye toward maintaining such values. However, the lack of a comprehensive methodology has resulted in case-by-case assessments of projects that do not necessarily constitute an objective system for managing scenic value.

For the last 20 years, federal and state land managers have developed methods for evaluating and planning for the management of scenic resources to preserve the character of the landscape and its associated views. The examples in the following list show how land managers have institutionalized comprehensive scenic resource programs that include resource inventories of landscape character and vistas, visual impact assessment procedures, and visual impact mitigation components. The approaches' purpose is to protect the scenic qualities we appreciate in a landscape.

U.S DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

- Goal: Minimize the impacts of surface-disturbing activities on visual resources and maintain the scenic value of tracts of land for the future.
- Method: **Visual Resource Management (VRM) System**

U.S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

Goal: Assist parks to identify and understand their scenic resources, enabling them to manage landscape character and viewsheds through best-management practices and collaboration efforts with stakeholders, such as federal, state, and local agencies and private landowners.

- Method: **Visual Resource Program (VRP) and Visual Resource Inventory (VRI)**

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

- Goal: Provide an overall framework for inventory, analysis, and management of scenery on National Forest lands. USFS uses Scenery Management System (SMS) as the framework for integrating scenery management data into Forest Service planning.

Method: **Scenery Management System (SMS)**

UK LANDSCAPE CHARACTER ASSESSMENT

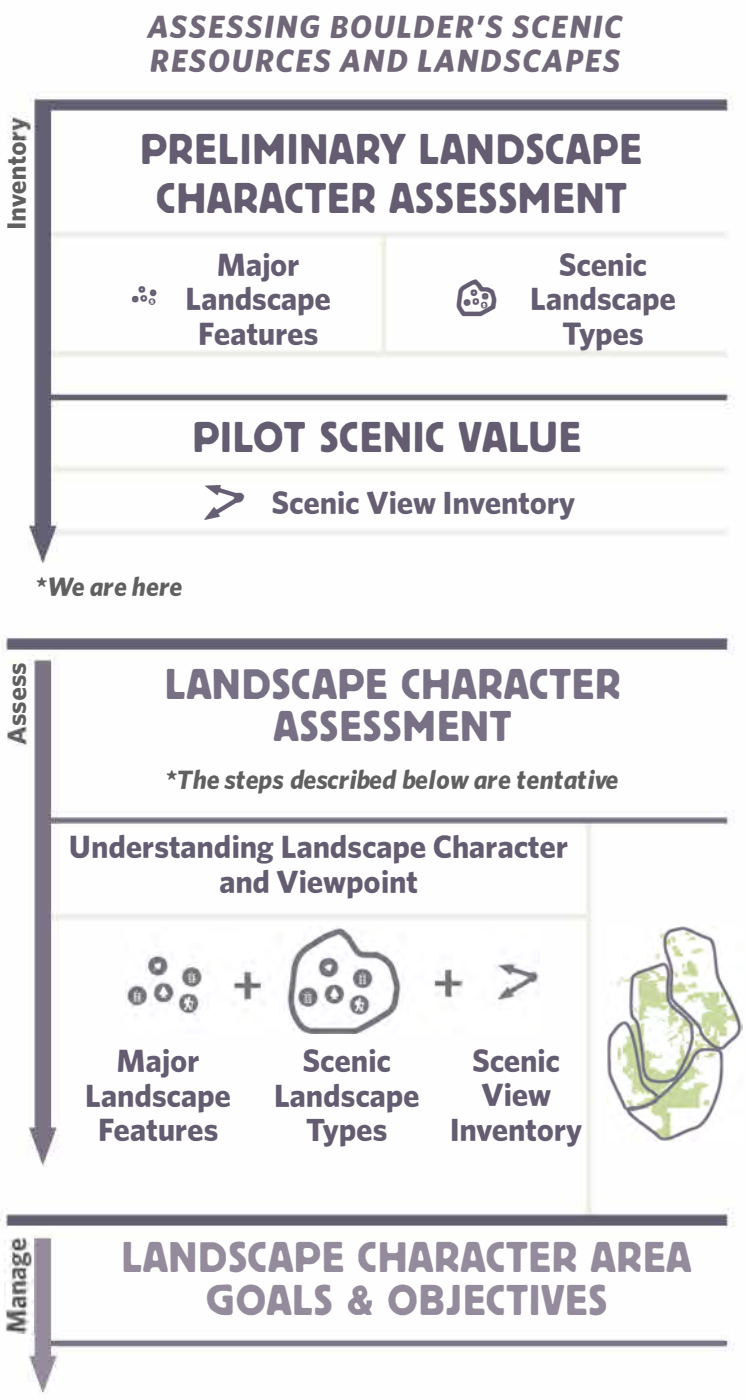
Goal: Seeks to identify and explain unique combinations of elements and features that make landscapes distinctive.

- Method: **Landscape Character Assessment (LCA)**

OSMP APPROACH TO SCENIC RESOURCE MANAGEMENT

Given OSMP's responsibility to manage scenic resources, which is incorporated into various guiding plans and policies, OSMP staff undertook a process to create a draft scenic resource management system in 2016. The Boulder approach considered two major aspects of scenic management: landscape character and scenic views. The methodology used to evaluate these two aspects is based on a modified version of the National Park Service (NPS) Visual Resource Program (VRP) protocol and the U.K.'s Landscape Character Assessment approach used in locations like the Columbia River Gorge (Meyer and Sullivan 2016; Natural England and Department for Environment, Food & Rural Affairs 2014). This System Overview Report affords an opportunity to provide an update on the work-to-date. An initial phase of the landscape character assessment has been completed, resulting in draft landscape types that describe the scenic qualities of the landscape. In addition, 17 viewpoints have been inventoried to describe the scenic quality of the views and the viewpoints from which people can enjoy them.

Figure 11.1: Understanding Landscape Character and Viewpoints



Preliminary Landscape Character Assessment

A landscape character assessment acts as a tool "to understand, and articulate, the character of the landscape. It helps us identify the features that give a locality its 'sense of place' and pinpoints what makes it different from neighboring areas" (Natural England and Department for Environment, Food & Rural Affairs, 2014). Boulder's Preliminary Landscape Character Assessment first identifies major landscape features, then looks at the distribution of these features in combination with landscape typologies such as the color, form and texture to determine landscape types. The final step, yet to be undertaken, will be the formation of landscape character areas that contain various landscape types and the integration of the scenic view inventory, described later in this chapter. This framework will further our understanding of the landscape and inform future decisions. The assessment can inform preservation of the scenic qualities we identify as important to the community, mitigate against impacts and be sensitive to improvements that affect character.

The maps, images and descriptions on the following pages demonstrate initial staff work to better understand the landscape character within the OSMP system. Over the next few years, staff will advance this process to refine the landscape types and develop a full landscape-character assessment. Please note that these landscape types described do not conflict with or replace existing management-area designations. Rather, they help us understand and communicate the diverse range of landscape features and characteristics that we are familiar with and help forge Boulder's identity.

DEFINITIONS

Major Landscape Features: Prominent or eye-catching elements, like tree groves, rock escarpments, fields, barns, rolling hills, settlements, running creeks, rustic buildings or mesas.

Scenic Landscape Types: These are distinct types of landscapes that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the Front Range, but whenever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land use and settlement pattern.

Landscape Character Areas: These are single, unique areas that are the discrete geographical areas that make up a series of landscape types. Each has its own individual character and identity that distinguishes one area from another.

MAJOR LANDSCAPE FEATURES

As an early first step in a larger assessment process, the department identified major landscape features that the community is familiar with and easily recognize as they move through the landscape. The character-giving features of OSMP lands consist of natural features like cliffs, drainages and grasslands as well as built or developed features like quarries, crop lands and trailheads. These features are mapped and their distribution across the system is reviewed to develop draft landscape types that have common features or characteristics as well as iconic or unique features. The range of features can be sorted into the following categories to provide a starting point for articulating the landscape:

Agricultural Features
- Grazed Lands
- Dryland Crops
- Ditches
- Orchards
- Diversified Croplands
- Farmsteads
- Ranches
- Relics of Working Lands
- Fences
- Barns

Natural Features
- Cliffs & Talus
- Rock Outcroppings
- Ponderosa Pine
- Mixed Conifer
- Forest Opening
- Cottonwoods
- Lakes & Ponds
- Streams & Wetlands
- Waterfalls
- Natural Springs
- Tallgrass Prairie
- Mixed Grass Prairie

Recreation Features
- Amphitheaters
- Gathering Areas
- Visitor Centers
- Campgrounds
- Pavilions
- Lodges & Shelters
- Wildlife Viewing Areas
- Water Features
- Trailheads
- Access Points
- Parking
- Scenic Pullouts
- Hard-Surface Paths
- Soft-Surface Paths
- Mountain Bike Trails
- Rock Climbing Walls
- Hang-gliding
- Scenic Overlooks

Cultural Features
- Historic Structures
- Isolated Settlements
- Coal Mines
- Stone Quarries
- Gravel Extraction
- Historic Timber Operations
- Historic Trails & Routes
- Railroads
- Colorado Chautauqua
- Mount Sanitas Sanitarium

Peaks and Unique Topography
- Bear Peak
- Doudy Draw
- Flatirons
- Marshall Mesa
- South Boulder Peak
- Boulder Creek
- Devils Thumb
- Foothills
- Mesa Tops
- White Rocks
- Canyons
- Drainages
- Green Mountain
- Piedmont
- Chautauqua Meadow
- Eldorado Mountain
- Haystack Mountain
- Mount Sanitas
- Davidson Mesa
- Flagstaff Mountain
- Hogback Ridge
- South Boulder Creek

PRELIMINARY SCENIC LANDSCAPE TYPES

The diversity of OSMP landscapes can be expressed as distinct types based on the patterns of the landscape features present and the visual composition of natural landscape and human context. The relationships of the major features, landforms, natural processes and views define each of OSMP's scenic landscape types. These types are shown in the **Landscape Types** map below. The preliminary types identified within the system are as follows:

LEGEND

OSMP System

REMOTE LANDS
- Eldorado Mountain
- Flatirons Forests
- West Sanitas

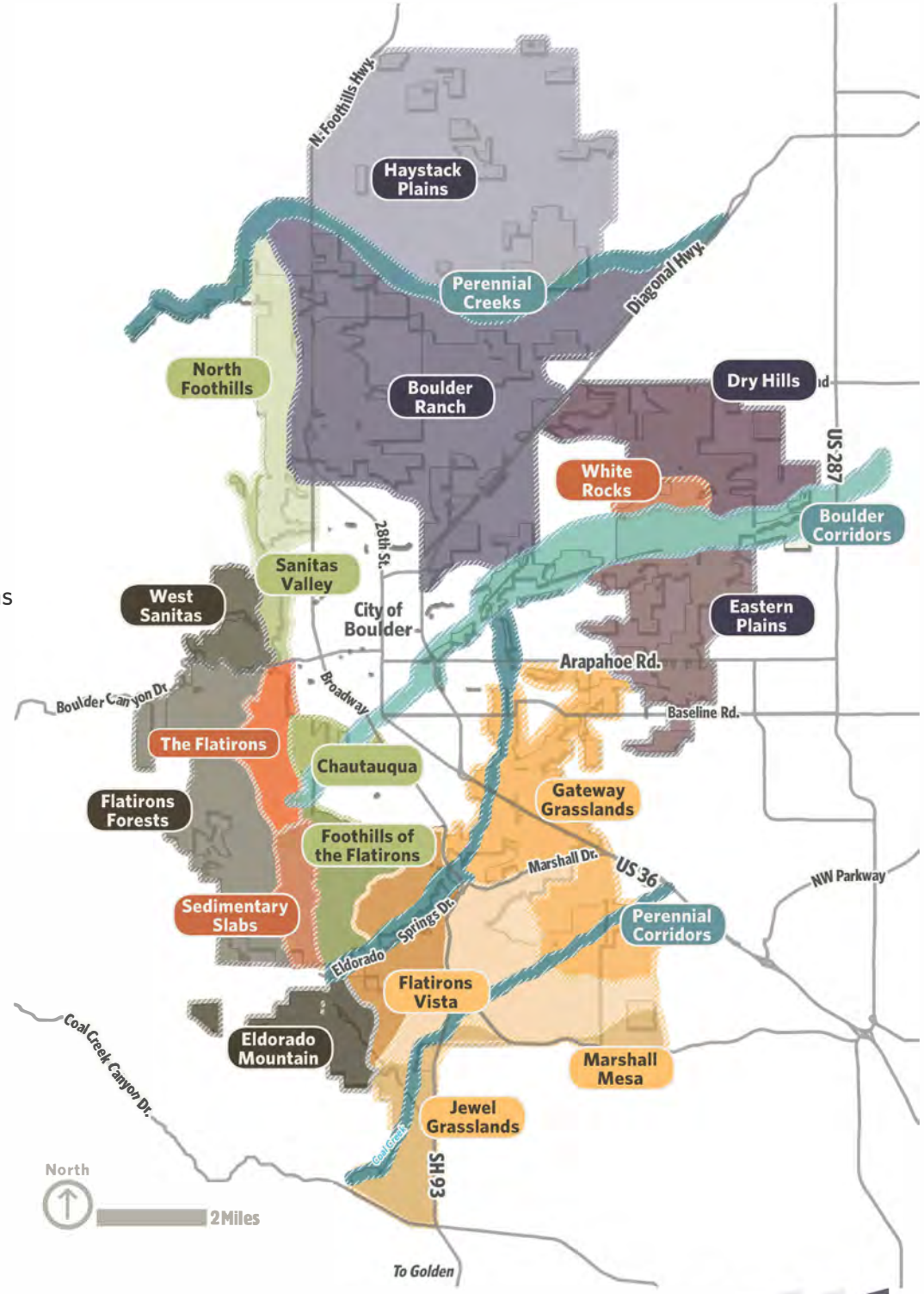
PEAKS AND UNIQUE TOPOGRAPHY
- The Flatirons
- White Rocks
- Sedimentary Slabs

FOOTHILLS
- North Foothills
- Sanitas Valley
- Chautauqua
- Foothills of the Flatirons

GRASSLANDS
- Flatirons Vista
- Marshall Mesa
- Gateway Grasslands
- Jewel Grasslands

THE PLAINS
- Haystack Plains
- Boulder Ranch
- Dry Hills
- Eastern Plains

WATER
- Boulder Creek
- Perennial Corridors



ELDORADO MOUNTAIN

KEY SCENIC CHARACTERISTICS

- Expansive shrub-lands and prairie grasses
- Dense stands of ponderosa pines and forest openings
- North and south trending valleys
- Moderate to steep vertical relief

