

USING GIS TO IMPROVE WILDFIRE PREPAREDNESS IN RURAL COLORADO COMMUNITIES

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GEOG 596A - Spring 2021

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OVERVIEW

- Background
 - Key terms
 - Study Area
- Goals and Objectives
 - Methodology
- Anticipated Results
- Project Timeframe
- Possible Presentation Venues
 - References

BACKGROUND

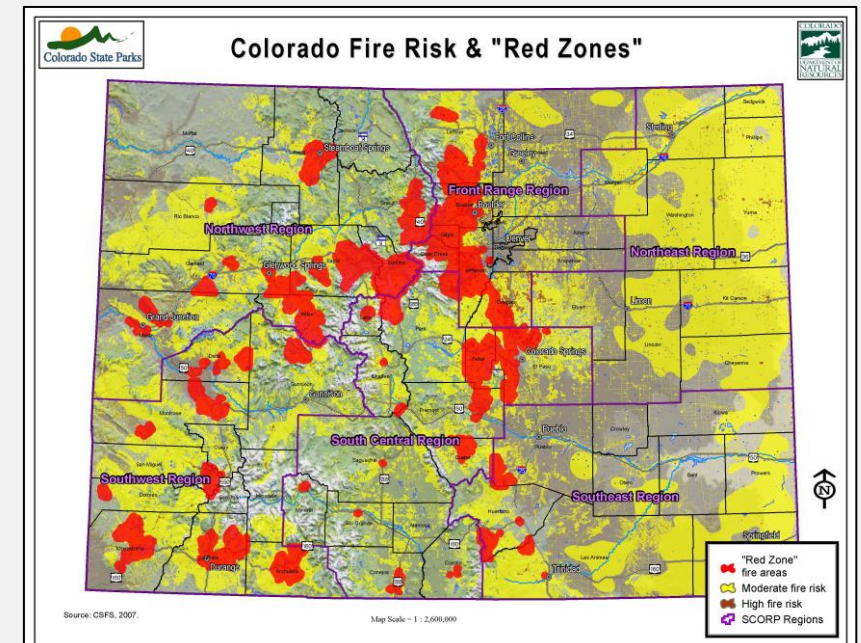
- 2020 was a record year for wildfires in Colorado
 - Top three largest fire records in the state were broken in 2020 alone
 - 625,000 total acres burned
- Resulted in a push for a more proactive vs. reactive approach to wildfire protection planning
- Counties across Colorado have made a concerted push to update dated community wildfire protection plans (CWPPs)

FIRST ALERT 5 WEATHER

5th LARGEST COLORADO WILDFIRES (IN ACRES)

| | |
|------------------------------|---------|
| CAMERON PEAK FIRE (2020) | 208,913 |
| EAST TROUBLESOME (2020) | 193,812 |
| PINE GULCH FIRE (2020) | 139,007 |
| HAYMAN FIRE (2002) | 137,760 |
| SPRING CREEK FIRE (2018) | 108,045 |
| HIGH PARK FIRE (2012) | 87,284 |
| MISSIONARY RIDGE FIRE (2002) | 70,485 |
| WEST FORK FIRE (2013) | 58,570 |

Source: KOAA News 5



Source: Colorado State Parks

COMMUNITY WILDFIRE PROTECTION PLAN WHAT IS IT?

