



PLANNING FOR HAZARDS

Land Use Solutions for Colorado

Reducing Community Risk
May 16, 2023

Panelists



Anne Miller

Director

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Dale Case

Director

Boulder County
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Agenda

- Introduction
 - Anne Miller, Colorado Resiliency Office
- Why Planning for Hazards is Important
 - Anne Miller
- Overview of Planning for Hazards Guide
 - Andy Rumbach, Urban Institute
- Putting the Guide into Action
 - Andy Rumbach
- Boulder County Case Study
 - Dale Case, Boulder County
- Q & A



Colorado Resiliency Framework

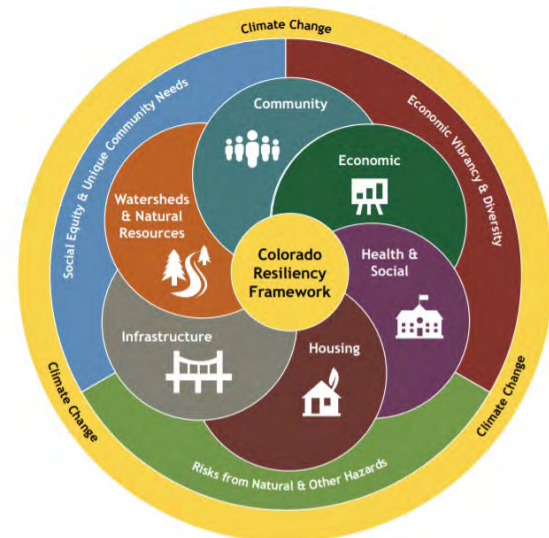
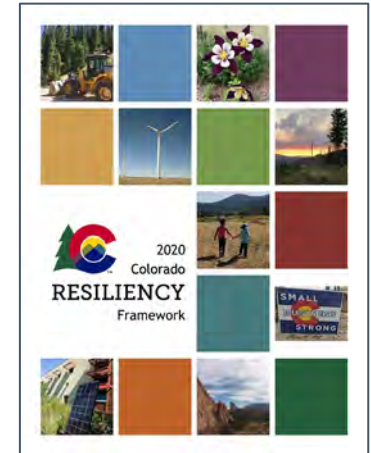
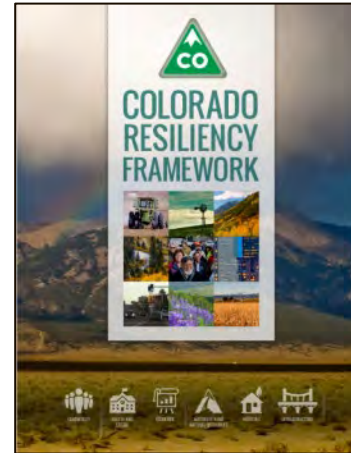
Adopted in 2015, updated in 2020

Establishes a vision and definition of resilience

Planning for Hazards guide - strategy from 2015

A “call to action” for Colorado

coresiliency.com



What is Resiliency?

*“The the ability of communities to rebound and positively **adapt to or thrive amidst changing conditions or challenges**—including disasters and changes in climate—and maintain quality of life, healthy growth, economic vitality, durable systems and conservation of resources for present and future generations.*

- 2018 Update to the Colorado Disaster Emergency Act



Why Planning for Hazards is Important

Why Colorado?

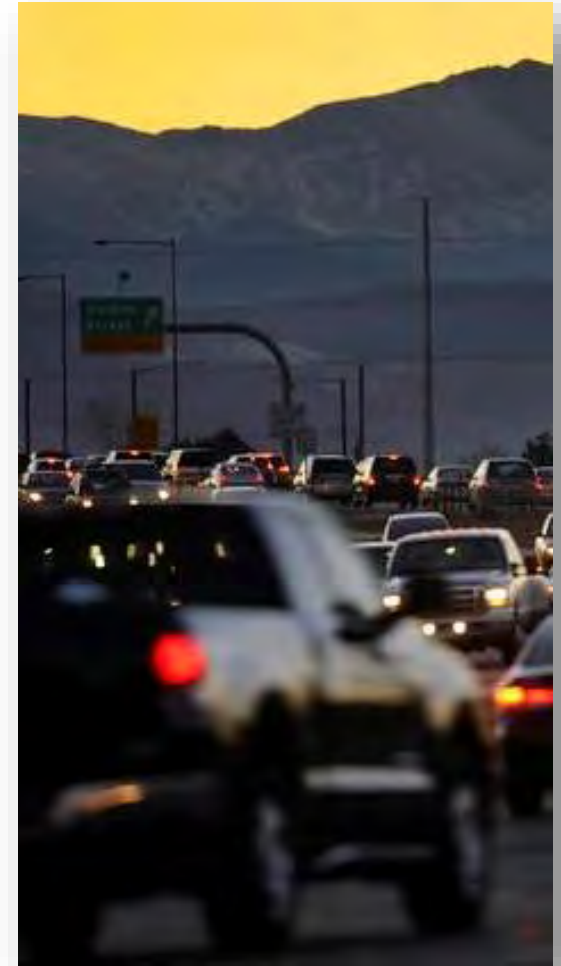
The population is growing

We are no stranger to hazards

Many Colorado communities face hazards

- Riparian areas (floodways)
- Forested and grassland areas (wildland-urban interface)
- Ridgelines (great views/steep slopes)

Natural disasters are increasing in frequency and severity



Why Land Use Planning?

