Developing a Resiliency Framework for Jefferson County Open Space:
Meeting the Mission by Managing for Future Uncertainty

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Learning Objectives

1. What is resiliency?
2. What is the difference between resiliency and sustainability?
3. How can you and your agency incorporate resiliency into land management planning?

What has been your favorite part of COSA?

COLORADO OPEN SPACE ALLIANCE

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What are your organization's most pressing management challenge(s)?

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Jefferson County Open Space (JCOS)

"Preserve open space and parkland, protect park and natural resources, [and] provide healthy, nature based experiences"
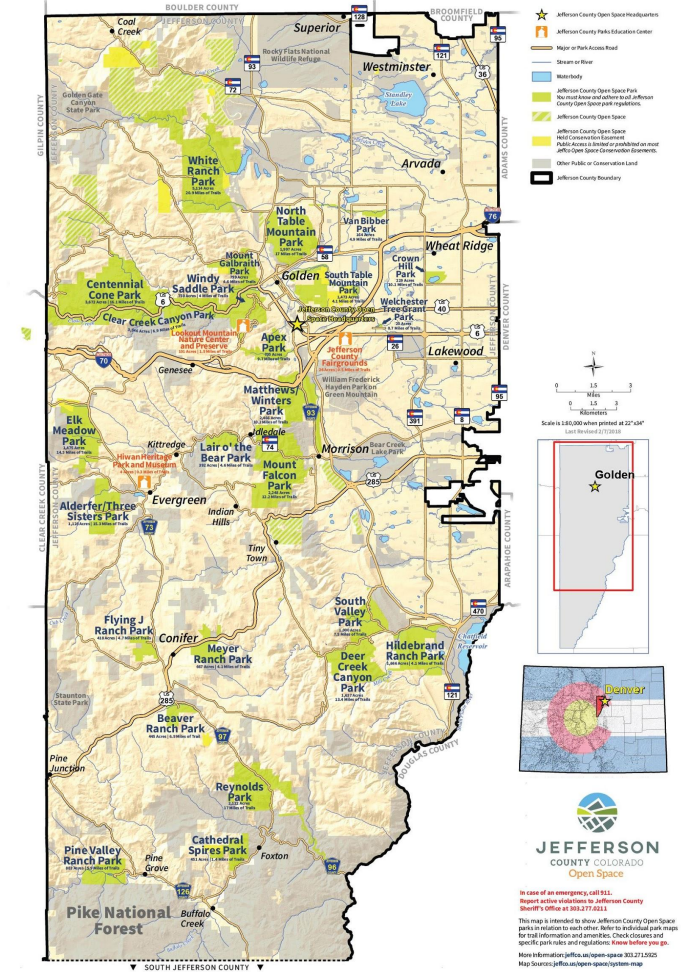
Founded in 1972

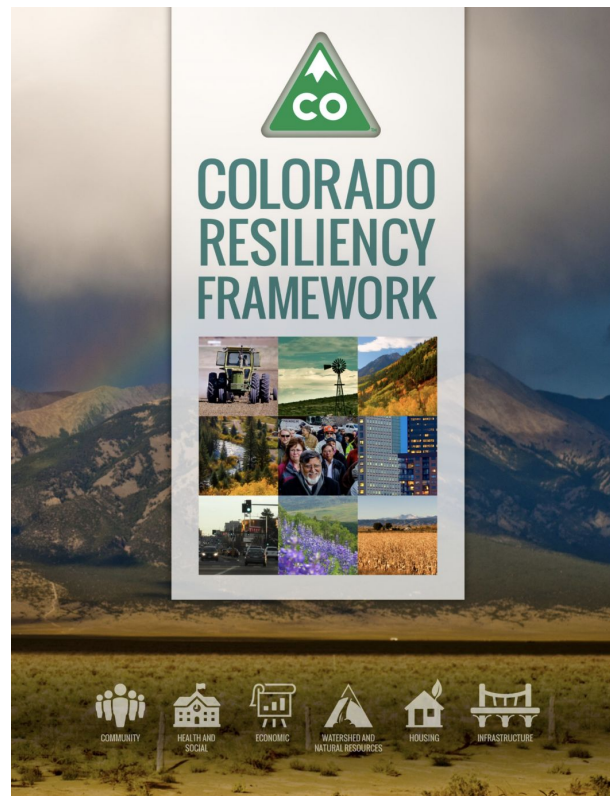28 open space parks | 56,000 acres | 244 miles of trails