- A Community Wildfire Protection Plan (CWPP) identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community.
- A CWPP may address issues such as
 - wildfire response
 - hazard mitigation
 - community preparedness
 - structure protection
- A finalized CWPP will delineate what areas within the community fall within Wildland Urban Interface zones

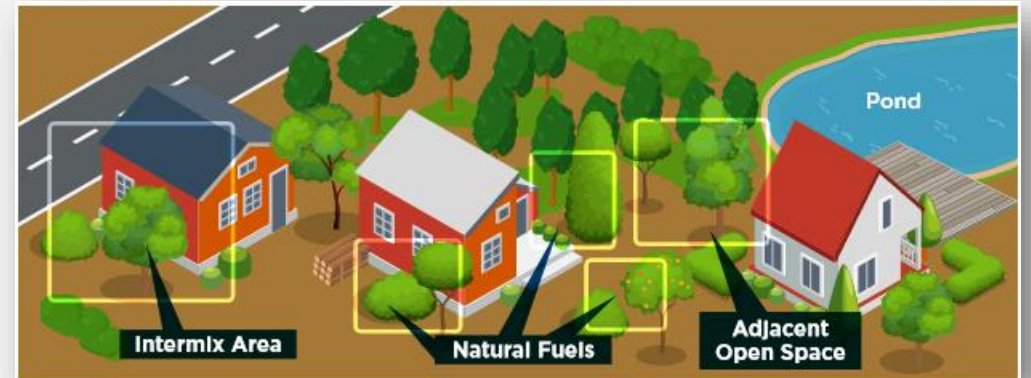


WILDLAND URBAN INTERFACE WHAT IS IT?

- The wildland–urban interface (WUI) is commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels.
- This WUI zone poses tremendous risks to life, property, and infrastructure in associated communities and is one of the most dangerous and complicated situations firefighters face.



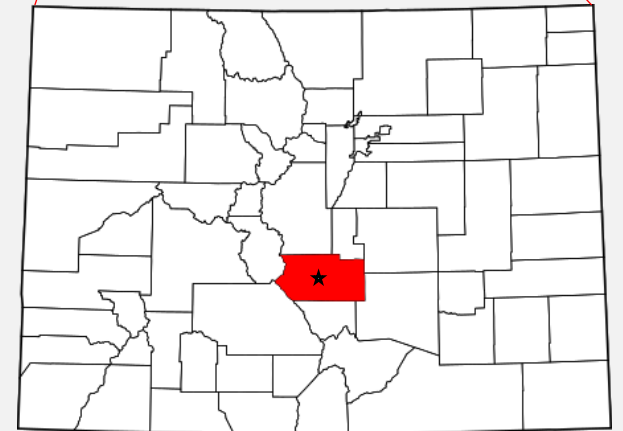
Source: San Diego Fire-Rescue Department



Source: Leaders guide to CWPP planning, lafc.org

STUDY AREA

- Fremont County, Colorado was created in 1861 and named for explorer, military officer, and politician John C. Frémont. As of the 2020 census, the population was 47,291. The county seat is Cañon City.
- Portions of Pike and San Isabel national forests, Sangre de Cristo Wilderness, and the Arkansas Headwaters Recreation Area are located in Fremont County
- Fremont County last updated their Community Wildfire Protection Plan in 2007 but is working on refining their plan with a proposed publication date of September 2020.



CWPP FRAMEWORK

- Step One: Convene Decisionmakers
- Step Two: Involve Federal Agencies
- Step Three: Engage Interested Parties

- Step Four: Establish a Community Base Map
- Step Five: Develop a Community Risk Assessment

DIRECT SUPPORT

- Step Six: Establish Community Priorities and Recommendations
- Step Seven: Develop an Action and Assessment Strategy
- Step Eight: Finalize Community Wildfire Protection Plan

ADVISE/ASSIST

GOALS AND OBJECTIVES

- Identify areas within Fremont County that are at a heightened risk for wildfires so that priorities can be better aligned for the protection of life, property, and critical infrastructure within the wildland-urban interface area.
- Step 4 - Where is the problem?
 - Community Base Map (County-wide)
 - Inhabited areas at potential risk to wildland fire
 - Areas containing critical human infrastructure
 - Preliminary designation of the community's WUI zone
- Step 5 – How does it vary spatially between communities?
 - GIS-Based Risk Index Classification by Community
 - Fuel Hazards
 - Fuel Treatment
 - Risk of Wildfire Occurrence
 - Homes, Businesses, and Essential Infrastructure
 - Local Preparedness and Firefighting Capability