- Cost Effective - losses avoided have high benefit-to-cost ratio
- Far Reaching - over 38,000 general purpose local governments in the United States
- Flexible - different tools and strategies for different communities



National Benefit-Cost Ratio (BCR) Per Peril *BCR numbers in this study have been rounded		Beyond Code Requirements	Federally Funded
Overall Hazard Benefit-Cost Ratio		\$4:1	\$6:1
 Riverine Flood		\$5:1	\$7:1
 Hurricane Surge		\$7:1	Too few grants
 Wind		\$5:1	\$5:1
 Earthquake		\$4:1	\$3:1
 Wildland-Urban Interface Fire		\$4:1	\$3:1

(Source: National Institute of Building Sciences, 2019)



Overview of the Planning for Hazards Guide

Overall Goals

Communicate to multiple audiences

Ensure all content is accessible in a variety of formats

Printed guide

- User-friendly exploration of major planning tools
- All content, plus internal and external links

Website

- Essential content from all chapters (background, framework, resources, examples)
 - Multiple ways (entry points) to access information
 - Multimedia content
 - Foundation for future updates
-



Outline:

Introduction and
Summary

Planning Framework

Hazard Identification
and Risk Assessment

Planning Tools and
Strategies

Moving Forward

Appendix – Hazards in
Colorado



PLANNING FOR HAZARDS:
Land Use Solutions for Colorado

MARCH 2016

The Hazards Lineup



Avalanche



Drought



Earthquake



Extreme Heat



Flood



Hazardous
Material Release



Landslide, Mud/
Debris Flow, and
Rockfall



Severe Winter
Storm



Soil Hazards



Wildfire



Wind Hazards



Planning Tool Profiles

ADDRESSING HAZARDS IN PLANS AND POLICIES

Comprehensive Plan

Climate Plan

Community Wildfire Protection Plan (CWPP)

Hazard Mitigation Plan

Parks and Open Space Plan

Pre-Disaster Planning

STRENGTHENING INCENTIVES

Community Rating System

Density Bonus

Development Agreement

Transfer of Development Rights

PROTECTING SENSITIVE AREAS

1041 Regulations

Cluster Subdivision

Conservation Easement

Land Acquisition

Overlay Zoning

Stream Buffers and Setbacks

IMPROVING SITE DEVELOPMENT STANDARDS

Stormwater Ordinance

Site-Specific Assessment

Subdivision and Site Design Standards

Use-Specific Standards

IMPROVING BUILDINGS AND INFRASTRUCTURE

Building Code

Critical Infrastructure Protection

Wildland-Urban Interface (WUI) Code

ENHANCING ADMINISTRATION AND PROCEDURES

Application Submittal Requirements

Post-Disaster Building Moratorium

- Exploratory Scenario Planning
- Resilience Planning
- Fluvial Hazard Zones
- Landscaping Ordinance
- Capital Improvement Plan
- Community Engagement
- Funding Strategies

What's in the Tool Profiles?

How it Works

Implementation

Where It's Been Done

Advantages and Key Talking Points

Challenges

Model Code Language and Commentary (for some)

Key Facts

Examples and More Information





www.planningforhazards.com

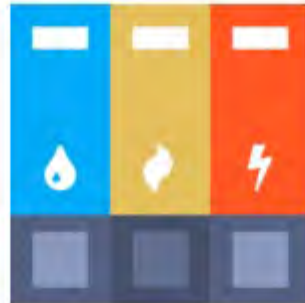


Purpose of the Guide

Learn how the Hazard Mitigation Guide can help your community address risks and integrate hazard mitigation into policies, regulations, and standards.

Intro

This guide provides detailed, Colorado-specific information about how to assess a community's risk level to hazards and how to implement several land use planning tools and strategies for reducing a community's risk.



Read the Guide

To explore this guide or specific chapters in the traditional format, Page-by-Page from start to finish, look for the purple Table of Contents on the top right and the previous/next buttons on the bottom of each page.

