# Cherokee Meadows Road Association Community Wildfire Protection Plan 2022 Revised and Updated

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#### Introduction

Community Wildfire Protection Plans (CWPP) are authorized and defined in Title I of the Healthy Forests Restoration Act (HFRA) passed by Congress on November 21, 2003, and signed into law by President Bush on December 3, 2003. The Healthy Forests Restoration Act places renewed emphasis on community planning by extending a variety of benefits to communities with a wildfire protection plan in place. The CWPP, as described in the Act, brings together diverse local interests to discuss their mutual concerns for public safety, community sustainability and natural resources. It offers a positive, solutionoriented environment in which to address challenges such as:

- Local firefighting capability
- The need for defensible space around homes and subdivision
- Where and how to prioritize land management on both federal and non-federal land

Critical among these benefits:

- The option of establishing a localized definition and boundary for the wildland-urban interface (WUI)
- The opportunity to help shape fuels treatment priorities for surrounding federal and non-federal lands

A Community Wildfire Risk Analysis was generated using the 2017 Colorado Wildfire Risk Assessment Summary Report. This report was generated using <u>www.ColoradoForestAtlas.org</u>; Report version: 1.2.1 and was generated 2022-10-24. Excerpts from this report are integrated in the CWPP and the entire report is attached as Appendix B. (Disclaimer: Colorado State Forest Service makes no warranties or guarantees, either expressed or implied as to the completeness, accuracy, or correctness of the data portrayed in this product nor accepts any liability, arising from any incorrect, incomplete or misleading information contained therein. All information, data and databases are provided "As Is" with no warranty, expressed or implied, including but not limited to, fitness for a particular purpose. User should also note that property boundaries included in any product do not represent an on-the-ground survey suitable for legal, engineering, or surveying purposes. They represent only the approximate relative locations.)

#### Abbreviations

CWPP: Community Wildfire Protection Plan CMRA: Cherokee Meadows Road Association CSFS: Colorado State Forest Service LCSOES: Larimer County Sheriff's Office Emergency Services ARP: Arapahoe and Roosevelt National Forests and Pawnee National Grassland LFPD: Livermore Fire Protection District WUI: Wildland Urban Interface WRA: Wildfire Risk Assessment

#### **Previous CWPP**

CMRA developed the first CWPP in 2007. This was successfully reviewed and updated in 2011 and 2017. When an attempt to update the CWPP in 2022, it was found that some of the Minimum Standards for a CWPP had been updated and the current CWPP did not address Risk Factors and location maps of such risks. It was decided to not only update the current CWPP but to also revise the CWPP to meet current standards. Previous CWPP records attached as Appendix C.

#### Core Team

In order to develop a revised and updated CWPP, a core team was formed with participation from CMRA homeowners, a CMRA Board member, the CSFS, LCSOES, and representatives from the LFPD. The Core Team members consisted of Jennifer Wright, CMRA homeowner; Curt Palin, CMRA Board of Directors; David Herder, LFPD; Jan Jervis, CMRA homeowner; Max Erickson, CSFS; Derek Rosenquist, LCSOES; Kendra Arbesman, LFPD. Jan Jervis left the Core Team on October 9, 2022. Charlie Reynar and Daniel Goldwin of the ARP joined later in the process and agreed to be on the Core Team.

#### Meetings

Throughout the CWPP process the following meetings were held:

- The Initial Meeting to revise the CMRA CWPP was held July 7, 2022 with Max Erickson, the State Forester and interns (Natalie & Krystal). In attendance were Jen Wright, Dave Herder, Jan Jervis, and Derek Rosenquist with LCSOES. Most discussion was around the upcoming Firewise USA presentation for July 23, 2022 with CMRA.
- A Firewise USA Presentation at the CMRA annual Meeting was given July 23, 2022 to start out the process with numerous handouts and information that was explained to those in attendance.
- The core team consisting of Jennifer Wright, Jan Jervis, Dave Herder (LFPD), Curt Palin (CMRA), Max Erickson (CSFS), and Derek Rosenquist (LCSOES) met August 3, 2022. This meeting started the Core team process to meet the requirements set forth by the CSFS for development of the CWPP.
- Survey questions were decided in a breakout group of the Core team consisting of Jen Wright, Jan Jervis, Curt Palin, and Dave Herder. This group subsequently meet several more times via teleconference to finalize the survey.
- This group also met on September 12, 2022 to begin working on summarizing survey responses gathered from CRA members and neighbors via Survey Monkey.
- The entire Core Group met September 20th review the summary of survey responses. At this meeting Kendra Arbesman joined the core team as another representative from LFPD.
- The survey response summary was sent to the CMRA members and neighbors. See attached Appendix A: September 2022 Survey Summary.
- A breakout group of the core team consisting of Jen Wright, Jan Jervis, Dave Herder, Curt Palin, and Kendra Arbesman met September 27, 2022 and began working on Risk Identification areas on various maps provided by the CSFS.
- The entire Core Team consisting of Max Erickson, Derek Rosenquist, Jen Wright, Jan Jervis, Dave Herder, and Curt Palin (Kendra Arbesman unable to attend) met October 4, 2022. Next steps to finalize the CWPP were discussed.
- A Core Team meeting was held March 13, 2023 with Max Erickson, Derek Rosenquist, Charlie Reynar, Jim Herrington, Curt Palin, Jen Wright, and Dave Herder to adjust the CWPP before sending to the community for comments.
- All comments were received and final version made April 13, 2023 and sent to Core team April 27, 2023.

#### Wildland Urban Interface

The Wildland Urban Interface (WUI) area that the CWPP will cover includes the Cherokee Meadows Road Association and neighboring properties to the East (Hall Development) and the Rabbit Creek Development properties bordering CMRA. USDA Forest ARP lands to the West and State of Colorado lands and Division of Wildlife State lands to the North. The map on below indicates the CMRA Community with CMRA proper outlined in red.

Map CMRA Community in relationship to surrounding areas.



#### The WUI boundaries

- The CMRA WUI boundaries have been identified by CMRA, CSFS, LCSOES, ARP, and LFPD as the CMRA and lands 2 miles in each direction outside the CMRA boundary.
- North: T11N, R72W, section 35 (CMRA); section 26 (ARP); Sections 25 & 36 (State of Colorado); T11N R71W sections 30 & 31 (State of Colorado). West: T10N, R72W, Section 2 NW & SW quadrants (ARP); section 34 SE, NW, & SW quadrants (ARP); Section 2 NE & SE quadrants (CMRA); Section 1 (CMRA). East: T10N, R71W, Section 6 (CMRA), Section 5 (Hall Development). South: T10N, R72W, Section 11 & 12, NE & NW quadrants in each section (Rabbit Creek Development).

#### Characteristics of the private land within the WUI

- 2337 acres in CMRA; 54 owners; 37 structures in CMRA
- 534 acres in the Hall development; 9 owners; 9 structures
- 620 acres along CR 82E, 10 owners; 7 structures
- Total 3306 acres, 73 owners
- ARP 336 & 494 acres to the west of CMRA.
- State of Colorado Trust land 667 acres and State DOW 2488 acres to the North of CMRA.
- Elevation 6600 to 7300 feet above sea level.

The forests are mostly Ponderosa Pine, Juniper, and Mountain Mahogany/Sage Brushes/scrub brushes, with aspen and some deciduous trees in the riparian areas. There are no reliable waters sources except for 3, 2500 gallon cisterns buried in the development. A local pond, located at MM 11 on CR 80C usually has water. Wildlife consists of mule deer, rabbits, coyotes, black bear, mountain lions, bobcats, marmots, and wild turkeys.

Population varies from 70 full time residents and can swell to 100 with part time residents. Approximately 53 structures are built on lots in the entire WUI and there are approximately 16 vacant lots. Land uses are Residential, Agricultural, and Recreational.

Two main roads link the properties inside of Cherokee Meadows to Larimer County RD 80C. Brown Bear Way is the road from CR 80C in section 35 and Cherokee Meadows Road is the road linking CR 80C to sections 2, 1, and 6. CR 80C and CR 82 E are the main access for neighboring properties bordering Cherokee Meadows. Brown Bear Way and Cherokee Meadows Road do not connect and are the 2 main evacuation routes to CR 80C.

#### Wildfire Risk Assessment (WRA)

#### Description

Wildfire Risk is a composite risk rating obtained by combining the probability of a fire occurring with the individual values at risk layers. Risk is defined as the possibility of loss or harm occurring from a wildfire. It identifies areas with the greatest potential impacts from a wildfire – i.e., those areas most at risk - considering all values and assets combined together – WUI Risk, Drinking Water Risk, Forest Assets Risk and Riparian Areas Risk.

Since all areas in Colorado have risk calculated consistently, it allows for comparison and ordination of areas across the entire state. The Values at Risk Rating is a key component of Wildfire Risk. The Values at Risk Rating is comprised of several inputs focusing on values and assets at risk. This includes Wildland Urban Interface, Forest Assets, Riparian Assets and Drinking Water Importance Areas (watersheds).

To aid in the use of Wildfire Risk for planning activities, the output values are categorized into five (5) classes. These are given general descriptions from Lowest to Highest Risk.

Wildfire Risk Class	Acres	Percent
Non-Burnable	128	0.6 %
Lowest Risk	746	3.7 %
Low Risk	5,363	26.5 %
Moderate Risk	14,009	69.2 %
High Risk	9	0.0 %
Highest Risk	0	0 %

Total 20,255 Acres

The CSFS Wildfire Hazard Ratings Maps identifies the CMRA area as moderate wildfire Risks rating. CMRA Community Wildfire Risk Class Map on page 7. Much of the CMRA owner lots are in the 5,363 acre Low Risk because of meadows and grassland that have been grazed with the CMRA Grazing Lease.

#### **Burn Probability**

Burn Probability (BP) is the annual probability of any location burning due to a wildfire. BP is calculated as the number of times that a 30-meter cell on the landscape is burned from millions of fire simulations. The annual BP was estimated by using a stochastic (Monte Carlo) wildfire simulation approach with Technosylva's Wildfire Analyst software (www.WildfireAnalyst.com).

**Burn Probability** 

Class	Acres	Percent
Non-Burnable	0	0 %
Very Low	2	0.0 %
Very Low-Low	6	0.0 %
Low	11	0.1 %
Low-Moderate	67	0.3 %
Moderate	20,040	99.6 %
Moderate-High	0	0.0 %
High	0	0 %
High-Very High	0	0 %
Very High	0	0 %
Total	20,127	100 %

CMRA Area Burn Probability Map on page 8

#### Map CMRA Community Wildfire Risk

![](_page_7_Figure_2.jpeg)

#### Map CMRA Community Burn Probability

![](_page_8_Figure_2.jpeg)

#### Surface Fuels

#### Description

Surface fuels, or fire behavior fuel models as they are technically referred to, contain the parameters required by the Rothermel (1972) surface fire spread model to compute surface fire behavior characteristics, including rate of spread, flame length, fireline intensity and other fire behavior metrics. As the name might suggest, surface fuels account only for surface fire potential. Canopy fire potential is computed through a separate but linked process. The Colorado Wildfire Risk Assessment (WRA) accounts for both surface and canopy fire potential in the fire behavior outputs. However, only surface fuels are shown in this risk report. Surface fuels typically are categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter, and 4) slash.

Surface Fuels	Description	Acre	Percent
NB 91	Urban/Developed	54	0.3 %
NB 92	Snow/Ice	0	0 %
NB 93	Agriculture	1	0.0 %
NB 98	Water	66	0.3 %
NB 99	Barren	7	0.0 %
GR 1	Short/sparse/dry climate grass	408	2.0 %
GR 2	Low load/dry climate grass	958	4.7 %
GR 3	Low load/very coarse/humid climate grass	0	0 %
GR 4	Moderate load/dry climate grass	0	0 %
GR 1	GT 10000 ft elevation	0	0 %
GR 2	GT 10000 ft elevation	0	0 %
GS 1	Low load/ dry climate grass-shrub	4127	20.4 %
GS 2	Moderate load/dry climate grass-shrub	5683	28.1 %
GS 1	GT 10000 ft elevation	0	0 %
SH 1	Low load/ dry climate shrub	2850	14.1 %
SH 2	Moderate load/dry climate shrub	11	0.1 %
SH 3	Moderate load/ humid climate shrub	0	0 %
SH 5	High load/humid climate shrub	131	0.6 %
SH 7	Very high load/dry climate shrub	18	0.1 %
SH 7	Oak Shrubland without changes	20	0.1 %
TU 1	Light load/dry climate timber-grass-shrub	2158	10.7 %
TU 2	Moderate load/humid climate timber-shrub	0	0 %
TU 5	Very high load/dry climate timber-shrub	3562	17.6 %
TL 1	Low load/compact conifer litter	4	0.0 %
TL 2	Low load/broadleaf litter	6	0.0 %
TL 3	Moderate load/conifer litter	102	0.5 %
TL 4	Small downed logs	0	0 %
TL 5	High load/conifer litter	0	0 %
TL 6	Moderate load/broadleaf litter	0	0 %
TL 7	Large downed logs	0	0 %
TL 8	Long-needle litter	88	0.4 %
TL 9	Very high load/broadleaf litter	0	0 %

Map on page 10 shows the types and location of Surface Fuels in the CMRA Community. Map on Page 11 further describes the types of vegetation in the CMRA Community

#### Map CMRA Community Surface Fuels

![](_page_10_Figure_2.jpeg)

#### Map Vegetation in the CMRA Community

![](_page_11_Figure_2.jpeg)

#### Fire Type Extreme Weather

Fire Type Extreme Weather represents the potential fire type under the extreme percentile weather category. The extreme percentile weather category represents the average weather based on the top three percent fire weather days in the analysis period. It is not intended to represent a worst-case scenario weather event. Accordingly, the potential fire type is based on fuel conditions, extreme percentile weather, and topography. Canopy fires are very dangerous, destructive, and difficult to control due to their increased fire intensity. From a planning perspective, it is important to identify where these conditions are likely to occur on the landscape so that special preparedness measure can be taken if necessary. Typically canopy fires occur in extreme weather conditions. The Fire Type – Extreme layer shows the footprint of where these areas are most likely to occur. However, it is important to note that canopy fires are not restricted to these areas. Under the right conditions, it can occur in other canopied areas.

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below:

**Surface Fire** is a fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.

**Passive Canopy Fire** is a type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).

Active Canopy Fire is a crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (Scott & Reinhardt, 2001).

Fire Type	Acres	Percent
Surface Fire	10828	53.8 %
Passive Canopy Fire	4964	24.7 %
Active Canopy Fire	4335	21.5 %
Total	20127	100 %

#### Potential Fire Type Under Extreme Weather in CMRA Community

Map on Page 13 indicates the Potential Fire Type Under Extreme Weather in the CMRA Community

#### Map Potential Fire Type Under Extreme Weather in CMRA Community

![](_page_13_Figure_2.jpeg)

#### Suppression Difficulty Rating

#### Description

Reflects the difficulty or relative cost to suppress a fire given the terrain and vegetation conditions that may impact machine operability. This layer is an overall index that combines the slope steepness and the vegetation/fuel type characterization to identify areas where it would be difficult or costly to suppress a fire due to the underlying terrain and vegetation conditions that would impact machine operability (in particular Type II dozer).

#### Suppression Difficulty breakdown in the CMRA Community

SDR Class	Acres	Percent
No Limitations	975	4.8 %
Slight	2997	14.8 %
Slight to Moderate	6780	33.6 %
Moderate	2974	14.7 %
Moderate to Significant	3139	15.5 %
Significant	151	0.7 %
Significant to Severe	1023	5.1 %
Severe	965	4.8 %
Inoperable	1192	5.9 %
Total	20194	100 %

The Suppression Difficulty Map is shown on page 15

#### Map CMRA Suppression Difficulty

![](_page_15_Figure_2.jpeg)

#### Structural Ignitability

The likelihood the materials in and on your home will ignite during a wildfire is known as structural ignitability. The ideal time to address home ignition risk is when the structure is in the design phase. However, you can still take steps to reduce the ignitability of an existing home.

