UPDATED AUGUST 2024

Table of Contents

1.0 Purpose and Concurrences……...1

1.1 Purpose…….1

1.2 Concurrences……....1

2.0 Introduction……..2

2.1 Healthy Forests Restoration Act……...2

2.2 Requirements for Community Wildfire Protection Plans……3

2.3 Description of Indian Mountain Community…… ..3

2.4 Role of the CWPP Committee for Indian Mountain……....5

3.0 Wildland-Urban Interface……....5

3.1 Structures at Risk…….……7

3.2 Other Values at Risk……...…7

3.3 Property Owner Input……10

4.0 Wildland Fire, Fuels and Risk…….…..11

4.1 Types of Wildfires……11

4.2 Factors Affecting Fire Behavior……12

4.3 Integrated Risk Assessment……..…..……14

5.0 Wildfire Suppression Capabilities……..…...16

5.1 Jefferson-Como Fire Protection District (JCFPD) Overview…….…..16

5.2 Emergency Planning and Response…….…….……18

6.0 Prevention and Mitigation of Catastrophic Wildfire…….18

6.1 Personal Responsibility…….…18

6.2 Survivable Space and Structure Vulnerability…….20

6.3 Fuels Treatment……21

6.4 Indian Mountain Forest Management……..23

7.0 Evacuation Routes……32

8.0 Goals, Objectives and Planned Actions……...33

Goal I - Using this Plan……..33
Goal II - Information and Education……..34
Goal III - Fuel Reduction Implementation…….35
Goal IV - Collaboration and Communication……36

9.0 Summary……. 37

1.0 Purpose and Concurrences

1.1 Purpose

Congressional enactment of the Healthy Forests Restoration Act (HFRA) in 2003 gave unprecedented incentive for community-based forest planning. This landmark legislation includes the first meaningful statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to consider the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this opportunity, it must first prepare a Community Wildfire Protection Plan (CWPP). Local wildfire protection plans can take a variety of forms, based on the needs of the people involved in their development. A CWPP may also address issues such as wildfire response, hazard mitigation, community preparedness, and structure protection. The process of developing a CWPP can help a community clarify and refine its priorities for the protection of life, property, and infrastructure in its wildland-urban interface. This CWPP for the Indian Mountain subdivision of Park County is intended to accomplish all of these ends.

1.2 Concurrences

Each of the following entities concurs in the adoption of this CWPP.

Indian Mountain Metropolitan District (IMMD)

Carol L Darland Carol Darland, President Date 8/4/2024

Indian Mountain Property Owners Association (IMPOA)

Kathryn Abrahamson, President Date 8/6/2024

Jefferson-Como Fire Protection District (JCFPD)

Trent Smith Trent Smith, Chief Date 8/7/2024

Colorado State Forest Service

Andrew Schlosberg Andy Schlosberg, Supervisory Forester Date 8/19/2024

The Park County Board of County Commissioners concurred in this Indian Mountain CWPP on the 27 day of August 2024.

2.0 Introduction

For most of the twentieth century, the predominant theme for managing the nation's forests was conservation. Accordingly, forest fires were actively suppressed to protect both old and young trees. Consequently, the present forests, including those in Indian Mountain, are quite different from those existing in the early nineteenth century, before settlement, when occasional fires played an important role in maintaining healthy forests.

As fires have been suppressed, forest fuel levels have increased so that fires ignite more easily and burn with greater intensity. Due to prolonged drought and overcrowded forest conditions, the trees are more susceptible to insects and disease. In addition, the rapid expansion of residential housing and other development into the wildlands has greatly increased the likelihood and the difficulty of managing wildfires, so some have the potential to reach catastrophic proportions.

Fire managers can no longer focus only on perimeter control and putting fires out. They must also deal with evacuation and safety of residents, protection of homes, higher fire intensities and heavy media interest. These factors require high levels of cooperation and coordination across jurisdictional and agency boundaries.

Wildfire poses a high risk of catastrophic consequences to the Indian Mountain subdivision and its increasing number of residents. Therefore, property owners have developed this Plan to provide a strategy for improving awareness and preparedness, acting cooperatively and efficiently in fuel mitigation projects, and understanding emergency response.

2.1 Healthy Forests Restoration Act

In 2000, more than 7 million acres of forest and range land burned across the United States, making that year one of the worst wildfire seasons in American history. The fire season of 2002 was another reminder for citizens and governments about the severity of wildfire in America. Colorado's Hayman Fire occurred that year and involved hundreds of forestry officials and firefighters, caused nearly $40 million in damages, burned 138,000 acres and 133 homes, and forced the evacuation of 5,340 people. The Hayman fire occurred about 15 miles east of the Indian Mountain subdivision.

The fire seasons of 2000 and 2002 led to comprehensive forest planning and the 2003 enactment of the Healthy Forests Restoration Act (HFRA or the Act) by the Federal government.[1] In the HFRA, Congress directed vulnerable communities to prepare Community Wildfire Protection Plans (CWPPs).

1 Healthy Forests Restoration Act of 2003

2.2 Requirements for Community Wildfire Protection Plans

The HFRA encouraged the use of CWPPs to aid communities in planning how they would reduce the risk of wildfire. Such plans are to identify strategic sites and methods for fuel reduction projects across the landscape and across jurisdictional boundaries. The benefits of having a CWPP include funding priority under the National Fire Plan for projects identified in the CWPP and tax advantages for property owners who accomplish fuel reduction. In addition, the United States Forest Service (USFS) and the Bureau of Land Management (BLM) can expedite the implementation of fuel treatments identified in a CWPP through alternative environmental compliance options offered under the HFRA. The Act requires the following items of a CWPP:

Collaboration between private landowners, emergency services personnel and federal and state land managers.

Identification and prioritization of fuel reduction strategies and treatments, with recommendations for the future.

Recommendation of measures that homeowners and communities can take to reduce ignitability of structures.

The Colorado State Forest Service (CSFS) issued guidance on the development and management of CWPPs[2] with the latest revision in March of 2022.[3]

2.3 Description of Indian Mountain Community

The Indian Mountain subdivision is situated in the northern part of Park County, Colorado. It encompasses approximately 6,200 acres. According to Park County tax data, there are about 2,406 lots in the subdivision, and, nearly 33% of the lots have structures. The subdivision's population is estimated to be about 300 full time residents and about 1000 part time residents not counting summertime campers. These numbers continue to increase. As the population increases, so does the potential for wildfire to destroy homes and other highly valued assets in the community. Therefore, it is imperative that all private landowners, the Indian Mountain Property Owners Association (IMPOA)[4] and the Indian Mountain Metropolitan District (IMMD)[5] work cooperatively to reduce