JEFFERSON COUNTY COLORADO
Open Space

Colorado Resiliency Framework

City of Boulder Resilience Strategy

CITY OF BOULDER
RESILIENCE STRATEGY

PIONEERED BY THE
ROCKEFELLER FOUNDATION
100 RESILIENT CITIES

THROUGH THE RESILIENCE assessment and community discussions, Boulder has identified three major resilience strategies. Working collaboratively to create actions that achieve these interconnected strategies will help build a resilient and adaptive community that is better able to address the unpredictable impacts of environmental, social and economic shocks and stresses.

Building community resilience is a never-ending process and requires constant adjustment to new conditions and opportunities. At its heart, building community resilience is about social cohesion and the connections between and among people and organizations. The design and implementation of each of these strategies, actions and frontiers is intended to create new or amplify existing bonds to build our collective resilience, regardless of the threat we face. Through the actions identified here, we take steps towards meeting these goals, but as noted earlier, these are not the first steps. These new actions add to ongoing and historic efforts in a way that brings intentional direction toward catalyzing change across all sectors of the community.

Strategies

The following three strategies represent the main action areas for the city:

■ **CONNECT AND PREPARE** - Prepare all segments of the community for uncertainty and disruption by encouraging community preparedness, creating a culture of risk awareness and personalizing resilience.

■ **PARTNER AND INNOVATE** - Capitalize on the collective problem-solving and creativity of our community by leveraging advances in data, research and observations to address emerging resilience challenges.

■ **TRANSFORM AND INTEGRATE** - Embed resilience into city operations and systems by transforming our approach to community resilience.

Actions

These are immediate priority activities to be implemented over the next two to three years that take advantage of partnerships and resources catalyzed by the 100RC network and program. The actions being proposed are intended to be responsive to existing city priorities and bring a resilience lens and added value to projects and initiatives that are already underway. A summary table of all the proposed activities is provided at the end of this document.
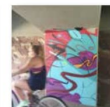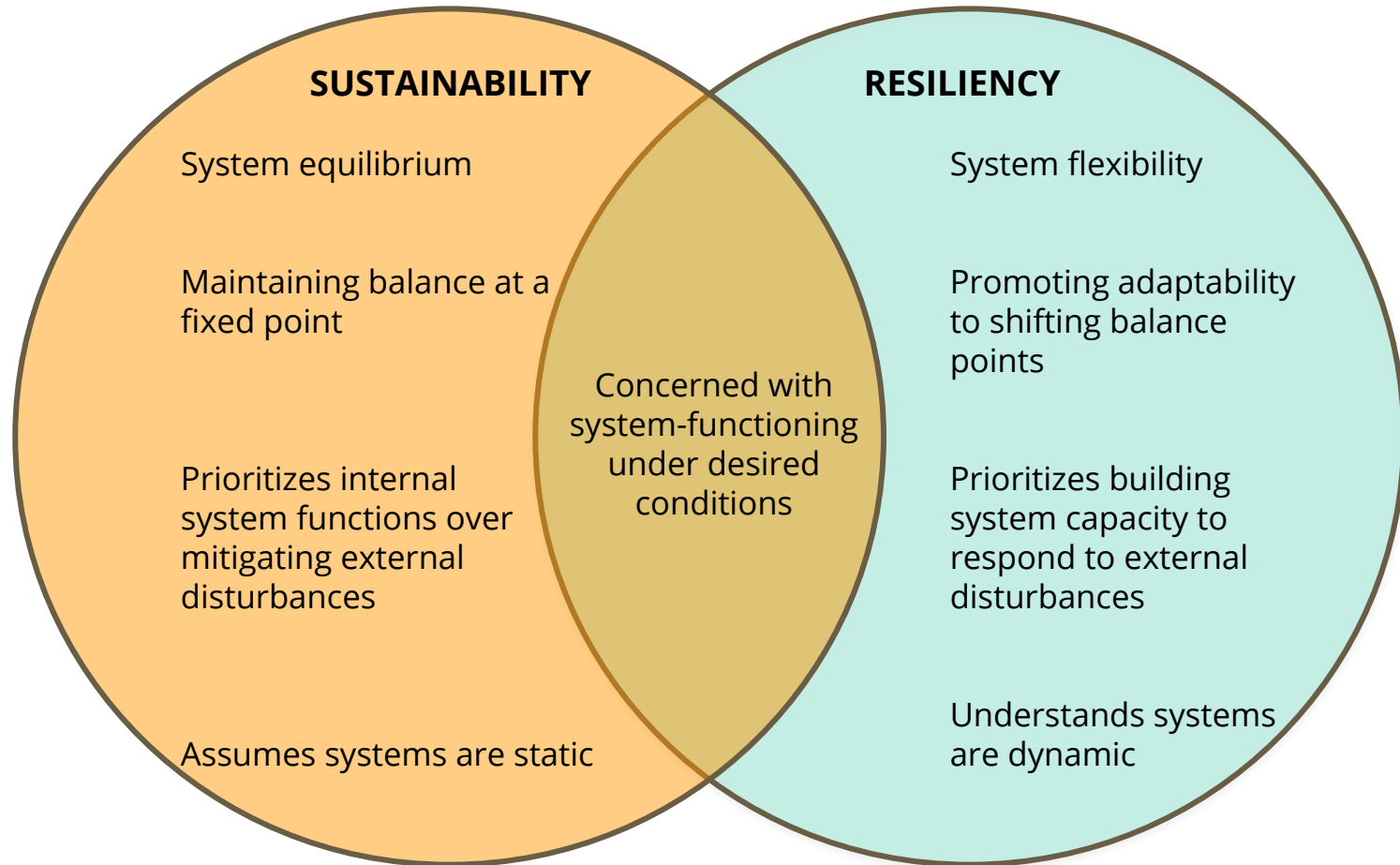
Frontiers