- Ensure the roof has a Class A fire rating
- Remove all leaves, needles and other debris from decks, roofs and gutters
- Screen attic, roof, eaves and foundation vents with 1/8-inch metal mesh
- Screen or wall-in stilt foundations and decks with 1/8-inch metal mesh
- Use tempered glass for windows; two or more panes are recommended
- Create 6 inches of vertical clearance between the ground and home siding
- Replace combustible fencing or gates, at least within 5 feet of the home

For more information on reducing a home's structural ignitability, please refer to National Fire Protection Association – Wildfire Research Fact Sheets: <u>https://www.nfpa.org/Public-Education/Fire-</u> causes-and-risks/Wildfire/Firewise-USA/Firewise-USA-Resources/Research-Fact-Sheet-Series

#### Structural Vulnerability

Utilizing Larimer County Building Codes, most of the structures have metal roofs, fire resistant shingles, and sidings with improved fire ratings. 75% of structures have the Zone 1 first 5 feet cleared and Zone 2 mitigation is estimated at 40-50% improved. Defensible space was created along the main roads using 2017 grant monies and previous grants were used throughout the last 10 years.

"Defensible Space" consists of the Home Ignition Zone Standards as published by the Colorado State Forest Service and referenced in this CWPP's action plans. Defensible space is the area around a home or other structure that has been modified to reduce fire hazards. In this area, natural and synthetic fuels are treated, cleared or reduced to slow the spread of wildfire. If fire crews are available for home protection during a wildfire incident, this defensible space will aid in their efforts.

#### **History of Wildfires**

History of Wildfires in the area for the last 20 years include 8 wild land fires including 6 caused by lightning, 1 by negligent campfire, and 1 from a structure fire. The Stuart Hole Fire in June of 2012 was one of the fires caused by lightning and was 227 acres in size. This fire was approximately ½ mile South of Cherokee Meadows, above the Rabbit Creek drainage. This fire was managed and contained by Larimer County Emergency Services. All 6 fires caused by lightning except the Stuart Hole fire were less than 1 acre and not severe due to wet springs and rapid deployment of LFPD. A smoldering campfire caused a wildfire that was kept to less than an acre, during the winter, and with rapid deployment of LFPD. There was also a structure fire caused by human factors and was a total loss but exposures were protected by LFPD.

#### Fire Protection for the WUI

- Livermore Fire Protection District consisting of 4 stations and 24 volunteer firefighters.
- LFPD Station 2, minimum response time of 10 minutes. Capabilities include: 1 TYPE 1 Engine, 700 gallons; 1 TYPE 4 engine 800 gallons; 1 TYPE 6 Engine 300 gallons; 2-Rescue/Medical Support Vehicles.
- LFPD Station 1, minimum response time, 20 minutes. Capabilities include: 1 TYPE 1 Engine, 700 gallons; 1 Tender, 3000 gallons; 1 TYPE 6 Engine 300 gallons; 1 Ambulance.

- LFPD Station 3, minimum response time of 25 minutes. Capabilities include: 1 Type 6 engine 300 gallons.
- LFPD Station 4, minimum response time 30 minute. Capabilities include: 1 Type 6 engine 300 gallons; 1 Type 6 foam CAFS truck; 1 Tender 1800 gallons.
- LFPD Additional Apparatus: 2 Response/Squad Vehicles; 1 Support Command Vehicle.
- LFPD has 320 square miles in their protection district. The major home owner developments include Bonner Springs Ranch, Cherokee Hills, Red Mountain (CR 37 to the Wyoming border), Weaver ranch, Diamond Creek, Trail Creek, Mill Creek, Poudre River Ranch, Cherokee Meadows Road Association, Elk Meadows, Boxer Ranch, and Meadow Creek.
- Larimer County Emergency Services responds to all LFPD wildland incidents.
- UDA Forest Service resources have responded to LFPD wildland incidents based on property ownership and severity of the incident.
- LFPD has Mutual Aid Agreements with Wellington Fire, Poudre Fire Authority, Glacier View Fire Protection District, Red Feather Fire Protection District, Crystal Lakes Fire Protection District, and Laramie County District 10 in Wyoming.

#### 2017-2022 Accomplishments:

#### Defensible Space Around Homes:

- Community education at annual CMRA meetings about the Home Ignition Zone was done at the annual CMRA meeting in July 2022.
- Continued LFPD survey visits to properties as requested by owners to help identify any problem areas and to promote activity in the Home Ignition Zone.
- Certified annually as a FIREWISE USA COMMUNITY.

#### Improve options for Emergency Egress:

- Communicated with LFPD to create a viable community evacuation plan.
- Removed brush and trees along the CMRA roadway easements identified as choke points.
- Continued to make residents aware of access around residences to assure space for fire fighting vehicles.

#### Fuel Break Activities ON CMRA Borders:

- Continued work on vulnerable areas including property bordering USFS land.
- Previous grant funds used in these areas along with community volunteers.

#### **Encourage Private Owners to Reduce Hazard Fuels:**

- Owners have lessened fuels by removing dead or dying trees themselves or with timber professionals. Slash chipped or safely burned with burn permits.
- Educated and encouraged landowners to clear and reduce fuels in the Home Ignition Zones.

#### Assist LFPD in Efforts to Protect Our Community:

- Continued relationship with LFPD and recruited more CMRA volunteers for LFPD.
- Provided information to CMRA residents about the importance of reflective address numbers. Since the Annual CMRA meeting in July 2022, at least 10 new reflective signs have been purchased and installed by homeowners.
- Continued to keep the CMRA map updated. CMRA map provided to LFPD with cisterns and other water sources within the community.
- CMRA continued to make annual donations to LFPD.

#### Seek Out Funding to Assist with Projects:

- Continued to apply for grants relevant to CWPP goals. Obtained a \$34.000 dollar grant for \$68,000 in costs during 2017.
- Encouraged landowners to donate fund or volunteer to LFPD to help further CMRA outreach projects and activities such as roadside clear of brush.

#### Keep CMRA CWPP Updated:

• CWPP has been discussed and CWPP committee set goals to further reduce fuel sources and hazards. Need to formalize this CWPP Committee to assure this update makes the CWPP a living document.

#### **Communication:**

• Held a CWPP and Firewise USA education event at the CMRA annual meeting which included providing residents with information to register with LETA to receive emergence notices.

#### **Action Plans**

The following four Action Plans will be the focus of the activity for the next 5 years. Additional plans and activities may be added as the need arises or as feedback indicates issues needing to be addressed before the next yearly CWPP update and 5 year renewal:

#### Action Plan 1: Risk Mitigation and Home Hardening using the Home Ignition Zone.

From the Survey sent to CMRA and neighbors in September of 2022, the most prevalent responses in the area of "**barriers for you to do Wildfire mitigation on your property**" were Physical limitations, Cost, and Time. The most important effort CMRA and neighbors can make is also the easiest to accomplish. The aspects of Home Hardening for residences in the Cherokee Meadows Wildland Urban Interface should be implemented in 3 Stages to increase the possibility of completing the goal. Taking this Action Plan in small stages and using the Zone 1, 2, 3 philosophy; will help mitigate the barriers from the Survey.

The goal of Home Hardening will be in accordance with the guidelines for the "Home Ignition Zone" per Colorado State Forest Service publication at:

<u>https://csfs.colostate.edu/media/sites/22/2021/04/2021\_CSFS\_HIZGuide\_Web.pdf</u> Also consult the "**Firewise USA"** website for similar activities to work on the stages in an easy and manageable manner to make your property safer in a Wildfire: <u>https://www.nfpa.org/Public-</u> <u>Education/Fire-causes-and-risks/Wildfire/Firewise-USA</u>. Both these resources use similar Stages and Zones.

The individual property owner is responsible for the facilitation and completion of the Risk Mitigation and Home Hardening Action Plan on their own properties. Technical assistance and guidance can be obtained from LFPD and the CWPP Committee as requested in addition to the above websites. Success will be measured by response to various communications from the CWPP committee and education provided to the community under the Education Goal.

#### Stage 1 (Zone 1):

The First Stage of the Home Hardening Goal will be to assure that 100% of the residences in Cherokee Meadows will have Zone 1 of the Home Ignition Zone accomplished by summer of 2023.

Zone 1 is the area 0 to 5 feet from the home, the area nearest the home. This zone requires the most vigilant work in order to reduce or eliminate ember ignition and direct flame contact with the home. This zone is designed to prevent flames from coming in direct contact with the structure. Use nonflammable, hard surface materials in this zone, such as rock, gravel, sand, cement, bare earth or stone/concrete pavers.

Recommended activities include:

- Remove all flammable vegetation, including shrubs, slash, mulch, and other woody debris.
- Do not store firewood or other combustible materials inside this zone.
- Prune tree branches hanging over the roof and remove all fuels within 10 feet of the chimney.
- Regularly remove all pine needles and other debris from the roof, deck, and gutters.
- Rake and dispose of pine needles, dead leaves, mulch, and other organic debris within 5 feet of all decks and structures.
- Do not use space under decks for storage.
- Install reflective address numbers at the entrance to your property.

#### Stage 2 (Zone 2):

The Second Stage of the Home Hardening Goal will be to assure 100% of the residences in Cherokee Meadows are in progress to complete the Zone 2 of the Home Ignition Zone by summer of 2024.

Zone 2 is the area 5 to 30 feet from the home. This is the area transitioning away from the home where fuels should be reduced. This zone is designed to minimize a fire's intensity and its ability to spread while significantly reducing the likelihood a structure ignites because of radiant heat. This zone is designed to give an approaching fire less fuel, which will help reduce its intensity as it gets nearer to your home or any structures.

Recommended activities include:

- Mow grasses to 4 inches tall or less.
- Avoid large accumulations of surface fuels such as logs, branches, slash, and mulch.
- Remove enough trees to create at least 10 feet\* of space between crowns. Measure from the outermost branch of one tree to the nearest branch on the next tree.
- Small groups of two or three trees may be left in some areas of Zone 2. Spacing of 30 feet\* should be maintained between remaining tree groups to ensure fire doesn't jump from one group to another.
- Remove ladder fuels under remaining trees. This is any vegetation that can bring fire from the ground up into taller fuels.
- Prune tree branches to a height of 6-10 feet from the ground or a third of the total height of the tree, whichever is less.
- Remove stressed, diseased, dead or dying trees and shrubs. This reduces the amount of vegetation available to burn and improves forest health.
- Common ground junipers should be removed whenever possible because they are highly flammable and tend to hold a layer of flammable material beneath them.

- You can keep isolated shrubs in Zone 2, as long as they are not growing under trees. Keep shrubs at least 10 feet\* away from the edge of tree branches.
- Periodically prune and maintain shrubs to prevent excessive growth. Remove dead stems annually.
- Spacing between clumps of shrubs should be at least 2 1/2 times\* their mature height. Each clump should have a diameter no more than twice the mature height of the vegetation. Example: For shrubs that grow 6 feet tall, space clumps 15 feet apart or more (measured from the edge of the crowns of vegetation clumps). Each clump of these shrubs should not exceed 12 feet in diameter.
- Prepare personal water resources by making them easily accessible and clearly labelling how to access them. Unlock pump house doors and remove vegetation or other obstructions. If you have a generator, leave it in an accessible location in case power is turned off.

\*Horizontal spacing recommendations are minimums and can be increased to reduce potential fire behavior, particularly on slopes. Consult a forestry, fire or natural resource professional for guidance with spacing on slopes. See the discussion on Fuelbreaks in Action Plan 3 of this CWPP to provide Fuelbreaks in Zone 2 and Zone 3 of the Home Hardening Action Plan.

This Second Stage will be measured by site visits by the CWPP Committee and or LFPD to provide input and measure progress. This will be done when the residence owner invitees this assistance as part of the Education efforts in the Education Goal.

#### Stage 3 (Zone 3):

The Third Stage of the Home Hardening Goal will be to assure 100% of the residences in Cherokee Meadows are in progress to complete the Zone 3 of the Home Ignition Zone by Summer of 2026.

Zone 3 is the area 30 to 100 feet from the home. This is the area farthest from the home. It extends 100 feet from the home on relatively flat ground. Efforts in this zone are focused on ways to keep fire on the ground and to get fire that may be active in tree crowns (crown fire) to move to the ground (surface fire), where it will be less intense. This zone focuses on mitigation that keeps fire on the ground, but it's also a space to make choices that can improve forest health. Healthy forests include trees of multiple ages, sizes and species, where adequate growing room is maintained over time. If the distance of 100 feet to the edge of Zone 3 stretches beyond your property lines, it's encouraged to work with adjoining property owners to complete an appropriate defensible space. If your house is on steep slopes or has certain topographic considerations, this zone may be larger.

Recommended activities include:

- Mowing grasses is not necessary in Zone 3.
- Watch for hazards associated with ladder fuels. The chance of a surface fire climbing into the trees is reduced in a forest where surface fuels are widely separated, and low tree branches are removed.
- Tree crown spacing of 6-10 feet is suggested. Consider creating openings or meadows between small clumps of trees so fire must transition to the ground to keep moving.
- Any approved method of slash treatment is acceptable in this zone, including removal, piling and burning, lop and scatter, or mulching.
- Lop-and-scatter or mulching treatments should be minimized in favor of treatments that reduce the amount of woody material in the zone. The farther this material is from the home, the better.

- See the discussion in Action Plan 3 on Fuelbreaks to utilize this practice in Zone 3.
- The CWPP Committee and LFPD will meet with residents to discuss methods and activities to
  increase access to individual properties via private driveways where access by the LFPD and first
  responders will be in jeopardy. Long, narrow, steep, and curving private drives and driveways
  without turnarounds significantly decrease firefighter access to your property, depending on
  fire behavior. If improvement to driveway access is not feasible, Home Hardening and utilization
  of the defensible zones is crucial for residents with access issues.
- Landowners are encouraged to install reflective address numbers on the main roads to make it easier for firefighters to navigate to homes under smoky conditions. Make sure the numbers are clearly visible from both directions on the roadway. Use noncombustible materials for your address sign and sign supports. Installing reflective address numbers can save lives and is inexpensive and easy to accomplish.

This Third Stage will be measured by site visits by the CWPP Committee and or LFPD when invited by the property owner to provide input and measure progress. This will be done when the residence owner invites this assistance as part of the Education efforts in the Education Goal.

#### Action Plan 2: Education and Outreach.

In order for the CWPP to be successful the plan needs to be an active part of living in the Wildland Urban Interface. Education/Planning was a major concern from the survey done in September 2022. In order to accomplish the success of this goal, an Acton Plan for continued and consistent education/communication to property owners in Cherokee Meadows (CMRA) is described within the following Education and Outreach Goal. The Education and Outreach will keep the CWPP active from year to year and will be an important aspect of implementing the entire plan.

Education will be accomplished in several methods to assure timely and helpful information is presented to all property owners in Cherokee Meadows as follow:

- A CWPP/Firewise USA presentation with handouts will be conducted annually at the CMRA Annual Membership Meeting and Potluck. CWPP and Firewise USA progress will be reviewed, and issues addressed by the CWPP Committee and LFPD.
- **CWPP Committee**. CMRA board and members will be encouraged to form an ongoing group of volunteers from the community and representatives from Livermore Fire Protection District (LFPD). The CMRA Board will designate an elected Board member to serve on the CWPP Committee. This CWPP Committee will continue the efforts of the CWPP for the next CWPP cycle.
- The Cherokee Meadows Road Association website is currently being developed and the CWPP will become an active tab to be filled with information on Home Hardening and fuel mitigation throughout the Home Ignition Zones. Information pamphlets and links from the CSFS, LCSOES, Larimer County Building Department, and Firewise USA will be available. This area of the CMRA website will be open to all and have forms to track hours and costs for individual efforts to accomplish Home Hardening and other aspects of the CWPP.
- The CWPP Committee will provide information via e-mail distribution to CMRA property owners at least quarterly to provide timely information and links for specific activities that will aid with Home Hardening and fuels mitigation. Some activities are best performed in various seasons of the year to be more successful and theses quarterly updates will aid in accomplishment of CWPP goals.