2 Community Wildfire Protection Plans

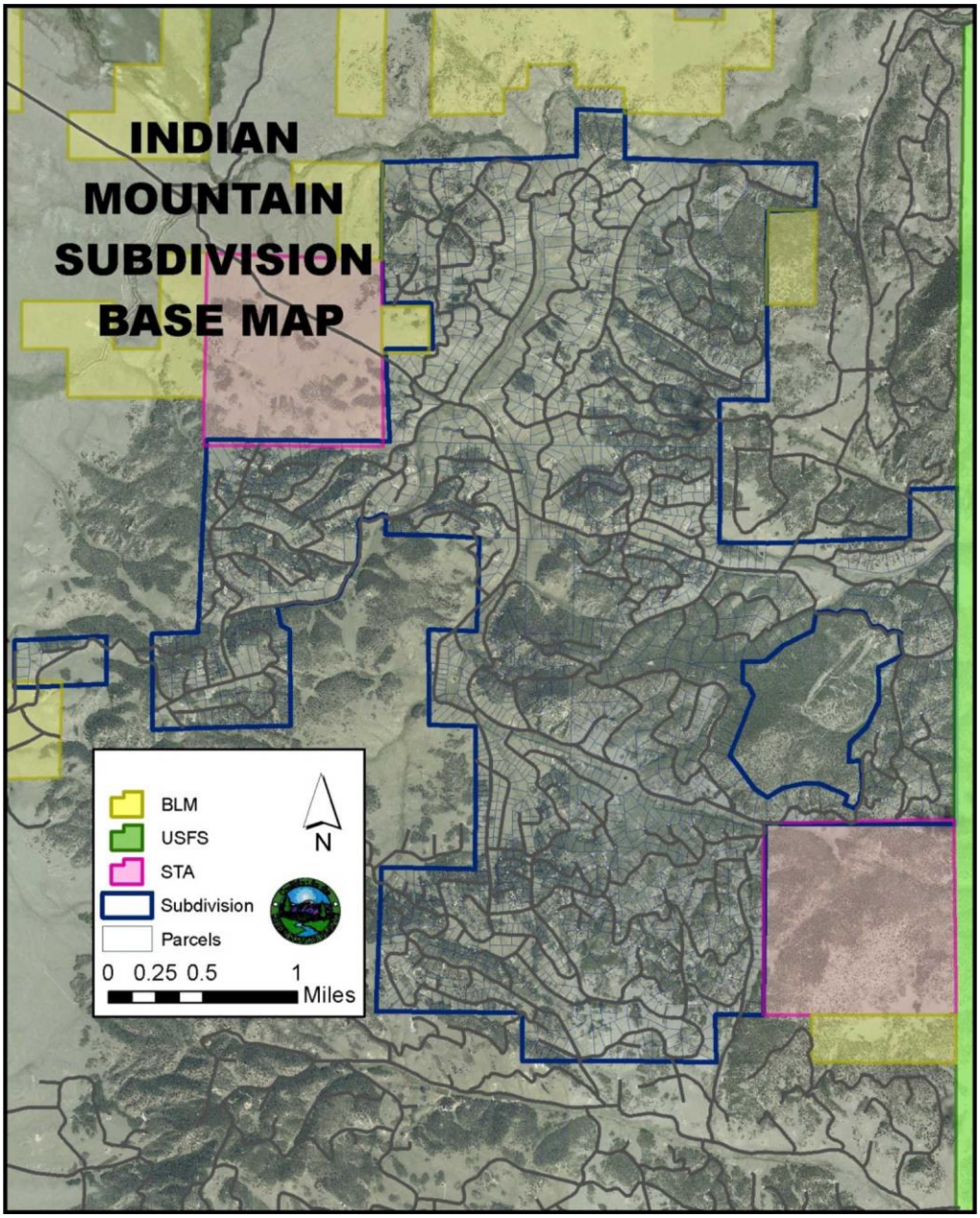
3 Minimum Standards for CWPPs

4 Indian Mountain Property Owners Association https://impoa.net/

5 Indian Mountain Metropolitan District, https://indianmountain.info/

this risk. The Jefferson-Como Fire Protection District (JCFPD)[6] provides fire protection for the subdivision and has assisted in the development of this plan.

The Indian Mountain subdivision is outlined in the following subdivision base map. Notice the irregularly shaped 265 acres of the Indian Mountain Park in the far eastern section of the subdivision. The park is owned and administered by IMMD in the far eastern section of the subdivision. The subdivision is bordered on the northeast by the Stagestop subdivision, on the east by Pike National Forest, on the south by the Buffalo and Elkhorn subdivisions, on the northwest and southeast by State Land Board property, and on the west by a mix of BLM and private property.



6 Jefferson-Como Fire Protection District, https://www.jcfpd.org/

2.4 Role of the CWPP Committee for Indian Mountain

Property owners in Indian Mountain formed an ad hoc committee to develop this CWPP in the fall of 2010. Members of the committee included officers of IMPOA, IMMD and JCFPD. The committee requested assistance from CSFS, which asked the Coalition for the Upper South Platte (CUSP) to provide professional support to the committee. The current members of the committee are Trent Smith (JCFPD), Daniel Qualman (IMMD), Will Graff (IMPOA). Daniel Qualman and Will Graff own homes or property in Indian Mountain. The previous committee met several times to create this plan. Representatives of CSFS, JCFPD, IMMD, IMPOA and Park County government that are familiar with the purpose of CWPPs also reviewed the plan.

The CWPP committee enumerated the following reasons for developing this plan for Indian Mountain:

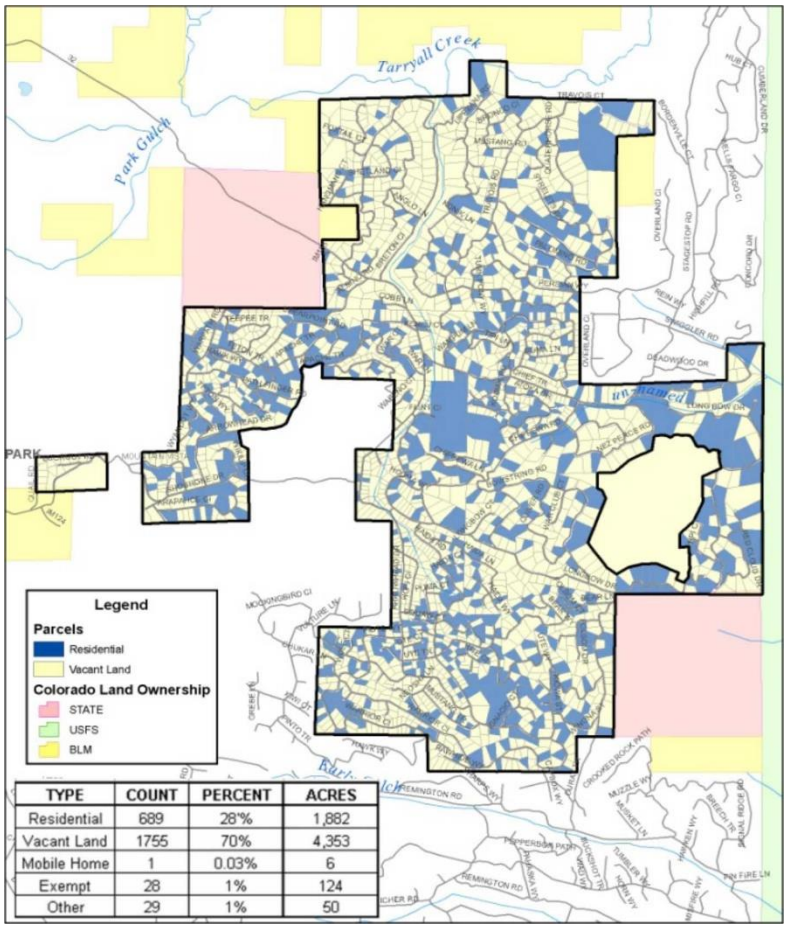
- Providing learning opportunities regarding the importance and techniques of wildfire prevention to members of the community;
- Integration of the efforts of the diverse stakeholders in wildfire prevention in the community;
- Improving firefighter accessibility in the event of wildland or structural fire;
- Informing property owners of tax advantages of wildfire prevention efforts;
- Enabling grant applications for funds to assist wildfire prevention efforts;
- Increasing awareness of the relationships among fire prevention, forest health, and watersheds;
- Improving collaborative efforts within the subdivision;
- Obtaining measurable reductions in wildfire fuel within the subdivision; and
- Establishing collaborative efforts with property owners adjoining the subdivision to reduce the fuel for wildfires.

The CWPP committee intends that comments on the plan are welcome at any time and that the plan will be updated from time to time to reflect the will of the community.

3.0 Wildland-Urban Interface

The impact of a catastrophic wildland fire is far reaching. Not only is there the potential loss of structures, but wildfire also leaves behind emotional, economic, and environmental devastation. Fire that leads to the loss of wild lands and homes (urban structures) is the subject of this chapter of the Plan. A term that has gained wide acceptance in wildfire prevention circles, and that is used throughout this Plan, is the wildland-urban interface (WUI). It is the zone where structures and other human development meet and intermingle with vegetative fuels in the undeveloped wildlands.

INDIAN MOUNTAIN LAND OWNERSHIP



TYPE	COUNT	PERCENT	ACRES
Residential	689	28'%	1,882
Vacant Land	1755	70%	4,353
Mobile Home	1	0.03%	6
Exempt	28	1%	124
Other	29	1%	50

Fig. 3.1 This map shows wide dispersion of properties with structures of any type within Indian Mountain (i.e., the WUI) according to the Park County Assessor's information.

The potential for wildfire movement in the Indian Mountain vicinity is high. The map of the wildland-urban interface in Figure 3.2 demonstrates areas around Indian Mountain, starting as far away as US 285, where fire could spread unimpeded by geographic or vegetative features. To provide the greatest potential benefits in Indian Mountain, cross-boundary projects for fuel mitigation should be considered by all landowners.

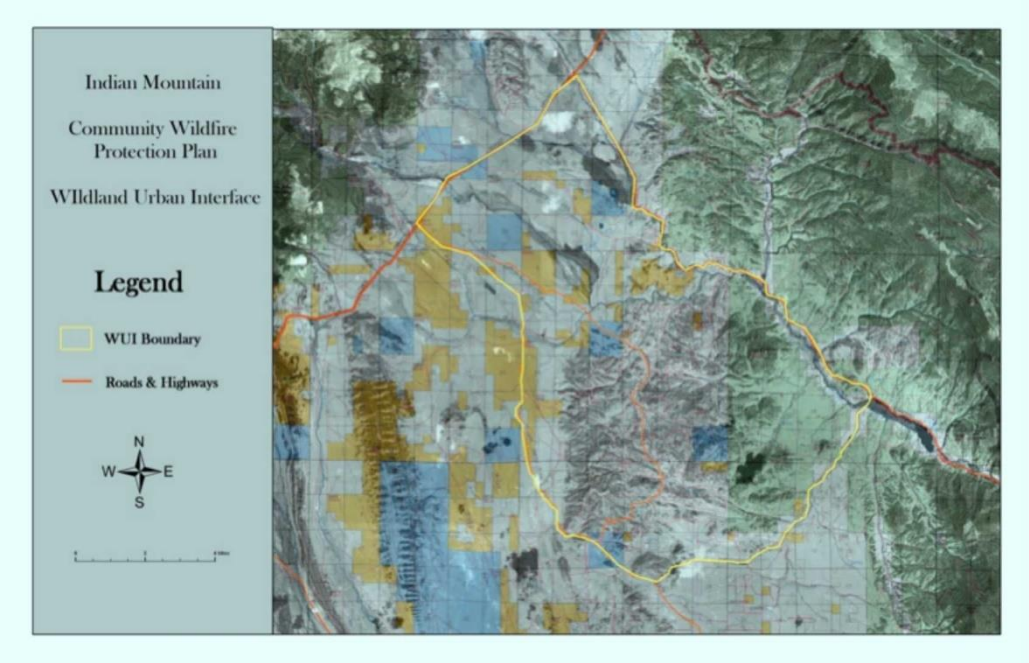


Fig. 3.2 This map shows the areas surrounding Indian Mountain where wildfires could originate and spread into the subdivision.