Table of Contents



Putting the Guide into Action

Forming a Network

Identify subject matter experts

Find examples from other communities and best practices

Harness political leadership

Recruit local champions



Putting the Guide into Action

Developed facilitator and participant workbooks to convene work-sessions

Piloted project with Milliken and Manitou Springs

Developed and held workshops in 2018

New tools and model codes added to site

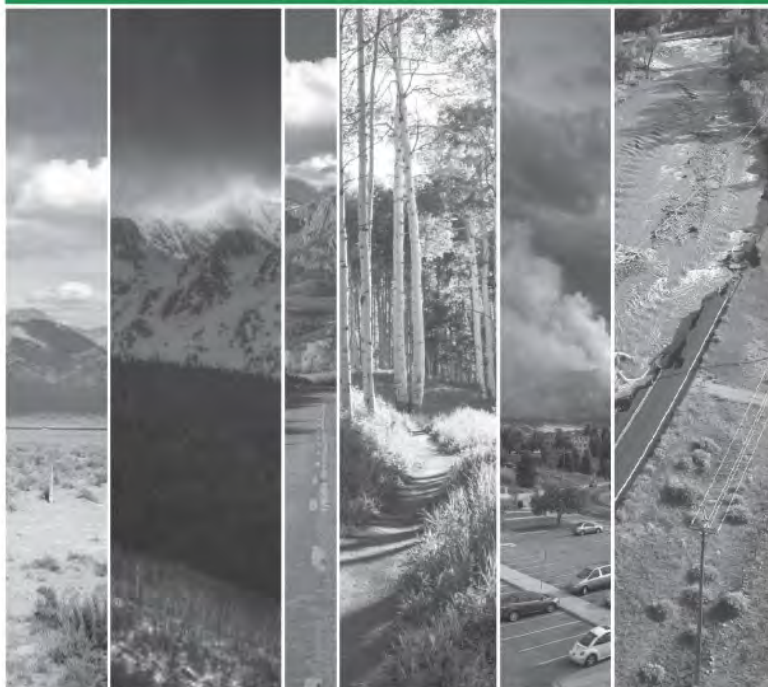




PLANNING FOR HAZARDS
Land Use Solutions for Colorado

WORKBOOK

VERSION 2, JUNE 2019



Tasks and Work Sessions	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
Work Session 1 – Provide Introduction and Framework, & Assess Community Vulnerability		★										
Prepare Risk Assessment/HIRA; Prepare Stakeholder Engagement Strategy												
Work Session 2 – Assess Capabilities and Develop Planning Strategies				★								
Prepare Assessment Memo												
Work Session 3 – Prioritize Planning Implementation Tools						★						
Refine Assessment Memo; Develop Implementation Tools												
Work Session 4 – Review and Refine Draft Planning Implementation Tools									★			
Work Session 5 – Establish Implementation and Maintenance Procedures											★	

KEY: ★ = work session = ongoing work

Risk Assessment

1. Describe Hazards

2. Identify
Community
Assets

3. Evaluate
impacts &
potential
losses

4. Summarize
key issues &
vulnerabilities



Note: FEMA Local Mitigation Planning Handbook and adapted from U.S. Geological Survey and Oregon Partnership for Disaster Resilience Models

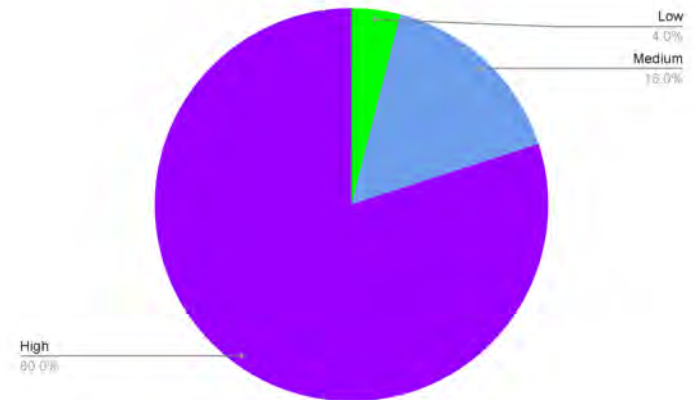
Implementation: Milliken

- **Milliken** is a fast-growing town in Weld County
- Revised landscape ordinance to help manage multiple water-related hazards
- Led by advisory committee, under supervision of Planning Commission and in line with goals of comprehensive plan
- Applies standards to all new development, including species selection and site standards



Implementation: Green Mountain Falls

- **Green Mountain Falls** is a rural town of 875, near Manitou Springs & Colorado Springs
- Accumulation of wildland fuels and downtown flood risk
- Prioritized hazard mitigation in comprehensive plan
- Resiliency woven throughout plan, including land-use element



Implementation: Manitou Springs

- **Manitou Springs** is a small city of 5,000 in the foothills of Pike's Peak
- Suffered multiple disasters in 2012-2015, including Waldo Canyon Fire
- After joint comprehensive plan-hazard mitigation plan update, focused on development code update
- Alternative to site specific hazard assessment (too cumbersome)
- Centered on subdivision regulations and zoning code