FREQUENT LANDSCAPE FEATURES

Color

- ☑ Rich color combinations, contrast and variety
- ■ Some intensity and variety in colors
- ■ Subtle color variations

Form

- ☑ Dominant features and exceptionally intriguing landforms
- ☐ Prominent features complemented by rolling landforms
- ☐ Expansive landforms with subtle landform changes

Texture

- ☑ Rich expression of rough, irregular and complex textures
- ■ Smooth, regular and generally uniform in texture

Uniqueness

- ☐ Rare within the Front Range
- ■ Distinctive of Boulder
- ☐ Fairly Common within the Front Range

FLATIRONS FORESTS

KEY SCENIC CHARACTERISTICS

- Rock outcroppings and steep vertical relief
- Dense stands of mixed conifers
- Limited views toward the Front Range
- Remote system of trails and moderate recreation use

FREQUENT LANDSCAPE FEATURES

Color

- ☑ Rich color combinations, contrast and variety
- ■ Some intensity and variety in colors
- ■ Subtle color variations

Form

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- ☐ Prominent features complemented by rolling landforms
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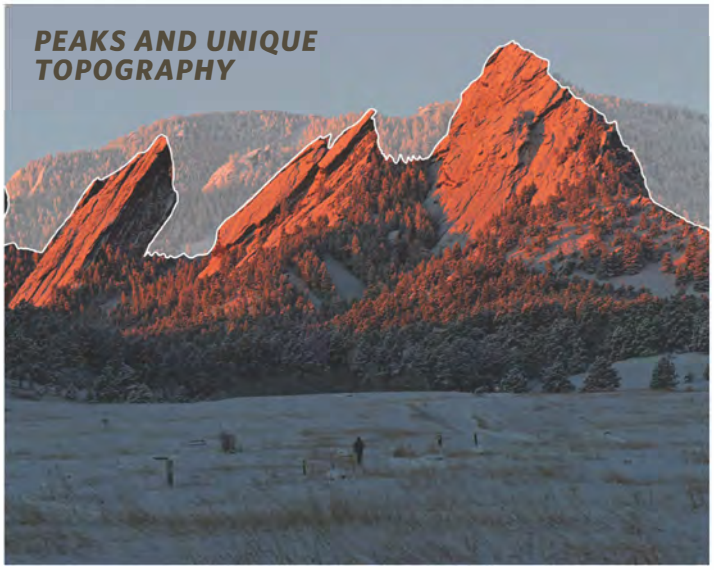

WEST SANITAS

KEY SCENIC CHARACTERISTICS

- Steep vertical relief
- Dense stands of ponderosa pines
- Remote system of trails
- Some recreation amenities

FREQUENT LANDSCAPE FEATURES

REMOTE LANDS

Color

- ☐ Rich color combinations, contrast and variety
- ☑ Some intensity and variety in colors
- ☐ Subtle color variations

Form

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THE FLATIRONS

KEY SCENIC CHARACTERISTICS

- Prominent sandstone slabs
- Scattered stands of ponderosa pines
- Popular vantage points of the Front Range
- High density of trails

FREQUENT LANDSCAPE FEATURES

Color

- ☑ Rich color combinations, contrast and variety
- ☐ Some intensity and variety in colors
- ☐ Subtle color variations

Form

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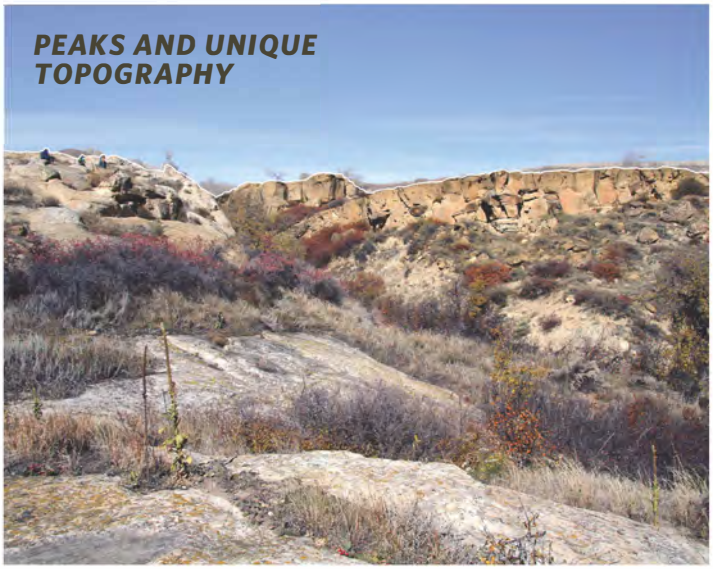

WHITE ROCKS

KEY SCENIC CHARACTERISTICS

- Unique protrusion of white sandstone
- Outcroppings among prairies
- Steep vertical relief
- Interface of mountains and plains

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [ ] Some intensity and variety in colors
- [x] Subtle color variations

Form

- [x] Dominant features and exceptionally intriguing landforms
- [ ] Prominent features complemented by rolling landforms
- [ ] Expansive landforms with subtle landform changes

Texture

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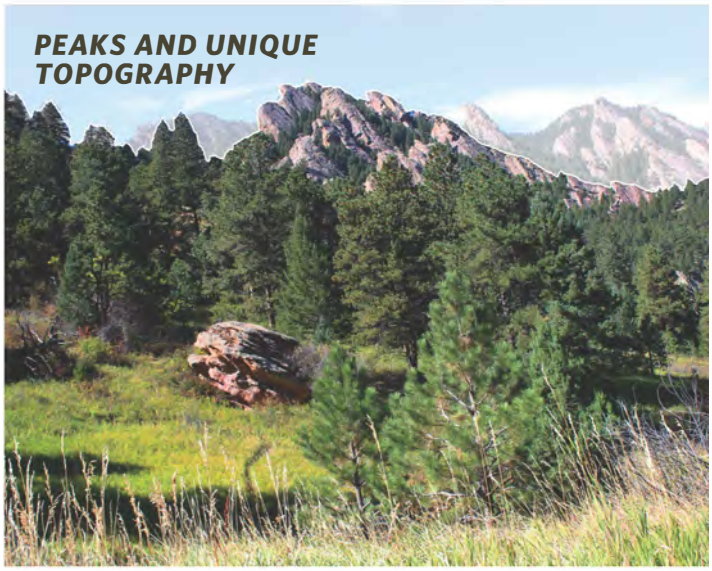

SEDIMENTARY SLABS

KEY SCENIC CHARACTERISTICS

- Broken sandstone slabs and rock outcroppings
- Ponderosa Pines
- Grassy ridges
- Frequent forest openings
- Density of trails

FREQUENT LANDSCAPE FEATURES

Color

- [x] Rich color combinations, contrast and variety
- [ ] Some intensity and variety in colors
- [ ] Subtle color variations

Form

- [x] Dominant features and exceptionally intriguing landforms
- [ ] Prominent features complemented by rolling landforms
- [ ] Expansive landforms with subtle landform changes

Texture

- [x] Rich expression of rough, irregular and complex textures
- [ ] Smooth, regular and generally uniform in texture

Uniqueness

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- Distinctive of Boulder
- Fairly Common within the Front Range

NORTH FOOTHILLS

KEY SCENIC CHARACTERISTICS

- Hogback ridges
- Expansive shrub-lands
- Tallgrass prairies
- Interface of mountains and plains

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [x] Some intensity and variety in colors
- [ ] Subtle color variations

Form

- [ ] Dominant features and exceptionally intriguing landforms
- [x] Prominent features complemented by rolling landforms
- [ ] Expansive landforms with subtle landform changes

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Uniqueness

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- [ ] Fairly Common within the Front Range

SANITAS VALLEY

KEY SCENIC CHARACTERISTICS

- North-South Valley
- Hogback Ridge
- Flagstone Quarry
- Density of trails and recreation amenities

FREQUENT LANDSCAPE FEATURES

Color

- [x] Rich color combinations, contrast and variety
- [ ] Some intensity and variety in colors
- [ ] Subtle color variations

Form

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- [ ] Prominent features complemented by rolling landforms
- [ ] Expansive landforms with subtle landform changes

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Uniqueness

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- [ ] Distinctive of Boulder
- [ ] Fairly Common within the Front Range

CHAUTAUQUA

KEY SCENIC CHARACTERISTICS

- Expansive grass and wildflower meadow
- Historical landmarks and structures
- Density of trails
- Interface of mountains and plains

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
- ☑ Some intensity and variety in colors
- ☐ Subtle color variations

Form

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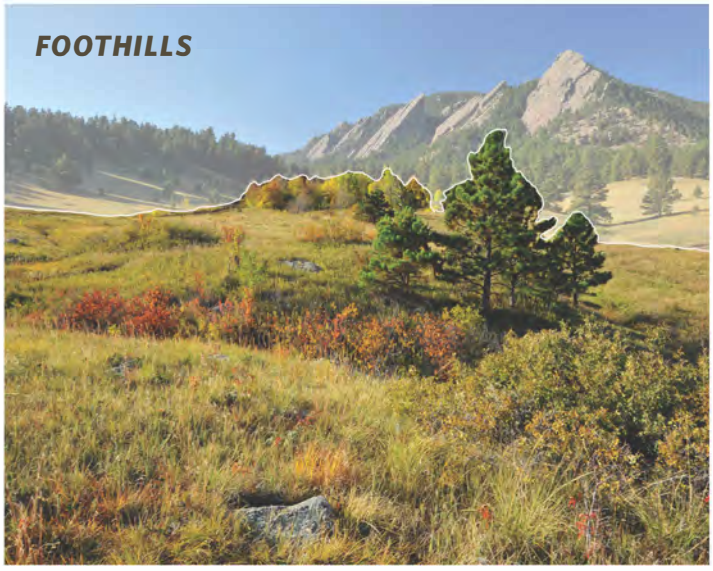

FOOTHILLS OF THE FLATIRONS

KEY SCENIC CHARACTERISTICS

- Rolling, upward slope
- Ponderosa pines and forest openings
- Ungrazed grasslands
- Interface of mountains and plains

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
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Form

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- ☐ Fairly Common within the Front Range

FLATIRONS VISTA

KEY SCENIC CHARACTERISTICS

- Gentle, upward slope
- Depressed landscapes
- Expansive prairie grasses and isolated shrubs
- Continuous views

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [ ] Some intensity and variety in colors
- [x] Subtle color variations

Form

- [ ] Dominant features and exceptionally intriguing landforms
- [ ] Prominent features complemented by rolling landforms
- [x] Expansive landforms with subtle landform changes

Texture

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Uniqueness

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- [ ] Distinctive of Boulder
- [x] Fairly Common within the Front Range

MARSHALL MESA

KEY SCENIC CHARACTERISTICS

- Elevated
- Broken mesa tops
- Expansive shrublands and prairie grasses
- Historic mining operations

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [x] Some intensity and variety in colors
- [ ] Subtle color variations

Form

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Uniqueness

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- [ ] Fairly Common within the Front Range

GATEWAY GRASSLANDS

KEY SCENIC CHARACTERISTICS

- Rolling hills and relatively flat valleys
- Stands of cottonwoods in proximity to water
- Expansive prairie grasses
- High degree of visibility

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [x] Some intensity and variety in colors
- [ ] Subtle color variations

Form

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Uniqueness

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- [ ] Fairly Common within the Front Range

JEWEL MOUNTAIN GRASSLANDS

KEY SCENIC CHARACTERISTICS

- Mesa tops
- Expansive shrublands and prairie grasses
- Interface of mountains and plains

FREQUENT LANDSCAPE FEATURES

Color

- [ ] Rich color combinations, contrast and variety
- [ ] Some intensity and variety in colors
- [x] Subtle color variations

Form

- [ ] Dominant features and exceptionally intriguing landforms
- [ ] Prominent features complemented by rolling landforms
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Uniqueness

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- [ ] Fairly Common within the Front Range

BOULDER RANCH

KEY SCENIC CHARACTERISTICS

- Rolling terrain
- Interspersed connectivity
- Current agricultural and ranching uses
- Relics of working lands

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
- ☐ Some intensity and variety in colors
- ☑ Subtle color variations

Form

- ☐ Dominant features and exceptionally intriguing landforms
- ☐ Prominent features complemented by rolling landforms
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Uniqueness

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- ▬ Fairly Common within the Front Range

HAYSTACK PLAINS

KEY SCENIC CHARACTERISTICS

- Relatively flat with topographical anomalies
- Interspersed connectivity
- Current agricultural and ranching uses
- Relics of working lands

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
- ☐ Some intensity and variety in colors
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Form

- ☐ Dominant features and exceptionally intriguing landforms
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- ▬ Fairly Common within the Front Range

DRY HILLS

KEY SCENIC CHARACTERISTICS

- Elevated and rolling terrain
- Expansive grasslands
- Relics of working lands
- Limited public access

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
- ☐ Some intensity and variety in colors
- ☑ Subtle color variations

Form

- ☐ Dominant features and exceptionally intriguing landforms
- ☐ Prominent features complemented by rolling landforms
- ☑ Expansive landforms with subtle landform changes

Texture

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Uniqueness

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- ▬ Fairly Common within the Front Range

EASTERN PLAINS

KEY SCENIC CHARACTERISTICS

- Rolling hills and relatively flat valleys
- Current agricultural and ranching uses
- Relics of working lands
- Stands of Cottonwoods in proximity to water

FREQUENT LANDSCAPE FEATURES

Color

- ☐ Rich color combinations, contrast and variety
- ☑ Some intensity and variety in colors
- ☐ Subtle color variations

Form

- ☐ Dominant features and exceptionally intriguing landforms
- ☐ Prominent features complemented by rolling landforms
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Texture

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Uniqueness

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- ▬ Distinctive of Boulder
- ☐ Fairly Common within the Front Range

BOULDER CREEK

KEY SCENIC CHARACTERISTICS

- Remnants of gravel excavation
- Riparian corridor
- Wildlife

FREQUENT LANDSCAPE FEATURES

Color

- ■ Rich color combinations, contrast and variety
- ☑ Some intensity and variety in colors
- ■ Subtle color variations

Form

- ☐ Dominant features and exceptionally intriguing landforms
- ☑ Prominent features complemented by rolling landforms
- ☐ Expansive landforms with subtle landform changes