3.1 Structures at Risk

There are almost 800 privately owned structures at risk in Indian Mountain, about one-quarter of which are estimated to be occupied year-round. The average selling price is $545,000. Thus, the total real property value in the subdivision exceeds $436,000,000.

In the past, little information was available to homeowners and contractors regarding the wildfire threat to residences and other structures. As a result, construction materials and placement of structures often created a greater hazard than was necessary. Today, there is improved understanding of the WUI and there are "firewise" construction techniques and materials to reduce the likelihood of loss of structures in the event of a wildfire. Actions described later in this CWPP address these opportunities.

IMMD also owns structures on behalf of all Indian Mountain property owners. These structures include a community center, lodge, comfort station, playground equipment and picnic pavilion, all located at Indian Mountain Park and totaling about $1,200,000 in value.

Kevin Copeland, Jefferson Real Estate, https://www.jeffreal.com/property-search/market-update/indian-mountain-market-update-residential/?searchtype=2&searchid=2207481

3.2 Other Values at Risk

Other values at risk, besides structures, include historic buildings, the forest, the watershed and wildlife.

Historic Buildings

The land now occupied by the subdivision was first settled in the early 20th century, and a dozen historic log structures remain from those early settlements. These structures are in varying stages of decay, but they are priceless reminders of the World War I and depression era residents of Indian Mountain and are an irreplaceable "value" to be considered. The IMPOA website (see footnote 4) describes the various historic structures and the people who built them.

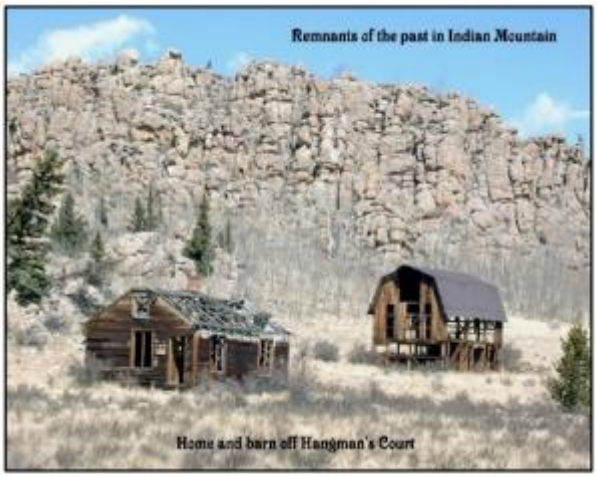


Fig. 3.3 Photo courtesy of IMPOA

Forest

The Indian Mountain forest is old growth and contains six species of conifers, namely, ponderosa pine, limber pine, bristle-cone, Douglas-fir, Colorado blue spruce and Engelmann spruce. Scattered among the conifers are patches of aspen and grass ranging in size from dozens of square feet to dozens of acres. Vacant property values in Indian Mountain range from $10,000 to $30,000 per acre. If the average land value is $18,000 per acre for both developed and undeveloped lots and if that value were to be reduced in half by a wildfire, the potential loss of land value for the more than 6,000 acres encompassed in the subdivision would total $54,000,000.

Kevin Copeland, Jefferson Real Estate, Vacant Properties Indian Mountain

Fig. 3.4 Photo courtesy of CUSP

Indian Mountain enjoys unparalleled views of the Continental Divide and other mountains that surround South Park, all framed by the species-rich forests of the subdivision. The loss of esthetic and monetary value of Indian Mountain scenery in a destructive wildfire would be tragic.

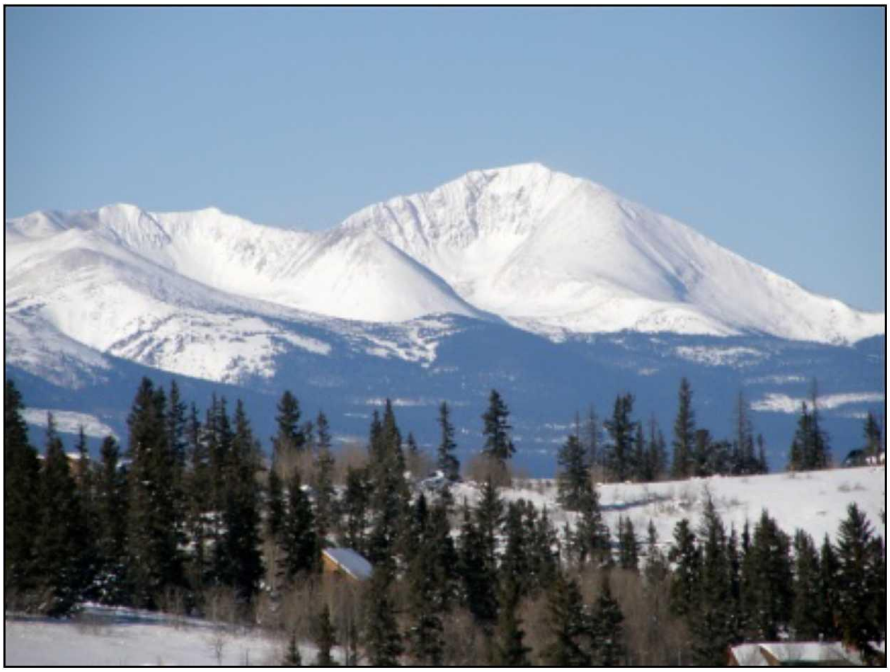


Fig 3.5 Continental Divide photo courtesy of R. Mattson

Watershed

Indian Mountain is in the Tarryall Creek drainage, which combines downstream with the South Platte River drainage, the source of water for metropolitan Denver. The 2002 Hayman fire on the South Platte River drainage affected the cost of the metropolitan water supply for years. As a result of the damage to the watershed, $17,000,000 was applied to post-fire management techniques to restore and maintain water quality.

Wildlife

Indian Mountain is home to bear, mountain lion, bobcat, fox, coyote, elk, deer and uncounted smaller, four-legged critters. More than 75 bird species have been recorded in the subdivision and surrounding lands. While research has shown that wildfire can lead to increased diversity of wildlife, the temporary disruption of wildlife habitat caused by a wildfire would dismay many residents in Indian Mountain and diminish property values and the quality of life in this large, open-range community.

3.3 Property Owner Input

Besides homes and community properties in Indian Mountain, other values may be critical to the community and could become casualties of a catastrophic wildfire. These include historic artifacts, real estate values, community infrastructure, such as roads and utilities, economic impacts on residents and businesses, aesthetic values, and a sense of community or "why we live here." In January 2011, IMPOA mailed a survey form to all property owners of record in Indian Mountain to see what they thought about wildfires. The survey was designed to help the CWPP committee develop this plan. The owners were asked to prioritize a list of values associated with their forests and a list of potential actions that could be taken to reduce the likelihood and consequences of wildfires. The survey also asked owners to identify whether they had taken action to reduce the likelihood and consequences of wildfire on their properties and, if not, what obstacles stood in their way.

The owners of 280 properties, some with multiple lots, responded to the survey. Thirteen of the surveys received were from full-time residents. Half of those that responded have structures on their lot, but are not full-time residents. 42% of all surveys indicated they had not done any fuel mitigation projects and listed a variety of reasons. 55% of those with vacant lots believe they have no risk of wildfire because they have no structure. Of those that have undertaken active mitigation efforts, 59% use the IMMD burn pit. IMMD allows residents to dump forest slash in the burn pit under the supervision of volunteers. IMMD will continue to burn the slash in the pit in the winter during snowy conditions: Indian Mountain Burn Pit.

The survey indicated that the primary concern is reducing the risk of wildfire in the community, followed by the risk on individual lots. Some 46% of the respondents would like to have information about making their property less vulnerable to wildfire and would like to know more about emergency planning for the community. There was less concern for fire suppression accessibility, wildlife, and forest health. These concerns and interests of the property owners are reflected in the priorities of the planned actions in Chapter 7.

Fig. 3.6 Photo courtesy of CUSP: Even properties without a structure can be severely damaged by fire.

4.0 Wildland Fire, Fuels and Risk

Before human occupation, fire was a natural part of the Rocky Mountain environment. Frequent low intensity fires thinned the trees and maintained forest diversity, removed dead or down fuels and recycled nutrients necessary for healthy forest growth. These naturally occurring fires also promoted a variety of other vegetation that provided food sources and habitats necessary for wildlife to thrive.

As people moved into the wildland, wildfire was seen as a destructive force to be avoided at all cost. The strict fire suppression activities of the last hundred years, which were meant to protect human life and communities, have interfered with the natural wildfire cycle allowing forest fuels to accumulate, reducing forest and vegetation diversity and limiting wildlife habitats. The potential costs of catastrophic wildfire, in terms of dollars, resources and aesthetics, have continued to rise as the density of the vegetation continued to increase.