Implementation: Training Course

Mitigating Hazards with Land Use Planning

MGT-474

Module 1: Welcome, Introduction and Administration



FEMA

April 2022
Version 1.0

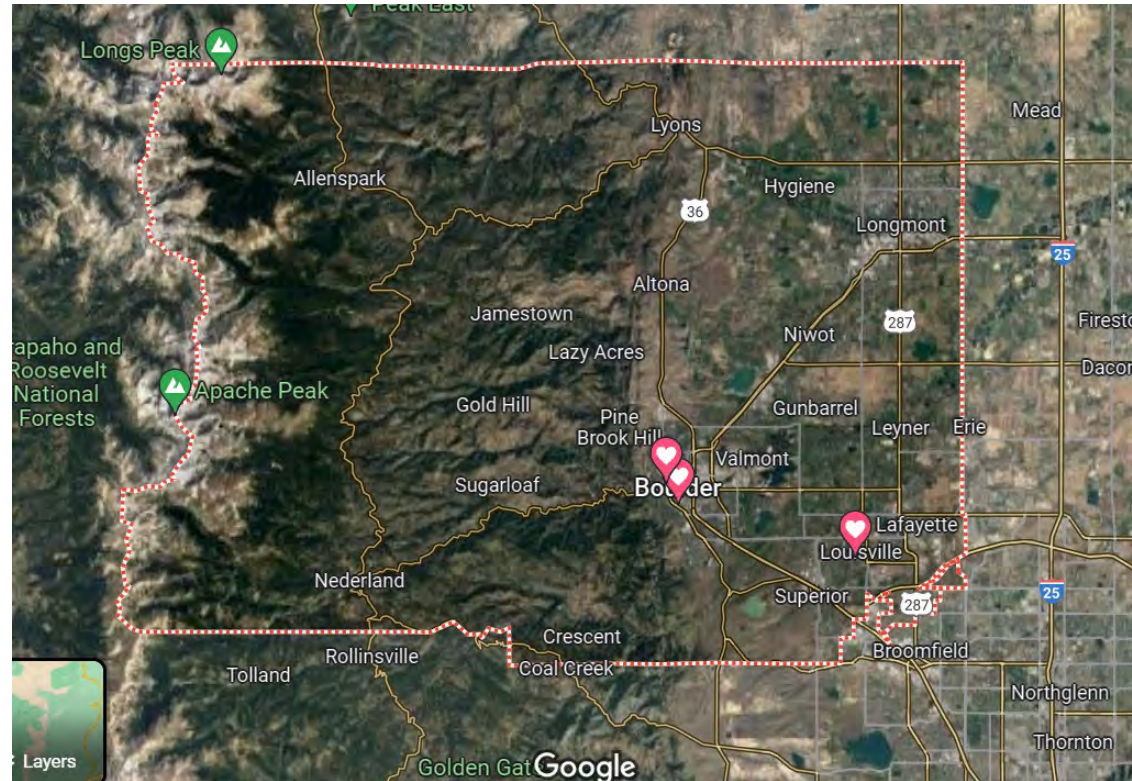


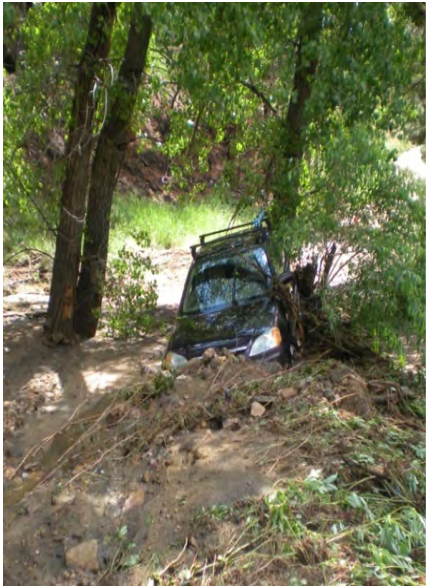


Boulder County Case Study

**“Floods are acts of Nature; but flood losses
are largely acts of man.”**

-- Dr. Gilbert White







Tools and Integration

- Plans - Comprehensive Plan, Hazard Mitigation Plan, Watershed Master Plans, CIP, etc.....
- Regulations
 - Zoning
 - Subdivision
 - Floodplain
 - Building Code
- Programmatic
 - Wildfire Partners
 - BOCO Strong
 - Acquisition Program
 - Housing



Land Use Tool:
Comprehensive Plan

- Natural Hazards Element – Goals
- Inappropriate development in natural hazard areas should be reduced as much as possible or eliminated in order to minimize potential harm to life, health, and property.
- Efforts to mitigate existing areas as risk to the impacts of natural hazards and disasters should be made to minimize the potential for harm to life, health, and property.





BCCP Goals –
indirect but
just as
important to
outcome.