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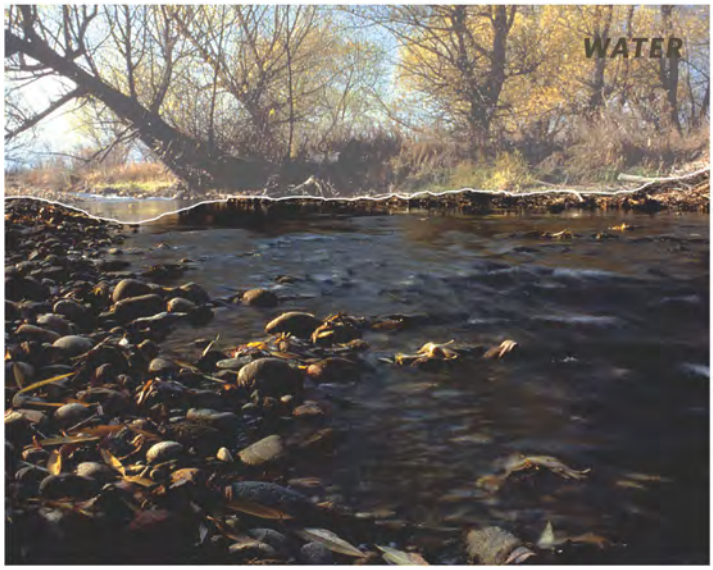

PERENNIAL CORRIDORS

KEY SCENIC CHARACTERISTICS

- Drainages with steep, eroded banks
- Lined with cottonwoods and willows

FREQUENT LANDSCAPE FEATURES

Color

- ■ Rich color combinations, contrast and variety
- ☑ Some intensity and variety in colors
- ■ Subtle color variations

Form

- ☑ Dominant features and exceptionally intriguing landforms
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- ■ Fairly Common within the Front Range

Scenic View Inventory

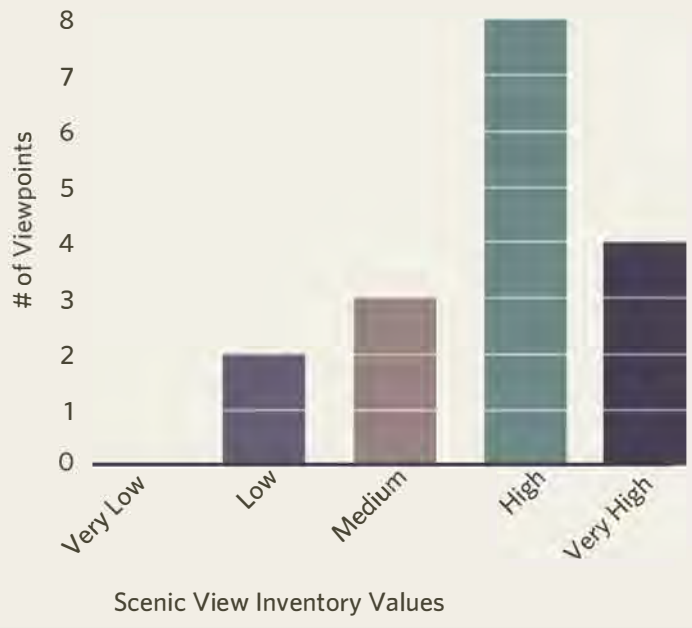
To complement the Landscape Character Assessment, OSMP adopted a modified version of the National Park Service's Visual Resource Program (VRP) protocol (Meyer, 2016) and conducted a scenic view pilot inventory. The pilot study evaluated the appropriateness of the protocol for OSMP use and provided a preliminary assessment of scenic viewpoints and their associated viewsheds. The sample identified 17 viewpoints representing a wide range of views across the system. The initial pilot revealed the NPS VRP methodology was suitable with modifications for OSMP use. Similar to the landscape character assessment, the pilot is considered preliminary and is still in a draft stage. The preliminary landscape character assessment – including major features and landscape types, coupled with the results of the scenic view inventory – will be used to develop a complete landscape character assessment in the future.

EVALUATING SCENIC VIEWS

In order to evaluate the overall scenic views and associated viewsheds within the OSMP system, staff evaluated both aesthetic (Scenic Quality) and social (View Importance) attributes using qualitative measures. Scenic Quality considers viewed landscape typologies such as form, line, color, texture, landscape type integrity and others, which are combined into a Scenic Quality Score. View Importance considers socially defined values such as viewpoint infrastructure condition and investment, visible cultural resources and major landscape features, as well as visual impacts. These values are combined into a view importance score. Both the Scenic Quality and View Importance scores are then combined to produce a Scenic View Inventory Value (SVIV) which reflects the overall scenic value of a viewpoint and its associated viewshed.

The inventory findings revealed SVIV across the system are generally high, based on the relatively small number of viewpoints assessed. Screening from vegetation was one of the reasons for low SVIV scores (Figure 11.2).

Figure 11.2: Scenic Values of OSMP Viewpoints and Viewsheds



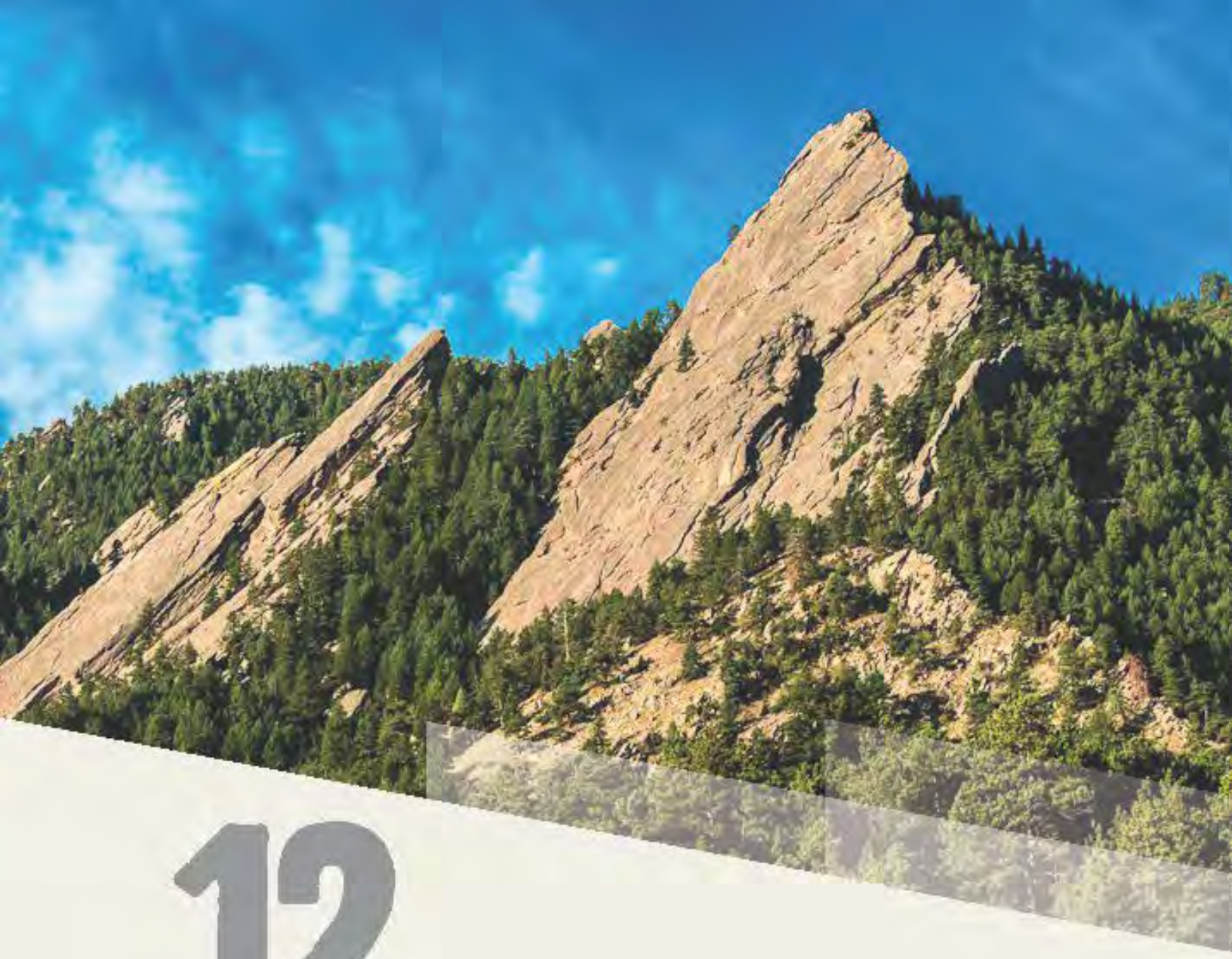
The study also found that:

- Ephemeral effects such as atmospheric haze and pollution tend to decrease the quality of the viewshed at high-elevation;
- Iconic features – such as the Flatirons, NCAR, the major peaks of the Rockies, a valley floor from above, an old barn, a waterfall, the Boulder Star or a prominent mesa – all contribute to the quality of a viewshed by providing scale and a focus for the viewpoint.

A Viewpoint with a High Scenic Quality (top) and a Viewpoint with Low Scenic Quality (bottom)

Next Steps

In the future, the pilot study will be expanded to evaluate scenic viewpoints across the OSMP system. This systemwide inventory will include assessment of scenic quality, view importance and viewpoint selection criteria. These aspects of the future systemwide scenic view inventory will be incorporated into the full landscape character assessment to support management decisions about how best to manage the scenic landscape character that supports Boulder's community identity.



12

LOOKING TO THE FUTURE: EMERGING TRENDS AND FUTURE DIRECTIONS

This chapter provides information on trends and management approaches for each charter purpose:

- Natural areas and species of special value
- Water, landscapes and ecosystems
- Passive recreation
- Agriculture
- Limiting sprawl
- Urban shaping
- Floodplain protection
- Aesthetics and quality of life

SNAPSHOT

The master plan process is an opportunity to think about the future, and future thinking can help us face potential challenges with greater creativity, empathy, and optimism (McGonigal, 2017). As we think about our treasured open space lands, what conditions or trends may affect our future capability to uphold the **Open Space and Mountain Parks (OSMP)** purposes defined in the charter? Given our current approach to managing these conditions or trends, what strategic policy direction will best prepare us to meet the needs of the future?

Topics that we have identified as being impactful to the future of open space include:

- Current perspectives on our relationship to nature;
- Ecological health;
- Biodiversity;
- Natural disasters;
- Water;
- Population and demographic change;
- Youth and families;
- Accessibility;
- Inclusion;
- Working landscapes;
- Stewardship and enjoyment;
- Technological advances;
- Health and well-being;
- Operational change and financial health;
- Mineral rights on open space lands; and
- Climate change and resilience.

Adobe Stock Image

LOOKING TO THE FUTURE: EMERGING TRENDS AND FUTURE DIRECTIONS

WHAT TRENDS, HOPES OR CONCERNS ARE IMPORTANT TO YOU?

We introduce many of these trends as initial questions to explore in the master plan process. Community members are encouraged to reflect upon these questions and ultimately, help identify focus areas for the forthcoming master plan. Initial questions to help start the conversation include:

1. How do we best steward nature?
2. How do we prepare for the impacts of climate change?
3. What could an increase in population and visitation mean for the future?
4. Who will visit in the future and how can we manage the system inclusively for all groups?
5. How could ownership of mineral and oil and gas rights affect open space (e.g., oil and gas development)?
6. What impacts and opportunities will technology bring?
7. What operational and financial futures do we anticipate?

HOW WILL THE NEXT 50 YEARS BE DIFFERENT THAN THE PAST?

REGIONAL/LOCAL CONTEXT

At the end of the second decade of the 21st century, there is less land available for acquisition across the country and in the Boulder Valley. Boulder open space sales tax increments that fund acquisitions are scheduled to sunset in 2018 and 2019. Population in the front range is growing, demographics are changing, fewer children are connecting with nature and visitor use is increasing. At the same time, the effects of climate change are being felt locally, nationally and globally. Invasive species are affecting OSMP's ability to conserve important landscapes, and resilience to wildfires and flooding is a major focus for the City of Boulder and other communities along the Front Range.

IMPLICATIONS FOR THE FUTURE

What strategic policy can best address the rapid rate of change and increasing challenges facing stewardship of the system? The City of Boulder has worked to preserve and improve the OSMP system through a series of management plans, put in place over several decades to reflect changing demographics and community needs. Current and future trends require a more comprehensive review of policies that will occur in this master plan process through community engagement and planning investigation. The full content of Chapter 12 provides further information on the forecast for implications of trends.

CURRENT MANAGEMENT APPROACHES

The OSMP master plan process is a systemwide tool that relates to existing Boulder values, charter purposes and planning efforts. In planning for the future, OSMP staff is committed to this inclusive master plan process and invested in understanding national best practices through regional roundtables and collaboration with local, state and federal agencies.

Introduction

The previous chapters offer a snapshot of facts, figures, and plans describing current conditions and management approaches for Open Space and Mountain Parks (OSMP). They are informed by the Boulder City Charter purposes for OSMP, which guide how we steward the land. This final chapter explores OSMP in the context of emerging trends and future directions, with the intent of facilitating a discussion around two questions critical to maintaining the City of Boulder's remarkable and innovative investment:

- What conditions or trends may affect our ability in the future to uphold the OSMP purposes defined in the charter?
- Given our current approach to managing these conditions or trends, what strategic policy direction will most prepare us to meet the needs of the future?

This chapter begins with an exploration of big picture trends that may affect more than one charter purpose in the future. For each of these broader trends, we explore the regional and local contexts, highlight potential implications or management needs in the future and share our current management approach to addressing them*. We then lay out the same information as it relates to each charter purpose.

We introduce many of these trends as initial questions to explore in the master plan process. Community members are encouraged to reflect upon these questions, refine them or add more questions and, ultimately, help identify focus areas for the forthcoming master plan.

*Please note that these charts do not convey a comprehensive listing of all current and relevant policies. Rather, they highlight a sampling to broadly characterize our current management approach. As the master plan process advances, other relevant policies will be brought to bear on the development of strategies in the master plan.

Big Picture Trends and Questions for the Future

Responding to both current conditions and emerging trends, OSMP's systemwide master plan will create a vision for Boulder's natural heritage that builds on the past 120 years and inspires a trajectory for continued stewardship in the future. As such, certain questions will help guide the development of this forward-thinking plan. These questions are only the beginning of a conversation with the community. *We encourage community members to help shape our shared vision for the future.*

1.

HOW DO WE BEST STEWARD NATURE?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context
OSMP has a legacy of protecting and stewarding nature over the last 120 years. How do we continue this legacy over the next 50 years given many interacting trends and changing dynamics?