4.1 Types of Wildfires

Wildfires can be broadly categorized into two types based on the intensity of the fire and the damage caused to the environment. The most severe type is a crown fire, such as the Hayman Fire of 2002. A crown fire burns in the canopy of the forest, jumping from treetop to treetop, killing most if not all of the trees in its path, and producing extreme heat. The frequent high winds in Indian Mountain increase the risk of crown fires. The heat produced in a crown fire is intense enough to damage the soil. Long after a crown fire is extinguished, precipitation runs off the impermeable soil causing flash flooding and environmental degradation far from the burn area. In addition, because of the intense heat and soil damage connected with a crown fire, vegetation re-growth is significantly delayed. As demonstrated in the Park County CWPP, 2007, the current forest condition in Indian Mountain is classified as a closed canopy with a high rating for crown fire risk.[7]

A less severe type of fire is the so-called ground fire. This type of fire is typical of open ponderosa pine forests and open grasslands. In forests that are not overgrown, wildfires burn more slowly and often stay closer to the ground, clearing away excess fuel such as needles, fallen branches and small seedlings. Such a fire revitalizes the forest without destroying the healthy trees. The heat produced is less intense, does not damage the soil and rarely penetrates the thick bark of the ponderosa trees. Due to the release of nutrients attendant to such a fire, new herbaceous plants re-sprout quickly after the fire cools. Prescribed fires mimic this type of fire.

7 "Community Wildfire Protection Plan 2007: Park County, Colorado," p. A-15, https://static.colostate.edu/client-files/csfs/documents/ParkcountyCWPP.pdf

4.2 Factors Affecting Fire Behavior

In order to understand the wildfire hazard in Indian Mountain, it is necessary to understand the factors that influence how fires burn. The three primary factors that determine fire behavior are weather, fuel and topography.

Fig. 4.1 Photo courtesy of CUSP

Weather

Weather is the "wild card" of fire behavior and cannot be predicted. While lightning or human activity may ignite a fire, high temperatures, low humidity and strong winds increase its intensity. Dry conditions any time of year can increase the frequency and intensity of wildfires; however, such fires are usually less severe in cold seasons.

Fuel

The two types of fuel in a wildland-urban interface are vegetative and structural. The fuel available to a fire influences how much heat is produced and, hence, the severity of a wildfire. Vegetative fuels consist of living and dead trees, brush and grasses. Figure 4.2 shows the variation of vegetation in Indian Mountain. While the focus of wildfire management is usually on forested areas, some portions of the Indian Mountain subdivision have more grassland and brush than trees.

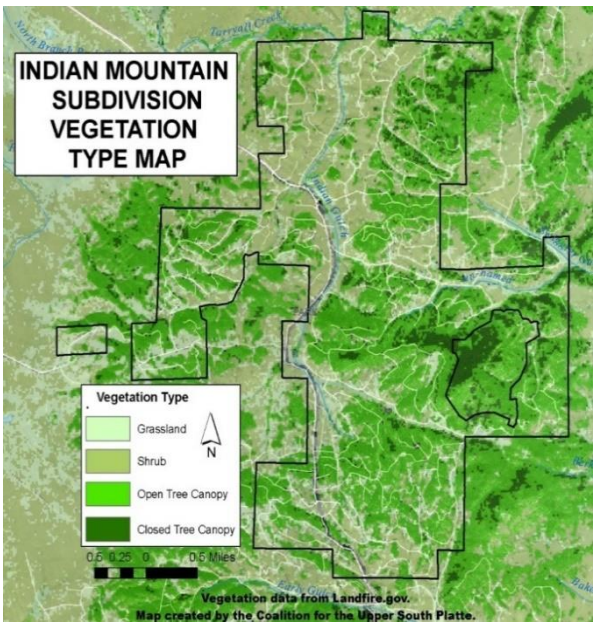


Fig. 4.2 Variation of vegetation in Indian Mountain

Typically, grass fires ignite more easily and move faster than forest fires. However, the fire intensity decreases shortly after the flame front has passed. Grass fires can be extremely hazardous to life and property.

The diameter of fuel affects fire behavior in trees. Small diameter fuels such as small branches ignite more easily than large diameter fuels such as large logs. Smaller diameter fuels act as kindling, spreading a fire to larger size fuels. Fires burning in organic material on the forest floor usually move slowly and create relatively low heat.

The unnaturally dense forest conditions that cause the potential for catastrophic wildfire in Indian Mountain also create the potential for cyclical outbreaks of insects and disease because trees weakened by overcrowding and competition for water and sunlight are more susceptible to invasion.

Structural fuels include houses, outdoor equipment, lawn furniture, ancillary buildings, fences and firewood. In the WUI, structures can contribute to the quantity of fuel available to a fire. Not only can a wildfire move into a structure from a forest or grassland, a structure fire can move outward into a grassland or forest and become a wildfire.

Topography

Topography is a term that describes the lay of the land. The influence of topography on wildfire is simply that heat rises. On a slope, heat rises above a fire, pre-heating and drying the fuel above. The drier upslope fuels ignite easier and burn more quickly than downslope fuels. The steeper the slope, the more pronounced is this effect. During the day, warming air rises and pushes wildfires upslope. Fires may move four times faster up slopes than on flat ground. Figure 4.3 shows the variation of slope within Indian Mountain.

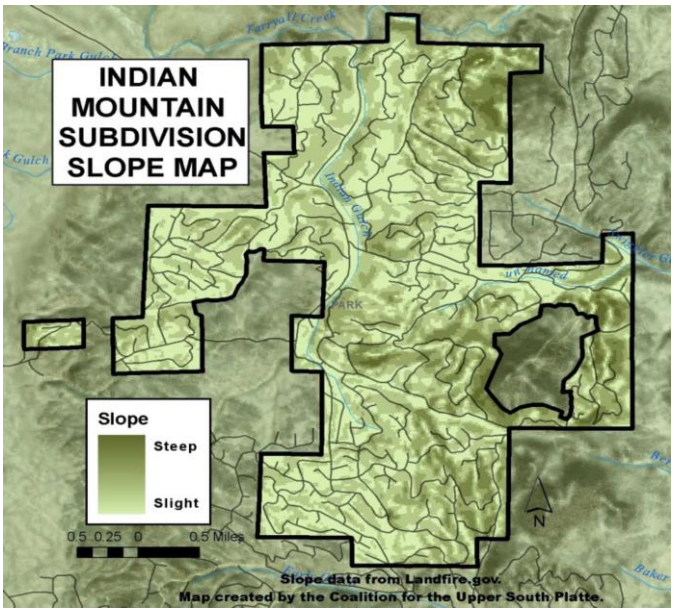


Fig 4.3 Slope variation in Indian Mountain

Aspect

Solar heating also plays a part in the intensity of wildfire, and solar heating is a function of the aspect, a term that refers to the primary direction that a slope faces. At this high elevation, slopes in Indian Mountain that face south and west are pre-heated and dried by strong sunlight which makes these areas more vulnerable to rapidly igniting fuels. Figure 4.4 indicates the aspect of the Indian Mountain terrain.

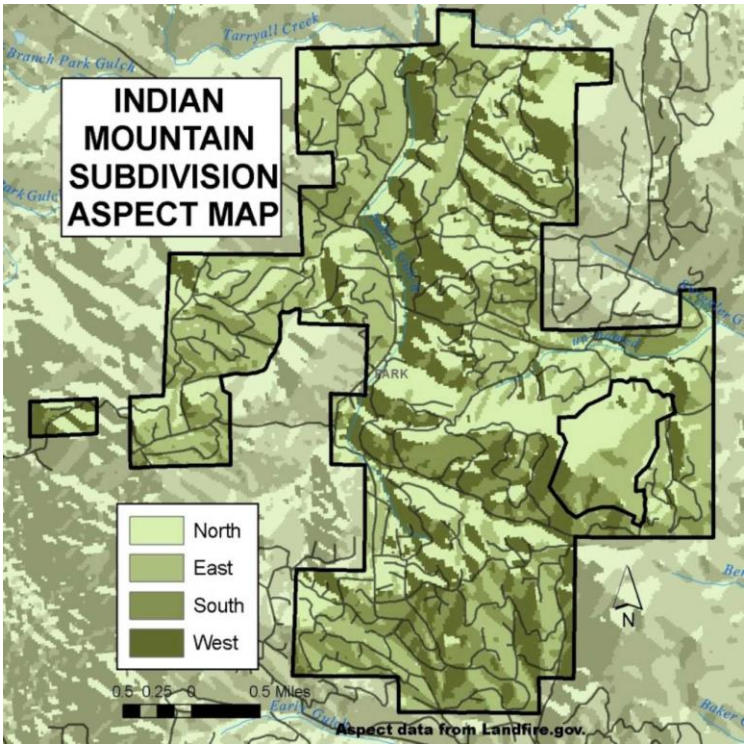


Fig 4.4 Aspect variation in Indian Mountain

4.3 Integrated Risk Assessment

Using computer-based Geographic Information Systems (GIS), the factors that relate to fire behavior (fuels, topography and weather) can be combined to calculate the geographic distribution of wildfire risk. Scores of 1 to 4 (1 being the lowest risk) are assigned to each of the fire behavior factors. Additionally, using the parcel map from Chapter 3, parcels that have no structures were given a score of 1, and those parcels with structures were given a score of 2. As a result, the highest scores were attached to areas where structures exist, where the forest is most dense, where slope is steeper, and where the aspect is the least favorable. The total scores, shown by color in Figure 4.5, provide a general representation of the areas with the highest risk of destructive fire. This map can be used to prioritize fuel mitigation projects within the subdivision.