Transformative investments in community resilience that currently have no models to emulate, represent extremely complex areas for action and/or require an extensive community conversation to be successful.

Sustainability vs. Resiliency

SUSTAINABILITY

System equilibrium

Maintaining balance at a fixed point

Prioritizes internal system functions over mitigating external disturbances

Assumes systems are static

RESILIENCY

System flexibility

Promoting adaptability to shifting balance points

Prioritizes building system capacity to respond to external disturbances

Understands systems are dynamic

Concerned with system-functioning under desired conditions

Sustainability vs. Resiliency:
U.S. 34 BIG THOMPSON CANYON

SUSTAINABLE	RESILIENT
- Original configuration maintained operation for non-flood conditions - Original configuration did not consider social resiliency	- New design enables adaptation to major flood events - New design considers social resiliency
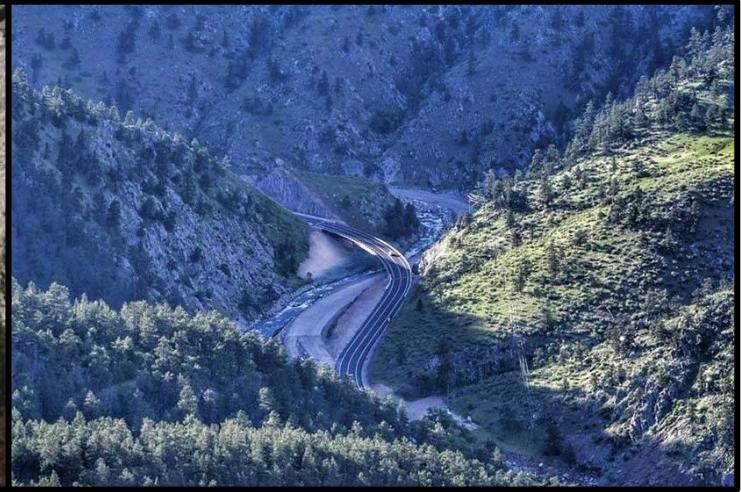
Methods