- The CWPP committee will assist CMRA in providing CWPP information, pamphlets from CSFS regarding the Home Ignition Zone, fuel mitigation and wildfires, and Firewise USA information and projects. This will continue to as part of the CMRA New Owner's Welcome Packet.
- The CWPP Committee will encourage LFPD to provide points of contact in order to continue LFPD survey visits to properties as requested by owners to help identify any problem areas and to promote working with the Home Ignition Zone.
- Ready, Set, Go, information and CSFS suggestions for emergency evacuation will be provided with all the above methods. Evacuation preparedness information/suggestions are essential to increase wildfire preparedness.
- Education and verification that 100% of CMRA residents are properly registered through the NoCo Alert website with home telephone number, cell phone, and/or email.

#### Action Plan 3: CMRA Community Fuels, Access, Egress, and Evacuation Preparedness.

There were issues with CMRA roads and fuels from the survey responses obtained in September 2022. Issues with overall fuels mitigation along access/egress roads, as well as issues involving road suitability of emergency access along CMRA roads including access on property owner's driveways will be identified as part of this Action Plan and efforts will be made to correct these issues.

The Colorado State Forest Service publication: "Fuelbreak Guidelines for Forested Subdivisions & Communities" by Frank C Dennis, will be used to establish the guidelines for accomplishing this Action Plan. Fuelbreaks will be considered in fire management planning for the CMRA subdivisions and developments; however, the following are guidelines only. They should be customized to local areas by professional foresters experienced in Rocky Mountain wildfire behavior and suppression tactics which CMRA has available with LFPD.

#### Fuelbreak vs Firebreak:

Although the term fuelbreak is widely used in Colorado, it is often confused with firebreak. The two are entirely separate, and aesthetically different, forms of forest fuel modification and treatment.
A firebreak is strip of land, 20 to 30 feet wide (or more), in which all vegetation is removed down to bare, mineral soil each year prior to fire season. Access roads inside of CMRA fit this definition.
A fuelbreak (or shaded fuelbreak) is an easily accessible strip of land of varying width (depending on fuel and terrain), in which fuel density is reduced, thus improving fire control opportunities. The stand is thinned, and remaining trees are pruned to remove ladder fuels. Brush, heavy ground fuels, snags, and dead trees are disposed of and an open, park-like appearance is established.

#### **Fuelbreak Limitations:**

Fuelbreaks provide quick access for wildfire suppression. Control activities can be conducted more safely due to low fuel volumes. Strategically located, they break up large, continuous tracts of dense timber, thus limiting uncontrolled spread of wildfire. Fuelbreaks can aid firefighters greatly by slowing fire spread under normal burning conditions. However, under extreme conditions, even the best fuelbreaks stand little chance of arresting a large fire, regardless of firefighting efforts. Such fires, in a phenomenon called "spotting," can drop firebrands 1/8-mile or more ahead of the main fire, causing very rapid fire spread. These types of large fires may continue until there is a major change in weather conditions, topography, or fuel type.

It is critical to understand that a fuelbreak is the line of defense. The area (including any homes and developments) between it and the fire may remain vulnerable. In spite of these somewhat gloomy

limitations, fuelbreaks have proven themselves effective in Colorado. During the 1980 Crystal Lakes Subdivision Fire near Fort Collins, crown fires were stopped in areas with fuelbreak thinnings, while other areas of dense lodgepole pine burned completely. A fire at O'Fallon Park in Jefferson County was successfully stopped and controlled at a fuelbreak. The Buffalo Creek Fire in Jefferson County (1996) and the High Meadow Fire in Park and Jefferson Counties (2000) slowed dramatically wherever intense forest thinnings had been completed. During the 2002 Hayman Fire, Denver Water's entire complex of offices, shops and caretakers' homes at Cheesman Reservoir were saved by a fuelbreak with no firefighting intervention by a fuelbreak.

CMRA, with over 8 miles of internal roads, provides a good opportunity to improve these existing Firebreaks with Fuelbreak activity. Since fuelbreaks should normally provide quick, safer access to defensive positions, they are necessarily linked with road systems. Connected with county-specified roads within subdivisions, they provide good access and defensive positions for firefighting equipment and support vehicles. Cut-and fill slopes of roads are an integral part of a fuelbreak as they add to the effective width of modified fuels.

Fuelbreaks without an associated road system, such as those located along strategic ridge lines, are still useful in fire suppression. Here, they are often strengthened and held using aerial retardant drops until fire crews can walk in or be ferried in by helicopter. Preferably, fuelbreaks are located along ridge tops to help arrest fires at the end of their runs. However, due to home site locations and resource values, they can also be effective when established at the base of slopes. Mid-slope fuelbreaks are least desirable, but under certain circumstances and with modifications, these too, may be valuable.

This goal will be measured and accomplished with the following efforts:

- The CWPP Committee and the CMRA will work together to identify additional fuelbreak opportunities along CMRA maintained roads. Much of this fuel mitigation was accomplished in 2017 from Colorado State Grant monies.
- A method of utilizing Grant availability for this activity needs to be determined. Methods of financing the activity for CMRA roads until Grant reimbursement needs to be determined with the CMRA Board. This may require a line item in the annual proposed budget that includes strengthening the reduction of fuels along already developed fire breaks on CMRA roads.
- Compromise with landowners needs along CMRA roads needs to be developed so as to improve the fuels mitigation in a manner that does not completely destroy the natural aesthetics of the trees. Fuelbreak activity vs Firebreak activity will be the predominant method and will assist this compromise. Assistance from the CSFS, LCSOES, and LFPD will be obtained by the active CWPP Committee to develop best practices to obtain property owner buy in.
- CWPP Committee will encourage cooperation with neighboring residents to create Linked Defensible Space. Collective action by residents will magnify the impact of individual defensible space projects and reduce the likelihood that homes will ignite due to embers produced from adjacent, combusting homes. Linked defensible space creates greater strategic value.
- The CWPP Committee will work with the CMRA Road Manager and CMRA Board to develop areas of the CMRA road that in need of turn outs made to provide better access for fire protection efforts and egress in the event of an evacuation. Continued cooperation with the CMRA Board over the life of this CWPP will be necessary to accomplish the plan.
- Prepare personal water resources by making them easily accessible and clearly labeling how to access them. Unlock pump house doors and remove vegetation or other obstructions. If you have a generator, leave it in an accessible location in case power is turned off.
- Water availability due to drought and lack of year round water sources are a major concern in CMRA. Currently there are three 2500 gallon buried cisterns located throughout CMRA. The

CWPP Committee with cooperation with the CMRA Board and LFPD will investigate feasibility and location for an additional 2500 gallon cistern. This will improve the first response efforts of LFPD.

#### Action Plan 4: Outlying Areas to Cherokee Meadows Community.

CSFS Wildfire Hazard Ratings maps identify the CMRA Community as a moderate Wildfire Risks rating. Much of the actual CMRA area is in the Lower Risk. CMRA forests are mostly Ponderosa Pine, Juniper, and mixed conifer, with aspen trees in the riparian areas. In the CMRA area there is much open grass and meadows which are kept moderately trimmed with active cattle grazing with the CMRA Grazing Lease. Recent droughts and an especially dry past winter have stressed trees. There are no reliable waters sources except for 3, 2500 gallon cisterns buried in the CMRA development and a large, year round pond located at mm10 on CR 80C. A Survey concern/issue was identified for Fuels Reduction on lands neighboring CMRA to the West and North. The 830 acres to the West are owned by USDA and managed by the Roosevelt/Arapahoe Forest, Canyon Lakes District. The 3157 acres to the North are part of the State of Colorado and Division of Wildlife hunting areas.

The Action Plan for this part of the CWPP is hard to implement due to the ownership and access to these lands. The attempts to accomplish this Action Plan include:

- Approach the governmental owners of these properties through the CWPP and request grants or assistance with fuels/risk mitigation. Areas of concern include the ARP lands to the West of the CMRA development and the State of Colorado lands on the Northern boundary to CMRA.
- Assistance is needed to help develop fuelbreaks are located so that the area under management is broken into small, manageable units. Thus, when a wildfire reaches modified fuels, defensive action is more easily taken, helping to keep the fire small. For example, a plan for CMRA might recommend that fuelbreaks break up continuous forest fuels into units of 10 acres or less. This is an excellent plan, especially if defensible space thinnings are completed around homes and structures, and thinning for forest management and forest health are combined with the fuelbreak.
- Help accomplish fuels/risk mitigation by providing access to these properties through CMRA roads where possible.
- From the US Forest Service, Rocky Mountain Research Station, the publication: Principles and practices for the restoration of ponderosa pine and dry mixed-conifer forests of the Colorado Front Range; <a href="https://www.fs.usda.gov/rmrs/publications/principles-and-practices-restoration-ponderosa-pine-and-dry-mixed-conifer-forests">https://www.fs.usda.gov/rmrs/publications/principles-and-practices-restoration-ponderosa-pine-and-dry-mixed-conifer-forests</a>; offers guidance for foresters and property owners. Using these guidelines and we can work together with other agencies and ownerships to create a holistic approach to restoring these forests from dense forests into historical forests that were maintained by wildfires and very resilient to them. Mechanical treatments on these properties generate residual material such as tree boles and slash. Often called activity fuels (because they result from the treatment activity itself). These residual fuels can be challenging to deal with during and after the primary treatment activity. Several methods are currently in use on the Front Range for dealing with residual material, including piling and burning, lop-and-scatter, and mastication or chipping. Grant opportunities may be available to aid in dealing with residual material.
- Collaboration between landowners, local governments, and LFPD will be necessary to ensure good outcomes from this plan.
- Actively approach neighboring developments to the South, East, and West and share the CWPP efforts and success.

Action plans 1-3 will be located mainly in Project Area 4. Action plan 4 will be located in Project Areas 1-3

![](_page_25_Figure_2.jpeg)

#### Grant and Funding Assistance

#### Grant Programs for the CWPP: <u>https://csfs.colostate.edu/grants/</u>

The Colorado State Forest Service helps community groups, nonprofits, and others secure grants and assistance for projects that promote healthy forests and wildfire mitigation in Colorado. Projects that benefit only one landowner do not qualify for these state-funded grant programs.

- Forest Restoration & Wildfire Risk Mitigation grants reduce the risk of wildfire to people, property and infrastructure, and promote forest health and restoration.
- Wildfire Mitigation Incentives for Local Government grants match revenue raised by local governments for forest management and fuels reduction or expand existing programs.
- Wildfire Mitigation Resources & Best Practices grants support outreach among landowners in high wildfire hazard areas.
- Grants Database: The Colorado State Forest Service maintains a database of grants offered by state, federal, private, and other organizations that fund projects that promote the health of Colorado's natural resources. The database is free to use. <u>https://csfs.colostate.edu/naturalresources-grants-database/</u>
- Programs for Private Landowners: The Colorado State Forest Service offers a variety of programs to assist landowners in managing their forested property. The CSFS is committed to helping landowners promote healthy and sustainable forest conditions by providing technical and financial assistance through these programs.
  - Forest Ag: <u>https://csfs.colostate.edu/forest-ag-program/</u>
  - Forest Legacy: <u>https://csfs.colostate.edu/forest-legacy-program/</u>
  - Forest Stewardship: <u>https://csfs.colostate.edu/forest-stewardship-program/</u>
  - Tree Farm: <u>https://csfs.colostate.edu/tree-farm/</u>
- Mitigation Income Tax Subtraction: Colorado landowners with property located in a wildlandurban interface (WUI) area may qualify to receive a tax subtraction for the costs of wildfire mitigation work:
  - The taxpayer must own the property upon which the wildfire mitigation measures are performed.
  - The property must be located in Colorado and within a wildland-urban interface area.
  - The total amount of the subtraction cannot exceed 50% of the landowner's out-of-pocket expenses, \$2,500 or the owner's federal taxable income, whichever is less.
     The deduction is available through tax year 2025.
- For more information on this Colorado Department of Revenue tax deduction:

#### https://tax.colorado.gov/sites/tax/files/documents/ITT Wildfire Mitigation Measures Dec 2022.pdf

- The Natural Resources Conservation Service (NRCS) offers the Environmental Quality Incentives Program (EQIP) which provides cost-share opportunities for landowners or managers, typically on private land. Eligible applicants can work through their local NRCS Field Office to create a Conservation Plan and apply for the program. Though EQIP does not require matching contributions, it typically covers only 50-75% of associated costs for a forestry project. This program is tied to addressing Resource Concerns on working lands, not limited to forestry. The Larimer Conservation District (LCD) partners with NRCS to administer this program locally on forested land with eligible and interested landowners within Larimer County, and can leverage EQIP funding to apply for grants to cover any additional costs. For more information on EQIP, visit: <a href="https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives">https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives</a>; To contact LCD: <a href="https://www.larimercd.org">www.larimercd.org</a>
- Another potential grant source for development/revision of the CWPP and implementation of projects is the USFS Community Wildfire Defense Grants: https://www.fs.usda.gov/managinghttps://www.fs.usda.gov/managing-land/fire/grants

#### **Approval Page**

The Cherokee Meadows Road Association Wildfire Protection Plan (CMRA CWPP) was Revised and Updated. The CWPP is a collaborative effort to guide the CMRA and Community wildfire protection efforts and complies with CWPP standards set forth by the Colorado State Forest Service in 2022. The following Individuals and organizations were engaged in developing the Cherokee Meadows Community CWPP and approve the 2022 Revision and Update:

**David Herder** CMRA Core Team/Livermøre Fire Protection District Signature: Date:

**Janet Gibbs CMRA Board President** Signature: Date:

Date: 5/8/2023

**Jlm Herrington, Fire Chief** 

Signature:

Livermore Fire Protection District

Cody Peel, Fire Staff Officer US Forest Service, Arapaho and Roosevelt National Forest and Pawnee National Grassland

Signature: Date:

**Curt Palin** CMRA Board Representative to the Core Team Signature:

Date:

Jennifer Wright **CMRA** Core Team Signature; Date:

Derek Rosenquist, Sergeant Larimer County Sheriff's Office Emergency Services

Signature Date:

Max Erickson, Supervisory Forester **Colorado State Forest Service** Signature: Date:

#### Appendix A

#### Summary of CWPP Survey

A survey to help understand concerns and issues was sent to Cherokee Meadows Road Association (CMRA) residents and property owners during the first 2 weeks September, 2022 using Survey Monkey. The results of this survey helped evaluate and validate the issues the community saw with regard to living in the Wildland Urban Interface. The results of the survey were summarized by the using the most prevalent responses to help form the CWPP. The responses are listed in descending order of the most responses per question.

#### 55 Surveys sent out 25 responded = 45% response

#### 1. Please rate the level of your concern regarding wildfire issues in our community:

Very Concerned: 14 Somewhat concerned: 10 Not Concerned: 1

# 2. <u>What are your concerns regarding Wildfire risks in the Community? (Some examples of concerns are tall grass/bushes, neighboring lands, drought, severe weather etc.):</u>

- 1. Neighboring lands (state/federal)
- 2. Drought
- 3. Access roads to the community
- 4. Wind

#### 3. <u>What are concerns of Wildfire risks/issues on your property? (Some examples of concerns</u> are not enough defensible space, access in and out of my driveway, fuels on neighboring properties, construction materials of my house, etc.):

- 1. Fuels, grass and trees
- 2. Access to water
- 2. Neighboring lands (state/Federal)
- 2. Neighboring property owners
- 2. Access to their property

## 4. <u>What are barriers for you to do Wildfire mitigation on your property?</u> (Some examples of barriers are cost, finding help, knowing how, physical limitations, etc.):

- 1. Physical limitations
- 2. Cost
- 3. Time

# 5. What are the top 3 things you see as strengths in our community regarding Wildfire issues and/or our ability to resolve them? (Some examples of strengths are cohesiveness, cooperation, shared purpose, etc.):

- 1. Shared purpose
- 2. Relation and proximity with LFPD
- 3. Willingness to help and educate

## 6. <u>What are 3 things you see as weakness in our community regarding Wildfire issues?</u> (Some examples of weakness are part time residents, plan of action, shared costs, etc.):

- 1. Part time residents/ out of state owners
- 2. Apathy/ complacency
- 3. Shared purpose/ goals/ plan of action

#### 7. What do you see as 3 opportunities in our community for improving Wildfire resilience?:

- 1. Education
- 2. Grants
- 2. Mitigation of neighboring state and federal lands
- 2. Planning

## 8. <u>Please list any threats you envision that would hamper our efforts in improving our wildfire</u> risks? (Some examples of threats are apathy, procrastination, costs, age of residents, etc.):

- 1. Costs
- 2. Age of residents
- 3. Procrastination

#### 9. <u>Would you participate in a state grant that would reimburse you 50% of your costs for</u> <u>Wildfire mitigation?:</u>

Yes: 19 No: 1

Comments for question 9:

1. Probably not. We spent over \$5500 that summer dealing with the beetle kill due to "Wildfire Mitigation" and our "state/county rep" was all over the place on what needed to be done and he just cost us more time and money. There was no grant or anything with that. It was a dictate (or receive a \$5,000 fine) and soured us a bit with government telling us what to do on our property when they were not doing the same with their property literally across the road. Would have been money and time ahead doing nothing and paying the fine.