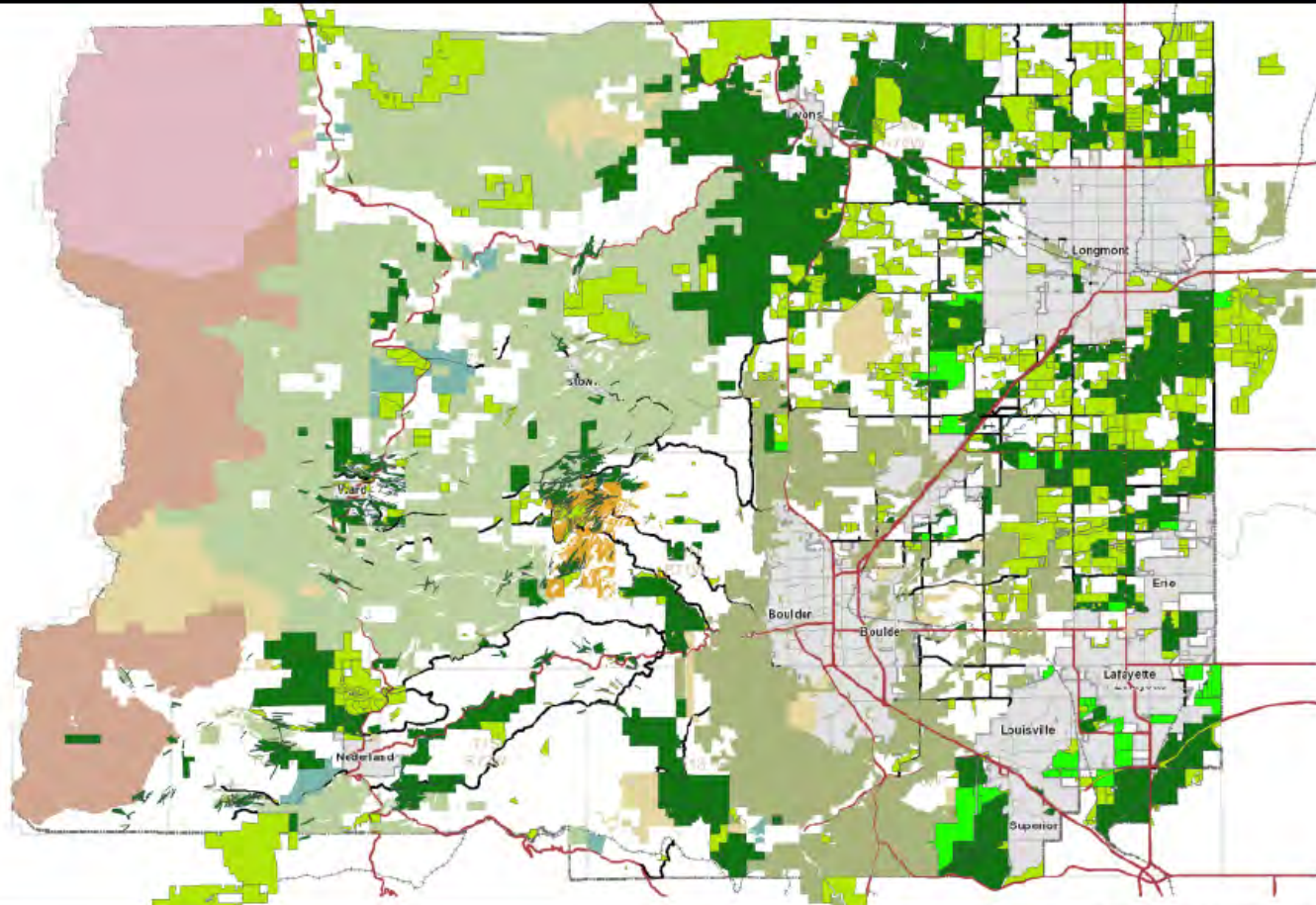
- Unique or critical environmental resources identified pursuant to Goals B.1, B.3, B.4 and B.5 shall be conserved and preserved in a manner which assures their protection from adverse impacts, with the private sector, non-county agencies and other governmental jurisdictions being encouraged to participate.
- Environmental Conservation Areas (ECAs) should be conserved and preserved in order to perpetuate those species, biological communities, and ecological processes that function over large geographic areas and require a high degree of naturalness.
- Riparian ecosystems, which are important plant communities, wildlife habitat and movement corridors, shall be protected.
- Future urban development should be located within or adjacent to existing urban areas in order to eliminate sprawl and strip development, to assure the provision of adequate urban services, to preserve agriculture, forestry and open space land uses, and to maximize the utility of funds invested in public facilities and services.