Major challenges to nature conservation over the next 50 years might include drier, hotter conditions (more on climate change in Question 2 on the following page), more frequent and intense natural disasters and more invasive plants and pests. For example, the Front Range has seen an increase in droughts, fires, and floods in recent history that have had major ecological and financial impacts.

Restoration is a key stewardship tool used to return degraded areas to their natural states and recover from disasters or degradation, but can restoration remain effective given the pace of environmental change? Can we restore habitats to have even more ability to resist change and recover from disturbance? What are the attributes that make a habitat resilient in the first place?

As the Front Range population grows, so too has the interest in outdoor recreation, reflected by the booming outdoor industry in Colorado. However, a global review of scientific studies indicated that 93 percent of all articles surveyed revealed at least one negative impact of recreation on wildlife (please see **Chapter 8** for more information). For example, trail use can flush wildlife and disturb acoustic environments. Trail use also can facilitate the movement of weeds and pests, cause erosion and damage vegetation. How do we provide high-quality visitor experiences while also minimizing recreation impacts to natural resources? With a growing population living in close contact with forests, wildfires are also a key concern. How do we avoid catastrophic wildfires that threaten life, property and air quality while ensuring forests burn with enough frequency to remain healthy?

RELEVANT CHAPTERS

- **Chapter 1**
- **Chapter 5**
- **Chapter 9**

MANAGEMENT APPROACHES

- Boulder Valley Comprehensive Plan
- Open Space Long-Range Management Policies
- Systemwide Management or Geographic Area Plans
- **Related Plans and Ongoing Needs**

Sustainability Framework:
Environmentally Sustainable Community
Climate Commitment:
Wildland Ecosystems
Urban Ecosystems

- **FOREST ECOSYSTEM MANAGEMENT PLAN**
- **GRASSLAND ECOSYSTEM MANAGEMENT PLAN**
- **VISITOR MASTER PLAN**
- **TRAIL STUDY AREA PLANS**

- Maintain, restore and preserve native ecosystems.
- Restore and improve natural, cultural, passive recreational and agricultural resources where suitable.
- Restore and conserve wetlands, riparian areas, creeks and ponds.
- Preserve ecological systems and land resources that provide habitat for native plants and animals.
- Maintain or enhance native species and their communities, along with the ecological processes that sustain them.

3.03 Native Ecosystems
The protection and enhancement of biological diversity and habitat for state and federal endangered and threatened species, as well as critical wildlife habitats, migration corridors, environmental conservation areas, high biodiversity areas, rareplant areas, significant natural communities and county and local species of concern (i.e., resources identified in the Boulder County Comprehensive Plan) will be emphasized.

3.07 Invasive Species Management
High priority will be given to managing invasive species that have, or potentially could have, a substantial impact on city and county resources or ecosystem function.

Big Picture Trends and Questions for the Future

1. CONT'D

HOW DO WE BEST STEWARD NATURE? CONT'D

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Land development across the region is also a challenge to nature conservation. As demand for housing and associated traffic increases across the Front Range, wildlife species are forced to relocate, or, if corridors don't exist, be stranded in remnant patches. Landcover conversion around Boulder's open space also impacts local climate, water quality and water retention, pollinator services and nutrient flows.

Even though interest in outdoor recreation in Colorado and the Boulder area appears to be at an all-time high, there is a competing trend that youth are increasingly uninterested or disconnected from nature. This is the next generation who will be asked to not just prepare for, but to fix the legacy of climate change we will leave behind. Strategies that directly address the relationship of natural and human communities will play an increasingly important role in the conservation and protection of biodiversity. How do we connect youth with the outdoors in ways that create a bond with nature and prepares them for future stewardship?

Implications for the Future

OSMP is committed to preserving natural environments, including creeks, habitat and their associated wildlife, as noted in the Boulder City Charter. We also engage in a large range of stewardship activities, sponsor research on conservation and offer a diversity of educational nature programs. The Master Plan is a great chance for the community to reaffirm its focus on nature conservation as a key value, and from there, work with staff to develop strategies on how to best steward nature in consideration of future challenges, changing dynamics and fiscal realities. We will need to work more with our partners across the Front Range on protecting corridors, addressing increased visitation pressures and understanding how we can better mitigate the range of human impacts facing nature as well as continuing to engage the next generation of land stewards.

2.

HOW DO WE PREPARE FOR THE IMPACTS OF CLIMATE CHANGE?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context

Climate change is a significant global challenge. In Boulder today, it is significantly drier and hotter than it was 50 years ago (Boulder's Climate Commitment, 2017), which is troublesome given Boulder is in a semi-arid climate zone where water is at a premium. An even more arid future likely awaits, and we need to prepare for it as well as engage the next generation who will have to deal directly with the impacts.

What are the impacts for ecosystems? In Colorado, we might expect upslope shifts in plants, earlier arrival of migratory birds, advanced blooming time of plants, loss of plant populations in hot microsites, increased spread of invasive species and pests, and more frequent and extreme natural disasters.

What about agriculture? More CO_2 may lead to more crop yields, but higher temperatures, lower water availability and increased winter survival of pests will likely offset those gains. The timing and availability of forage for cattle also will likely become less certain, making ranching operations more difficult.

Visitation patterns also will likely change, as fewer back-country skiing days in winter mean more Front Range days on muddy trails. In summertime, increased daytime temperatures above 95 degrees Fahrenheit may keep people inside, or steer visitation away from the most sunbaked trails and lower elevations. If wildfires become more common or smog increases, the scenic quality of Boulder also will decline. In addition, we will see impacts on existing facilities and trails, and new requests for facilities like shade structures that may increase costs.

RELEVANT CHAPTERS

Chapter 5
Chapter 9

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

- **3.10 Climate Change Mitigation, Adaptation and Resilience**
  City/County working to mitigate climate change globally and recognize climate change adaptation is an important area for consideration
- **3.15 Soil Carbon Sequestration**
  For the natural environment, the capacity of native grasslands and forests to sequester carbon will be important in city and county soil carbon sequestration efforts.

Open Space Long-Range Management Policies

- Open Space fire management programs will be designed around resource management and community objectives subject to the limitations of equipment, personnel, and safety considerations.

Systemwide Management or Geographic Area Plans

- **FOREST ECOSYSTEM MANAGEMENT PLAN**
- **GRASSLAND ECOSYSTEM MANAGEMENT PLAN**
- **AGRICULTURAL RESOURCES MANAGEMENT PLAN**

Related Plans and Ongoing Needs

Sustainability Framework:
Environmentally Sustainable Community
Climate Commitment:
Urban Ecosystems
Wildland Ecosystems

Big Picture Trends and Questions for the Future

2. CONT'D

HOW DO WE PREPARE FOR THE IMPACTS OF CLIMATE CHANGE? CONT'D

Implications for the Future

In the future, the severity and frequency of flood and fire regimes likely will cause significant damage across Open Space and Mountain Parks' trails, facilities, agricultural infrastructure and scenic quality. Additional costs may be associated with complying to new climate laws or clean energy mandates (e.g., transitioning OSMP fleet to clean-energy vehicles).

Moving forward, staff needs to identify suitable metrics and targets that address long-term resilience, a term defined as the capacity to maintain species diversity and ecological conditions in the face of the stress of climate change and the shocks of natural disasters. These plans should integrate with existing wildland-management efforts, such as ongoing forest restoration and vegetation management. As we continue to prepare for climate change, partnering with city, regional and state agencies also will grow in importance.

3.

WHAT COULD INCREASES IN POPULATION AND VISITATION MEAN FOR THE FUTURE?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context

Communities across Colorado's Front Range are anticipating significant population increases over the next three decades. By 2050, the Denver Boulder metro area could increase by 45 percent, or an additional 1.39 million people (Colorado Division of Local Affairs; State Demographer's Office, 2017). By 2040, the City of Boulder population is projected to increase nearly 12 percent, to 123,000 residents (City of Boulder, 2017). Drivers of growth include a well-educated population, government research centers, the lowest unemployment rate in the nation, easy access to quality recreation opportunities and scenic landscapes (Community Foundation, 2017).

Lending credence to this population trend, Colorado's Statewide Comprehensive Outdoor Recreation Plan reports the North Central region of Colorado, including Rocky Mountain National Park and Boulder County, is the most visited area of the state for outdoor recreation, logging in almost 140 million activity days. An activity day is defined by one day of participation by survey respondents in outdoor recreation (Colorado Parks and Wildlife, 2014). The report also finds the primary motivations for visiting natural areas or parks include participating in recreational activities, enjoying special places and spending time with family or friends. **Reflecting the statewide and regional trends, Boulder's open space, an area almost three times as large as its urban area, attracted nearly 6.25 million visits annually in 2017, up 34% from 4.7 million in 2005.**

RELEVANT CHAPTERS

Chapter 5
Chapter 8
Chapter 9

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

Open Space Long-Range Management Policies

Systemwide Management or Geographic Area Plans

- **VISITOR MASTER PLAN**
- **TRAIL STUDY AREA PLANS**

Related Plans and Ongoing Needs

Sustainability Framework:
Healthy and socially thriving community
Livable community
Accessible and connected community
Climate Commitment:
Clean Mobility

2010 City Council Identified Overarching Issue:
Multimodal access to and parking opportunities for OSMP visitors
Programs that promote public awareness of trail etiquette

- Provide for aesthetic enjoyment and provide for a passive recreation experience.
- OSMP developed facilities include passive recreation amenities, such as parking areas, picnic areas, regulation boards, trailheads, trails and bridges.
- Provide and maintain highly functional and sustainable visitor facilities.
- Ensure compatibility of passive recreational activities with long-term resource protection.
- Partner with the community in passive recreation decision-making and stewardship.
- Acquire the lands or interests to provide access to the city's open space lands and relieve the adverse effects of crowding upon resources and the visitor experience.

3.08 Public Access to Public Lands

Public access to natural lands will be provided for, except where closure is necessary to protect areas from unacceptable degradation or impacts to agriculture, habitat or wildlife, for public safety or limits on access necessary to preserve the quality of the visitor experience.

- Improve the quality of visitor experiences and increase the sustainability of trails and trailheads while conserving resources.
- Balance and integrate the activities of nature and people in accordance with the Boulder City Charter.

Big Picture Trends and Questions for the Future

3. CONT'D

WHAT COULD INCREASES IN POPULATION AND VISITATION MEAN FOR THE FUTURE? CONT'D

Implications for the Future

The increase in population numbers across the North Central region of Colorado parallels a rise in visitation to the OSMP system, a trend that will likely continue over the next decades. This rise will create stresses on a system designed to accommodate a lower number of visitors. The ability for facilities to function as intended and provide for a quality visitor experience will likely prove more difficult. For example, Boulder's Mountain Parks covering the hills on the west side of the system were planned by the National Park Service in 1937, when Boulder's population stood at about 11,000 people.

Today, many of the trailheads and gathering areas, including those on Flagstaff Mountain, have not changed much since their inception. Another example is the Ranger Cottage at Chautauqua, which receives about 80,000 visits a year and acts as a gateway for more than 700,000 visits to the Flatirons and mountain trails every year. Two single bathrooms were originally designed to deal with demand when it was at much lower visitor levels and lines now form around the cottage to visit the bathroom, reducing the quality of the experience for visitors.

Results of a 2016 Resident Survey suggest that there are areas within the OSMP system that are now perceived as overcrowded, including the Sanitas and Chautauqua areas. Similarly, nearby Eldorado State Park, with a single vehicle access point, will now stop visitors on a Saturday morning from entering when parking spaces are full within the park. While not unique to OSMP, management challenges related to increased visitation are monitored across the system, with a focus on retaining quality visitor experiences and understanding its effects on supporting infrastructure. The issue has been recognized by other adjacent departments including Jefferson, Boulder and Larimer counties. Conversations are now beginning as to how to better understand how increasing visitation may affect local public lands, and we will work on it together in the future, learning from each other and sharing solutions over the coming decade.

4.

WHO WILL VISIT IN THE FUTURE AND HOW CAN WE MANAGE THE SYSTEM INCLUSIVELY FOR ALL GROUPS?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Who will visit in the future?
Like many communities along the Front Range, Boulder is experiencing shifts in demographics that will impact future visitation of open space lands. For example, more baby boomers are choosing to age in place, and the number of employee commuters is increasing with the strong local economy. Levels of racial diversity and youth concentration, due in part to the university populations, are projected to remain steady (City of Boulder, 2017).

Age Trends

- The number of school-age children (ages 5-17) in Boulder has remained level at about 9,600 since 1980, and this pattern is expected to continue.
- Boulder's 55-59-year-old population grew by 53 percent and 60-64-year-old population grew by 80 percent, a direct reflection of the aging baby-boom generation. This age group increased specifically in north and central Boulder and makes up almost 10 percent of Boulder's population.
- The 15-24 age range increased, reflecting the increase in university enrollments over the last decade.

Ethnicity and Language Trends

- Eighty-eight percent of Boulder's population defines as White, while nationally, the population is more diverse. Boulder's population, when compared to that of the U.S., includes more Asians, Pacific Islanders, and persons of two or more races while it has a lower percentage of African-American residents and a higher percentage of American Indians. Since 2000, the number of people of Hispanic origin has increased by 8.3 percent in Boulder, while across the nation, the Hispanic population increased by 43 percent (City of Boulder, 2017).
- People who speak a language other than English at home make up 17 percent of the Boulder County population (Community Foundation, 2017).

RELEVANT CHAPTERS

Chapter 5
Chapter 8
Chapter 9

MANAGEMENT APPROACHES

- Boulder Valley Comprehensive Plan
  - **3.08 Public Access to Public Lands**
    Certain lands provide a means for educating users on the importance of the natural environment. These public lands may include areas for recreation and preservation of agricultural use, unique natural features and wildlife and plant habitat.
  - **8.05 Diversity**
    City/County support inclusion of racial, ethnic, socioeconomic and cultural diversity into physical, social and economic environments.
- Open Space Long-Range Management Policies
  - Provide for aesthetic enjoyment and provide for a passive recreation experience.
  - Provide and maintain highly functional and sustainable visitor facilities.
  - Partner with the community in passive recreation decision-making and stewardship.
- Systemwide Management or Geographic Area Plans
  - **VISITOR MASTER PLAN**
- **Related Plans and Ongoing Needs**

Sustainability Framework:
Healthy and socially thriving community
Livable community
Accessible and connected community
Climate Commitment:
Clean Mobility

Big Picture Trends and Questions for the Future

4. CONT'D

WHO WILL VISIT IN THE FUTURE AND HOW CAN WE MANAGE THE SYSTEM INCLUSIVELY FOR ALL GROUPS? CONT'D

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Gender and Sexual Orientation Trends

- Forty-nine percent of Boulder County residents identified as female during the last census with 51 percent identifying as male (U.S. Census, 2010).
- Boulder has a LGBTQIA+-friendly standing, but recent surveys suggest LGBTQIA+ students in Boulder can suffer increased rates of social isolation (Community Foundation, 2017).