2. I will continue mitigation whether I am reimbursed or not. I would prefer that my 50% be put towards either someone else's property or to the public lands nearby.

3. I probably won't now as I don't have a house and have thinned out a lot of the accessible areas (after the beetle scourge), but might if more insects or diseases cropped up

4. Perhaps. Is time spent reimbursable?

5. As long as a clear community action plan has been established and individual expectations understood

6. Unsure - not interested in having people on my property under the guise of "fire mitigation"

7. Depends on cost.

#### 10. Which of the following are causing concern or confusion?:

None of the above: 13 Community Wildfire Protection Plan: 6 Firewise Community: 5 Fire Adapted Community: 5 Grants: 7

Other for question 10:

- 1. Age
- 2. Personal participation and responsibilities
- 3. How to get the majority of residents to "buy in" to a plan
- 4. No aware of the document
- 5. None of these are readily understood by the majority of the owners. People don't know or care about their responsibility in "common areas" in keeping their community safe.

Appendix B:

# WUI CMRA Community (Wildfire Risk Assessment Summary Report)

Report was generated using

www.ColoradoForestAtlas.org

Report version: 1.2.1

Report generated: 2022-10-24

# 2017 Colorado Wildfire Risk Assessment Summary Report

![](_page_32_Picture_1.jpeg)

![](_page_32_Picture_2.jpeg)

### *CMRACOMMUNITY*

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# Disclaimer

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User should also note that property boundaries included in any product do not represent an on-the-ground survey suitable for legal, engineering, or surveying purposes. They represent only the approximate relative locations.

# Introduction

#### **Colorado Wildfire Risk Assessment Report**

Welcome to the Colorado Wildfire Risk Assessment Summary Reporting Tool.

This tool allows users of the Risk Reduction Planner application of the Colorado Forest Atlas web portal to define a specific project area and generate information for this area. A detailed risk summary report can be generated using a set of predefined map products developed by the Colorado Wildfire Risk Assessment project which have been summarized explicitly for the user defined project area. The report is generated in PDF format.

The report has been designed so that information from the report can be copied and pasted into other specific plans, reports, or documents depending on user needs. Examples include, but are not limited to, Community Wildfire Protection Plans, Local Fire Plans, Fuels Mitigation Plans, Hazard Mitigation Plans, Homeowner Risk Assessments, and Forest Management or Stewardship Plans. Example templates for some of these reports are available for download on the Colorado Forest Atlas web portal.

The Colorado WRA provides a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in Colorado.

Results of the assessment can be used to help prioritize areas in the state where mitigation treatments, community interaction and education, or tactical analyses might be necessary to reduce risk from wildfires.

The Colorado WRA products included in this report are designed to provide the information needed to support the following key priorities:

- Identify areas that are most prone to wildfire
- · Plan and prioritize hazardous fuel treatment programs
- Allow agencies to work together to better define priorities and improve emergency response, particularly across jurisdictional boundaries
- Increase communication with local residents and the public to address community priorities and needs

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### **Products**

Each product in this report is accompanied by a general description, table, chart and/or map. A list of available Colorado WRA products in this report is provided in the following table.

COWRA Product	Description
Wildfire Risk	The overall composite risk occurring from a wildfire derived by combining Burn Probability and Values at Risk Rating
Burn Probability	Annual probability of any location burning due to wildfire
Fire Intensity Scale	Quantifies the potential fire intensity by orders of magnitude
Wildland Urban Interface	Housing density depicting where humans and their structures meet or intermix with wildland fuel
Wildland Urban Interface Risk	Annual probability of any location burning due to wildfire
Values at Risk Rating	A composite rating of values and assets that would be adversely impacted by a wildfire by combining the four main risk outputs
Suppression Difficulty Rating	Reflects the difficulty or relative cost to suppress a fire given the terrain and vegetation conditions that may impact machine operability
Drinking Water Risk Index	A measure of the risk to Drinking Water Risk Index Areas (DWIA) based on the potential negative impacts from wildfire
Forest Assets Risk Index	A measure of the risk to forested areas based on the potential negative impacts from wildfire
Riparian Assets Risk Index	A measure of the risk to riparian areas based on the potential negative impacts from wildfire
Characteristic Flame Length	A measure of the expected flame length of a potential fire

COWRA Product	Description
Characteristic Rate of Spread	A measure of the expected rate of spread of a potential fire
Fire Type Extreme Weather	Represents the potential fire type under the extreme percentile weather category
Surface Fuels	A measure of the expected rate of spread of a potential fire
Characteristic Rate of Spread	Characterization of surface fuel models that contain the parameters for calculating fire behavior outputs
Vegetation	General vegetation and landcover types
Forest Assets	Identifies forested land categorized by susceptibility or response to fire
Riparian Assets	Forested riparian areas characterized by functions of water quantity and quality, and ecology
Drinking Water Importance Areas	A measure of quality and quantity of public surface drinking water categorized by watershed

### Wildland Urban Interface

### Description

Colorado is one of the fastest growing states in the Nation, with much of this growth occurring outside urban boundaries. This increase in population across the state will impact counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.



For the **CMRACOMMUNITY** project area, it is estimated that **79** people or **100.0** % percent of the total project area population (79) live within the WUI.

The Wildland Urban Interface (WUI) layer reflects housing density depicting where humans and their structures meet or intermix with wildland fuels. In the past, conventional wildland-urban interface datasets, such as USFS SILVIS, have been used to reflect these concerns. However, USFS SILVIS and other existing data sources did not provide the level of detail needed by the Colorado State Forest Service and local fire protection agencies.

The new WUI dataset is derived using advanced modeling techniques based on the Where People Live dataset and 2016 LandScan USA population count data available from the Department of Homeland Security, HSIP dataset. WUI is simply a subset of the Where People Live dataset. The primary difference is populated areas surrounded by sufficient non-burnable areas (i.e. interior urban areas) are removed from the Where People Live dataset, as these areas are not expected to be directly impacted by a wildfire. This accommodates WUI areas based on encroachment into urban areas where wildland fire is likely to spread.



A more detailed description of the risk assessment algorithms is provided in the Colorado Wildfire Risk Assessment (Colorado WRA) Final Report, which can be downloaded from <a href="https://www.ColoradoForestAtlas.org">www.ColoradoForestAtlas.org</a>.

Data are modeled at a 30-meter cell resolution (30 m2 or 900 m area per map cell), which is consistent with other Colorado WRA layers. The WUI classes are based on the number of houses per acre. Class breaks are based on densities understood and commonly used for fire protection planning.

Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
Less than 1 house/40 ac	41	51.9 %	1,464	79.7 %
1 house/40 ac to 1 house/20 ac	24	49.0 %	246	13.4 %
1 house/20 ac to 1 house/10 ac	14	20.6 %	125	6.8 %
1 house/10 ac to 1 house/5 ac	0	0.0 %	0	0 %
1 house/5 ac to 1 house/2 ac	0	0.0 %	0	0 %
1 house/2 ac to 3 houses/ac	0	0.0 %	0	0 %
More than 3 houses/ac	0	0.0 %	0	0 %
Total	79	100.0 %	1,836	100.0 %







## Wildland Urban Interface (WUI) Risk Index

#### Description

The Wildland-Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the wildland-urban interface and rural areas is essential for defining potential wildfire impacts to people and homes.

The WUI Risk Index is derived using a response function modeling approach. Response functions are a method of assigning a net change in the value to a resource or asset based on susceptibility to fire at different intensity levels, such as flame length.

To calculate the WUI Risk Index, the WUI housing density data were combined with flame length data and response functions were defined to represent potential impacts. The response functions were defined by a team of experts led by Colorado State Forest

Service mitigation planning staff. By combining flame length with the WUI housing density data, it is possible to determine where the greatest potential impact to homes and people is likely to occur.

The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9, while areas with low housing density and low flame lengths are rated -1.

The WUI Risk Index has been calculated consistently for all areas in Colorado, which allows for comparison and ordination of areas across the entire state. Data are modeled at a 30-meter cell resolution, which is consistent with other Colorado WRA layers.

WUI Risk Class	Acres	Percent
-1 (Least Negative Impact)	522	26.6 %
-2	1,230	62.6 %
-3	61	3.1 %
-4	115	5.9 %
-5	10	0.5 %
-6	26	1.3 %
-7	0	0 %
-8	0	0 %
-9 (Most Negative Impact)	0	0 %
Total	1,965	100 %





### **Firewise USA**®

### Description

Firewise USA® is a national recognition program that provides resources to inform communities how to adapt to living with wildfire and encourages neighbors to take action together to reduce their wildfire risk. Colorado communities that take the following five steps can be recognized as Firewise:

- 1. Form a Firewise board or committee
- 2. Obtain a wildfire risk assessment from the CSFS or local fire department, and create an action plan
- 3. Hold a Firewise event once per year
- 4. Invest a minimum of \$24.14 per dwelling unit in local Firewise actions annually
- 5. Create a National Fire Prevention Association (NFPA) profile and follow the application directions located at <u>https://portal.firewise.org/user/login</u>

The Firewise USA® dataset defines the boundaries of the recognized communities. Mapping Firewise USA® boundaries will generally be completed by CSFS staff.



### **FIREWISE USA**<sup>®</sup> Residents reducing wildfire risks

Note: These are estimated boundaries using a variety of methods with varying degrees of accuracy. These are not legal boundaries and should not be construed as such. The boundaries may overlap with CWPP areas and are subject to change over time as the communities develop, change, and continue to implement wildfire mitigation efforts.

To learn more about the Firewise USA® recognition program or to fill out an application, visit <u>https://www.nfpa.org/Public-Education/By-topic/Wildfire/Firewise-USA</u> - OR - <u>https://csfs.colostate.edu/wildfire-mitigation/colorado-firewise-communities/</u>

Name	County	Acres Inside Project Area	Total Acres
Cherokee Meadows	LARIMER	1737.274	9707.047
Total Acres		1737.274	9707.047



# **Community Wildfire Protection Plans (CWPPs)**

### Description

A Community Wildfire Protection Plan (CWPP) is a document developed and agreed upon by a community to identify how the community will reduce its wildfire risk. CWPPs identify areas where fuels reduction is needed to reduce wildfire threats to communities and critical infrastructure, address protection of homes and other structures, and plan for wildfire response capability. The Colorado State Forest Service (CSFS) supports the development and implementation of CWPPs and provides resources, educational materials and information to those interested in developing CWPPs.

The CWPP dataset represents the boundaries of those areas that have developed a CWPP. Note that CWPPs can be developed by different groups at varying scales, such as county, Fire Protection District (FPD), community/subdivision, HOA, etc., and as such, can overlap. In addition, the CWPPs can be from different dates. Often a county CWPP is completed first with subsequently more detailed CWPPs done for local communities within that county or FPD. CO-WRAP provides a tool that allows the user to select the CWPP area and retrieve the CWPP document for review (PDF).

At a minimum, a CWPP should include:

- The wildland-urban interface (WUI) boundary, defined on a map, where people, structures and other community values are most likely to be negatively impacted by wildfire
- The CSFS, local fire authority and local government involvement and any additional stakeholders
- A narrative that identifies the community's values and fuel hazards
- The community's plan for when a wildfire occurs
- An implementation plan that identifies areas of high priority for fuels treatments

CWPPs are not shelf documents and should be reviewed, tracked and updated. A plan stays alive when it is periodically updated to address the accomplishments of the community. Community review of progress in meeting plan objectives and determining areas of new concern where actions must be taken to reduce wildfire risk helps the community stay current with changing environment and wildfire mitigation priorities.



Community input is the foundation of a Community Wildfire Protection Plan that identfies community needs and garners community support.

If your community is in an area at risk from wildfire, now is a good time to start working with neighbors on a CWPP and preparing forfuture wildfires. Contact your local CSFS district to learn how to start this process and create a CWPP for your community: <u>http://csfs.colostate.edu/pages/your-local-forester.html</u>

For the CMRACOMMUNITY test project area, there are 2 CWPPs areas that are totally or partially in the defined project area.

Community CWPP Name	СШРР Туре	CSFS District	Acres inside project area	Total Acres
Larimer County	County	Fort Collins	20,278	1,684,188
Livermore FPD - Cherokee Meadows	FPD	Fort Collins	10,503	10,531
Total Acres			30,781	1,694,719





### Wildfire Risk

#### Description

**Wildfire Risk is a composite risk rating obtained by combining the probability of a fire occurring with the individual values at risk layers.** Risk is defined as the possibility of loss or harm occurring from a wildfire. It identifies areas with the greatest potential impacts from a wildfire – i.e. those areas most at risk - considering all values and assets combined together – WUI Risk, Drinking Water Risk, Forest Assets Risk and Riparian Areas Risk.

Since all areas in Colorado have risk calculated consistently, it allows for comparison and ordination of areas across the entire state. The Values at Risk Rating is a key component of Wildfire Risk. The Values at Risk Rating is comprised of several inputs focusing on values and assets at risk. This includes Wildland Urban Interface, Forest Assets, Riparian Assets and Drinking Water Importance Areas (watersheds).

To aid in the use of Wildfire Risk for planning activities, the output values are categorized into five (5) classes. These are given general descriptions from Lowest to Highest Risk.

Wildfire Risk Class		Acres	Percent
	Non-Burnable	128	0.6 %
	Lowest Risk	746	3.7 %
	Low Risk	5,363	26.5 %
	Moderate Risk	14,009	69.2 %
	High Risk	9	0.0 %
	Highest Risk	0	0 %
Total		20,255	100 %







## **Burn Probability**

### **Description**

Burn Probability (BP) is the annual probability of any location burning due to a wildfire. BP is calculated as the number of times that a 30-meter cell on the landscape is burned from millions of fire simulations. The annual BP was estimated by using a stochastic (Monte Carlo) wildfire simulation approach with Technosylva's Wildfire Analyst software (www.WildfireAnalyst.com).

A total number of 3,200,000 fires were simulated across the state, including those fires outside the Colorado border which were used in a buffer area around the state, to compute BP with a mean ignition density of 8.68 fires/km2. The simulation ignition points were spatially distributed evenly every 500 meters across the state. Only high and extreme weather conditions were used to run the simulations. All fires simulations had a duration of 10 hours.

**Burn Probability** Acres Percent Class the different weather scenarios and the historical spatial distribution of the ignition points. Non-Burnable 0 0 % Very Low 2 0.0 % Very Low-Low 0.0 % 6 0.1 % Low 11 67 0.3 % Low-Moderate 20.040 Moderate 99.6 % 0.0 % Moderate-High 0 0 % High 0 **High-Very High** 0 % 0 Very High 0 % 0 Total 20,127 100 %

The Wildfire Analyst fire simulator considered the number of times that the simulated fires burned each cell. After that, results were weighted by considering the historical fire occurrence of those fires that burned in high and extreme weather conditions. The weighting was done by assessing the relationship between the annual historical fire ignition density in Colorado and the total number of simulated fires with varying input data in

The probability map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local protection mitigation or prevention planning.

To aid in the use of Burn Probability for planning activities, the output values are categorized into 10 (ten) classes. These are given general descriptions from Lowest to Highest Probability.

A more detailed description of the risk assessment algorithms is provided in the Colorado WRA Final Report, which can be downloaded from www.ColoradoForestAtlas.org.





## Values at Risk Rating

### Description

**Represents those values or assets that would be adversely impacted by a wildfire.** The Values at Risk Rating is an overall rating that combines the risk ratings for Wildland Urban Interface (WUI), Forest Assets, Riparian Assets, and Drinking Water Importance Areas into a single measure of values-at-risk. The individual ratings for each value layer were derived using a Response Function approach.