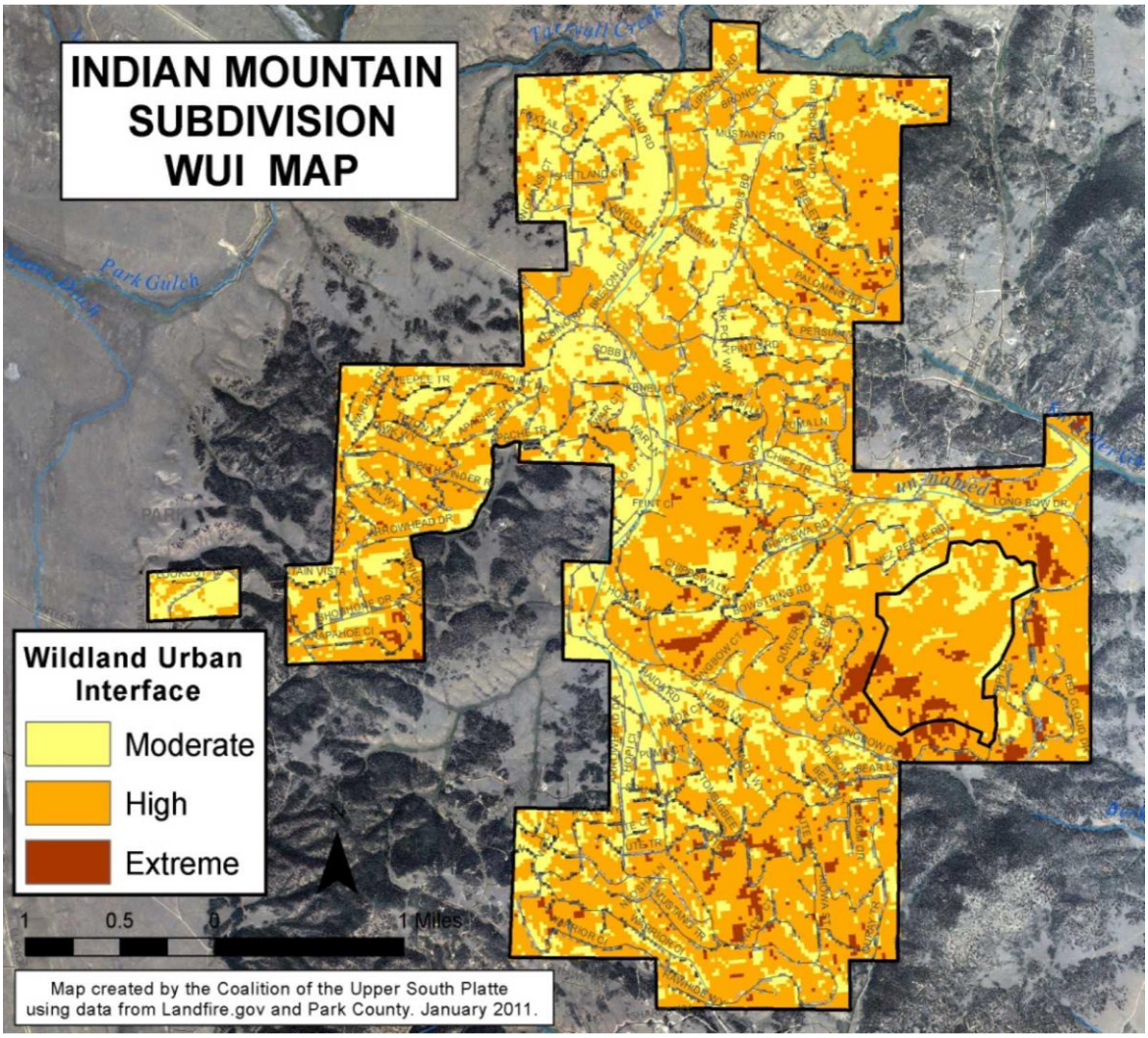


Fig 4.5 Integrated Risk Assessment

Notice that there are both high and extreme conditions in Indian Mountain Park, the irregular-shaped area outlined in black on the right side of this map. As describe in Chapter 7, this is the area of highest priority for on-the-ground projects in Indian Mountain, pursuant to this plan, to demonstrate the benefits and practices of fuel reduction, fire breaks and fuel breaks.
Figure 4.6, below, was derived from the same data with one exception - this integrated risk map for the subdivision was created using the structural density data obtained from the Park County Assessor. This map serves to focus attention where there are concentrations of structures on private properties with high or extreme risk of wildfire.

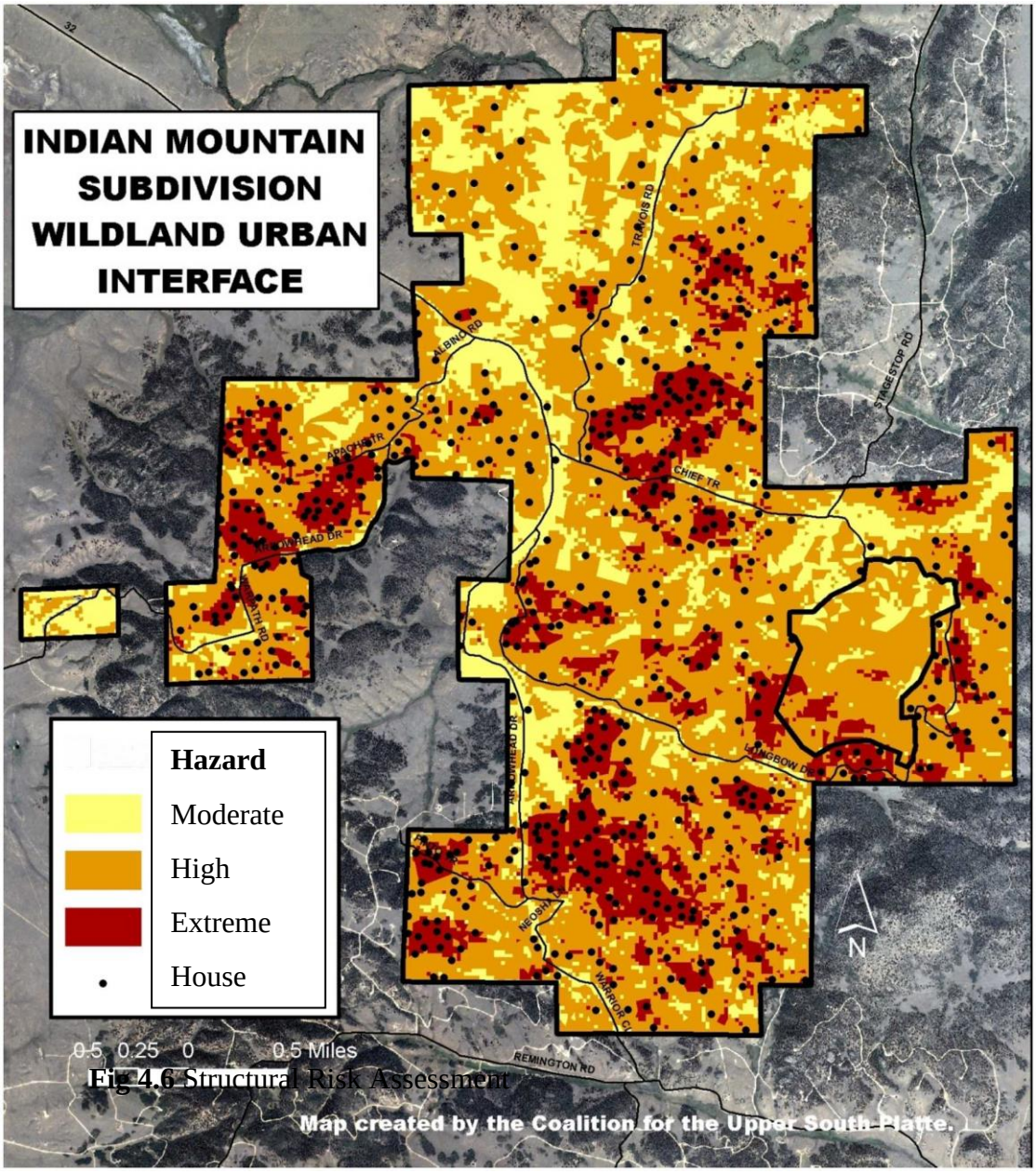


Fig 4.6 Structural Risk Assessment

5.0 Wildfire Suppression Capabilities

Although the principal reason for this CWPP is to expand the knowledge and awareness of wildfire prevention in Indian Mountain, it is useful in this context for residents to be informed of the planning and preparations for suppression of wildfires within the subdivision. In addition, early suppression of fires, either vegetative or structural, is a primary means of preventing the spread of wildfires.