Income Trends

- Despite a high annual median income of $103,037, Boulder County poverty rates are similar to the national average. About 1,500 children in the County are homeless, with some groups found camping in the mountains (Community Foundation, 2017).

Implications for the Future: How will future visitors interact with OSMP lands?

The holistic and long-term physical and mental health benefits of spending time in the outdoors are widely accepted as avenues for staying active and reducing stress. Community open space systems offer opportunities for residents to access the outdoors in a convenient and safe manner has helped Boulder to be recognized by National Geographic as the "happiest city in the United States."

The forthcoming master plan will consider how patterns of use are impacted by current and future trends including the following:

- National studies that observe actual use of parks and open space have indicated lower participation in outdoor recreation by females (Maas, 2006), linking the ability to see "oneself" represented in recreation as a key component to feeling welcome and participating in outdoor recreation (Futura, 2017).
- National and state trends suggest that the biggest barrier to recreating outdoors is lack of time, which is having the biggest effect on families (Colorado Parks and Wildlife, 2014) (Futura, 2017).
- Nature deficit disorder is now a nationally recognized phrase used to describe a phenomenon whereby children are spending less time outdoors. They are leading a more sedentary lifestyle, especially due to competition from time spent on screens, resulting in a wide range of health and behavioral problems.
- Colorado recreation trends indicate that recreation participation is more successful when communication is seamless and appropriate facilities to support traditional recreation opportunities are present (Colorado Parks and Wildlife, 2014).
- Colorado recreation trends indicate that the presence of inadequate transportation opportunities present a barrier to recreation participation (Colorado Parks and Wildlife, 2014), a factor that correlates with a lack of time and disposable income.
- In Boulder, visitation patterns to OSMP lands vary according to specific sports (e.g., mountain biking, hiking, etc.). In addition, visitation patterns are influenced by seasonal weather patterns, such as snow cover, temperature and wind.
- OSMP is seeing an increased demand for activities that appear to be in direct response to the stresses of a fast-paced lifestyle. These requests have led to an increase in programs that support relaxing, meditating and unstructured time in nature, including nature play programs for youth and guided meditations for adults.

4. CONT'D

WHO WILL VISIT IN THE FUTURE AND HOW CAN WE MANAGE THE SYSTEM INCLUSIVELY FOR ALL GROUPS? CONT'D

CONTEXT AND IMPLICATIONS FOR THE FUTURE

- There is an increasing awareness at OSMP to support people experiencing disabilities and to be more considerate in providing equal opportunities for access to passive recreation activities and facilities. For example, OSMP recently purchased two power-driven hand cycles to increase biking opportunities for all.
- Along with the rise in visitation, OSMP has noted a growing trend in increased volunteerism.
- There is a nationally identified need to create a more inclusive and welcoming environment for underserved communities in natural areas. For example, Boulder County Parks and Open Space completed a 2010 visitor study that noted a 14 percent of the Latinx population in the county, but only 3 percent of this community visited open space. There is a need to work more closely with underserved communities and to create equal opportunities for all to visit OSMP.
- Developing an early connection to nature is recognized as a key component in the development of an ethic of stewardship. If today's youth are less connected to nature, it is probable that they will be less interested in protecting it in the future. There is a community-wide trend to provide Boulder County youth with the knowledge, care, skills and connection to place required to become future stewards of the environment.

Implications for the Future: How can we manage the system inclusively for all groups?
Chapter 9 provides details on the work the department is doing to include all of the Boulder community including underserved groups. The 2005 Visitor Master Plan (VMP) set in motion Open Space and Mountain Parks' framework for making decisions that foster the continuation of a high quality visitor experience, confirming Boulder's commitment to protecting and preserving its lands for future generations. It also presented opportunities to create a full range of visitor experiences, including extending a sense of welcome; enhancing visitor access; connecting to the land; and accessing various destinations.

Today, OSMP continues to advance this model of providing equal opportunities for all residents and visitors to connect with nature "for anyone to traverse," as Frederick Law Olmsted Jr. described in his 1910 report. As a result, resident surveys conducted by OSMP, continue to reflect the public's overall satisfaction with their open space experiences. To ensure an inclusive experience, this **master plan process** will engage with a variety of community interest groups including, youth leaders and liaisons to the LatinX community, and people experiencing disability.

Big Picture Trends and Questions for the Future

5.

HOW COULD OWNERSHIP OF MINERAL AND OIL AND GAS RIGHTS AFFECT OPEN SPACE (E.G., OIL AND GAS EXTRACTION)?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context

For decades, the City of Boulder has worked to acquire subsurface property interests – including oil, gas and mineral rights – as part of any new open space acquisition or where the opportunity has existed to acquire them separately. These acquisitions have helped to better control oil, gas and mineral development in the Boulder area that could cause detrimental impacts to city open space and adjacent properties. In some cases, the City of Boulder has not been able to acquire the oil, gas and mineral rights when it purchased surface lands, resulting in a "severed mineral estate." In these cases, state law provides mineral rights owners the right of entry to explore for, develop and produce their oil and gas rights as long as they reasonably accommodate the surface owner's activities and minimizes intrusion and damage; additional surface protections can be requested through surface-use agreements. Ownership of both the surface and mineral estate doesn't guarantee control of mineral development, as the extraction of oil and gas along the horizontal wells ("forced pooling") is permitted even if a company only has fractional ownership in the oil and gas interests.

Implications for the Future

The City of Boulder supports the right and responsibility of local governments act to protect the public health and well-being of its residents as well as the environment. The city supports state legislation that clarifies and strengthens the authority of local governments to use their existing land-use authorities to manage and tailor oil and gas activities within their borders or on property that they own to ensure public health, safety and welfare, and to protect the environment. The City of Boulder also opposes legislation that would pre-empt local authority to establish and enforce regulations over oil and gas operations.

City staff is not aware of and has not seen any specific plans, permits or applications for future drilling on City of Boulder-managed open space. The City of Boulder's Open Space and Mountain Parks (OSMP) Department is currently evaluating and analyzing its overall oil, gas and mineral holdings and acquisition opportunities to help determine and prioritize additional ways to protect Boulder's open space. With the City of Boulder's moratorium set to expire in 2018, staff is currently evaluating the possibility of creating new city regulations for oil and gas development to minimize the impact development has on residents and city-owned land including open space.

For more information please visit: **https://bouldercolorado.gov/osmp/open-space-and-mountain-parks-statement-on-oil-and-gas-development.**

RELEVANT CHAPTERS

Chapter 1
Chapter 5

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

- **3.17 Mineral Deposits**
  City/County will work together to acquire mineral rights as appropriate

Open Space Long-Range Management Policies

- Preserve ecological systems and land resources that provide habitat for native plants and animals.
- Maintain or enhance native species, their communities and the ecological processes that sustain them.
- Acquire and maintain lands consistent with the Open Space Charter and the Area Management Plan goals.

Related Plans and Ongoing Needs

Sustainability Framework:
Healthy and socially thriving community
Livable community
Climate Commitment:
Clean Mobility

6.
WHAT IMPACTS AND OPPORTUNITIES WILL TECHNOLOGY BRING?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context
Handheld, connected devices have revolutionized the way we share information and interact with each other and the natural world – but not always for the better. The negative impacts of technology on both adult and children's interest in, and exposure to, the outdoors is now well described. Appropriate use of technology through positive social media presence can reverse that trend by encouraging awareness and participation in nature enjoyment. Finding the right balance of screen time and outdoor time will continue to be an important debate.

Implications for the Future
The advent of smart phones makes it even easier for visitors to discover recreational opportunities, find their way, learn about trail conditions and interact with other visitors. For example, fitness apps encourage outdoor recreation through the promotion of individual fitness goals. How do we support the use of these technologies for improving the visitor experience while not reducing trail safety?

Text-messaging services can help the department solicit input from visitors who use our trails.

The launching, landing and operation of drones on city open space, along with the use of e-bikes (electric bikes that can be used recreationally) is prohibited on city-managed open space. However, e-bikes are allowed on OSMP land by people experiencing disabilities. Recognizing changing demographics and changing technological trends, OSMP will continue to seek ways to allow for a range of activities that provide high-quality and technologically advanced visitor experiences.

RELEVANT CHAPTERS

Chapter 2
Chapter 4
Chapter 5
Chapter 8
Chapter 9
Chapter 10
Chapter 11

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

Open Space Long-Range Management Policies

Related Plans and Ongoing Needs

Sustainability Framework:
Healthy and socially thriving community
Livable community
Accessible and connected community
Economically viable community

- Use education and outreach to help accomplish management goals.

8.19 Information Resource/ Community Center
City will facilitate information by providing materials, technology and services to enhance the personal development of the community's residents

Big Picture Trends and Questions for the Future

7.

WHAT OPERATIONAL AND FINANCIAL FUTURES DO WE ANTICIPATE?

CONTEXT AND IMPLICATIONS FOR THE FUTURE

Regional and Local Context

Public lands add significant economic, environmental and social value to Boulder's identity and inspires investment in nature. Several Front Range communities, including Boulder, Arvada and South Suburban Park and Recreation District are looking for methods to acquire precious remaining lands for open space while also keeping pace with rising costs and maintaining funding mechanisms needed to oversee existing assets.

Today, fewer priority acres for acquisition remain and the costs to acquire them are greater than in the past. At the same time, we recognize the need for funding to maintain and restore what we currently own. Moreover, continuing to defer major maintenance projects also will likely lead to total higher total costs as construction costs will likely continue to grow due to a shortage of skilled labor. These higher costs are especially concerning given our existing primary revenue sources are set to decline as sales tax increments either sunset or decrease, and retail transitions to online stores from brick and mortar stores.

Implications for the Future

As we address these implications for the future, we strive to improve our ability to forecast multiyear work planning and budget needs. Innovative improvements and advancements in operational efficiencies will support restoration, protection, restoration and maintenance of the open space system. The master plan process will seek the community's feedback on priorities and strategies given different operational and financial future scenarios.

RELEVANT CHAPTERS

Chapter 1
Chapter 5

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

Open Space Long-Range Management Policies

Related Plans and Ongoing Needs

Sustainability Framework:
Healthy and socially thriving community
Livable community
Climate Commitment:
Clean Mobility

- Acquire and maintain lands consistent with the Open Space Charter and the Area Management Plan goals.
- Priorities consistent with the City Charter will be updated annually or as directed by the City Manager, OSBT, or City Council.

- **5.08 Funding City Services & Urban Infrastructure**
  The city will encourage a strong sustainable economy to generate revenue to fund quality city services and recognizes that urban infrastructure, facilities, services and amenities are important to the quality of life of residents, employees and visitors to the community.
- **5.17 Partnerships to Support Economic Vitality Goals**
  The city and county work in partnership with a number of organizations, each of which has an independent focus but contributes to the overall quality of life enjoyed within the community.

Trends Affecting Each OSMP Charter Purpose

Coupled with the previous exploration of big picture trends, this chapter offers the following charts to describe trends specific to each open space purpose defined by the City of Boulder's Charter. The charts also highlight some* of our current management approaches to help answer the question: *What is our current approach to managing these conditions or trends, and how might this approach need to change to meet the needs of the future?*

A.

NATURAL AREAS AND FEATURES OR SPECIES OF SPECIAL VALUE

EMERGING TRENDS AND FUTURE DIRECTIONS

Biodiversity
OSMP lands support a vast diversity of native flora and fauna– including 64 mammal species, 303 bird species, 741 native plant species. As temperatures and climate change affects our ecosystems, ***how can we maintain and restore natural areas to prevent species loss?***

Ecological Health
Together with its partners, the City of Boulder engages in stewardship and restoration activities to enhance ecological health of natural areas and features, the protection of which enable species of special value to thrive. Several management approaches are currently in place to maintain, restore and preserve native ecosystems. ***How will we continue to integrate scientific research into management practices and quickly respond to ecological threats?***

Soundscapes
Anthropogenic noise, or sounds generated by humans, can degrade the natural acoustical environment that wildlife depend upon. ***How will we take steps to measure and protect our natural soundscapes?***

Disturbances
OSMP plays a vital role in managing and preserving forests and grasslands, which are subject to human-caused disturbances, such as the diversion of water, the proliferation of invasive weed species and natural disturbances like floods and fires. ***How will we prepare natural areas for future disturbances and how will we restore them if they are disturbed?***

Wildlife Populations
Preble's Meadow Jumping Mouse is endemic to upland habitats in Wyoming and Colorado (and found nowhere else in the world). Threats to this species include urban development, habitat fragmentation, drought and climate change. ***How will we encourage an increasingly greater role of socio-ecological strategies to conserve and protect our wildlife populations?***

*Please note that these charts do not convey a comprehensive listing of all current and relevant policies. Rather, they highlight a sampling to broadly characterize our current management approach. As the master plan process advances, other relevant policies will be brought to bear on the development of strategies in the master plan.

****Overarching Issues**
Past City Councils have provided guidance or questions to OSMP staff about existing programs, planning and management practices, and potential new policies. Many of these issues have been resolved over the years, while others remain to be explored in this master plan process. We highlight the latter in this chapter to feature some of the broader conversations that the current City Council may still find important.

RELEVANT CHAPTERS
Chapter 5

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

- **2.04 Open Space Preservation** City/County will permanently preserve lands. with open space values or accept donations of fee simple interests, conservation easements or development rights.
- **3.03 Native Ecosystems** City/County will protect significant/rare native ecosystems on public/private lands with land use planning, conservation easements, acquisitions and public land management.

Open Space Long-Range Management Policies

- Maintain, restore and preserve native ecosystems.
- Restore and improve natural, cultural, passive recreational and agricultural resources where suitable.
- Restore and conserve the native flora and fauna (of the Colorado Tallgrass Prairie) to approximate pre-settlement conditions.
- Maintain natural ecological processes in the tallgrass communities.
- Encourage scientific research consistent with the basic purpose of the (Colorado Tallgrass Prairie) natural area.