PROPOSED METHODOLOGY

GOAL →

Identify areas in proximity to the WUI that are at a higher risk for wildfire

CRITERIA →

Topography

Land and Canopy Cover

Prescribed Burns/Historic Fires

Firefighting Capability

Population and structural characteristics

DATA SOURCE →

LANDFIRE/
BLM/CGS/
CO DOT

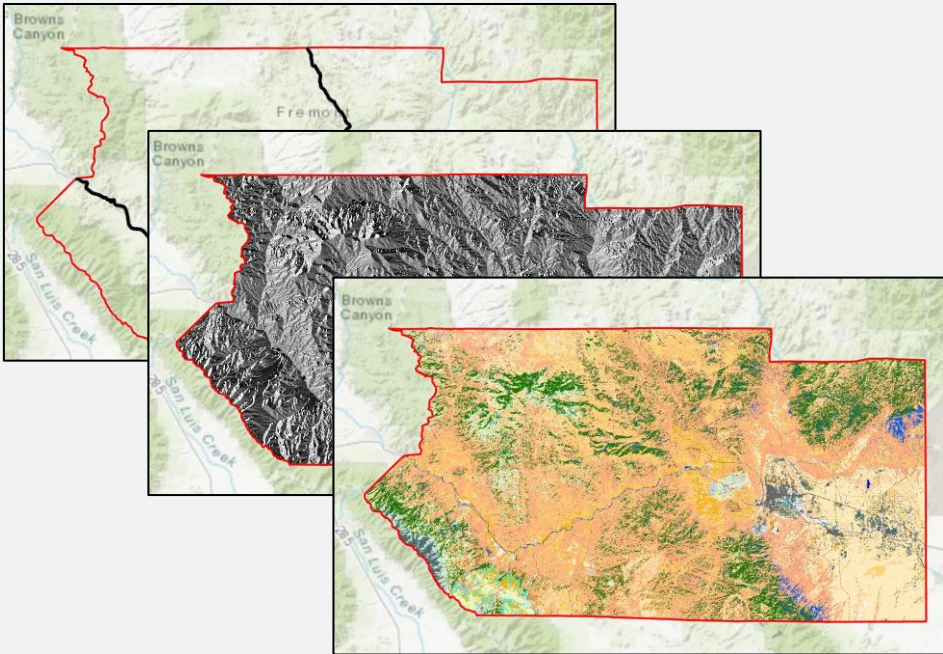
LANDFIRE

USGS/NIFC/
Local agencies

Local agencies

US Census Bureau/Local agencies

ANTICIPATED RESULTS



| Community | Hazard Rating |
|------------------|---------------|
| Indian Head | High |
| Pine Ridge | Moderate |
| Station 2 | Moderate |
| 53 rd | Moderate |
| South Easley Way | Moderate |
| Table Rock | Low |



- Final map showing critical areas in or proximity to the WUI (at the community and county scale) at risk to wildfire exposure
- Analysis Methodology and Metadata for inclusion into CWPP

PROJECT TIMELINE

BRIEF PROJECT PROPOSAL
APR/MAY 21

CONTINUE
RESEARCH AND
GATHER
INFORMATION
MAY-JUNE 21

BUILD AND
REFINE RISK
MODELS JUNE-
JULY 21

COMPILE RESULTS
AND BUILD
FINAL PRODUCT
AUG-SEP 21

BRIEF CAPSTONE
PROJECT SEP/OCT
21

GRADUATE
DEC 21

POSSIBLE PRESENTATION VENUES

- Colorado Wildland Fire Conference – SEP 21-23 2021
- Fremont County Planning Committee Meeting (Planned for late AUG or early SEP 2021)



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ACKNOWLEDGEMENTS

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**THANK YOU!
ANY QUESTIONS?**