5.1 Jefferson-Como Fire Protection District (JCFPD) Overview

The JCFPD encompasses 525 square miles within Park County. The Indian Mountain subdivision is a small portion of the district. In recent times, 65% of calls generated within the district were requests for Emergency Medical Services (EMS). The other calls were associated with smoke investigations, wildland fires and structure fires. In 2019, JCFPD ran 345 emergency calls, in 2020

there were 292 emergency calls, and in 2021 there were 346 calls; Indian Mountain accounted for 15% of them. In 2022, JCFPD ran 284 calls of which 107 or 37.6% were to Indian Mountain. In 2023, JCFPD ran 271 calls of which 191 or 70.49% were to Indian Mountain.

The following list characterizes some of JCFPD's preparations for fire emergencies in Indian Mountain:

- Access to properties with locked gates or difficult access would depend on the property itself. If the property were deemed savable at the time of the fire, then firefighters would use every tool they have to gain access. For example, all JCFPD trucks carry bolt cutters for locked gates. If fire-fighting equipment could not get onto a savable property for other reasons, and if it were deemed safe to do so, firefighters would carry what they could to fight the fire on foot. In assessing whether a property is savable, fire fighters would consider the flammability of the structure, the degree to which the surrounding vegetation had been cleared and the risk attendant in that specific fire to the lives of the fire fighters.
- JCFPD has two fire stations within the Indian Mountain subdivision that house various fire-fighting equipment, including EMS rescue trucks, first-response fire suppression equipment, wildland brush trucks and water supply tenders. Currently, the JCFPD also has two cisterns at Station 7, located near the intersection of Gitchee Goone and Apache Trail, with a total capacity of 60,000 gallons, and one cistern on Chief Trail at the Indian Mountain Park with a total of 30,000 gallons available for fire suppression and tender supplementation. The JCFPD does not staff either of those locations.
- The JCFPD stations two people at Station 5 at the intersection of County Road 15 (Elkhorn Road) and Albino Road (about three miles from the west-most entrance to the Indian Mountain subdivision, 20200 County Rd 15) 24 hours a day, 365 days a year. Office hours are from 7am to 5pm, seven days a week. Those individuals remain on call for the remainder of the 24-hour shift and respond from their residences during the evening. JCFPD has a number of trained volunteers living in Indian Mountain and neighboring communities that respond to all calls. They are currently working on increasing to 3 staffed positions. JCFPD is always looking for more volunteers.
- The firefighters in the JCFPD are trained in the initiation of owner-provided fire suppression systems, such as foaming systems.

The JCFPD posts the current fire danger in the district on a sign adjacent to Station 5. The posting is based on temperature and moisture conditions provided by the National Weather Service. As conditions change, the JCFPD changes the fire danger posting. In addition to these fire danger postings, outdoor burn bans are issued countywide by the Sheriff's office. In years past, IMPOA echoed fire danger and fire ban postings at the main entrances to Indian Mountain. Resumption of these postings is a subject of one of the actions described in Chapter 7.

JCFPD has a program in place that calls for an annual burn permit. This allows the fire department to be aware of planned burns or campfires. The burn permit is $10. Go to https://www.jcfpd.org/burn-permits and create an account. When you plan a burn, call the phone number listed on the permit or 1-833-935-1189 and you're good for 24 hours.

Note: No slash burning is allowed May 1st – September 30th regardless of snow.

5.2 Emergency Planning and Response

In any wildland fire event, the JCFPD is the first responder to a fire in Indian Mountain. The Park County Sheriff would control egress and ingress in and around Indian Mountain in the event of a structure or wildfire, based on an ad hoc assessment of fire location, weather conditions and fuel conditions. There is no preset routing for emergency ingress and egress.
The Sheriff's office would also advise Indian Mountain residents of any major incident through a reverse 911 call. Such calls only service landlines, not cell phones.
Park County has a Public Emergency Notification System called CODE RED. You can sign up to receive notifications for road closures, general alerts, and potential fire issues. Go to CodeRED | Park County, CO, create an account and sign up for whatever alerts you'd like to receive. You can receive text messages, voicemails, and/or emails. Make sure to add the phone numbers below to your contacts.
You will recognize the CodeRED call when your caller ID displays the following numbers. Please be sure to add these telephone numbers into your telephone's contacts, when applicable.

- 866-419-5000 or Emergency Comm for Emergency Notifications
- 855-969-4636 or ECN Community for General Notifications
- 800-566-9780 or Emergency Comm for CodeRED Weather Warning Alerts

This is a great tool to receive advance notification of any potential fire in your area.

6.0 Prevention and Mitigation Of Catastrophic Wildfires

6.1 Personal Responsibility

In the words of Smoky Bear, "only you can prevent wildfires." In the context of this CWPP, those words mean that the reduction of the fire risk to structures and vegetation on private property is the owner's responsibility. That responsibility includes managing wildland fuels within the first 100 to 200 feet surrounding any structure on the owner's property. It has been demonstrated repeatedly that the greatest fire threat to a structure occurs within that area.[8]

Property owners understand and accept their responsibilities to varying degrees. The foremost examples of poor acceptance are the absence of survivable space surrounding some structures in the community and the lack of easy access for firefighters on some developed lots. Other examples are poor outdoor burning practices and ignoring burn bans issued by the Sheriff's office. Efforts to increase the understanding of personal responsibility and to increase knowledge of the assistance available to meet that responsibility are motivators for the actions described in Chapter 7.

It is a common misconception that the absence of a structure means the absence of wildfire risk. Owners of vacant property should be aware that it is more likely for a wildfire to increase in intensity as it moves through a parcel with untreated fuels causing more severe damage to vegetation and soil and posing a greater threat to adjacent properties. Under "natural" circumstances, historical fires

8 "Reducing the Wildland Fire Threat to Homes: Where and How Much?" Jack D. Cohen, USFS, General Technical Report, PSW-GTR-173, 1999. https://research.fs.usda.gov/treesearch/5603.

would have maintained healthy forest conditions. The absence of natural fire cycles for the last century has led to abnormal fuel accumulation and created unhealthy forest conditions that must be addressed by other methods.

Part of a mountain property owner's responsibility is to stay informed about fire prevention and mitigation measures for property and structures in the wildland-urban interface. These measures have evolved over the years based on advancements in science and on lessons learned in past fires. In addition, there are tax incentives for property owners to accomplish fuels reduction.[9]

According to the latest thinking of the Fire Sciences Laboratory of the USFS,[10] most homes that burn during a wildfire ignite while they are still some distance from intense flames. Although low-intensity ground fires in grasses and other low-lying vegetation close to homes ignite some homes, others ignite when the wildfire is more than a mile away because of the propensity for the fire to generate airborne embers.

When a tree ignites, flames can race up the trunk at up to 75 miles an hour. Burning material is literally stripped away and hurled into the air where winds can carry it far downwind. Multiplying this process by dozens or even hundreds of trees can produce a blizzard of firebrands that literally fill the air. These embers can pile up on top or under a deck, in corners or indentations outside a house, and even on exterior windowsills like drifts of snow. They also can settle on roofs, accumulate there and burn through a flammable roof or drop down onto a flammable deck. When enough embers accumulate, the house catches fire.

Whether a house ignites during a wildfire depends on its design, the materials used in its exterior construction, including its roof, and the amount of heat to which it is subjected. The materials of construction and the nearby fuels, such as wooden decks, stored firewood, dry grass and trees, determine whether embers will ignite a house during a wildfire. By the time a fire threatens, it's too late to do much about these factors. They should be addressed before a fire season begins. Protective measures might include renovations to the house itself, such as replacing a flammable roof with a fire resistant one. The Fire Science Lab summarized the primary lessons learned from the 2010 Fourmile Canyon Fire in Boulder, Colorado, as follows:

- Eliminate all flammable materials (potential fuels) within 10 feet of the house.
- Consider any wood roof to be flammable; wet the whole roof frequently when flying embers are threatened.
- Remove flammable materials from decks or boardwalks - if it's connected to the house, consider it part of the house.
- Remove dead leaves and pine needles from gutters and the roof.
- Staple metal window screening over any openings or gaps including low decks, walkways and crawl spaces.
- If possible, place sprinklers to wet the area around the house, especially within 60 feet of the house.

---

9 Colorado Dept of Revenue: Wildfire Mitigation Measures.

10 USFS Missoula Fire Sciences Laboratory, https://www.firelab.org/

- Reduce or eliminate surface fuels, including cutting the grasses, starting at the house to within 100 feet of the house, and pruning lower limbs of trees to at least 8 feet above the ground.