Systemwide Management or Geographic Area Plans

- **FOREST ECOSYSTEM MANAGEMENT PLAN**
- **GRASSLAND ECOSYSTEM MANAGEMENT PLAN**
- **TRAIL STUDY AREA PLANS**

Related Plans and Ongoing Needs

Sustainability Framework: **Environmentally Sustainable Community**
Climate Commitment: **Wildland Ecosystems**
2010 City Council Identified Overarching Issue: **Integration of science into trail planning

Trends Affecting Each OSMP Charter Purpose

B.

WATER, LANDSCAPES AND ECOSYSTEMS

EMERGING TRENDS AND FUTURE DIRECTIONS

Iconic Landscape Features
The department stewards iconic features in the landscape for the benefit of residents and visitors. Scenic values will become even more important to preserve and enhance as development evolves over time. ***How do we measure, protect and improve our scenic quality?***

Landscape Connectivity
OSMP manages large, intact habitat blocks that act as key movement corridors for wildlife. ***How do we continue to support species that need vast areas and a variety of habitats for survival?***

Cultural History
While no comprehensive plan or strategy has been developed to guide the management of the 1,000 known cultural resources and scenic areas on OSMP-managed land, more than a dozen documents or intergovernmental agreements, including OSMP's Long Range Management Policies, provide guidance in specific areas. ***How will we coordinate these efforts to provide cohesive guidance?***

Water Quantity
Demands on limited water resources are increasing with the population growth of the Front Range. Currently, OSMP owns water rights estimated to be worth $60 to $70 million. ***How can we further engage in cooperative management approaches of water resources beyond our boundaries at the watershed scale?***

A Changing Climate
Temperatures along the northern Front Range have increased nearly 2 degrees Fahrenheit above average. If this warming trend continues, temperatures are projected to increase an additional 2 to 6 degrees Fahrenheit by 2050. Climate changes, such reduced snow pack and diminishing water availability, will affect our diverse and sensitive natural areas. This raises an important question; ***How do we prepare for an increasingly arid future?***

RELEVANT CHAPTERS

Chapter 2
Chapter 5
Chapter 6

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

- **2.27 Preservation of Historic & Cultural Resources**
  City/County will identify, evaluate and protect buildings, structures, objects, districts, sites and natural features of historic, architectural, archaeological or cultural significance with input from the community.
- **3.01 Incorporating Ecological Systems into Planning**
  Approach planning and policy in Boulder Valley through an ecosystem framework, natural regions like bioregions, airsheds and watersheds
- **3.06 Wetland & Riparian Protection**
  Continue to develop and support programs to protect, enhance and educate the public about wetlands and riparian areas in Boulder Valley

Open Space Long-Range Management Policies

- Pursue acquisition of areas with critical ecological value and that complement or provide continuity with existing open space.
- Recognize and protect significant historic, archaeological and ethnographic values.
- Restore and conserve wetlands, riparian areas, creeks and ponds.
- Preserve ecological systems and land resources that provide habitat for native plants and animals.
- Where there are real or potential conflicts between nature and human use in the Boulder Mountain Parks, preference will be given to sustaining nature; both for its intrinsic values and its value as a component of human experience.

Systemwide Management or Geographic Area Plans

- **FOREST ECOSYSTEM MANAGEMENT PLAN**
- **GRASSLAND ECOSYSTEM MANAGEMENT PLAN**
- **TRAIL STUDY AREA PLANS**

Related Plans and Ongoing Needs

Sustainability Framework: **Environmentally Sustainable Community**
Climate Commitment: **Urban Ecosystems**

C.
PASSIVE RECREATION

EMERGING TRENDS AND FUTURE DIRECTIONS

Community Stewardship
Like many land managers across the country, Boulder faces visitation management challenges – from increased visitation to water conservation – that need to be balanced with preservation and enhanced by community input and involvement. ***How will we work, as a community, to protect and preserve the lands for future generations?***

Visitor Use
A new OSMP estimates indicates that the open space system now receives 6.25 million visits – up 34% from 4.7 million in 2005. And statewide, about 66 percent of Colorado residents recreated outdoors one time per week, and it is projected that 60 percent will "greatly increase/somewhat increase" their participation over the next five years (Colorado Parks and Wildlife, 2014). An OSMP 2005 Visitor Master Plan established a framework for decisions to foster a high-quality visitor experience. ***How will we manage visitor expectations and visitor conflicts as visitation increases?***

Trail Conditions
Trail impacts, such as erosion, braiding and widening, can damage trails, affect adjacent natural areas and diminish OSMP visitors' outdoor experience. Undesignated trails – which are also known as unofficial, informal, visitor-created or social trails – are also widespread throughout OSMP land and managing them is a critical component of the new focus on stewardship. ***In response, OSMP has expanded its focus to encompass maintenance and trail stewardship. Moving forward, how do we best construct, repair and maintain trails to sustain current and future use levels?***

Recreation Impacts
The City of Boulder is not alone in grappling with the management challenges that high visitation creates. Stressors to the natural environment can affect ecological health and recreation may also affect natural resources, due to cumulative impacts of recreation activities on sensitive or fragile environments. National Parks around the country are experimenting with strategies to address topics, such as crowding, congestion and related effects on visitor experience and resource conditions. ***While conditions are constantly and proactively monitored on all properties and trails, how will we utilize this information to improve visitor experiences while protecting our important natural resources?***

Visitation and Visitor Conflict
Because visitors are more likely to arrive during certain times of the year, days of the week and times of day, peak use patterns can affect some visitors' experiences through perceived parking congestion and/or trail crowding. ***How will we manage access of our properties?***

RELEVANT CHAPTERS
Chapter 8

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

Open Space Long-Range Management Policies

Systemwide Management or Geographic Area Plans

- **VISITOR MASTER PLAN**
- **TRAIL STUDY AREA PLANS**

Related Plans and Ongoing Needs

Sustainability Framework:
Healthy and socially thriving community
Livable community
Accessible and connected community
Economically viable community
Climate Commitment:
Clean Mobility
Resilience Strategy
2010 City Council Identified Overarching Issue:
Multimodal access to and parking opportunities for OSMP visitors

Nighttime access management
Temporal access management (e.g., alternating days for activities
Penalties for violations
Programs that promote public awareness of trail etiquette
On-trail travel requirements

- Provide for aesthetic enjoyment and provide for a passive recreation experience.
- OSMP developed facilities include passive recreation amenities, such as parking areas, picnic areas, regulation boards, trailheads, trails and bridges.
- Provide and maintain highly functional and sustainable visitor facilities.
- Ensure compatibility of passive recreational activities with long-term resource protection.
- Partner with the community in passive recreation decision-making and stewardship.
- Acquire the lands or interests to provide access to the city's open space lands and relieve the adverse effects of crowding upon resources and the visitor experience.
- Improve the quality of visitor experiences and increase the sustainability of trails and trailheads while conserving resources.
- Balance and integrate the activities of nature and people in accordance with the Boulder City Charter.

8.16 Trail Functions & Locations
City/County recognize that trails should be designed to provide a safe and enjoyable experience and help minimize conflicts among users. Trails should sustainable.

Trends Affecting Each OSMP Charter Purpose

D.
AGRICULTURE

EMERGING TRENDS AND FUTURE DIRECTIONS

Local Food Systems
We maintain an agricultural program focused on production of food, feed and fiber. Today, we lease 15,000 acres to agricultural producers (mostly for grazing to 26 ranchers and farmers). Of the 15,000 acres, about 6,000 are irrigable, facilitating crop production-mostly hay-and livestock uses. In addition to the lands OSMP leases to ranchers and farmers, we also protect thousands of acres of agricultural land through conservation easement agreements. ***How will we continue to sustain thriving agricultural operations on open space?***

Farmers and Ranchers
The City of Boulder has a long history of working in partnership with agricultural operators to manage open space lands. Many farmers and ranchers have been working the same lands for decades–some since before the city acquired the lands as open space. They have learned valuable lessons on overcoming challenges of farming in an urban environment. ***How will we work to pass on these lessons and work ethic to a new generation of farmers and ranchers?***

Technology
Improvements in digital technology can provide data from sensors on farm equipment or detailed weather tracking. The future of technology could bring tracking of water use on a plant-by-plant basis and other monitoring information (Johnson, 2015). ***How can data and technology be used in the future to improve crop yields and help manage a healthy open space system?***

Agri-tourism
Farm events, agri-tourism and community farming help connect our community to our lessees and OSMP's agricultural lands. Service-learning programs, which provide volunteer opportunities in collaboration with farmers and ranchers, opportunities also provide community members opportunities to connect with local agriculture. ***How could these opportunities be expanded?***

Pest Management
We work with ranchers and farmers to maintain healthy soils and follow best-management strategies, including integrated, non-chemical pest management and water conservation. Environmental conditions limit agricultural production to mostly livestock grazing or hay/forage production. We encourage non-chemical pest management, where possible, and the least persistent and least toxic pesticides when chemical treatment is determined to be necessary. ***What other management approaches and treatments might need to be evaluated in the future?***

RELEVANT CHAPTERS

Chapter 5
Chapter 6
Chapter 7
Chapter 9

MANAGEMENT APPROACHES

- Boulder Valley Comprehensive Plan
- Open Space Long-Range Management Policies
- Systemwide Management or Geographic Area Plans
- **Related Plans and Ongoing Needs**

- **AGRICULTURAL MANAGEMENT PLAN**
- **GRASSLAND ECOSYSTEM MANAGEMENT PLAN**
- **NORTH TRAIL STUDY AREA PLAN**

- Environmental and economic sustainability in the planning and implementation of agricultural activities.
- Integrate sustainable agricultural land uses with ecological conservation objectives.
- Maintain and enhance the city's agricultural operations and relationships with ranchers and farmers.
- Integrate agricultural, scenic, cultural and ecological stewardship.
- Support and enrich opportunities for people to connect with agriculture.
- Maintain sustainable agricultural operations by balancing economic and natural resource considerations.

- **3.09 Integrated Pest Management**
  The city aims to reduce/eliminate, where possible, the use of pesticides and synthetic fertilizers on public properties.
- **9.06 Food System Resilience**
  The city will explore local food system vulnerabilities, assess the local productive capacity to buffer future shocks and develop solutions to address them.

Sustainability Framework:
Livable community
Environmentally sustainable community
Climate Commitment:
Agricultural ecosystems
Food

Resiliency Strategy 2010 City Council Identified Overarching Issue:
OSMP's coordination of plan implementation with the Capital Improvement Program (CIP)

E.
LIMITING SPRAWL

EMERGING TRENDS AND FUTURE DIRECTIONS

Urban Sprawl
Beginning with the purchase of Chautauqua in 1898 and followed closely by Frederick Law Olmsted, Jr.'s call to preserve the Boulder mountain backdrop and areas along major waterways, over 45,000 acres of public land – a natural resource almost three times as large as the surrounding urban landscape – have been acquired to date. OSMP's vast system of open lands has been utilized to shape the development of Boulder, limit urban sprawl and discipline growth. ***How do we continue to fulfill this specific charter purpose at a time when there are only about 5,000 acres left to acquire to complete a comprehensive open space system?***

Density and Composition of New Growth
Most new growth is occurring in north Boulder. The median detached and attached home sales prices increased from 2013 to 2016 at a rate of 34 percent for detached homes and 52 percent for attached homes. Meanwhile, the median household income for Boulder County increased by 7 percent in that same time-frame. More people are opting to live in group quarters, like student housing, with the exception being seniors who are increasingly aging in place rather than in group homes. ***How will rising costs of homes and density of development impact our open lands?***

Regional Open Space Systems
City and county open space systems are growing where they can while others in the region have no more lands to preserve. This has two impacts for OSMP. First, there is the growth of a regional network of complementary and nearby federal and state lands. Secondly, where there are reduced options for neighbors to acquire more open space, OSMP lands may see increased focus from the region.

- Boulder County: 103,147 acres/110 miles of trail/2 million visitors annually
- Jefferson County: 54,000 acres/236 miles of trail/5 million visitors annually
- Fort Collins Natural Areas: 36,000 acres/100 miles of trail/2 million visitors annually

Urban Development in Neighboring Communities
Rising costs of homes in Boulder is encouraging growth in nearby Lafayette and Erie, the two fastest growing communities in Boulder County. These places offer bigger homes at lower prices which lends to more diverse residents. Population patterns suggest Colorado's population will continue to grow around the urban centers in the Denver area. ***What are the potential impacts of adjacent community development to our open lands?***

RELEVANT CHAPTERS

Chapter 1
Chapter 4

MANAGEMENT APPROACHES

- Boulder Valley Comprehensive Plan
  - **1.06 City's role in Managing Growth and Development**
    City will implement urban design/growth management tools to control scale, location, type, intensity of new development/redevelopment
  - **1.14 Definition of New Urban Development**
    New urban development will not occur unless adequate urban facilities/services are available to serve set out in Chapter VII Urban Service Criteria and Standards
- Open Space Long-Range Management Policies
  - Use land preservation to support the city's Climate Action Plan.
- Systemwide Management or Geographic Area Plans
  - **2013 ACQUISITIONS PLAN UPDATE**

Related Plans and Ongoing Needs

Sustainability Framework:
Livable community
Accessible and connected community
Environmentally sustainable community
Good governance
Climate Commitment:
Clean Mobility
Resilience Strategy
2010 City Council Identified Overarching Issue:
Collaboration with regional land managers

Trends Affecting Each OSMP Charter Purpose

F.