Response functions are a method of assigning a net change in the value to a resource or asset based on susceptibility to fire at different intensity levels. A resource or asset is any of the Fire Effects input layers, such as WUI, Forest Assets, etc. These net changes can be adverse (negative) or positive (beneficial).

Calculating the Values at Risk Rating at a given location requires spatially defined estimates of the intensity of fire integrated with the identified resource value. This interaction is quantified through the use of response functions that estimate expected impacts to resources or assets at the specified fire intensity levels. The measure of fire intensity level used in the Colorado assessment is flame length for a location. Response Function outputs were derived for each input dataset and then combined to derive the Values Impacted Rating.

Different weightings are used for each of the input layers with the highest priority placed on protection of people and structures (i.e. WUI). The weightings represent the value associated with those assets. Weightings were developed by a team of experts during the assessment to reflect priorities for fire protection planning in Colorado. Refer to the Colorado WRA Final Report for more information about the layer weightings.

Since all areas in Colorado have the Values at Risk Rating calculated consistently, it allows for comparison and ordination of areas across the entire state. The data were derived at a 30-meter resolution.

	Values at Risk Class	Acres	Percent
	-1 (Least Negative Impact)	3,140	15.6 %
	-2	7,059	35.1 %
	-3	7,075	35.2 %
	-4	2,753	13.7 %
	-5	92	0.5 %
	-6	8	0.0 %
	-7	0	0 %
	-8	0	0 %
	-9 (Most Negative Impact)	0	0 %
Tot	al	20,127	100 %





# **Suppression Difficulty Rating**

### Description

**Reflects the difficulty or relative cost to suppress a fire given the terrain and vegetation conditions that may impact machine operability.** This layer is an overall index that combines the slope steepness and the vegetation/fuel type characterization to identify areas where it would be difficult or costly to suppress a fire due to the underlying terrain and vegetation conditions that would impact machine operability (in particular Type II dozer).

The rating was calculated based on the fireline production rates for hand crews and engines with modifications for slope, as documented in the NWCG Fireline Handbook 3, PMS 401-1.

The burnable fuel models in the Colorado WRA were grouped into ten categories: Grass, Grass/Shrub, Shrub/Regeneration, Moderate Forest, Heavy Forest, Swamp/Marsh, Agriculture, Barren, Urban/Developed, Water/Ice.

Fireline production capability on six slope classes was used as the basic reference to obtain the suppression difficulty score. The response function category is assigned to each combination of fuel model group and slope category.

	SDR Class	Acres	Percent
	No Limitations	975	4.8 %
	Slight	2,997	14.8 %
	Slight to Moderate	6,780	33.6 %
	Moderate	2,974	14.7 %
	Moderate to Significant	3,139	15.5 %
	Significant	151	0.7 %
	Significant to Severe	1,023	5.1 %
	Severe	965	4.8 %
	Inoperable	1,192	5.9 %
Tot	al	20,194	100 %





### **Fire Occurrence**

#### Description

Fire Occurrence is an ignition density that represents the likelihood of a wildfire starting based on historical ignition patterns. Occurrence is derived by modeling historic wildfire ignition locations to create an ignition density map.

Historic fire report data were used to create the ignition points for all Colorado fires. The compiled fire occurrence database was cleaned to remove duplicate records and to correct inaccurate locations. The database was then modeled to create a density map reflecting historical fire ignition rates.

Historic fire report data were used to create the ignition points for all Colorado fires. This included both federal and non-federal fire ignition locations.

The class breaks are determined by analyzing the Fire Occurrence output values for the entire state and determining cumulative percent of acres (i.e. Class 9 has the top 1.5% of acres with the highest occurrence rate). Refer to the Colorado WRA Final Report for a more detailed description of the mapping classes and the methods used to derive these.

The Fire Occurrence map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not sufficient for site specific analysis, it is appropriate for regional, county or local protection mitigation or prevention planning.

A more detailed description of the risk assessment algorithms is provided in the Colorado WRA Final Report, which can be downloaded from <u>www.ColoradoForestAtlas.org</u>.

F	ire Occurrence Class	Acres	Percent
	Non Burnable	126	0.6 %
	1 (Lowest Occurrence)	0	0 %
	2	0	0 %
	3	93	0.5 %
	4	2,543	12.6 %
	5	11,182	55.2 %
	6	6,310	31.2 %
	7	0	0 %
	8	0	0 %
	9 (Highest Occurrence)	0	0 %
Tot	al	20,255	100 %





### **Fire Behavior**

#### Description

Fire behavior is the manner in which a fire reacts to the following environmental influences:

1. Fuels

2. Weather

3. Topography



Fire behavior characteristics are attributes of wildland fire that pertain to its spread, intensity, and growth. Fire behavior characteristics utilized in the Colorado WRA include fire type, rate of spread, flame length and fireline intensity (fire intensity scale). These metrics are used to determine the potential fire behavior under different weather scenarios. Areas that exhibit moderate to high fire behavior potential can be identified for mitigation treatments, especially if these areas are in close proximity to homes, business, or other assets.

#### <u>Fuels</u>

The Colorado WRA includes composition and characteristics for both surface fuels and canopy fuels. Assessing canopy fire potential and surface fire potential allows identification of areas where significant increases in fire behavior affects the potential of a fire to transition from a surface fire to a canopy fire.

Fuel datasets required to compute both surface and canopy fire potential include:

- 1. Surface Fuels are typically categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter, and 4) slash. They are generally referred to as fire behavior fuel models and provide the input parameters needed to compute surface fire behavior. The 2017 assessment uses the latest 2017 calibrated fuels for Colorado.
- 2. Canopy Cover is the horizontal percentage of the ground surface that is covered by tree crowns. It is used to compute wind-reduction factors and shading.
- 3. Canopy Ceiling Height/Stand Height is the height above the ground of the highest canopy layer where the density of the crown mass within the layer is high enough to support vertical movement of a fire. A good estimate of canopy ceiling height is the average height of the dominant and co-dominant trees in a stand. It is used to compute wind reduction to mid-flame height, and spotting distances from torching trees.
- 4. **Canopy Base** Height is the lowest height above the ground above which sufficient canopy fuel exists to vertically propagate fire (Scott & Reinhardt, 2001). Canopy base height is a property of a plot, stand or group of trees, not an individual tree. For fire modeling, canopy base height is an effective value that incorporates ladder fuels, such as tall shrubs and small trees. Canopy base height is used to determine whether a surface fire will transition to a canopy fire.



5. **Canopy Bulk Density** is the mass of available canopy fuel per unit canopy volume (Scott & Reinhardt, 2001). Canopy bulk density is a bulk property of a stand, plot or group of trees, not an individual tree. Canopy bulk density is used to predict whether an active crown fire is possible.

#### <u>Weather</u>

Environmental weather parameters needed to compute fire behavior characteristics include 1-hour, 10hour and 100-hour time-lag fuel moistures, herbaceous fuel moisture, woody fuel moisture and the 20foot, 10-minute average wind speed. To collect this information, Weather data (1988-2017) from NCEP (National Center for Environmental Prediction) was used to analyse potential weather scenarios in which assessing fire behavior and spread. In particular, the North American Regional Reanalysis (NARR) product from NCEP was selected because of it provides high resolution weather data for all of Colorado. The following percentiles (97th, 90th, 50th and 25th) were analysed for each variable in each 30km NARR point to create four weather scenarios to run the fire behavior analysis: "Extreme", "High", "Moderate" and "Low". After computing the weather percentiles of the NARR variables, an IDW algorithm was used to derive 30m resolution data to match the surface fuels dataset.

The four percentile weather categories are intended to represent low, moderate, high and extreme fire weather days. Fire behavior outputs are computed for each percentile weather category to determine fire potential under different weather scenarios.

For a detailed description of the methodology, refer to the 2017 Colorado Wildfire Risk Assessment Final Report at <u>www.ColoradoForestAtlas.org</u>.

#### **Topography**

Topography datasets required to compute fire behavior characteristics are elevation, slope and aspect.

#### FIRE BEHAVIOR CHARACTERISTICS

Fire behavior characteristics provided in this report include:

- Characteristic Rate of Spread
- Characteristic Flame Length
- Fire Intensity Scale
- Fire Type Extreme Weather

### **Characteristic Rate of Spread**

**Characteristic Rate of Spread is the typical or representative rate of spread of a potential fire based on a weighted average of four percentile weather categories.** Rate of spread is the speed with which a fire moves in a horizontal direction across the landscape, usually expressed in chains per hour (ch/hr) or feet per minute (ft/min). For purposes of the Colorado WRA, this measurement represents the maximum rate of spread of the fire front. Rate of Spread is used in the calculation of Wildfire Threat in the Colorado WRA.

Rate of spread is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each 30-meter cell in Colorado. Thirty (30) meter resolution is the baseline for the Colorado WRA, matching the source surface fuels dataset.



The "characteristic" output represents the weighted average for all four weather percentiles. While not shown in this report, the individual percentile weather ROS outputs are available in the Colorado WRA data.

Ra	ate of Spread	Acres	Percent
	Non-Burnable	128	0.6 %
	1 Very Low	4	0.0 %
	2 Low	19	0.1 %
	3 Moderate	1,877	9.3 %
	4 High	4,583	22.6 %
	5 Very High	7,733	38.2 %
	6 Extreme	5,911	29.2 %
Total		20,255	100 %




# **Characteristic Flame Length**

**Characteristic Flame Length is the typical or representative flame length of a potential fire based on a weighted average of four percentile weather categories.** Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating. Flame length is typically measured in feet (ft). Flame length is the measure of fire intensity used to generate the Fire Effects outputs for the Colorado WRA.

Flame length is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each 30-meter cell in Colorado.

This output represents the weighted average for all four weather percentiles. While not shown in this report, the individual percentile weather Flame Length outputs are available in the Colorado WRA data.

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	Flame Length	Acres	Percent
	Non-Burnable	128	0.6 %
	1 Very Low (0-1 ft)	10	0.0 %
	2 Low (1-4 ft)	3,876	19.1 %
	3 Moderate (4-8 ft)	6,888	34.0 %
	4 High (8-12 ft)	16	0.1 %
	5 Very High (12-25 ft)	256	1.3 %
	6 Extreme (25+ ft)	9,081	44.8 %
Tot	al	20,255	100 %





# **Fire Intensity Scale**

## Description

**Fire Intensity Scale (FIS) specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist.** Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of five (5) classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities.

### 1. Class 1, Lowest Intensity:

Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

### 2. Class2, Low:

Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.

### 3. Class 3, Moderate:

Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

### 4. Class 4, High:

Large Flames, up to 30 feet in length; short-range spotting 1. common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.

### 5. Class 5, Highest Intensity:

Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Burn Probability and Fire Intensity Scale are designed to complement each other. The Fire Intensity Scale does not incorporate historical occurrence information. It only evaluates the potential fire behavior for an area, regardless if any fires have occurred there in the past. This additional information allows mitigation planners to quickly identify areas where dangerous fire behavior potential exists in relationship to nearby homes or other valued assets.

Since all areas in Colorado have fire intensity scale calculated consistently, it allows for comparison and ordination of areas across the entire state. For example, a high fire intensity area in Eastern Colorado is equivalent to a high fire intensity area in Western Colorado.

Fire intensity scale is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently.

To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each 30-meter cell in Colorado. The FIS represents the weighted average for all four weather percentiles.

The fire intensity scale map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local planning efforts.

	FIS Class	Acres	Percent
	Non-Burnable	128	0.6 %
	1 Lowest Intensity	2,837	14.0 %
	2 Low	514	2.5 %
	3 Moderate	4,702	23.2 %
	4 Moderate to High Intensity	6,757	33.4 %
	5 Highest Intensity	5,316	26.2 %
Tot	al	20,255	100 %





# **Fire Type – Extreme Weather**

**Fire Type – Extreme represents the potential fire type under the extreme percentile weather category.** The extreme percentile weather category represents the average weather based on the top three percent fire weather days in the analysis period. It is not intended to represent a worst-case scenario weather event. Accordingly, the potential fire type is based on fuel conditions, extreme percentile weather, and topography.

Canopy fires are very dangerous, destructive and difficult to control due to their increased fire intensity. From a planning perspective, it is important to identify where these conditions are likely to occur on the landscape so that special preparedness measure can be taken if necessary. Typically canopy fires occur in extreme weather conditions. The Fire Type – Extreme layer shows the footprint of where these areas are most likely to occur. However, it is important to note that canopy fires are not restricted to these areas. Under the right conditions, it can occur in other canopied areas.

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below.

### Surface Fire

A fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.



### **Passive Canopy Fire**

A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).



### **Active Canopy Fire**

A crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (Scott & Reinhardt, 2001).

The Fire Type - Extreme Weather map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local planning efforts.



	Fire Type - Extreme Weather	Acres	Percent
	Surface Fire	10,828	53.8 %
	Passive Canopy Fire	4,964	24.7 %
	Active Canopy Fire	4,335	21.5 %
Tot	al	20,127	100 %





# **Surface Fuels**

## Description

Surface fuels, or fire behavior fuel models as they are technically referred to, contain the parameters required by the Rothermel (1972) surface fire spread model to compute surface fire behavior characteristics, including rate of spread, flame length, fireline intensity and other fire behavior metrics. As the name might suggest, surface fuels account only for surface fire potential. Canopy fire potential is computed through a separate but linked process. The Colorado WRA accounts for both surface and canopy fire potential in the fire behavior outputs. However, only surface fuels are shown in this risk report.

Surface fuels typically are categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter, and 4) slash. Two standard fire behavior fuel model sets have been published. The Fire Behavior Prediction System 1982 Fuel Model Set (Anderson, 1982) contains 13 fuel models, and the Fire Behavior Prediction System 2005 Fuel Model Set (Scott & Burgan, 2005) contains 40 fuel models. The Colorado WRA uses fuel models from the 2005 Fuel Model Set.

The 2017 Colorado Surface Fuels were derived by enhancing the baseline LANDFIRE 2014 products with modifications to reflect local conditions and knowledge. A team of fuels and fire behavior experts, led by the CSFS, conducted a detailed calibration of the LANDFIRE 2014 fuels datasets. This calibration involved correcting LANDFIRE mapping zone seamlines errors; adding recent disturbances from 2013 to 2017 for fires, insect and disease, and



Unmanaged forest with dead and downed trees and branches

Slash on the ground indicates that forest management treatments have occurred in this area

treatments; correcting fuels for high elevations; adjusting fuels for oak-shrublands and pinyon-juniper areas; and modifying SH7 fuel designations. This calibration effort resulted in an accurate and up-to-date surface fuels dataset that is the basis for the fire behavior and risk calculations in the 2017 Colorado Wildfire Risk Assessment Update.

A detailed description of the fuels calibration methods and results is provided in the CSFS 2017 Fuels Calibration Final Report (July 2018).

Surface	Fuels	Description	Acres	Percent
	NB 91	Urban/Developed	54	0.3 %
	NB 92	Snow/Ice	0	0 %
	NB 93	Agriculture	1	0.0 %
	NB 98	Water	66	0.3 %
	NB 99	Barren	7	0.0 %
	GR 1	Short, sparse, dry climate grass	408	2.0 %
	GR 2	Low load, dry climate grass	958	4.7 %
	GR 3	Low load, very coarse, humid climate grass	0	0 %
	GR 4	Moderate load, dry climate grass	0	0 %
	GR 1	GT 10,000 ft elevation	0	0 %
	GR 2	GT 10,000 ft elevation	0	0 %
	GS 1	Low load, dry climate grass-shrub	4,127	20.4 %
	GS 2	Moderate load, dry climate grass-shrub	5,683	28.1 %
	GS 1	GT 10,000 ft elevation	0	0 %
	SH 1	Low load, dry climate shrub	2,850	14.1 %
	SH 2	Moderate load, dry climate shrub	11	0.1 %
	SH 3	Moderate load, humid climate shrub	0	0 %
	SH 5	High load, humid climate shrub	131	0.6 %
	SH 7	Very high load, dry climate shrub	18	0.1 %
	SH 7	Oak Shrubland without changes	20	0.1 %
	TU 1	Light load, dry climate timber-grass-shrub	2,158	10.7 %
	TU 2	Moderate load, humid climate timber-shrub	0	0 %
	TU 5	Very high load, dry climate timber-shrub	3,562	17.6 %
	TL 1	Low load, compact conifer litter	4	0.0 %
	TL 2	Low load, broadleaf litter	6	0.0 %
	TL 3	Moderate load, conifer litter	102	0.5 %
	TL 4	Small downed logs	0	0 %
	TL 5	High load, conifer litter	0	0.0 %
	TL 6	Moderate load, broadleaf litter	0	0 %
	TL 7	Large downed logs	0	0 %
	TL 8	Long-needle litter	88	0.4 %
	TL 9	Very high load, broadleaf litter	0	0 %
Total			20.255	100 %





## Vegetation

## Description

The Vegetation map describes the general vegetation and landcover types across the state of Colorado. In the Colorado WRA, the Vegetation dataset is used to support the development of the Surface Fuels, Canopy Cover, Canopy Stand Height, Canopy Base Height, and Canopy Bulk Density datasets.