Community Planning & Permitting

2045 13th Street, Boulder, CO 80302 303-441-3930 www.bouldercounty.org

Open Space Map



Approx. 1 inch = 23900 feet

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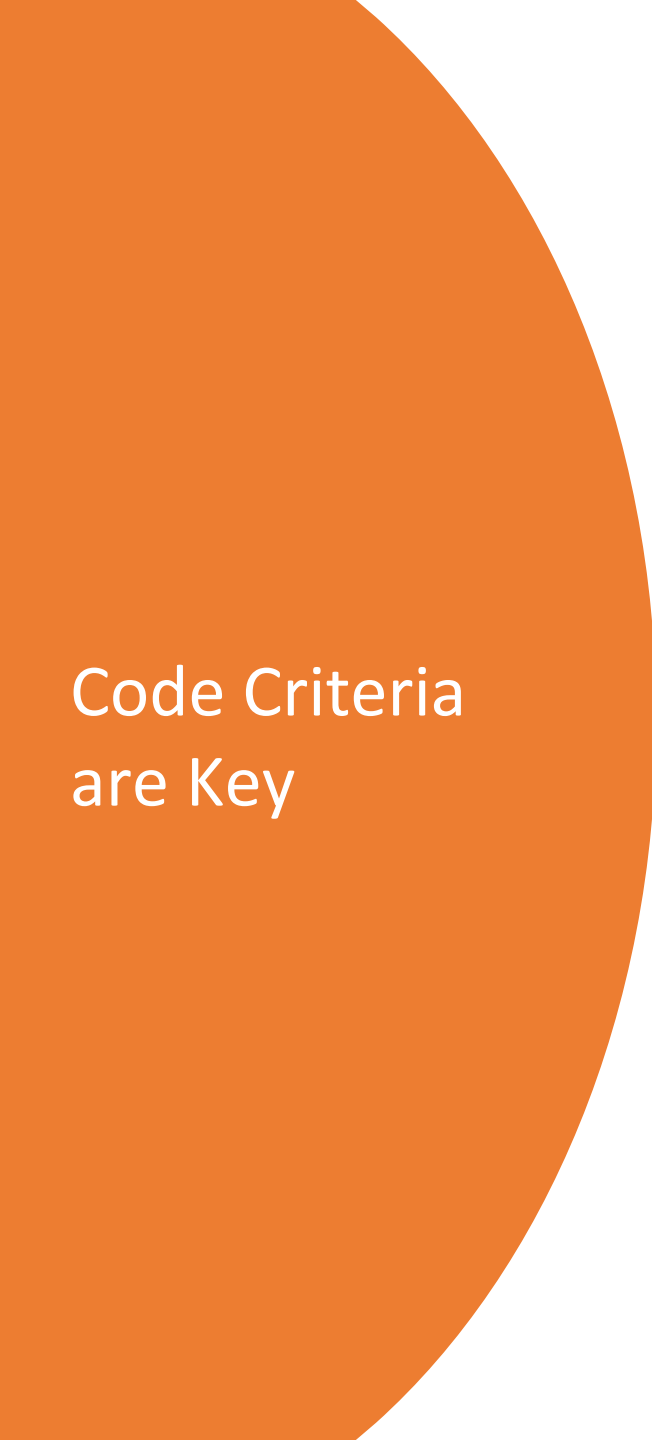
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Plan Implementation – Regulations (AKA Hammer)

- Flood Plain Regulations
- Site Plan Review
- Building Code
- Transfer of Development Credits
- “Article 19” - Post Disaster Regulations



A large orange circle on the left side of the slide.

Code Criteria
are Key

“The use will not result in unreasonable risk of harm to people or property – both onsite and in the surrounding area – from natural hazards. Development or activity associated with the use must avoid natural hazards, including those on the subject property and those originating off-site with a reasonable likelihood of affecting the subject property.”

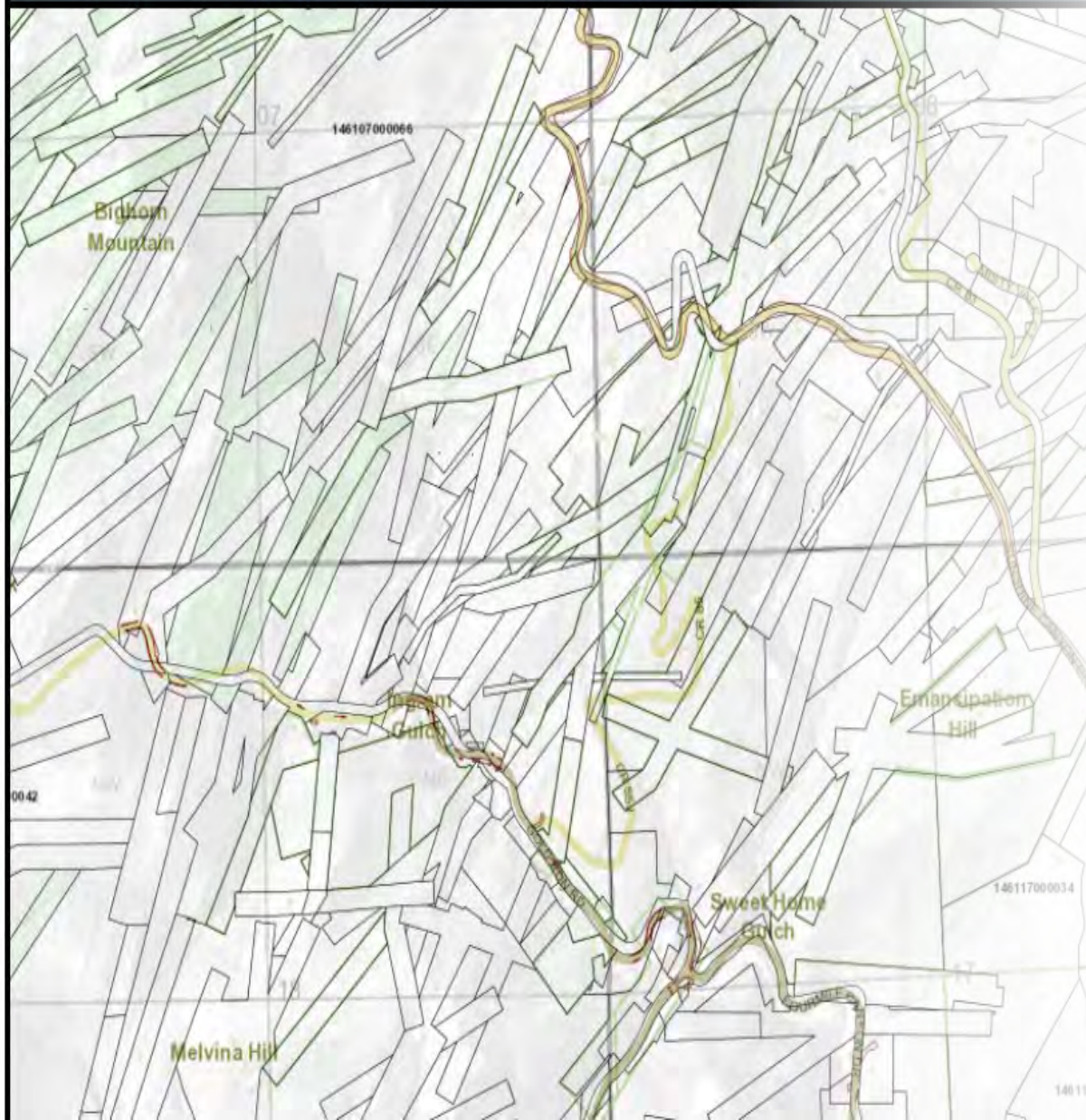
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Community Planning & Permitting