6.2 Survivable Space and Structure Vulnerability

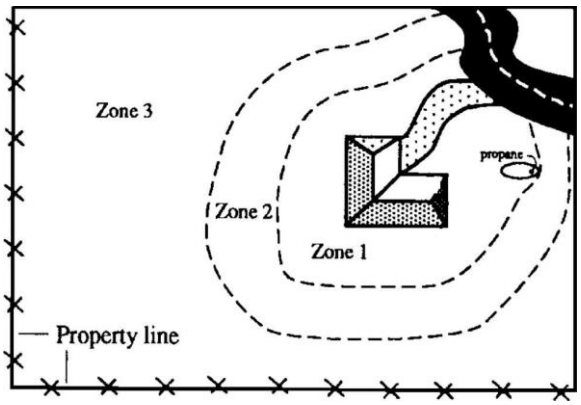


Fig. 6.1 Defensible space zones

The first defense of a home or other structure against wildfire is to create and maintain a survivable space (also called defensible space) within 100 to 200 feet of the structure and along the driveway. This does not mean the survivable landscape must be barren. Survivable space is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire toward or away from the structure. Survivable space also provides room for firefighters to safely do their jobs. A house is more likely to survive a wildfire if nearby grasses, brush, trees and other forest fuels are managed to reduce a fire's intensity before there is a fire. The survivable space should also be clear of man-made hazards such as stacks of firewood. The Colorado State Forest Service has described the key steps to creating a survivable space.[11]

Slash Disposal

A problem encountered by property owners in creating survivable space or otherwise thinning their forests is disposal of the slash, i.e., the debris created by the felling or the trimming of trees and brush. The term also includes dead and down trees. Chipping, lop and scatter, and mastication (shredding) are common methods of treating slash that return the nutrients of the wood to the forest floor. Pile burning is another method of slash disposal, although it is not recommended. Burning piles of slash may be done in Indian Mountain only if the owner secures and abides by a proper burn permit. However, done incorrectly, these fires run the risk of starting a wildfire within the community and may cause long-term damage to the soil. The JCFPD has provided guidance on burn permits.[12]

Residents of IMMD and surrounding subdivisions have an alternative for slash disposal, i.e. to transport it to a burn pit located on land owned by IMMD on Albino Road. It is available to Indian Mountain property owners on a no-fee basis. Others within the fire district may pay an annual fee to IMMD to use the pit. All users of the pit must register in advance in order to receive a burn pit permit. The pit is only open on certain days and volunteers monitor the pit to count the loads and to make sure only forest slash is dumped in the pit. IMMD will conduct controlled burns of the slash in the burn pit during the winter, with JCFPD approval, when there is snow on the ground to ensure that fire will not escape the pit.

Reduction of Structure Vulnerability

Fire research has demonstrated that the intense heat of a crown fire exposes a structure for 90 seconds

11 "Defensible Space," CSFS Website The Home Ignition Zone.

12 "Burn Permit," JCFPD Website, https://www.jcfpd.org/burn-permits.

or less. This is sufficient time for the heat of such a fire to ignite the structure. Anecdotal evidence, confirmed by post-fire damage assessment studies conducted by the National Institute of Science and Technology (NIST), suggests that wind-driven firebrand attack is another source of structure ignition. A NIST research program is underway to develop amendments to building codes in California and other states with high wildfire risks to address this firebrand issue. There are many ways to reduce the vulnerability of structures to wind-driven embers and these are outlined in CSFS documents.[13] The measures include the use of fire-resistant roofing materials, storing firewood away from structures, use of fire resistant decking, installation of screens to prevent buildup of embers under porches or decks, and use of vent screening and chimney caps.

6.3 Fuels Treatment

Two primary concerns determine the forest prescriptions for Indian Mountain. The first concern is the high risk of high intensity wildfires, and the second is the threat posed by mountain pine beetle and spruce bud worm. Wildfire risk is highest in the areas dominated by Engelmann spruce while pine beetle is a greater concern in the areas of ponderosa, limber pines and bristlecone pines. Proper management of the forests can address both concerns.

Forest Restoration

Restoration is a form of fuels treatment wherein the forest is returned to its historic (reference) condition before people interfered with its natural maintenance. Knowing how a site once looked is an important tool in setting management goals and strategies for forest restoration. Restoration treatments seek to lower fire danger while increasing the overall biological diversity and long-term health of treatment areas. Restoration treatments might involve mechanical thinning to remove excess trees and removal of ladder fuels to reduce the likelihood that a surface fire will become a crown fire. Such treatments also include reduction of the connectivity of tree crowns, which makes it more difficult for a crown fire to spread through the canopy.

Restoration treatments are focused on long-term rather than short-term health of the ecosystem. Instead of focusing only on altering forest structure, restoration treatments also aim to alter forest function. For that reason, they have the potential to provide a long-term solution to wildfire threats, which are really only a symptom of a larger problem, i.e., an unhealthy ecosystem. The CSFS has provided guidance on restoration treatments.[14]

Forest Thinning

Thinning the dense stands of trees that exist throughout Colorado would reduce the risk of catastrophic wildfires and improve forest health. Numerous thinning prescriptions have been implemented, primarily on public lands, but thinning within subdivisions also is beneficial. Many mitigation treatments on private property focus solely on removal of ladder fuels and reducing crown connectivity. In the simplest situation, chainsaws are used to remove lower branches or entire trees and to clear dead and down trees. In larger and more complex projects, mechanized equipment might

13 "Firewise Construction: Design and Materials," CSFS Website, https://static.colostate.edu/client-files/csfs/pdfs/firewise-construction2012.pdf

14 "Forest Restoration," CSFS Website, https://www.fs.usda.gov/rm/pubs_series/rmrs/gtr/rmrs_gtr373.pdf

be used. The cut wood is harvested for use as logs, posts or fuel; chipped or shredded for forest mulch; or burned at a controlled site. The Internet has information on tools used for thinning.[15]

Firebreaks and Fuel Breaks

Firebreaks and fuel breaks are two different management techniques used to improve the ability to suppress wildfires, though the terms are often confused. A firebreak is a complete gap in vegetation or other combustible material that is at least 30 feet wide and acts as a barrier to slow or stop the progress of a wildfire. A firebreak may occur naturally where there is a lack of vegetation or fuel, such as a waterway, lake or rock outcrop or be man-made including roadways and logging trails.

There are more than 300 miles of county-maintained gravel roads in the Indian Mountain subdivision. Article 5 of the subdivision's covenants requires property owners to maintain 10 feet of cleared space adjacent to any road with which their property abuts. The width of the roads in the subdivision plus 10 feet of clear space on either side would provide effective firebreaks throughout the community.

A fuel break is a natural or manmade change in fuel characteristics, which affects fire behavior so that fires burning into them can be more readily controlled. A man-made fuel break typically is 200-300 feet wide (or more on steeper terrain) and involves thinning to separate tree crowns, reduction of understory fuels, and removal of tree branches to a specified height, usually 8-10 feet above the ground, to keep fire from climbing into the tree tops. Fuel breaks commonly cross multiple property lines to provide a measure of protection to areas larger than a single property.
The areas of highest wildfire risk identified in Section 4.3 above will be of high priority for the fuels reduction projects identified in Chapter 8 below.

Prescribed Burns

The decision to use fire as a tool in forest management is a complicated process undertaken by fire management professionals. Among forest managers, carefully planned "prescribed" use of fire is considered a "Best Management Practice" for certain large acreage forest treatments. These fires help maintain and restore fire-dependent ecosystems by imitating the vegetative disturbance of periodic natural fires. In addition to considering the basic elements of fire behavior (fuels, terrain and weather) in designing a prescribed burn, forest and fire managers take into account the wildlife habitats, soils, historical or cultural impacts, air and water quality, and safety. Planning is a long-term process and unless all conditions of the prescription are met, no planned ignition will occur.

The benefit of a prescribed burn can be seen in Figure 6.2. The Polhemus Fire near Deckers, Colorado was a prescribed burn in October 2001 conducted by the USFS. Treatment included forest thinning followed by a prescribed "broadcast burn" of ground fuels. Eight months later, the Hayman fire burned uncontrolled through tree crowns to the boundary of the Polhemus burn where it dropped to a ground fire and went out. The USFS has published guidelines and procedures for prescribed burns.[16]

---

15 "Safe Chainsaw Operation," https://www.familyhandyman.com/project/how-to-use-a-chainsaw/

16 "Interagency Prescribed Fire Planning and Implementation Procedures Guide," USFS Website https://www.fs.usda.gov/rm/pubs/rmrs_gtr292/2008_prescribed_fire.pdf

Fig. 6.2 Benefits of prescribed burn

The benefit of a prescribed burn can be seen in Figure 6.2. The Polhemus Fire near Deckers, Colorado was a prescribed burn in October 2001 conducted by the USFS. Treatment included forest thinning followed by a prescribed "broadcast burn" of ground fuels. Eight months later, the Hayman fire burned uncontrolled through tree crowns to the boundary of the Polhemus burn where it dropped to a ground fire and went out. The USFS has published guidelines and procedures for prescribed burns.[17]

6.4 Indian Mountain Forest Management

Foresters manage trees not as individuals but in groups called stands. A stand is defined as a group of trees that is similar with respect to age, species composition, and other characteristics. Each stand is different from the ones nearby, and each landowner may have other objectives in addition to wildfire mitigation.

Thus, the information that follows is intended to be a general and highly simplified summary of the basic concepts of wildfire mitigation. It is only intended to give the reader an idea of how foresters approach the process of prescribing treatments for fire mitigation. The forest conditions in Indian Mountain vary widely. When planning fire hazard mitigation, an initial consultation with a forester is recommended. Specific prescriptions for any forest stand are best developed when the existing conditions of the stand and the landowner's specific objectives are known.