The LANDFIRE 2014 version of data products (Existing Vegetation Type) was used to compile the Vegetation data for the Colorado WRA. This reflects data current to 2014. The LANDFIRE EVT data were classified to reflect general vegetation cover types for representation with CO-WRAP.



Oak shrublands are commonly found along dry foothills and lower mountain slopes, and are often situated above Piñyon-juniper.



Piñyon-juniper woodlands are common in southern and southwestern Colorado.



Douglas-fir understory in a ponderosa pine forest.

Grasslands occur both on Colorado's Eastern Plains and on the Western Slope.



Wildland fire threat increases in lodgepole pine as the dense forests grow old.



Overly dense ponderosa pine, a dominant species of the montane zone.

١	/egetation Class	Acres	Percent
	Agriculture	2	0.0 %
	Grassland	1,105	5.5 %
	Introduced Riparian	0	0 %
	Lodgepole Pine	2	0.0 %
	Mixed Conifer	3,479	17.2 %
	Oak Shrubland	63	0.3 %
	Open Water	66	0.3 %
	Pinyon-Juniper	157	0.8 %
	Ponderosa Pine	5,990	29.6 %
	Riparian	347	1.7 %
	Shrubland	8,231	40.6 %
	Spruce-Fir	3	0.0 %
	Developed	150	0.7 %
	Sparsely Vegetated	0	0.0 %
	Hardwood	304	1.5 %
	Conifer-Hardwood	326	1.6 %
	Conifer	30	0.1 %
	Barren	0	0 %
Tot	al	20,255	100 %





# **Drinking Water Importance Areas**

## Description

Drinking Water Importance Areas is the measure of quality and quantity of public surface drinking water categorized by watershed. This layer identifies an index of surface drinking water importance, reflecting a measure of water quality and quantity, characterized by Hydrologic Unit Code 12 (HUC 12) watersheds. The Hydrologic Unit system is a standardized watershed classification system developed by the USGS. Areas that are a source of drinking water are of critical importance and adverse effects from fire are a key concern.

The U.S. Forest Service Forests to Faucets (F2F) project is the primary source of the drinking water data set. This project used GIS modeling to develop an index of importance for supplying drinking water using HUC 12 watersheds as the spatial resolution. Watersheds are ranked from 1 to 100 reflecting relative level of importance, with 100 being the most important and 1 the least important.

Several criteria were used in the F2F project to derive the importance rating including water supply, flow analysis, and downstream drinking water demand. The final model of surface drinking water importance used in the F2F project combines the drinking water protection model, capturing the flow of water and water demand, with a model of mean annual water supply.

The values generated by the drinking water protection model are simply multiplied by the results of the model of mean annual water supply to create the final surface drinking water importance index.

Water is critical to sustain life. Human water usage has further complicated nature's already complex aquatic system. Plants, including trees, are essential to the proper functioning of water movement within the environment. Forests receive precipitation, utilize it for their sustenance and growth, and influence its storage and/or passage to other parts of the environment.

Four major river systems – the Platte, Colorado, Arkansas and Rio Grande – originate in the Colorado mountains and fully drain into one-third of the landmass of the lower 48 states. Mountain snows supply 75 percent of the water to these river systems.



Virtually all of Colorado's drinking water comes from snowmelt carried at some point by a river.

The headwaters of the Animas River begin near Silverton, CO at elevations greater than 12,000 feet.

Approximately 40 percent of the water comes from the highest 20 percent of the land, most of which lies in national forests. National forests yield large portions of the total water in these river systems. The potential is great for forests to positively and negatively influence the transport of water over such immense distances.

I	Drinking Water Class	Acres	Percent
	1 - Lowest	0	0 %
	2	0	0 %
	3	0	0 %
	4	0	0 %
	5	0	0 %
	6	0	0 %
	7	20,255	100.0 %
	8	0	0 %
	9	0	0 %
	10 - Highest	0	0 %
Tot	al	20,255	100 %





# **Drinking Water Risk Index**

## Description

### Drinking Water Risk Index is a measure of the risk to DWIAs based on the potential negative impacts from wildfire.

In areas that experience low-severity burns, fire events can serve to eliminate competition, rejuvenate growth and improve watershed conditions. But in landscapes subjected to high, or even moderate-burn severity, the post-fire threats to public safety and natural resources can be extreme.

High-severity wildfires remove virtually all forest vegetation – from trees, shrubs and grasses down to discarded needles, decomposed roots and other elements of ground cover or duff that protect forest soils. A severe wildfire also can cause certain types of soil to become hydrophobic by forming a waxy, water-repellent layer that keeps water from penetrating the soil, dramatically amplifying the rate of runoff.

The loss of critical surface vegetation leaves forested slopes extremely vulnerable to large-scale soil erosion and flooding during subsequent storm events. In turn, these threats can impact the health, safety and integrity of communities and natural resources downstream. The likelihood that such a post-fire event will occur in Colorado is increased by the prevalence of highly erodible soils in several parts of the state, and weather patterns that frequently bring heavy rains on the heels of fire season.

In the aftermath of the 2002 fire season, the Colorado Department of Health estimated that 26 municipal water storage facilities were shut down due to fire and post-fire impacts.

The potential for severe soil erosion is a consequence of wildfire because as a fire burns, it destroys plant material and the litter layer. Shrubs, forbs, grasses, trees and the litter layer disperse water during severe rainstorms. Plant roots stabilize the soil, and stems and leaves slow the water to give it time to percolate into the soil profile. Fire can destroy this soil protection.

The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact.

	Class	Acres	Percent
	-1 Least Negative Impact	497	2.5 %
	-2	3,324	16.5 %
	-3	3,976	19.8 %
	-4	2,088	10.4 %
	-5	1,091	5.4 %
	-6	9,152	45.5 %
	-7	0	0 %
	-8	0	0 %
	-9 Most Negative Impact	0	0 %
Tot	al	20,127	100 %





# **Riparian Assets**

## Description

**Riparian Assets are forested riparian areas characterized by functions of water quantity and quality, and ecology**. This layer identifies riparian areas that are important as a suite of ecosystem services, including both terrestrial and aquatic habitat, water quality, water quantity, and other ecological functions. Riparian areas are considered an especially important element of the landscape in the west. Accordingly, riparian assets are distinguished from other forest assets so they can be evaluated separately.

The process for defining these riparian areas involved identifying the riparian footprint and then assigning a rating based upon two important riparian functions – water quantity and quality, and ecological significance. A scientific model was developed by the West Wide Risk Assessment technical team with in-kind support from CAL FIRE state representatives. Several input datasets were used in the model including the National Hydrography Dataset and the National Wetland Inventory.



The National Hydrography Data Set (NHD) was used to represent hydrology. A subset of streams and water bodies, which represents perennial, intermittent, and wetlands, was created. The NHD water bodies dataset was used to determine the location of lakes, ponds, swamps, and marshes (wetlands).

To model water quality and quantity, erosion potential (K-factor) and annual average precipitation was used as key variables. The Riparian Assets data are an index of class values that range from 1 to 3 representing increasing importance of the riparian area as well as sensitivity to fire-related impacts on the suite of ecosystem services.

	Riparian Assets Class	Acres	Percent
	Least Sensitive to Wildland fires	1,051	48.4 %
	2	1,022	47.1 %
	Most Sensitive to Wildland fires	97	4.5 %
Tot	al	2,170	100 %





# **Riparian Assets Risk Index**

## Description

Riparian Assets Risk Index is a measure of the risk to riparian areas based on the potential negative impacts from wildfire. This layer identifies those riparian areas with the greatest potential for adverse effects from wildfire.

The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact.

The risk index has been calculated by combining the Riparian Assets data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and high importance for ecosystem services. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and a low importance for ecosystem services.

This risk output is intended to supplement the Drinking Water Risk Index by identifying wildfire risk within the more detailed riparian areas.

Riparian Assets Risk Class	Acres	Percent
-1 (Least Negative Impact)	530	36.2 %
-2	312	21.3 %
-3	20	1.3 %
-4	538	36.7 %
-5	0	0 %
-6	1	0.1 %
-7	65	4.4 %
-8	0	0 %
-9 (Most Negative Impact)	0	0 %
Total	1,466	100 %





## **Forest Assets**

## Description

Forest Assets are forested areas categorized by height, cover, and susceptibility/response to fire. This layer identifies forested land categorized by height, cover and susceptibility or response to fire. Using these characteristics allows for the prioritization of landscapes reflecting forest assets that would be most adversely affected by fire. The rating of importance or value of the forest assets is relative to each state's interpretation of those characteristics considered most important for their landscapes.

Canopy cover from LANDFIRE 2014 was re-classified into two categories, open or sparse and closed. Areas classified as open or sparse have a canopy cover less than 60%. Areas classified as closed have a canopy cover greater than 60%.

Canopy height from LANDFIRE 2014 was re-classified into two categories, 0-10 meters and greater than 10 meters.

Response to fire was developed from the LANDFIRE 2014 existing vegetation type (EVT) dataset. There are over 1,000 existing vegetation types in the project area. Using a crosswalk defined by project ecologists, a classification of susceptibility and response to fire was defined and documented by fire ecologists into the three fire response classes.

These three classes are sensitive, resilient and adaptive.

- Sensitive = These are tree species that are intolerant or sensitive to damage from fire with low intensity.
- **Resilient** = These are tree species that have characteristics that help the tree resist damage from fire and whose adult stages can survive low intensity fires.
- Adaptive = These are tree species adapted with the ability to regenerate following fire by sprouting or serotinous cones

The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact.

The risk index has been calculated by combining the Forest Assets data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and low resilience or adaptability to fire. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and high resilience or adaptability to fire.

This risk output is intended to provide an overall forest index for potential impact from wildfire. This can be applied to consider aesthetic values, ecosystem services, or economic values of forested lands.

	Forest Assets	Acres	Percent
	Sensitive	339	3.2 %
	Resilient	9,470	90.6 %
	Adaptative	648	6.2 %
Tot	al	10,457	100 %





# **Forest Assets Risk Index**

### Description

Forest Assets Risk Index is a measure of the risk to forested areas based on the potential negative impacts from wildfire. This layer identifies those forested areas with the greatest potential for adverse effects from wildfire.

The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact.

The risk index has been calculated by combining the Forest Assets data with a measure of fire intensity using a Response Function approach. Those areas with the highest negative impact (-9) represent areas with high potential fire intensity and low resilience or adaptability to fire. Those areas with the lowest negative impact (-1) represent those areas with low potential fire intensity and high resilience or adaptability to fire.

This risk output is intended to provide an overall forest index for potential impact from wildfire. This can be applied to consider aesthetic values, ecosystem services, or economic values of forested lands.

Forest Assets Risk Class		Acres	Percent
	-1 (Least Negative Impact)	1,627	15.5 %
	-2	2,626	25.0 %
	-3	4,128	39.2 %
	-4	197	1.9 %
	-5	1,938	18.4 %
	-6	0	0 %
	-7	2	0.0 %
	-8	2	0.0 %
	-9 (Most Negative Impact)	1	0.0 %
Tot	al	10,522	100 %




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## APPENDIX C

# Previous CMRA CWPP Efforts/Updates 2007-2017

#### **Community Wildfire Protection Plan**

Cherokee Meadows CWPP Larimer County, Colorado

8/26/2007

#### Introduction

This *Community Wildfire Protection Plan* (CWPP) was developed by members of the Cherokee Meadows Road Association with guidance and support from United States Forest Service, Colorado State Forest Service, and Larimer County. This CWPP supplements several Larimer County documents referenced in Appendix A. Information in this plan will be provided at a level of specificity determined by the community and appropriate agencies.

The process of developing a CWPP can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface. It can also lead community members through valuable discussions regarding management options and implications for the surrounding watershed.

#### Community / Agencies / Interested Parties Involved

Representatives involved in the development of the Cherokee Meadows CWPP are included in the following table. Their name, organization, and roles and responsibilities are indicated below:

Name	Organization	Roles / Responsibilities
Richard Norris, Skip Koenig,	Members of the Cherokee Meadows	Primary development of CWPP and decision
Vern Desbian, Dave Herder,	Road Association	making – community risk and value
Julia Schott, Elaine Gazdech,		assessment, development of community
Alan VanArsdale		protection priorities, and establishment of
		fuels treatment project areas and methods
Dave Herder	Livermore Volunteer Fire Department	Primary development of CWPP and decision
		making – community risk and value
		assessment, development of community
		protection priorities, and establishment of
		fuels treatment project areas and methods
Boyd Lebeda, District	Colorado State Forest Service	Facilitation of planning process and approval
Forester, Fort Collins District		of CWPP process and minimum standards.
		Provides input and expertise on forestry, fire
		and fuels, and FireWise concepts.
Tony Simons, Emergency	Larimer County Wildfire Safety	Provides input and expertise on hazard
Services Specialist	Program	assessment, defensible space, and FireWise
		concepts.
Dick Edwards, USFS	Relevant federal land management	Provides input and expertise on federal lands
	agencies (USFS, BLM, etc.)	forestry, fire and fuels, and FireWise
		concepts.

#### **CWPP Development Team**

Identification of Values at Risk

Using technology and local expertise, the community members and FPD representatives have developed a base map and narrative of the community and adjacent landscapes of interest. This map will act as a visual aid from which community and FPD members can assess and make recommendations. The base map includes, at a minimum, the following:

- Inhabited areas and values at potential risk to wildland fire
- Areas containing critical human infrastructure—such as evacuation routes, municipal water supply structures, and major power or communication lines—that are at risk from wildfire
- A preliminary designation of the community's Wildland Urban Interface (WUI) zone.

#### Community Risk Assessment

The purpose of the community risk assessment is to help to prioritize areas for treatment and identify the highest priority uses for available financial and human resources. This section is divided into five areas of concern:

- Fuel Hazards An evaluation of vegetation conditions within the community and on adjacent lands. Products included are:
  - Larimer County Wildfire Safety Program Subdivision Wildfire Hazard Review
  - Larimer County Fuel Hazard Map
- Risk of Wildfire Occurrence An evaluation of the probability of fire ignition within the community and surrounding lands.
- Risk to homes, businesses, and essential infrastructure An evaluation of the vulnerability of structures within the community to ignition from firebrands, radiation, and convection. Also includes an evaluation of risks to essential infrastructure such as evacuation routes, water supply structures, and power and communication lines. Products may include:
  - Structure Assessment (construction materials, structure access, defensible space, etc.)
  - Infrastructure Assessment (utilities, water, community roads, power lines, etc.)
- Risk to Other Community Values An evaluation of risk to other community values such as wildlife habitat, recreation and scenic areas, water supplies, and landscapes of historical, economic or cultural value.
- Local Preparedness and Firefighting Capability
  - Initial response to all fire, medical and associated emergencies is the responsibility of the Poudre Canyon FPD. Wildland fire responsibilities of Larimer County, Colorado State Forest Service, United States Forest Service, Bureau of Land Management and the National Park Service are described in the current *Larimer County Annual Operating Plan*. All mutual aid agreements, training, equipment, and response are the responsibility of the local fire department and the agencies listed above.

#### Hazard Reduction Priorities

Please refer to the attached prioritized list of community needs regarding fuel reduction treatments within the WUI zone.