URBAN SHAPING

EMERGING TRENDS AND FUTURE DIRECTIONS

Open Space and Identity
Open space lands define the urban area and shape the identity of Boulder. ***Working to maintain the system and complete the greenbelt is an essential endeavor to spatially define the extent of urban growth and define rural and undeveloped areas.***

Wildland Urban Interface (WUI)
The impact of wildfires has been felt in the Boulder Community. It is a City that interfaces with forested areas and open lands, often referred to as a wildland-urban interface (WUI) community. Areas where homes border on the wildland present unique challenges for land managers. A 2007 Colorado State University analysis projected that the state's WUI areas would increase from 715,500 acres in 2000 to 2,161,400 acres in 2030, a 300 percent increase. ***As more people are projected to live in proximity to OSMP lands, how will we utilize non-urban lands to shape the urban edge and decrease intermixing of homes and wildlands?***

Center for Innovation, Entrepreneurship, Startups and Venture Capital
Boulder's identity and reputation as a center for innovation and the quality of life are among many factors driving growth. As of March 2017, government research centers including the National Institute of Standards and Technology, the National Oceanic and Atmospheric Administration and the National Center for Atmospheric Research generated $1.1 billion for the county, employed nearly 4,000 people and supported close to 8,000 other jobs. ***How will we preserve our non-urban lands that contribute to our quality life and continue Boulder's long tradition of innovation?***

Land Costs
OSMP's budget, which totaled nearly $33.5 million in 2016, is highly dependent on sales tax revenues. In fact, 88 percent of OSMP funding comes from citizen-approved sales tax increments, many of which will decline as taxes sunset or decrease and retail transitions to online stores. With critical lands still left to acquire, and cost of land per acre increasing: ***How will we diversify funding streams and partnerships going forward?***

Agricultural Lands
Colorado ranks fifth in the U.S. in land conversion of agricultural areas to residential and community development. Between 2002 and 2007, 139,000 acres of agricultural land were converted to developed land in Colorado. While OSMP has worked to protect 15,000 acres of agricultural and productive lands, parcellation for new development continues to occur. This trend has also led to transfer of water supplies to development, leaving land that isn't viable for farming. ***How will we work to preserve our agricultural lands that contribute to the urban shaping and scenic resources of our community?***

RELEVANT CHAPTERS

Chapter 5

MANAGEMENT APPROACHES

- Boulder Valley Comprehensive Plan
- Open Space Long-Range Management Policies
- Systemwide Management or Geographic Area Plans

Enhance the aesthetic value of open space in supporting an urban form that attracts employers and residents.

2013 ACQUISITIONS PLAN UPDATE

3.20 Wildfire Protection & Management
City/County will require onsite and offsite measures to guard against the danger of fire in developments adjacent to natural lands in a way that also sustains forest and grassland ecosystems health.

Related Plans and Ongoing Needs

Sustainability Framework:
Safe community
Livable community
Accessible and connected community
Environmentally sustainable community
Good governance

Climate Commitment:
Clean Mobility
Agricultural Ecosystems
Resilience Strategy
2010 City Council Identified Overarching Issue:
Collaborative work with other city departments, land managers, stakeholder groups on regional trail connections

G.
FLOODPLAIN PROTECTION

EMERGING TRENDS AND FUTURE DIRECTIONS

Risks
Boulder is an especially flood-prone urban area because it lies at the base of Rocky Mountain foothills and at the mouth of Boulder Canyon, and has extensive infrastructure and development located within the 100-year floodplain. ***How do we avoid and minimize risks to human safety and property?***

Availability of Lands in the Floodplain
Preventing development from encroaching on lands in the floodplain can be accomplished by protecting areas adjacent to rivers that are subject to flooding. OSMP currently owns 73 percent of the floodplain in the perimeter of land around Boulder. ***How do we best steward land to reduce flood risk for the urban core (the most susceptible area to severe flooding events in terms of potential property damage or risk to life)?***

Flood Resilience
In September 2013, the Front Range received a year's worth of rainfall within an eight-day period. Boulder County was the hardest hit county: the flood caused $300 million of private property damage, affecting 14 percent of Boulder's households and leading to $27 million of municipal property damage. Estimated costs to repair OSMP infrastructure damaged during the floods is estimated to total more than $7 million, with trails and irrigation water-delivery systems hardest hit. In addition, as members of many ditch companies, we contribute increased assessments to the costs of repair to the ditch companies' infrastructure. The flood also affected the land itself, necessitating restoration of native vegetation channels and floodplains. These projects have a price tag of more than $2.5 million and climate trends point to increased intensity of flood events. ***How will we budget for natural disasters into the future?***

Environmental Benefits
Floods are natural processes with ecological benefits. They result in an exchange of nutrients and sediment between the creek and its adjacent floodplain, benefiting both habitats. The scouring and deposition associated with flooding create new habitat adjacent to and within the creek, and cleans sediment from fish spawning areas. They foster the regeneration of native riparian communities by establishing germination sites for cottonwood seed, which is particularly important on the lands we manage, where riparian communities lack young cottonwood seedlings and saplings needed to replace the mature cottonwood trees along perennial streams. ***How will we mitigate risks of flooding while at the same time allowing for the environmental benefits floods bring?***

RELEVANT CHAPTERS

Chapter 6

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

- **3.24 Protection of High Hazard Areas**

Related Plans and Ongoing Needs

Sustainability Framework:
Safe Community
Climate Commitment:
Urban Ecosystems

Trends Affecting Each OSMP Charter Purpose

H.

AESTHETICS AND QUALITY OF LIFE

EMERGING TRENDS AND FUTURE DIRECTIONS

Quality of Life
Boulder's quality of life is enriched by the diversity of scenic resources and landscapes in and around the City. Residents recently revealed that "aesthetic purposes" is the most important reason for having Open Space and Mountain Parks (2016 Resident Survey). As "the best place to raise an outdoor kid," according to Backpacker Magazine, Boulder boasts an extensive network of facilities, trails and amenities that OSMP maintains. They offer multiple opportunities for youth, families and people of all ages to connect with and explore nature. ***How can we best engage a community of all ages, abilities and backgrounds to ensure current and future generations value and protect open space lands?***

Working Landscapes
Boulder residents value OSMP's scenic resources including agricultural, working landscapes. These working landscapes and OSMP's management of open space lands enable the beautiful scenery to exist. ***How do we support working landscapes to help protect scenic resources?***

Community Health
Boulder County has lower death rates than the national average from cancer, heart disease, diabetes and pneumonia. 88 percent of Boulder County residents ranked their health good to excellent and the County boasts the lowest obesity rate for adults in the State with the lowest obesity rates in the nation. The case is not the same for children and adolescents; 24 percent of Boulder County children are overweight or obese. ***How do we encourage community health through open space programming?***

Inclusivity
The department is committed to sharing open space lands to everyone. ***How do we can we support quality experiences of OSMP lands for all?***

RELEVANT CHAPTERS

Chapter 11

MANAGEMENT APPROACHES

Boulder Valley Comprehensive Plan

Open Space Long-Range Management Policies

Systemwide Management or Geographic Area Plans

2005 VISITOR MASTER PLAN

- Provide for aesthetic enjoyment and provide for a passive recreation experience.
- Create opportunities to encourage the public to participate in accomplishing the purposes of open space.
- Maintain or enhance the quality of the visitor experience.
- Coordinate open space acquisitions with other compatible community needs.
- Demonstrate a "best value approach" for public funds.
- Balance the protection of open space near the city with acquisitions farther away.
- Reduce the wildlife risk to forest and human communities.
- Manage and preserve land for passive recreation use, for its aesthetic or passive recreational value, and for its contribution to the quality of life of the community.
- Use education and outreach to help accomplish management goals.
- Use the outdoors for teaching children and adults about wetland ecology, environmental restoration and land stewardship.

Related Plans and Ongoing Needs

Sustainability Framework:
Safe community
Healthy and socially thriving community
Livable community
Accessible and connected community
Climate Commitment:
Urban Ecosystems

8.08 Health & Well Being
City/County strive to ensure that the community continues to be a leader in health. Neighborhood/ Community design will encourage physical activity and healthy eating.

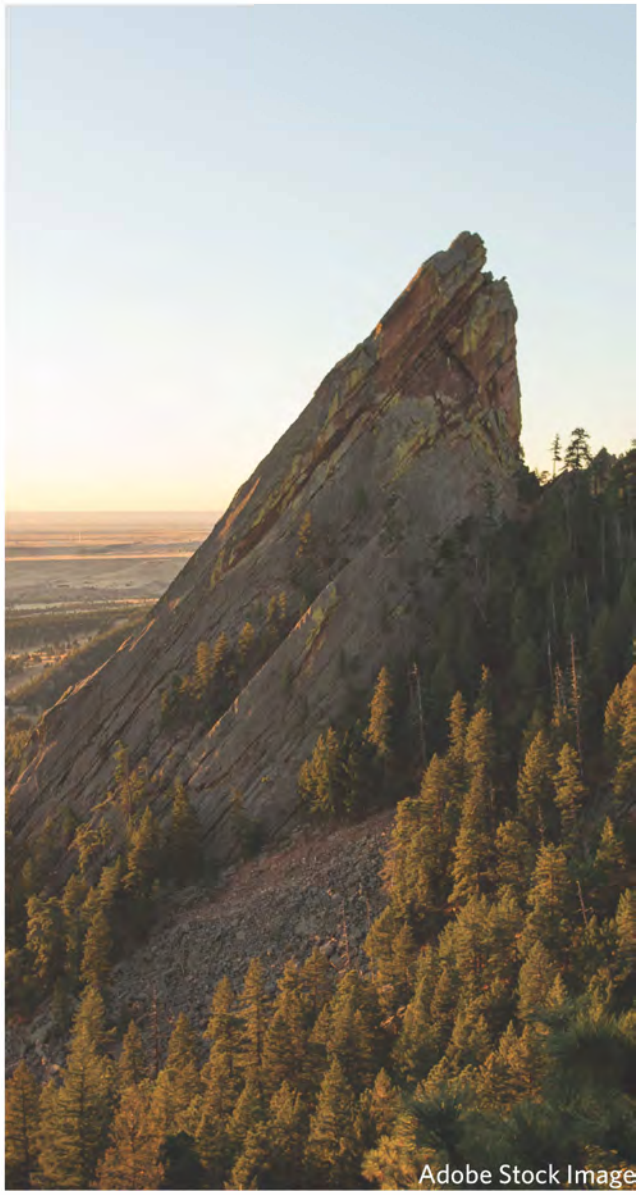
- Encourage education and interpretation of tallgrass prairie relicts.
- Maintain Boulder Mountain Parks as a place of inspiration, natural wonders, spiritual renewal, and educational benefit for the community.
- Inform and engage the community in setting policy and managing the land.

Conclusion

Questions of resiliency, sustainability and implications to open space charter purposes outlined in this chapter introduce some emerging trends and future directions for OSMP. The Master Plan is envisioned as an engaging, easy-to-use document that calls out major focus areas that respond to the City of Boulder's open space charter purposes and community values. The plan also will describe measurable strategies that establish an integrated vision for the next decade. During this planning process, questions to be explored further include:

- What other topics, trends and directions may be important now and over the next decade?
- As OSMP and the community continue to plan a future for our natural areas, agricultural lands and visitor services, we want to know what is important to you. What do you value about OSMP and what are your hopes or concerns for the future? How can OSMP anticipate future changes and uphold the community values as stated in the Boulder City Charter and its open space purposes?
- How can we emphasize and ground management strategies in financial realities, recognizing the need to prioritize work over the next 10 years?

With your help, the OSMP Master Plan will establish an integrated, strategic approach to OSMP management over the next decade and beyond.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Thank you for your continued support of Boulder's open space and mountain parks

LIST OF ACRONYMS AND GLOSSARY

Ag Plan = Agricultural Resources Management Plan

ADA = Americans with Disabilities Act

ATV = All-Terrain Vehicle

BCCP = Boulder County Comprehensive Plan

BCPOS = Boulder County Parks and Open Space

BLM = Bureau of Land Management

BMA = Boulder Mountainbike Alliance

BOAs = Best Opportunity Areas

BVCP = Boulder Valley Comprehensive Plan

BVSD = Boulder Valley School District

CAEE = Colorado Alliance for Environmental Education

CAMP = Chautauqua Access Management Plan

CCC = Civilian Conservation Corps

CDOT = Colorado Department of Transportation

CE = Conservation Easement

CIP = Capital Improvement Program

CNHP = Colorado Natural Heritage Program

CO = Colorado

COSA = Colorado Open Space Alliance

CSA = Community Supported Agriculture

CWA = Clean Water Act

DRA = Development Rights Agreements

EE = Environmental Education

FCC = Flatirons Climbing Council

FEMP = Forest Ecosystem Management Plan

FTE = Full Time Equivalent (Employees)

GMOs = Genetically Modified Organisms

GOCO = Great Outdoors Colorado

Grassland Plan = Grassland Ecosystem Management Plan

HCAs = Habitat Conservation Areas

IGA = Intergovernmental Agreement

IPM = Integrated Pest Management

LGBTQIA+ = Lesbian, Gay, Bisexual, Transgender, Queer, Intersexed, and Asexual

MHYC = Mile High Youth Corps

NAI = National Association of Interpretation

NCAR = National Center for Atmospheric Research

NPS = National Park Service

NWR = National Wildlife Refuge

OSBT = Open Space Board of Trustees

OSMP = Open Space and Mountain Parks

Open Space LRMP = Open Space Long Range Management Policies

Preble's = Preble's Meadow Jumping Mouse

RTW = Ready to Work

SCORP = Statewide Comprehensive Outdoor Recreation Plan

SHIFT = Shaping How we Invest For Tomorrow

SVVSD = Saint Vrain Valley School District

TABOR = Taxpayer Bill of Rights

TMO = Trail Management Objective

TSA = Trail Study Area

U.S. = United States

USDA = United States Department of Agriculture

USFS = United States Forest Service

USFWS = United States Fish and Wildlife Service

VMP = Visitor Master Plan

VRI = Visual Resource Inventory

VRM = Visual Resource Management

VRP = Visual Resource Program

Please note that some definitions, as indicated, have been taken from the following sources:

*The Countryside Commission and Scottish Natural Heritage (2002) Landscape Character Assessment: Guidance for England and Scotland (CAX 84), the Countryside Commission and Scottish Natural Heritage, April 2002.

**Interagency Visitor Use Management Council https://visitorusemanagement.nps.gov/Content/documents/Glossary.pdf

Abiotic: Physical rather than biological; not derived from living organisms.

Acquisitions: Real estate transactions that allow OSMP to protect lands as city open space.

Aesthetic: Beautiful, pleasing to the senses.

Agritourism (aka Agritainment): An agriculturally-based commercial enterprise that brings visitors to a farm or ranch for activities, events or services. This includes pumpkin patches, corn mazes, hay rides, petting zoos and u-pick crops.

Assets: Trails, facilities, signs, roads, gates, fences, offices, etc. that are managed and maintained by OSMP and that enable visitors to experience OSMP lands in a safe and accessible way.

Attenuation: The process of water retention on site and slowly releasing it in a controlled discharge to a surface water or combined drain or watercourse.

Best Opportunity Areas (BOAs): Identified areas that are best for conserving or restoring conditions or implementing identified objectives and/or management strategies.

Biodiversity: Biological diversity in an environment as indicated by numbers of different species of plants and animals.

Biology: The study of living organisms, divided into many specialized fields that cover their morphology, physiology, anatomy, behavior, origin and distribution.

Biotic: Relating to or resulting from living things, especially in their ecological relations.