| Spring 2019	Summer 2019	Fall 2019
Literature review and interviews with environmental professionals	JCOS staff engagement workshops	Colorado Open Space Alliance Conference presentation
National Outdoor Recreation Conference poster presentation	Field-based learning at JCOS parks and properties	Staff testing of framework and scorecard
	Writing of framework and scorecard	
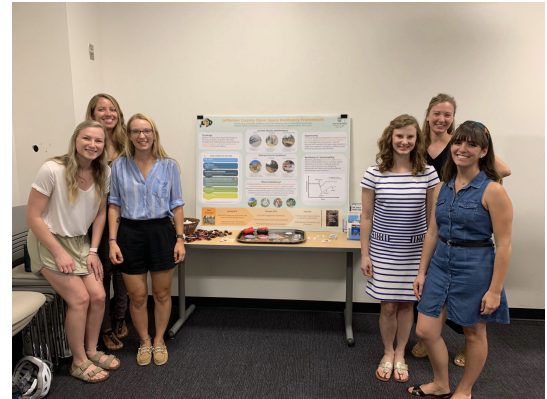
Components of Resiliency Planning: *Identifying Shocks and Stressors*

Vulnerability: The quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally

Shock: Direct disturbance (e.g., wildfire, flooding, economic downturn, etc.)

Stressor: Indirect disturbance (e.g., drought, overgrazing, demographic shifts, visitor behavior, etc.)
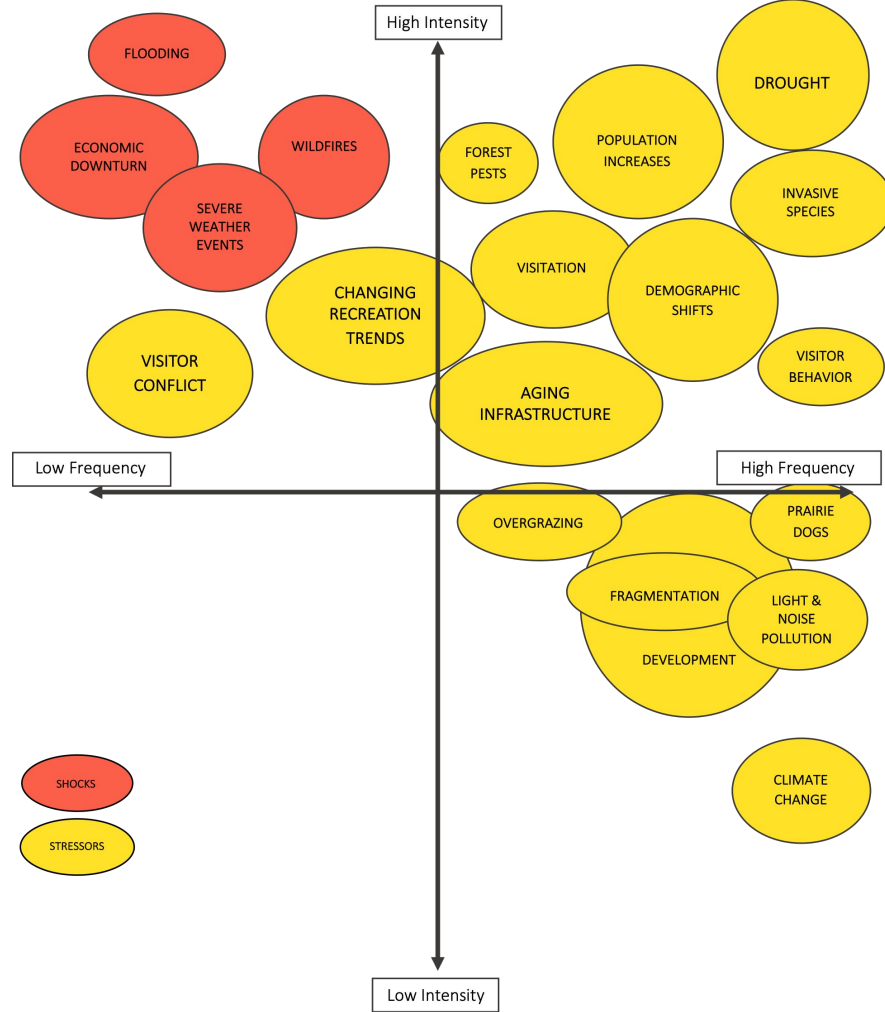
Shocks and Stressors for Jefferson County Open Space

What types of shocks or stressors does your organization face?