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Subdiv



“The site plan shall satisfactorily mitigate the risk of wildfire both to the subject property and those posed to neighboring properties in the surrounding area ...”

“The proposed development shall not alter historic drainage patterns and/or flow rates or shall include acceptable mitigation measures to compensate for anticipated drainage impacts. The best available information should be used to evaluate these impacts, including but not limited to hydrologic evaluations to determine peak flows, floodplain mapping studies, updated topographic data, Colorado Geologic Survey landslide, earth/debris flow data, and creek planning studies.”

5. *The site plan shall satisfactorily mitigate the risk of wildfire both to the subject property and those posed to neighboring properties in the surrounding area by the proposed development. In assessing the applicable wildfire risk and appropriate mitigation measures, the Director shall consider the referral comments of the County Wildfire Mitigation Coordinator and the applicable fire district, and may also consult accepted national standards as amended, such as the Urban-Wildland Interface Code; National Fire Protection Association (NFPA); International Fire Code; and the International Building Code.*

WILDFIRE MITIGATION

Wildfire Mitigation is required since the proposed project is in Wildfire Zone 1 (the foothills or mountains—approximately west of highways 7, 36, or 93) of unincorporated portion of Boulder County. The Boulder County Wildfire Mitigation requirements are composed of site location, ignition-resistant materials and construction, defensible space, emergency water supply, and emergency vehicle access.

Site Location

Site location has been reviewed by a Boulder County Wildfire Mitigation Specialist as part of the Site Plan Review process and no conflicts have been identified.

Ignition-Resistant Materials and Construction

Since the proposed development is located within a potentially hazardous area, all exterior building materials (including any proposed decking) must be ignition-resistant

New
Residence
Example
of
Conditions

Article 19



■ ■ ■ Procedures Following Disasters

Article 19 • Procedures Following Disasters

Purpose:

Boulder County is vulnerable to natural and human caused disasters that can damage property and cause injury or death, including wildfires, flood, hail storms, rock slides, blizzards, high winds, and tornadoes. Boulder County's Land Use Code contains provisions for rebuilding structures damaged or destroyed by means outside the control of the property owner; however, specific disaster events may warrant modified permitting and approval procedures to allow property owners to rebuild in a timely, safe, and responsible manner while also encouraging reasonable improvements in redevelopment consistent with current regulations and the Comprehensive Plan.

In addition, to respond appropriately in a disaster emergency, extraordinary actions must be taken quickly and efficiently. Some actions must occur faster than previously established permit processing timelines allow. Some actions require uses not normally allowed in certain zones, or not allowed without discretionary review, or not allowed without certain public process.

This Article addresses disaster emergency response in two ways. First, Section 19-100 grants temporary authority to certain county staff, upon the declaration of a local, state, or federal disaster emergency affecting Boulder County. Second, sections 19-200 and 19-300 include regulations tied to specific disasters, namely the Fourmile Canyon Fire of September 2010 and the Front Range Extreme Flood and Rain Event of September 2013.