Blue Line: The elevation above which city water or sewer is not provided—thereby limiting development.

Boulder Valley Comprehensive Planning Areas:

Area I is the area within the City of Boulder that has adequate urban facilities and services and is expected to continue to accommodate urban development.

Area II is the area now under county jurisdiction where annexation to the city can be considered consistent with policies - 1.07 Adapting to Limits on Physical Expansion, 1.09 Growth Requirements and 1.16 Annexation. New urban development may only occur coincident with the availability of adequate facilities and services. Master plans project the provision of services to this area within the planning period.

Area III is the remaining area in the Boulder Valley, generally under county jurisdiction. Area III is divided into the Area III-Rural Preservation Area, where the city and county intend to preserve existing rural land uses and character and the Area III-Planning Reserve Area, where the city and county intend to maintain the option of future Service Area expansion.

Capital Improvement Program (CIP): A forecast of funds available for public physical improvement projects and their estimated costs over a six-year period. For OSMP, CIP projects typically include acquisitions, large-scale plans, major trail work, farm site improvements and major restoration or ecological systems work, as well as implementation of past plans.

Carbon Sequestration: The capture and storage of carbon in plants, animals and soil using natural ecosystem processes.

City Charter (Charter): The city's equivalent to the US Constitution that established, described and listed the functions of the Open Space and Mountain Parks Department and the Open Space Board of Trustees as well as the purposes for which the city's open space lands may be used.

City of Boulder's Values: Customer service, respect, integrity, collaboration, innovation.

City of Boulder's Vision: Service excellence for an inspired future.

Climate Change: Any significant change in the measures of climate, such as temperature, precipitation, or wind patterns, among other effects, lasting for an extended period of time and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossils fuels.

LIST OF ACRONYMS AND GLOSSARY

Community-based organization: A public or private nonprofit organization (e.g. a church or religious entity).

Community Farming: Includes farming on a small scale with opportunities for local communities to invest directly in their food system, help create sources of healthy, locally-produced food, and enjoy social, economic, environmental and agricultural benefits. Examples of community farming efforts include demonstration farms, community gardens and food forests. If this term is included in document, then include this definition in the glossary

Community Rangering: A focused and proactive approach where OSMP rangers spend more time in identified "communities" rather than on random patrols throughout the system and work cooperatively with citizens, visitor groups, and organizations to identify and resolve issues of public concern in and around these "communities."

Condemnation: The transfer of a property from its private owner to the government for some civic or public use with monetary compensation with or without the owner's consent.

Conservation Easement: A legally enforceable agreement between the city/OSMP and landowners that protect the environmental values for a property by restricting commercial or residential development or other types of land use incompatible with Open Space purposes, while the owner retains ownership in the property.

Conservation Targets: Aspects of biological diversity identified in the Grassland Plan that best serve as the basis for setting objectives, taking action and measuring success.

Dedication: Property acquired by the city from landowners through the city or county development review process.

Designated Trails: Trails which have a way-finding sign with a trail name and are maintained.

Design Parameters, Trail: Technical guidelines for the survey, design, construction, maintenance and assessment of a trail, based on its designed use and trail class. Design parameters reflect the design objectives for OSMP trails and determine the dominant physical criteria that most define their geometric shape.

Designed Use, Trail: Refers to the managed use of a trail that requires the most demanding design, construction and maintenance parameters. All City of Boulder Open Space and Mountain Parks manages five Designed/Managed Use Types: Authorized Motor Vehicle, Pedestrian/Hiker, Equestrian, Bicycle, Wheelchair Accessible.

Development Review Process: The city and county processes used to evaluate proposed land uses and developments.

Diversified Vegetable/Pastured Livestock Farm: A farm that produces a variety of vegetable crops and cultivars. These farms frequently integrate animals into their vegetable operation, most commonly pigs or chickens, to better cycle nutrients, rest fields, and use waste vegetables as a feedstock.

Easement: An easement granted by a landowner to a public or private entity (as a land trust) in which the landowner agrees to restrictions on use of the land (as from development) and the holder agrees to enforce the restrictions.

Ecology: A branch of science concerned with the interrelationship of organisms and their environments.

Ecosystem: The dynamic complex of organisms and their environment contained within a specified area during a specified time. Systemic elements include interactions and feedbacks between components.

Ecosystem Services: Services provided by ecosystems that benefit humankind through: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

Ecotones/Ecotonal: A transitional zone between two biological communities containing the characteristics of each.

Endemic species: Species that occur nowhere else.

Ephemeral: Lasting a very short time; seasonal.

Erosion: Natural processes (weathering, dissolution, abrasion, corrosion and transportation) by which material is worn away from the earth's surface.

Facility: Something designed, built or installed to serve a specific function affording a convenience or service (e.g. nature centers, restrooms, office buildings, etc.).

Farm Events: Activities, such as farm-to-table dinners and family events, that are being evaluated by staff to determine whether they are suitable for OSMP lands as an additional source of revenue for lessees and an opportunity for community members to connect more closely with OSMP agricultural lands.

Farm Stand: A location for the sale of agricultural and horticultural products, for a period not to exceed 42 days in any calendar year. Non-agricultural and non-horticultural products may comprise no more than ten percent of sales. This use includes Christmas tree and pumpkin sales.

Fee Acquisitions: Land acquired through purchase.

Firebreak/Fuel Break: A buffer between wildlands and city properties created by opening the canopy of trees to reduce the spread of fire.

Floodplain: The low-lying area adjacent to a river or stream that is naturally subject to flooding.

Forbs: Herbaceous flowering plants that are not graminoids (grasses, sedges and rushes), especially one growing in a field, prairie or meadow.

Genetically Modified Organisms (GMOs): Organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered through means other than mating and/or natural recombination so that it contains one or more genes not normally found there. These genes can be transferred from one organism into another and also between unrelated species.

Geology: A science that deals with the history of the earth and its life, especially as recorded in rocks.

Grade: The vertical distance of ascent or descent of the trail expressed as a percentage of the horizontal distance, commonly measured as a ratio of rise to length (i.e. equivalent to the slope of a line, rise over run) or as a percent. For example, a trail that rises 8 vertical feet in 100 horizontal feet has an 8 percent grade. Grade is different than angle; angle is measured with a straight vertical as 90° and a straight horizontal as 0°. A grade of 100 percent would have an angle of 45°.

Grassland Planning Area: 24,000 acres of OSMP lands dominated by mixed-grass and xeric tallgrass prairie for which the Grassland Plan provides practical strategies and measures of success to conserve the ecological values of these grasslands and ensure on-going agricultural production.

Groundwater Discharge: A hydrologic process where water moves from the subsurface to the surface.

Groundwater Recharge: A hydrologic process where water moves downward from surface water to groundwater.

Habitat: The environment where a plant or animal naturally or normally lives and grows.

Habitat Effectiveness: An area that meets a range of required characteristics, including environmental factors and lack of disturbance, and supports all stages of a species lifecycle.

Hydrology: A science that deals with the properties, distribution and circulation of water on and below the earth's surface and in the atmosphere.

Indicator: A device providing specific information on the state or condition of something. Specifically, in the Grassland Plan, indicators were developed to measure, document the condition of and track the status of key attributes (such as size, condition or landscape context) of and conservation targets over time.

Integrated Pest Management (IPM): Focuses on the long-term prevention or suppression of pest problems while minimizing the impact on human-health, the environment and non-target organisms.

Interpretation: The educational methods by which the history and meaning of historic sites, buildings, objects, districts and structures are explained by use of docents, leaflets, tape recordings, signs, film and other means.

Invasive Species: A species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Irrigation: The supply of water to land or crops to help growth, typically by means of channels.

Keystone Species: A species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.

LIST OF ACRONYMS AND GLOSSARY

***Landscape Character:** A distinct, recognizable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

***Landscape Character Areas:** Single unique areas which are the discrete geographical areas of a particular landscape type. Each has its own individual character and identity, even though it shares the same generic characteristics with other types.

***Landscape Character Assessment:** The process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment.

***Landscape Features:** Particularly prominent or eye catching elements, like tree clumps, church towers, or wooded skylines.

***Landscape Types:** Distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land use, and settlement pattern.

Laterals: A branch off of a main ditch used to deliver irrigation water to a shareholder.

LatinX: A gender neutral term often used in lieu of Latino or Latina (referencing Latin American cultural or racial identity).

Lessees: Farmers and ranchers who lease land from OSMP in support of their agricultural operations and act as stewards of the land.

Managed Uses, Trail: The modes of travel that are actively managed and appropriate on a trail, based on its design and management. A trail can have allowed uses that are not managed.

Mesic: Characterized by, relating to or requiring a moderate amount of moisture.

Mitigate: To cause to become less harsh or hostile.

Monoculture: Areas occupied by single species stands.

Montane: Of, relating to, growing in or being the biogeographic zone of relatively moist cool upland slopes below timberline dominated by large coniferous trees.

Passive Recreation: (OSMP, 2005 Visitor Master Plan): Passive recreation is identified as a purpose of the Open Space and Mountain Parks Program in the Boulder City Charter. Although the City Charter never precisely defines passive recreation, it does mention several "passive" recreational activities, including: hiking, nature study, and photography. Three other recreational activities are listed in the City Charter as appropriate passive recreation under certain conditions--bicycling, fishing, and horseback riding. Passive recreation is different from developed recreation in that passive recreation activities require minimal construction or development of facilities for the activity to be conducted. The first Visitor Plan Advisory Committee crafted the following definition of passive recreation, which is used in the Visitor Master Plan. **Passive recreation** is defined as non-motorized activities that:

- Offer constructive, restorative, and pleasurable human benefits that foster an appreciation and understanding of Open Space [and Mountain Parks] and its purposes
- Do not significantly impact natural, cultural, scientific, or agricultural values
- Occur in an Open Space and Mountain Parks setting, which is an integral part of the experience
- Require only minimal facilities and services directly related to safety and minimizing passive recreational impacts
- Are compatible with other passive recreational activities.

Perennial: Present at all seasons of the year.

Prescriptive Grazing: The application of domestic livestock grazing during a specified time period and at a specified intensity to accomplish specific vegetation management goals such as controlling invasive plant populations and enhancing desirable vegetation conditions.

Propagate: Breed specimens of a plant by natural processes from the parent stock.

Regional Trails: Trails that establish or enhance trail connections within and around Boulder County and/or multiple counties, often with the goal of linking various public land destinations.

Recreation Activity: The doing of a pastime, diversion, or exercise affording relaxation and enjoyment.

Relict: A thing that has survived from an earlier period or in a primitive form.

Remnant: A small remaining quantity of something.

Resilience: The ability of a community to prepare for and respond effectively to stress.

Riparian Areas: Areas along streams and rivers, including related vegetation community.

Savannahs: Grassy plains with few trees.

Shale Barrens:

Shale: A fissile rock that is formed by the consolidation of clay, mud or silt, has a finely stratified or laminated structure and is composed of minerals essentially unaltered since deposition.

Barrens: An extent of usually level land having an inferior growth of trees or little vegetation.

Soil Health: The continued capacity of soil to function as a vital living ecosystem that sustains plants, animals and humans.

Stewardship: The careful and responsible management of something entrusted to one's care.

Stewardship Plan: A plan that will be developed for every agricultural property being leased by OSMP. These plans will include details about permitted agricultural uses, intensity of agricultural use and stewardship requirements; any OSMP required special conditions including requirements related to recreation and/or ecological management; as well as outline the condition of facilities on the property and detail who is responsible for facilities maintenance and repair. If this term is included in document, then include this definition in the glossary

Surface Type, Trail: The material that makes up the surface portion of a trail on which visitors travel typically native material, gravel, soil cement, asphalt, concrete or shredded, recycled tires.

Sustainability Framework: Common language included in the BVCP for all city departments, the local community and City Council defining what makes a great community including the following seven broad categories: safe community, healthy and socially thriving community, livable community, accessible and connected community, environmentally sustainable community, economically vital community and good governance.

Sustainable: Of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

Talus: A slope formed especially by an accumulation of rock debris.

Terrestrial: Living on or in or growing from land.

Trail Class: The prescribed scale of development for a trail, representing its intended design and management standards.

Trail Easement: An easement that specifically allows the construction of a trail linkage or public access through a private property.

Trail Management Objectives (TMOs): The intended design and management guidelines for trail design, construction and maintenance combined with management strategies and maintenance criteria that provide the fundamental building blocks for OSMP trail management and basic reference information for subsequent trail planning, management, condition surveys and reporting.

Trail Type: Reflects the predominant trail surface and mode of travel.

Tread: The surface portion of a trail upon which visitors travel excluding backslope, ditch and shoulder. Common tread surfaces are native material, gravel, soil cement, ashalt, concrete or shredded, recycled tires.

Undesignated Trails: Trails created or worn into the landscape by visitors repeatedly walking off of designated trails. Sometimes, undesignated trails begin as wildlife or cattle trails that attract the interest of hikers or other visitors. They are not shown on public trail maps and are not maintained.

Ungulate: Having hooves.

LIST OF ACRONYMS AND GLOSSARY

****Visitor Experience:** The perceptions, feelings, and reactions that a visitor has before, during, and after a visit to an area.

Visitor Surveys: Mailed resident surveys and on-site exit surveys of people leaving the OSMP system to obtain demographic information, trip characteristics and goals, and experience evaluations.

****Visitor Use:** Refers to human presence in an area for recreational purposes, including education, interpretation, inspiration, and physical and mental health.

****Visitor Use Management:** The proactive and adaptive process for managing characteristics of visitor use and the natural and managerial setting, using a variety of strategies and tools to achieve and maintain desired resource conditions and visitor experiences.

Water Diversion: A channel made to divert the flow of water from one course to another or to direct the flow of water draining from a piece of ground.

Water Rights: All surface and groundwater in Colorado is a public resource for beneficial use by public agencies, private persons, and entities;

1) A water right is a right to use a portion of the public's water resources;

2) Water rights owners may build facilities on the lands of others to divert, extract, or move water from a stream or aquifer to its place of use; and,

3) Water rights owners may use streams and aquifers for the transportation and storage of water.

Water Quality: The chemical, physical, biological and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose.

Watershed: An area of land that drains all the outflow of a reservoir, mouth of a bay or any point along a stream channel.

Wetlands: Where water is present above or near the surface of soil. Wetlands vary depending on soils, topography, climate, water chemistry and vegetation.

Working Lands: OSMP lands on which there is active agricultural production.

Xeric: Characterized by, relating to or requiring only a small amount of moisture.

Adobe Stock Image

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