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JCOS Working Definition of Resiliency

The ability of Jefferson County Open Space (JCOS) to rebound, positively adapt to, or thrive amidst changing conditions or challenges - including social, environmental, and biological shocks or stressors.

A resilient JCOS will maintain the preservation of open space and parkland, protect park and natural resources, and provide healthy, nature-based experiences for present and future generations.

JCOS Resiliency Framework Objectives

- Establish a definition and vision of resiliency

- Evaluate relevant shocks and stressors within JCOS

- Provide guidelines for increasing resilience within the open space system, including a resilience scoring matrix (The Scorecard)
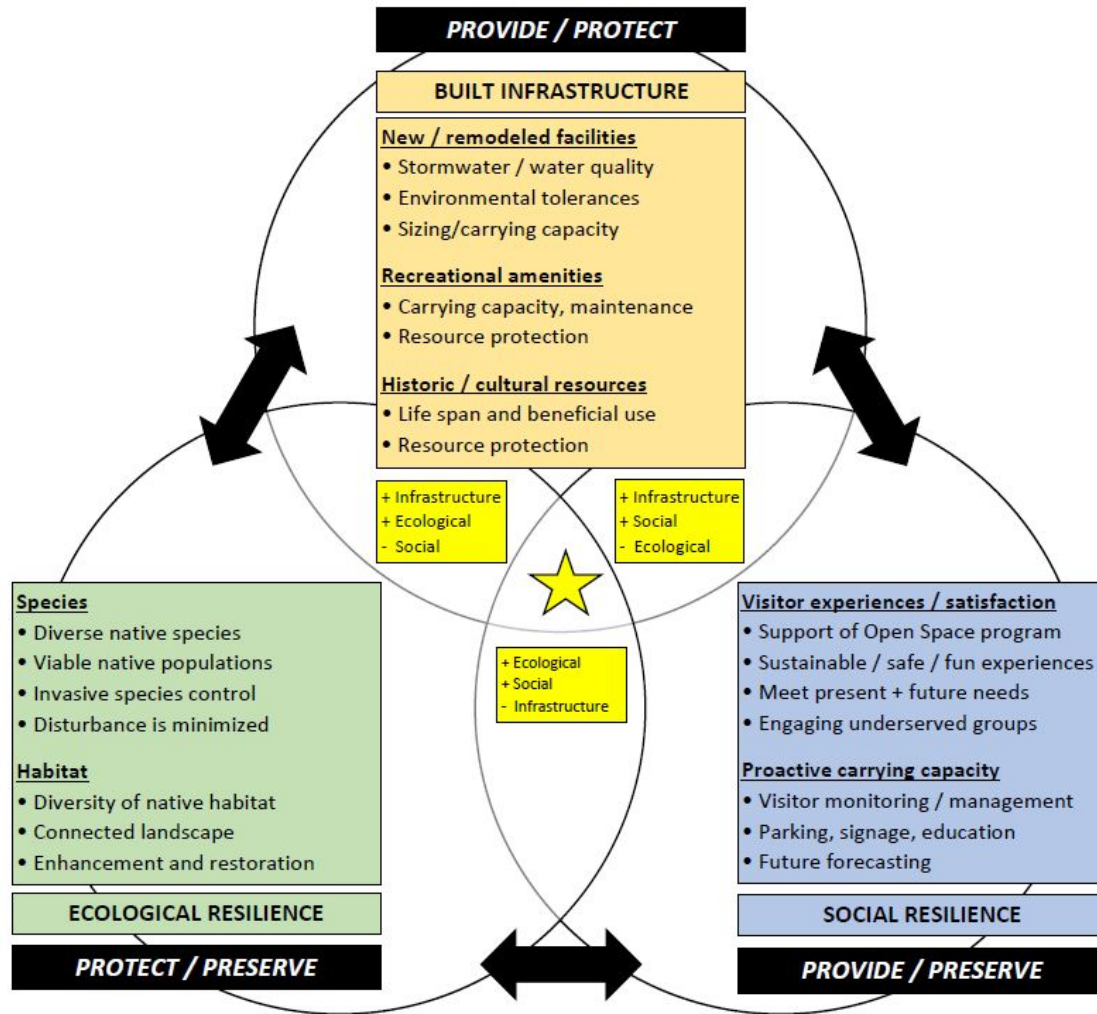
Thinking about resiliency, what is your organization's vision?
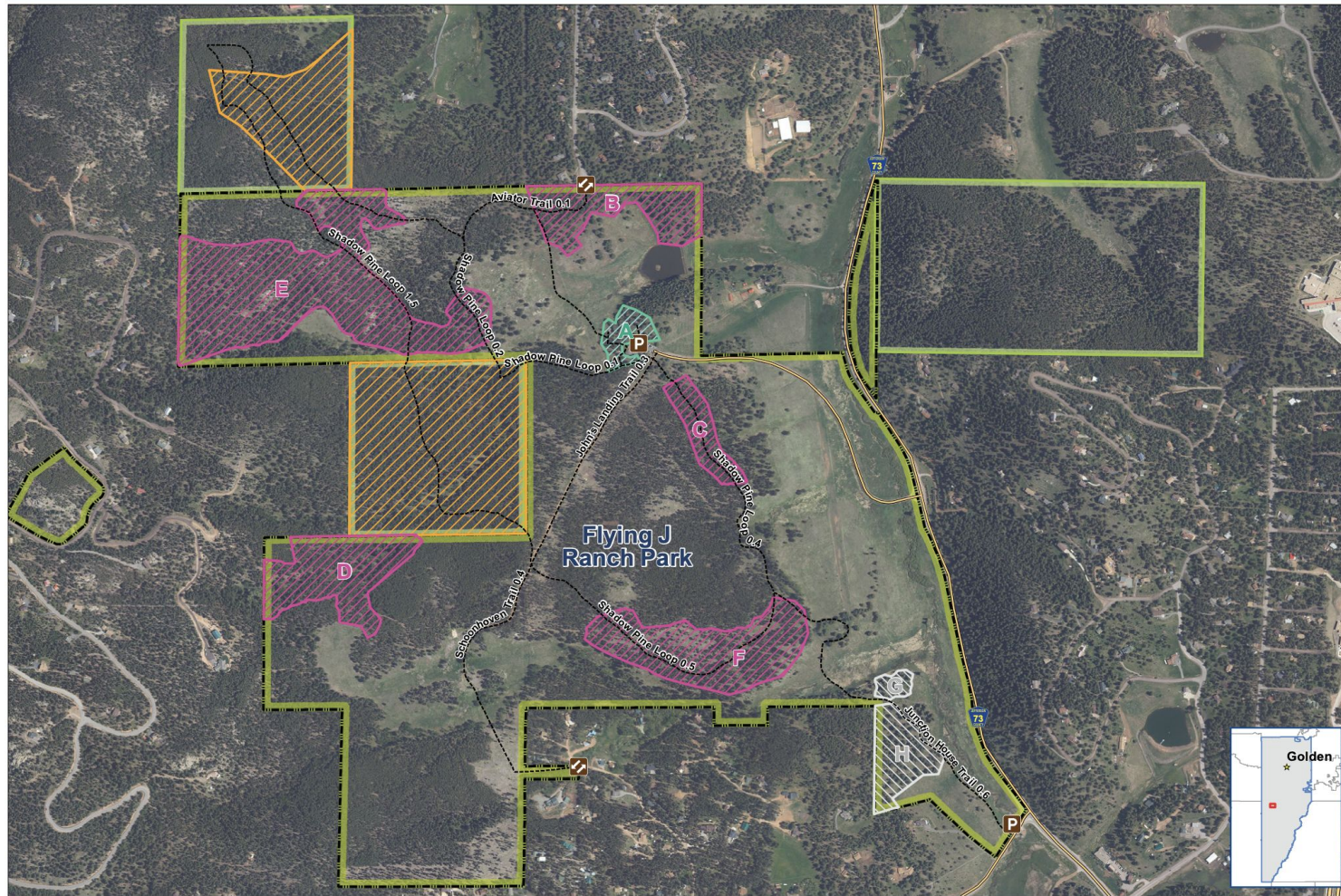
Forest Management Project: Flying J Ranch Park
Hypothetical Scoring Exercise