- Fuel reduction needs (Attached map identifying treatment types and ways to reduce structural ignitability.)
- Fire response needs

#### Action Plan

The Cherokee Meadows Road Association members have developed and attached an action plan which identifies roles and responsibilities, funding needs and timetables listed in Hazard Reduction Priorities. The core team will meet annually to evaluate progress and mutually agree on treatment priorities.

In cooperation with the Larimer County Fire Education Group, the Larimer Fire Council, and the Livermore Volunteer Fire Department, the community supports and promotes Firewise activities as outlined in the Larimer County Fire Plan. The community supports and educates its citizens in ways to reduce structure ignitibility through meeting Larimer County Building Code Requirements and utilizing Colorado State Forest Service FireWise Construction Fact Sheets.

The following community representatives / agencies have reviewed and support this Community Wildfire Protection Plan.

Cherokee Meadows Road Association

Livermore Volunteer Fire Department

Fort Collins District Colorado State Forest Service USDA Forest Service

### Appendix A

Larimer County Fire Plan a Community Wildfire Protection Plan (Larimer County 2004) Larimer County Wildfire Mitigation Plan (CSFS 1998)

Recommendations for Improving Wildfire Safety in Larimer County (CSFS 1997)

Larimer County Subdivision Wildfire Hazard Review (Larimer County/CSFS 2002)

Larimer County Annual Operating Plan (updated annually)

FEMA—Northern Colorado Natural Hazard Mitigation Plan (2004)

Representatives from the core team for the development of the Cherokee Meadows Road Association CWPP met on August 26 to discuss community values that are potentially at risk from wildfire, as well as to create action items for mitigating wildfire risk to these values. Participants at this meeting included seven of the Road Association members and a facilitator. The Road Association played a critical role in identifying values at-risk and creating action items, and it is important to note that the community members held the decision-making authority.

### **Cherokee Meadows CWPP: Values At-Risk**

The Road Association members listed the following community values that are at-risk from wildfire, and prioritized these values as high, medium, or low. Identifying values at-risk provided this group with a basis for determining action items, as action items specifically address values at-risk. Prioritizing these values assists the community in prioritizing mitigation projects for implementation.

Medium-High				
VALUE	PRIORITY			
Trees	High			
Agricultural Heritage	High			
Peacefulness/Tranquility	High			
Recreational Opportunities	High			
Access/Roads	High			
Water Resources Availability	High			
Investments/Homes/Property	High			
Aesthetics	High			
Life/Safety	High			
Wildlife/Wildlife Habitat	Medium			
Pets/Livestock	Medium			
People With Special Needs	Medium			
Power Lines/Telephone Boxes	Medium			
Home Heating Fuel/Propane Tanks	Medium			
Sense of Community	Medium			

Table 1. Community values at risk of wildfire, and prioritized on a scale of Low-

The community members referred to their list of values at-risk to create the following action items. The action items are presented in a general list according to priority level, which allows the community to implement projects in whatever order is the most efficient and effective.

ACTION ITEM	PRIORITY			
Distribute public educational information to landowners: such as	High			
FireWise, and mountain pine beetle				
Encourage property assessments pertaining to wildfire issues, and	High			
provide landowner appropriate contacts				
Improve access; widening roads, thinning trees, improving escape routes	High			
Identify a location for a community slash pile	High			
Create up to 2 community slash piles	High			
Identify home addresses more clearly	High			
Collectively address mountain pine beetle mitigation as a community.	High			
Install an underground water holding tank and research other sources of	High			
water that could be used in an emergency	-			
Develop a community evacuation plan. Components would include:	High			
emergency alert method such as a siren; developing community	-			
instructions to deal with the emergency alert system; educate				
community about the emergency alert system; develop a communication				
plan; investigate the use of hand held two-way radios as a				
communication tool				
Implement ongoing defensible space projects	High			
Obtain Class 8-B insurance class rank	High			
Improve covenants to address issues in the CWPP	High			
Institutionalize an annual review of a community monitoring plan;	High			
components would include: CWPP review; wildfire mitigation;				
mountain pine beetle mitigation; forest stewardship projects				
Develop a plan to preserve agricultural heritage including rangeland	Medium			
wildfire restoration actions				
Address tree mortality issues associated with magnesium chloride with	Medium			
county commissioners; includes removing dead trees, and discontinue				
applying to roads				
Recommend to emergency responders ways to protect private property	Medium			
when emergency access is needed				
Develop a strategy to work with absentee landowners	Medium			
Use forest stewardship techniques to reduce wildfire risk; especially	Medium			
techniques that remove ladder fuels				
19. Advocate that the forest service provide other methods than open	Medium			
pile burning for slash disposal				
Encourage replacement of perimeter wood fence posts with fire-resistant	Medium			
fencing				
Identify street signs more clearly, and use fire-resistant material for the	Low until the county takes			
signs	action. Once the county takes			
	action this would have a High			
	priority.			

# Table 2: Action items to protect values at risk of wildfire, and then prioritized on a scale of low-medium-high.

Members of the Cherokee Meadows CWPP planning effort recommended that the Road Association oversee annual updates and revisions of the CWPP.

# Livermore CWPP



#### **Community Wildfire Protection Plan**

#### CHEROKEE MEADOWS Larimer County, Colorado

#### NOVEMBER 25, 2012

#### Introduction

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The Cherokee Meadows Community Wildfire Protection Plan (CWPP) was originally created in 2007, and was updated in 2009, 2010 and 2011. This is the **2012** revision/update of that document. This CWPP was developed by CHEROKEE MEADOWS ROAD ASSOCIATION (CMRA) with guidance and support from the U.S. Forest Service (USFS), Colorado State Forest Service (CSFS), Livermore Fire Protection District (LFPD), Colorado Division of Wildlife (C-DOW), Larimer County Emergency Services (LCES), and surrounding private landowners. This CWPP was created according to the guidelines of *Preparing a Community Wildfire Protection Plan, a Handbook for WUI Communities, March 2004* and supplements several Larimer County documents referenced in Appendix A. Information in this plan will be provided at a level of specificity determined by the community and appropriate agencies.

#### Community / Agencies / Interested Parties Involved

Representatives involved in the development of the Cherokee Meadows CWPP are included in the following table. Their name, organization, and roles and responsibilities are indicated below:

Name	Organization	Roles / Responsibilities
Richard Norris, Kathy Orloski,	Cherokee Meadows Road Association,	Primary development of CWPP and decision
Jason Gillette, Julie Schott,	CMRA landowners, and adjacent	making – community risk and value
Mark Herrington,	landowner representatives	assessment, development of community
Elaine Gazdeck, CMRA Pres.		protection priorities, and establishment of
		fuels treatment project areas and methods
Mark Herrington	Livermore Fire Protection District	Primary development of CWPP and decision
		making from a firefighter's perspective -
		community risk and value assessment,
		development of community protection
		priorities, and establishment of fuels
		treatment project areas and methods
Boyd Lebeda, Dist. Forester,	Colorado State Forest Service	Facilitation of planning process and approval
Diana Selby, Asst. District		of CWPP process and minimum standards.
Forester, Fort Collins District		Provides input and expertise on forestry, fire
		and fuels, and FireWise concepts.
Tony Simons, Emergency	Larimer County Wildfire Safety	Provides input and expertise on hazard
Services Specialist, Larimer	Program	assessment, defensible space, and FireWise
County Sherriff's Department		concepts.
Dick Edwards, USFS	Relevant federal land management	Provides input and expertise on federal lands
Fire/Fuels/Timber staff,	agencies (USFS, BLM, etc.)	forestry, fire and fuels, and FireWise
Canyon Lakes Ranger Dist.		concepts.
Justin Foster, Wildlife	Other organizations designated by the	Provides input and expertise. This could
Technician, Colorado DOW	core team (Environmental groups,	include community risk and value
	utilities, recreational groups, etc.)	assessment, wildlife welfare, development of
		community protection priorities, and
		establishment of fuels treatment project areas
		and methods.

#### **CWPP Development Team**

#### Definition of the CMRA Wildland/Urban Interface

Using technology and local expertise, CMRA, and the CSFS, (with help of Larimer County Fuel Hazard Map), developed the following map (Figure 1) defining the boundary of the CMRA WUI boundary, and overall wildland fire hazard within this boundary.



Figure 1:CMRA WUI boundary and Wildfire hazard ratings. Courtesy of the CSFS

The boundary was created using current definitions of WUI as well as fuel conditions. It is important to note that communities and areas outside of the CMRA boundary fall inside the CMRA WUI boundary emphasizing the need for collaboration between landowners. Adjacent landowners include Rabbit Creek Road, Elk Meadows subdivision, Phantom Canyon subdivision, private landowners not in subdivisions, USFS and State School Land.

<u>Identification of Values at Risk</u> Using input from community members and local stakeholders, a list of values that are at risk from a wildland fire has been created. The list was based on priority for protection as well as reduction of risk/hazard

#### High priority values at risk

- Human life and safety
- > Homes and structures
- > Pet and livestock life and safety
- > Power & communication infrastructure
- Wildlife habitat

- $\succ$  In home businesses
- Cattle grazing
- Forests / Timber
- > Wetland / riparian areas
- Peacefulness / Tranquility

#### Community Risk Assessment

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Cherokee Meadows is a 2240 acre subdivision consisting of 57 lots from 35-40 acres in size, located 25 miles Northwest of Fort Collins. (Latitude 40 degrees, 51' N, Longitude -105 degrees, 25' W of the 6th pm). USFS land borders the subdivision to the West, and a section of State School Land is directly adjacent, where the C-DOW currently has a hunting lease. Cherokee Meadows elevation is between 6500' and 8500', and is a mix of upper and lower montane. Some tree diversity exists, but the majority of flora is dense, various age Ponderosa pine forested areas and grassy/brushy meadows and some riparian areas. Resident wildlife includes deer, coyote, bobcat, various raptors, rabbits, and occasional cougar and bear.

- About 50% of the CMRA lots have been developed in the past 35 years, and new homes are being built at the rate of approximately one every one to three years. Houses are between 1 and 34 years old and construction materials vary from full log to frame with wood siding to stucco/fire resistant materials. Some residents have aggressively worked to create defensible space around their homes and outbuildings, whereas, others need more guidance.
- The area that falls within the CWPP has been impacted by the recent pine beetle epidemic and drought, which has resulted in many dead and dying trees, including on the adjacent Federal and State lands. Of particular concern are the densely treed and difficult to access Northwestern and Southern forested areas of CMRA, and the properties which abut the USFS and State lands.
- Meadow Creek and tributaries are within CMRA and contribute to the watershed flowing into the North Fork of the Poudre River and Halligan Reservoir (water supply for nearby cities).
- Infrastructure includes communication lines, an REA power grid, plus many homes which are off-grid with photovoltaic power. These are all at risk, however defensible space practices are being worked on around these as well
- Agricultural cattle-grazing operations prosper on the largely un-fenced expanses of Cherokee Meadows.
- CMRA has approximately 10 miles of routinely maintained roads with no bridges. Some private driveways are gated.
- For years, CMRA has actively endeavored to reduce noxious weeds along our roads.
- CMRA has received SFA/WUI Grants for 2010, 2011, and an Emergency Supplemental Grant in 2011 for hazardous fuel reduction/wildfire mitigation activities. In all 3 of these grants, the community was required to match the grant amount, and did so 3 fold, which exemplifies the enormous commitment we have toward reducing the potential of catastrophic wildfire in our community. The forested areas in CMRA have undergone a large amount of fuel reduction and fire break work in the past 4 years by a dedicated community of committed landowners and their hired timber professionals (per CSFS "Fuel Break Guidelines" and Best Practices). Many homeowners have engaged in defensible space work, (per updated FIREWISE and CSU fact sheets), to lessen their risk. This work is sustainable, and future Grant funds will absolutely encourage the continued work, and unquestionably will be leveraged by landowner contributions of in-kind labor and payment of professional costs to lessen the quantity of hazard fuels in the community.
- CMRA landowners are proactive regarding the ever-present wildfire risk in our community. This year, CMRA began a website (cherokeemeadows.com) to enable landowner access to educational materials and resources. (see links section)

#### Risk of Wildfire Occurrence - An evaluation of the probability of fire ignition within the community surrounding lands.

- The CSFS Wildfire Hazard map for Cherokee Meadows indicates a range of moderate to very high risk across the community. Approximately 60% of the community falls into the high risk category (Appendix A).
- Colorado has experienced some of the most severe drought conditions in history. This combined with the unprecedented pine beetle epidemic add to the vulnerability of the area to experience a large scale fire. Over the past 10 years, numerous wildfires have occurred in Larimer County; but most notable is the increase in size and intensity of wildfires. The recent Hewlett Gulch, Picnic Rock, Stuart Hole and High Park Fires were all near the CWPP Southern border. During this same 10 year time frame, the CMRA area experienced one structure fire and several lightning-caused wildfires, along with multiple fires related to careless human activity. Fortunately, all fires were aggressively and quickly responded to by LFPD, and none of these fires exceeded 30 acres in size.

#### Local Preparedness and Firefighting Capability

- Initial response to all fire, medical & associated emergencies within CMRA is the responsibility of the LFPD.
  - Current LFPD capabilities include:
    - 10 active members
      - 5-NWCG FFT2's
        - o 1- NWCG engine boss
        - o 4- LFPD Wildland firefighters
        - o 6- EMT's
        - o 1-paramedic.
  - Station 1 capabilities:

Minimum response time of 25 minutes

- 1-Type 1 engine
- 1 -Type 4 engine
- 1-Type 6 engine
- 1-Ambulance.
- Station 2 capabilities:

Minimum response time of 15 minutes

- 1- Type 1 engine
- 1-2,000 gallon tender
- 1-Type 6 engine
  - 1-Medical/support vehicle.
- Additional apparatus:
  - 1-Support/command vehicle
  - 1-Slip-on CAFS truck.

Response to incidents by the LFPD varies based on the day of the week as well as by time of day, with lower numbers of responders during weekdays/hours.

Wildland fire responsibilities within Cherokee Meadows fall primarily to the LFPD, with Larimer County, the Colorado Division of Fire Prevention and Control, and USFS responding as described in the Larimer County Operating Plan. LFPD firefighters are trained, and the department has mutual aid agreements with the USFS, Poudre Fire Authority, Glacier View Fire Dept, Red Feather Lakes Fire Dept, and Wellington Fire Dept. Emergency response time to CMRA has been reduced by the addition of LFPD Station 2, which is on Cherokee Park Road about ½ mile from CMRA. Two 2500 gallon water storage cisterns have been installed in strategic locations within CMRA for firefighting. Some homes have large cisterns and/ or ponds potentially available for firefighting use.

#### **Hazard Reduction Priorities**

- 1. Conduct defensible space work around homes/outbuildings.
- 2. Improve options for emergency egress and community evacuation plan.
- 3. Fuel reduction needs of particular concern are the densely treed/difficult to access west and the southern forested areas of CMRA, including both the private properties and the adjacent USFS and State lands. (See attached maps A and B)
- 4. Encourage private landowners to continue to reduce hazard fuels on their property.
- 5. Assist Livermore Fire Protection District in their efforts to protect our community.
- 6. Continue to educate the community about wildfire related issues.
- 7. Seek out funding and Grant opportunities to assist in aforementioned items.
- 8. Keep the CMRA CWPP updated.