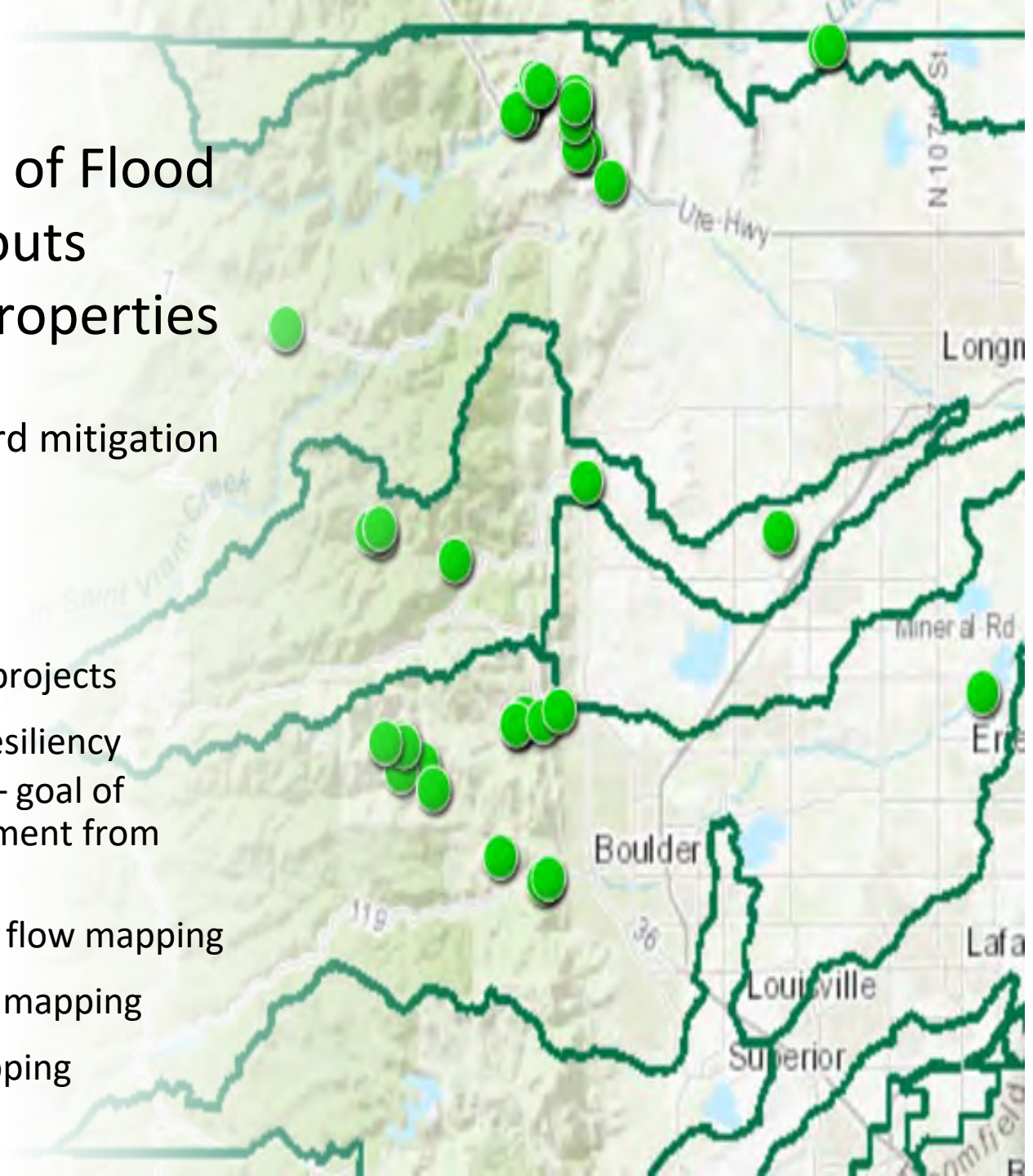


- Initially drafted specific regulations for rebuilding after Fourmile Fire.
- Amended after 2013 floods with specifics for rebuilding after flood. After Calwood Fire in 2020, and then again with specific provisions after Marshall Fire
- Amended again with general provisions that kick in after any declared disaster.

Map of Flood Buyouts 47 properties

2013 post flood hazard mitigation opportunities

- Buyout program
- Creek restoration projects
- Road and bridge resiliency
- Land Use reviews – goal of removing development from hazard areas
- Erosion and debris flow mapping
- Revised floodplain mapping
- Fluvial Hazard mapping





Marshall Fire Rebuilding Dashboard - Unincorporated Boulder County

Acres
Burned
6,026

Properties with
Impacted Structures
206

Homes
Destroyed
157

58

**Building Permits Issued
for Rebuilt Homes**

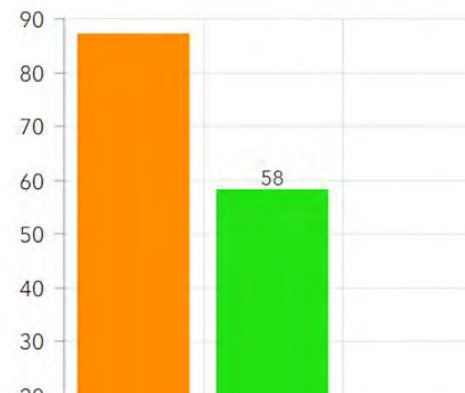
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**Certificates of Occupancy Issued
for Rebuilt Homes**



Clean-up / Demolition Status

Permit Issued 7
In Process 2



Post Marshall Fire Needs and Opportunities

- Ignition resistant materials
- Wildfire Partners Plains Pilot program
- Wildfire Mitigation Sales Tax - Generate about \$10 million/year for mitigation programs
- Updating the County's Community Wildfire Protection Plan

Wildfire	
Burn Probability	Characteristic Flame Length
Characteristic Rate Of Spread	Plains Pilot Project Participants
WFP Program Participants	WFP Wildfire Zone 2 - Qualifying Parcels - DRAFT 1
WHIMS Parcels	Wildfire History - Perimeters
Wildfire Risk	Wildland Urban Interface Risk



Questions & Discussion





Thank You



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