FLYING J RANCH PARK

Forest Management Blocks (2018–2020)

Legend:

- Jeffco Open Space 2019–2020 Forest Management Blocks
- Jeffco Open Space 2020 Forest Management Blocks
- Jeffco Open Space Finished Forest Management Blocks
- Potential Denver Mountain Parks Forest Management Blocks
- **P** Parking
- Access Point
- Jeffco Open Space Trail
- Jeffco Open Space
- Denver Mountain Parks

Map labels:

Aviator Trail 0.1
Shadow Pine Loop 1.5
Shadow Pine Loop 0.2
Shadow Pine Loop 0.3
John's Landing Trail 0.3
Shadow Pine Loop 0.4
Shadow Pine Loop 0.5
Schoonhoven Trail 0.4
Junction Horse Trail 0.6

Flying J Ranch Park

Block labels: A, B, C, D, E, F, G, H

73

Golden

N

0   250   500
Feet
Scale is 1:8,500 when printed at 11"x17"

Last Revised 3/19/2019

JEFFERSON
COUNTY COLORADO
Open Space

DENVER
PARKS & RECREATION

Data Sources: Jeffco Open Space, Jeffco ITS, USGS, NHD, CDOT, DRCOG

SEE OUR WEBSITE
FOR MORE INFORMATION
jeffco.us/open-space

Date : 3/19/2019   Document Path: M:\GIS\2 4 Natural Resources\Team Projects\2019\2019 Forestry\20180226 FJR SFA GrantMeds\20190314 FJR Park Forest Management Blocks 2018.mxd   Created by: Jefferson County Open Space

Forest Management Project: Flying J Ranch Park
Hypothetical Scoring Exercise

Section 1: Risk

Section 1: Risk	Please identify the items listed below:
Shocks and Stressors	Wildfire, drought, forest pests, climate change
Vulnerabilities	Stands of overgrown, crowded trees; surrounding private land that is untreated
Consequences	Catastrophic wildfire with large impacts on forests and human safety; greater chances of wildfire; negative impacts on forest health and visitor experience

Sample of pre-treatment area

Scoring System

Scoring Guidelines				
-6 to -4	**-3 to -1**	**0**	**1 to 3**	**4 to 6**
Project **significantly harms** diversity of native species	Project **mildly harms** diversity of native species	Project **does not affect** diversity of native species	Project **mildly promotes** diversity of native species	Project **significantly promotes** diversity of native species

Features of Resiliency

Resilience Feature	Definitions	Examples
Diversity	Multiple, unique components of a system that serve similar functions – therefore enabling diverse responses to shocks and stressors.	- Diversity of native species

Section 2: Resilience Score

Diversity: To what degree does this project impact ecological diversity within the JCOS park system?

Criteria	Score (-6 to +6)	Weight Factor	Total Score	Scoring Guidelines					
				-6 to -4	**-3 to -1**	**0**	**1 to 3**	**4 to 6**	*Please provide a detailed justification for this score:*
Native Species	4	2	8	*Project significantly harms diversity of native species*	*Project mildly harms diversity of native species*	*Project does not affect native species*	*Project mildly promotes diversity of native species*	*Project significantly promotes diversity of native species*	The project increases native diversity primarily in the understory and opening up areas to increase light for grasses, flowers, fungi, etc. The project goal is for wildlife diversity to increase since more species will use the treated areas; however minor reductions in tree diversity are likely as a result of the project.
Habitats	3	1	3	*Project significantly decreases habitat diversity*	*Project mildly decreases habitat diversity*	*Project does not affect habitat diversity*	*Project mildly promotes habitat diversity*	*Project significantly promotes habitat diversity*	The project mostly focuses on enhancing existing habitat, not necessarily creating new habitats.
Diversity Score:			**11**	**out of 18**					

Features of Resiliency

Resilience Feature	Definitions	Examples
Diversity	Multiple, unique components of a system that serve similar functions – therefore enabling diverse responses to shocks and stressors.	- Diversity of native species
Connectivity	Physical or functional patterning that supports continuity of resources, experiences, and infrastructure design – therefore allowing management strategies to consider the "larger picture."	- Habitat connectivity