#### Action Plan for 2013

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- 1. Defensible space work around homes/outbuildings.
  - a. Emergency Services personnel, in an advising capacity, will visit CMRA bi-annually to evaluate groups of residences regarding hazard-tree removal, thinning or trimming, brush removal, and general defensible space.
  - b. LFPD personnel, on a limited basis, can also advise landowners, as an adjunct to Emergency Services. LFPD will address safe firewood storage, safe slash-burning practices, firewise landscaping, keeping combustibles away from structures, etc.
  - c. In cooperation with the Larimer County Fire Education Group, the Larimer Fire Council and the LFPD, CMRA will continue to support and promote Firewise activities as outlined in the Larimer County Fire Plan. In addition, CMRA supports and educates its citizens in ways to reduce structure ignitibility through meeting Larimer County Building Code requirements and utilizing CSFS FireWise Construction Fact Sheets.
- 2. Improve options for emergency egress.
  - a. Work with the LFPD to develop a Community Evacuation Plan. Post this on CMRA website.
  - b. Improve egress on roads by trimming overhanging trees, and creating more turn-outs for vehicles to pass.
  - c. Research options for more secondary and tertiary emergency egress points through private property.
  - d. Educate and encourage residents to provide easy firefighter entrance to homes and other structures.
  - e. Contact neighboring landowners to discuss reciprocal emergency egress, and participation in our CWPP.
- 3. Fuel break/forest thinning activity targeted to high risk zones such as northwest area, southern border, and where CMRA borders USFS land and State land.
  - a. CMRA will encourage private landowners in the target areas to learn about effective Fuel-breaks and how to create them by tree thinning and removal.
  - b. CMRA will continue to seek out financial / Grant funding resources to assist with these projects.
- 4. Encourage private landowners to continue to reduce hazard fuels on their property.
  - a. Landowners will be encouraged to lessen the quantity of hazardous fuels by removing dead/dying trees on their property and chipping slash or safely burning slash in accordance with County burn permit requirements.
  - b. Gain permission from centrally located private landowners for a community slash pile that will be safely burned with the guidance of the LFPD.
- 5. Assist- the Livermore Fire Protection District in their efforts to protect our community.
  - a. Work toward developing more of a partnership with the LFPD.
  - b. Encourage all residents to have large, reflective address numbers at driveway entrance.
  - c. Update CMRA map, indicating which properties have full time residences, versus part time cabins and those with only vacant land. This will help greatly with evacuations.
  - d. Develop cooperative agreement with landowners for emergency use-rights for water in ponds/ fire-fighting water cisterns on their property. Map the location of these items.
  - e. Research options for emergency landing pads/staging areas within CMRA.(snow-plow-able areas preferred)
  - f. Donate funds to LFPD for needed equipment, and encourage residents to volunteer.
  - 6. Continue to educate the community about wildfire related issues.
    - a. Provide residents with an evacuation route map, and phone-tree neighbor contact information.
    - b. Encourage residents to establish individual evacuation plans, with plans for pets/livestock evacuation.
    - c. Keep the CMRA website updated with news, information and helpful links.
    - d. Invite subject- matter- experts to speak at the 2013 CMRA annual meeting.
    - e. Continue mailings to CMRA landowners with relevant CSFS and Firewise publications.
    - f. Encourage landowners to request defensible space advice from Emergency Services or LFPD.
  - 7. Seek out funding opportunities to assist in aforementioned items.
    - a. Previously obtained grant funds had enormous positive impact on the reduction of hazard fuels in Cherokee Meadows. These funds have also been the greatest motivating force for landowners to engage in wildfire mitigation efforts, so CMRA intends to seek out and continue applying for applicable grant funding.
    - b. Encourage private landowners to donate funds or efforts to the LFPD
  - 8. Keep the CMRA CWPP updated.
    - a. Our CWPP core team, with CMRA leadership, will meet annually to evaluate progress; agree on treatment priorities.

See attached Appendix A

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This concludes the 2012 revision of the CMRA CWPP, (original CWPP in 2007). Respectfully submitted by the committee:

Cherokee Meadows CWPP Committee Members:

Richard Norms

Julia Schot

November 25, 2012 Date

CHEROKEE MEADOWS CWPP (2012 REVISION OF 2007 DOCUMENT)

The following community representatives / agencies have reviewed and support this Community Wildfire Protection Plan.

11.25. Cherokee Meadows Association

President

For Collins District

Colorado State Forest Service

Larimer County Emergency Services

Mark Henryla Livermore Fire Protection District Representative

United States Forest Service

Other

#### Appendix A

CMRA subdivision map, indicating parcels, residences, roads & primary egress

CMRA map indicating areas of past & current fuel break work

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CSFS developed map: Cherokee Meadows Wildfire Hazard Rating, 11/2012 (incorporated into page 2 of this document)

The following documents were utilized to develop this plan and can be found at <u>www.co.larimer.co.us/wildfire/</u> Larimer County Fire Plan a Community Wildfire Protection Plan (Larimer County 2004) Larimer County Wildfire Mitigation Plan (CSFS 1998) Recommendations for Improving Wildfire Safety in Larimer County (CSFS 1997) Larimer County Subdivision Wildfire Hazard Review (Larimer County/CSFS 2002) Larimer County Annual Operating Plan (updated annually) FEMA –Northern Colorado Natural Hazard Mitigation Plan



= Primary egress Peute

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. planned work 2013 +

### 2017 UPDATE Community Wildfire Protection Plan Cherokee Meadows March 28, 2017

Introduction: The Cherokee Meadows Community Wildfire Protection Plan (CWPP) was originally created in 2007, was updated in 2009, 2010, 2011 with a full Revision in 2012. This CWPP with all updates and revisions has been developed by involved community members of the Cherokee Meadows Road Association, (CMRA), with guidance and support from the Livermore Fire Protection District (LFPD), Colorado State Forest Service; Fort Collins District, The Colorado Division of Wildlife, and the U.S. Forest Service. This CWPP was created according to the guidelines of *Preparing a CWPP, a Handbook for WUI Communities, March 2004,* and supplements several Larimer County documents. Please see the attached signature page of the CMRA CWPP update committee, CMRA President, LFPD Fire Chief, and agency reps.

This UPDATE document outlines our community CWPP Action Item accomplishments. The numbering system used coincides with the Action Items in our 2012 CWPP Revision document. In addition, see the Action Plan for 2017-2018 with many new objectives and action items. We have also updated the Firefighting capabilities of LFPD..

LOCAL PREPAREDNESS AND FIREFIGHTING CAPABILITIES: Initial response to all fire and medical emergencies within CMRA is the responsibility of Livermore Fire Protection District, (LFPD), with assistance from 8 mutual aid agencies.

- 1. Current LFPD capabilities include:
  - a. 23 active members
    - NWCG FF2'S = 2
    - MWCG Engine Boss = 2
    - Wildland Trained Firefighters = 19
    - NR Emergency Medical Technicians = 15
    - NR Paramedic = 1
  - b. LFPD STATION 1 Capabilities: Minimum Response time of 15 minutes
    - 1 TYPE 1 Engine
    - 1 TYPE 4 Tender, 1500 gallons
    - 1 TYPE 6 Engine
    - 1 Ambulance
  - c. LFPD STATION 2 capabilities: Minimum Response time of 10 minutes
    - 1 TYPE 1 Engine
    - 1 TYPE 4 Tender, 2000 gallons
    - 1 TYPE 6 Engine
    - 1 Rescue/Medical Support Vehicle
    - 1 Private TYPE 6 Vehicle
  - d. Additional Apparatus:
    - 1 MVA Response/Squad Vehicle
    - 1 TYPE 6 CAFS Truck
    - 1 Support Command Vehicle

This **CMRA 2017 CWPP UPDATE** is respectfully submitted by the Cherokee Meadows community. 4-17-2017. Cherokee Meadows Road Association. P.O. Box 18, Livermore, CO 80536. Contact: Julia Schott 970-556-1400.

#	Accomplishments from 2013 Action Plan	Action Plan for 2017, 2018
1.	<ul> <li>Defensible Space Around Homes/Outbuildings:</li> <li>a. Many presentations have been made to CMRA landowners about creating and maintaining defensible space. Educational material given.</li> <li>b. LFPD Wildland certified personnel surveyed 6 properties and advised residents of how to lessen their wildfire risk. (Residents complied!)</li> <li>c. CMRA achieved FIREWISE COMMUNITY USA recognition in 2015. We continue to maintain with public outreach, education and communication.</li> </ul>	<ul> <li>Defensible Space Around Homes/Outbuildings:</li> <li>a. Continue to educate residents about defensible space</li> <li>b. Continue LFPD survey visits to properties as requested by owners to help identify any problem areas and to promote Defensible space compliance.</li> <li>c. Continue FIREWISE COMMUNITY USA activities. In 2017, CMRA has purchased and will distribute to every landowner, a copy of the insightful book <u>Surviving Wildfire</u>, and accompanying <u>Pocket Guide</u> by Linda Masterson. The CMRA Annual meeting will have a speaker about wildfire mitigation as a Firewise activity. More RSG evacuation bags will be distributed.</li> </ul>
2.	<ul> <li>Improve Options for Emergency Egress <ul> <li>a. Community Evacuation plan has been discussed.</li> <li>b. LFPD identified trees along CMRA roadways for removal or trimming. This work was performed by a timber professional, and it enhanced egress.</li> <li>c. Considering secondary evacuation routes through private property</li> <li>d. Educate residents to create easy access onto property for firefighting vehicles (Re: 1.b surveys). Residents should provide sufficient space for easy access &amp; turn around for firefighting vehicles. Specifically, firefighting apparatus is difficult to back up in tight locations, so provide pull-through where possible</li> </ul> </li> </ul>	<ul> <li>Improve Options for Emergency Egress <ul> <li>a. Communicating with LFPD to create a viable</li> <li>Community Evacuation Plan to post on website</li> <li>b. Additional Brush &amp; trees along the CMRA roadway</li> <li>easements will be removed to further benefit egress.</li> <li>Edge of roads will be mowed if possible. Plan is to</li> <li>create potential firebreak areas with our roads.</li> <li>c. Potential alternate (secondary) Emergency Evacuation</li> <li>routes recognized will be shared with residents at the</li> <li>annual meeting. Info also shared with LFPD and</li> <li>Larimer County Emergency Services.</li> <li>d. Continue to make residents aware of access around</li> <li>residences to assure space for fire fighting vehicles.</li> <li>e. During an emergency evacuation, place reflectors to</li> <li>locate the path of the alternate evacuation routes.</li> </ul> </li> </ul>
3.	<ul> <li>Fuel Break activities on CMRA borders with public lands.</li> <li>a. Significant progress has been made, especially on property bordering USFS land.</li> <li>b. CMRA used 2014 WUI grant funds for this project.</li> </ul>	<ul> <li>Fuel Break Activities Where CMRA Borders Public Lands.</li> <li>a. Continue to work on these targeted vulnerable areas.</li> <li>b. Continue to pursue grant opportunities to help fund fuel breaks, and wildfire mitigation activities.</li> </ul>
4.	<ul> <li>Encourage Private Landowners to Reduce Hazard Fuels</li> <li>a. Owners have lessened fuels by removing dead/dying trees themselves or with Timber Professionals. Slash was chipped or safely burned with burn permit</li> <li>b. One CMRA resident , (who is a wildland trained firefighter), has agreed to allow a community slashburn pile on his property. He safely burns the pile when the weather conditions allow.</li> </ul>	<ul> <li>Encourage Private Landowners to Reduce Hazard Fuels <ul> <li>a. Owners will continue to lessen fuels by removing dead/dying trees, brush and by mowing tall grasses in yards and around buildings.</li> <li>b. Continue community slash-burn pile. Also, encourage the chipping of slash if possible.</li> <li>c. Emphasize SAFE open burning practices to all, but especially new residents. Include obtaining a permit, safe practices, optimal days, proper extinguishing.</li> </ul> </li> </ul>
5.	<ul> <li>Assist LFPD in their Efforts to Protect our Community <ul> <li>a. A much closer working relationship was created between CMRA and LFPD. Many CMRA residents now volunteer for LFPD and are wildland trained.</li> <li>b. Numerous residents now have reflective address numbers posted at the entrance to their property.</li> <li>c. CMRA map was modified to include address information for residences, and the location of water sources for firefighting. (Cisterns &amp; ponds).</li> <li>4 water cisterns have been installed now in CMRA.</li> <li>d. Emergency air-landing sites available already.</li> <li>e. CMRA makes annual donations to LFPD.</li> </ul> </li> </ul>	<ul> <li>Assist LFPD in their Efforts to Protect Our Community <ul> <li>a. Continue to enhance the partnership with LFPD.</li> <li>Recruit more CMRA volunteers for LFPD.</li> <li>b. Continue to provide information to residents about the importance of reflective address numbers, and provide order forms to purchase such metal signs.</li> <li>c. Continue to keep the CMRA map updated. Provide GPS location information for water sources within CMRA, and provide that info to Livermore Fire dept.</li> <li>d. Develop a written agreement for the emergency use of water from ponds on Burk and Rash property.</li> <li>e. CMRA will continue to make annual donations to LFPD</li> </ul> </li> </ul>

	Accomplishments from 2013 Action Plan	Action Plan for 2017, 2018/ Action items
6.	<ul> <li>Continue to Educate the Community about Wildfire Issues.</li> <li>a. Residents have CMRA map, no evacuate routes yet.</li> <li>b. Ready-Set-Go (RSG) evacuation information provided to residents. All are encouraged to create a family evacuation and communication plan.</li> <li>c. CMRA website is updated, and contains valuable links to educational information about wildfire.</li> <li>d. CMRA has had wildfire knowledgeable experts speak at annual meetings.</li> <li>e. CMRA website has contact information for residents to seek further information about wildfire issues.</li> </ul>	<ul> <li>Continue to Educate the Community about Wildfire Issues.</li> <li>a. Finalize evacuation route plans/ provide to residents.</li> <li>b. Continue RSG plan and continue to provide evacuation information for residents and their livestock.</li> <li>c. Continue updating CMRA website, adding to the links. Once evacuation routes are confirmed, put on website</li> <li>d. Continue to have experts help educate residents by speaking at the annual meetings.</li> <li>e. Continue to have wildfire information available to residents. Provide handouts to all new owners.</li> <li>f. Educate residents about open burning, and about obtaining burn permits and guidelines to safely burn.</li> </ul>
7.	<ul> <li>Seek Out Funding Opportunities to Assist with Projects.</li> <li>a. To date, CMRA has received \$117,000 in grant funds to carry out significant wildfire mitigation efforts. Grant funds have motivated landowners to engage !</li> <li>b. Landowners have donated labor to help LFPD</li> </ul>	<ul> <li>Seek Out Funding Opportunities to Assist with Projects.</li> <li>a. Continue to apply for grants relevant to CWPP goals.</li> <li>b. Encourage landowners to donate funds or their efforts to LFPD to help further CMRA outreach projects and activities such as road-side clearing of brush.</li> </ul>
8.	Keep CMRA CWPP Updated a. CWPP has been discussed annually	Keep CMRA CWPP Updated a. Formal updating of the CMRA CWPP with a committee meeting to review past accomplishments and set new goals for the community. (3-28-17)
		NEW CWPP OBJECTIVES/ Action items 2017-18:
		Communication
		<ul> <li>a. Provide CMRA residents with information to register their phones with LETA to receive emergency notices.</li> <li>b. Consider enhancing emergency communications via Larimer Connects. (New program being implemented)</li> </ul>
		GPS Mapping
		<ul> <li>a. Identify location of firefighting water cisterns/ponds with GPS coordinates, and provide this information to LFPD and Larimer County Emergency Services.</li> <li>b. Determine GPS coordinates of all residences in CMRA to be used in the event of no address signs present.</li> <li>c. Develop a plan to easily identify which residences have been evacuated in emergencies (Tag system??)</li> </ul>
		Enhance Firefighting Capabilities
		<ul> <li>a. Add water storage cisterns at key intersections to enhance firefighting access to water, (@ intersection of Cherokee Meadows Rd &amp; Running Deer Rd, and Haystack Gulch Rd? Possibly more in Sect 35?)</li> <li>b. Identify private water storage cisterns within CMRA. At annual meeting, ask residents if they have a cistern, and gain approval for this cistern water to be used for firefighting. Pinpoint these &amp; all water sources with reflective signs to direct firefighters to the source.</li> <li>c. Create more and larger pull-outs on the CMRA roadways to enable cars and firefighting apparatus to safely pass each other, especially where road shoulder</li> </ul>
		drops off steeply. This is crucial for emergency ingress and egress situations. !

### Cherokee Meadows CWPP 2017 UPDATE (2007 original CWPP document, revised 2012)

Date: March 28, 2017

committee members:

Lloyd Schott

Patti Herrington

George Cosmas

Jim Herrington

**Elaine Gazdeck** 

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Julia Schott

# Community Representatives / Agencies who reviewed this updated CWPP document

Vern Desbien, President, Cherokee Meadows Road Association (CMRA)

Brydo Lebeda

CSFS, Fort Collins District Representative

Donn Maynard, Chief, Livermore Fire Protection District

**United States Forest Service Representative**