Connectivity: To what degree does this project impact ecological connectivity within the JCOS park system?								
Criteria	Score (-6 to +6)	Weight Factor	Total Score	Scoring Guidelines				
				-6 to -4	-3 to -1	0	1 to 3	4 to 6	*Please provide a detailed justification for this score:*
Functional Connectivity	3	1	3	*Project significantly harms functional connectivity*	*Project mildly harms functional connectivity*	*Project does not affect functional connectivity*	*Project mildly promotes functional connectivity*	*Project significantly promotes functional connectivity*	Habitat enhancement for wildlife will benefit many species of birds and insects that will be able to move from patch to patch, even if there are some untreated areas between patches.
Physical Connectivity	4	2	8	*Project significantly harms physical connectivity*	*Project mildly harms physical connectivity*	*Project does not affect physical connectivity*	*Project mildly promotes physical connectivity*	*Project significantly promotes physical connectivity*	Project areas physically connect to past treatment areas, creating a landscape scale fuel break. As a result, surrounding neighborhoods are more protected from a fire in the park, and the park is more protected from a fire in the neighborhoods.
Connectivity Score:			11	out of 18				

Features of Resiliency

Resilience Feature	Definitions	Examples
Diversity	Multiple, unique components of a system that serve similar functions – therefore enabling diverse responses to shocks and stressors.	- Diversity of native species
Connectivity	Physical or functional patterning that supports continuity of resources, experiences, and infrastructure design – therefore allowing management strategies to consider the "larger picture."	- Habitat connectivity
Redundancy	Fail-safe mechanisms that ensure that if a component of a system fails, another component may take its place – therefore promoting adequate responses to shocks and stressors.	- Redundant ecosystem services

Redundancy: To what degree does this project impact ecological redundancy within the JCOS park system?									
Criteria	Score (-6 to +6)	Weight Factor	Total Score	Scoring Guidelines					
				-6 to -4	-3 to -1	0	1 to 3	4 to 6	*Please provide a detailed justification for this score:*
Ecosystem Services	1	1	1	*Project significantly decreases ecosystem services*	*Project mildly decreases ecosystem services*	*Project does not affect ecosystem services*	*Project mildly increases ecosystem services*	*Project significantly increases ecosystem services*	Ecosystem services that are being enhanced through this project include: carbon sequestration, recreation, and human health and safety. Since this project is only within one park, it does not have a large impact on the overall redundancy of ecosystem services in the park system.
Redundancy Score:			1	out of 6					

Section 3: How does this project allow JCOS to be more adaptive to relevant ecological shocks and stressors?

Project directly reduces risk of catastrophic wildfire and increases forest health. Healthier forests are less vulnerable to drought, forest pests, and the long-term effects of climate change.

Section 4: Broader Impacts

Question	Score (-6 to +6)	Weight Factor	Total Score	Scoring Guidelines					
				-6 to -4	**-3 to -1**	**0**	**1 to 3**	**4 to 6**	*Please provide a detailed justification for this score:*
To what degree does this project impact social resiliency?	3	2	6	*Project significantly harms social resiliency*	*Project mildly harms social resiliency*	*Project does not affect social resiliency*	*Project mildly promotes social resiliency*	*Project significantly promotes social resiliency*	In the short term, visitor experiences are impacted negatively by rolling park closures and aesthetics of forest treatment project. In the long term, all visitors benefit from reduced wildfire risk and healthier forest ecosystems. In addition, surrounding neighborhoods also benefit from reduced wildfire risk.
To what degree does this project impact built infrastructure resiliency?	1	1	1	*Project significantly harms built infrastructure resiliency*	*Project mildly harms built infrastructure resiliency*	*Project does not affect built infrastructure resiliency*	*Project mildly promotes built infrastructure resiliency*	*Project significantly promotes built infrastructure resiliency*	Built infrastructure at the park is minimal (restrooms, kiosks, pavillion), but project helps protect these from wildfire.
Total Score for Section 4:			**7**	**out of 18**					

Project Resilience Score: | **30 out of 60**

Wrapping it up:

- What kind(s) of projects would this scorecard help evaluate within your organization?

- How would you use resiliency to address the management challenges discussed earlier?

Thank You!

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