Although foresters may use many characteristics of trees to categorize them, the most common—and useful when discussing fire mitigation—is the tree's tolerance to shade. Shade tolerance means the ability of a tree to germinate and grow in the shade of other trees. Species of trees vary in their

17 "Interagency Prescribed Fire Planning and Implementation Procedures Guide," USFS Website, https://www.fs.usda.gov/rm/pubs/rmrs_gtr292/2008_prescribed_fire.pdf

tolerance to shade, but they can be grouped by those that require sunlight for germination and those that require shade. Forests in the upper montane zone, such as those in Indian Mountain, tend to be a mixture of shade-tolerant and shade-intolerant trees. Such a mixture is called mixed conifer. Forests in the community also have stands of aspen intermingled with the conifers.

Shade-Intolerant Trees

Shade-intolerant trees are those that require full sunlight to sprout and grow to maturity. Such trees are the first to colonize a site after a disturbance, such as a wildfire, removes the existing trees. For this reason, ecologists call these pioneer species. Aspen, the most shade-intolerant of local species, will send up new sprouts within days after a fire destroys the old trees. Shade-intolerant trees common to Indian Mountain include aspen, ponderosa pine, lodgepole pine, bristlecone pine, and limber pine.

It follows that if the trees in a particular area grow back following a disturbance, all the trees in a stand will be of roughly the same age. Since the trees compete for sunlight, water and nutrients, the most vigorous trees dominate the new stand. A dominant tree soon outgrows its siblings. The weak trees remain in the understory, stunted and overtopped. Thus, in shade-intolerant stands, small trees are not young trees but merely trees with suppressed growth. The ponderosa sections in Figure 6.3 illustrate why tree diameter is not a reliable indicator of age. The center section is 100 years old; section 2 is 99; section 3 is 101; section 4 is 90; section 5 is 85; section 6 is 130; and section 7 is 81 years old.

Fig 6.3 Sculpture by Bill Wallace. Photo by Bill Buckman, courtesy of the Black Forest Slash and Mulch Program.

Ponderosa pine: Of all the species of trees in the local area, ponderosa is the best adapted to

survive a low-intensity wildfire. First, the thick bark of the tree acts as insulation from the heat of the fire. Second, as the upper branches shade the lower ones, the lower branches die, and, in time, break off. Thus, there are fewer low hanging branches to act as ladder fuels. Fires that burn in the grass and litter under a mature ponderosa rarely harm the tree.

Aspen*:* As noted earlier, aspen are the most shade-intolerant of local trees. Unlike the ponderosa, aspen bark is thin, and even a cool fire burning on the ground may kill the tops of the trees. The root system, however, is insulated from the fire's heat by the ground, and when the treetops die, the roots respond by vigorously resprouting. As a deciduous tree, aspen will not carry a fire in the tree crowns, thus, fires drop to the ground in aspen stands. For this reason, aspen are desirable trees to retain in fuel breaks and survivable spaces. Furthermore, aspen are desirable wildlife trees, but years of fire suppression may result in conifers shading many stands of aspen. Since wildfire mitigation practices usually require thinning, some landowners assume that aspen should be thinned as well, but they should not. Thinning aspen is rarely recommended since the falling trees invariably wound the remaining trees. The bark on aspen is so thin that any wound will expose the tree to many different fungal diseases that are eventually fatal (see the insect and disease section, below). Fortunately, there are extensive stands of aspen in Indian Mountain. Many of these have large amounts of Engelmann spruce in the understory, and the spruce will eventually overtop the aspen. Fire mitigation in aspen should be limited to removal of dead trees if care is taken to avoid wounding live trees, cleaning up down or dead wood, and removing conifer regeneration from the aspen understory.

Lodgepole pine*:* There may be some scattered lodgepole in Indian Mountain, but there are no extensive stands of this tree. Lodgepoles tend to grow at higher elevations than ponderosa, and unlike ponderosa, they are not well adapted to survive frequent low-severity fires. Instead, they are prone to infrequent stand-replacing crown fires. Lodgepole resprout after a fire by virtue of their closed or serotinous cones. Serotinous cone scales are "glued" shut by sap, and the heat of the passing fire melts the sap causing the cones to pop open. Seeds fall on the bare ground, free of competition from other plants. As the seeds sprout, a new dense stand of lodgepole—called dog hair as in "thicker than the hair on a dog's back"—develops. The dense nature of lodgepole stands has important implications when attempting to mitigate wildfire hazard. The density of the stand protects the trees from the wind, and they do not become firmly rooted. If one attempts to thin lodgepole heavily, the remaining trees will often blow down. Lodgepole should be thinned lightly, or patch cut to avoid blow down.

Bristlecone pine*:* In Indian Mountain, bristlecone pines tend to occupy drier southern exposures in association with ponderosa pine, and the stands are usually open. Bristlecone is well known for its longevity—often living for millennia. The age of a tree cannot be determined visually, so it is impossible to know the age of the trees in Indian Mountain without actually counting the annual rings. In open stands, such as those in Indian Mountain, it appears that bristlecone is moderately able to withstand low intensity ground fires, but not high intensity fires. Bristlecone is resistant, but not immune to ponderosa pine dwarf mistletoe, and moderately susceptible to mountain pine beetle.

Limber pine: This short, usually multi-stemmed pine grows on poor sites, such as windswept ridge tops, and is often found mixed with other conifers. The common name derives from the fact that the branch tips are very flexible—almost to the point that they can be tied in knots. Limber pine looks similar to and is often mistaken for bristlecone pine, but a simple and accurate way to differentiate

between the two is to look at the needles. Bristlecone pine invariably has a drop of crystalline appearing sap (resin) at the middle of the needle, while limber pine does not. Limber pine is extremely drought tolerant, but its low growth habit makes it susceptible to fire damage. Limber pine is moderately susceptible to ponderosa pine dwarf mistletoe, ips beetle and mountain pine beetle.

Shade-Tolerant Trees

Shade-tolerant trees are those that will sprout from seed and grow in the shade of the existing forest canopy. Tolerant trees are usually found on the cooler, moister, north-facing slopes of hillsides and in moist drainages. In fact, most shade tolerant trees require shading for the seedlings to survive. Direct sunlight will often burn a seeding. As a result, stands of shade-tolerant trees contain trees of many ages. The most common shade-tolerant trees in the area are Colorado blue spruce, Engelmann spruce, and Douglas-fir.

Spruce: Colorado Blue Spruce and Engelmann Spruce are so similar that they may be considered together for discussion of fire mitigation. Colorado Blue Spruce is usually found in lower altitudes (below 9,000 ft), while Engelmann Spruce is usually found above 9,000 feet. Seedlings' ability to survive in the shade of mature trees usually creates dense forests with a closed canopy above and thickets of ladder fuels below. The typical fire regime in Engelmann spruce is an infrequent stand-replacing crown fire.

Like lodgepole pine, spruce tends to be shallow rooted, and excessive thinning of the upper canopy can result in wind throw in the remaining trees. This characteristic has important implications for fire mitigation in Indian Mountain that will be addressed in the prescriptions section, below.

Douglas-fir: Typically, Douglas-fir trees are found on cooler north facing slopes in lower elevations and mixed with spruce in higher elevations, although they are mixed with other trees in Indian Mountain. It is in the lower elevation ponderosa pine forests where Douglas-fir has become the most serious concern for wildfire mitigation. After a century of fire suppression in lower-elevation ponderosa pine stands, the canopy has closed, shading the forest floor. As a result, Douglas-fir has invaded the understory of the ponderosa stands creating dense thickets of ladder fuels.

Douglas-fir trees are firmly rooted and can be thinned much the same as ponderosa pine. In lower-elevation ponderosa stands, most Douglas-fir should be eliminated, especially those that create ladder fuel. There is an important exception to this general rule where the ponderosa are infected with dwarf mistletoe. In such situations, the landowner may choose to favor the Douglas-fir since it is immune to the dwarf mistletoe. In such cases, special attention should be given to providing adequate separation between the crowns of larger trees and pruning the lower branches from the Douglas-fir to reduce ladder fuels.

Where Douglas-fir is intermixed with less wind-firm spruce, it can be favored to maintain forest cover. Pruning the trees to remove ladder fuels is still important. In the high and dry conditions of Park County, Douglas-firs often self-prune so that in mature trees the lower 1/3 to 1/2 of the trunk is devoid of branches.

Thinning Prescriptions for Fuel Breaks

Foresters use many methods of thinning. The use of those methods on a particular property depends on the specific objectives of the landowner. Fuel break thinning is most often accomplished by thinning the canopy to create openings wide enough to prevent crown fires and by removal of ladder fuels.

For simplicity, trees can be divided into levels in the forest canopy. The largest trees at the highest level of the canopy are called dominants. These are usually the most vigorous trees since they have the largest root systems, create the most leaf area, and receive the most sunlight. Next are the co-dominant or intermediate trees. These trees occupy the middle level of the canopy but tend to be crowded and of smaller diameter. They are less vigorous with smaller root systems and fewer leaves as the result of crowding by the dominant trees. At the lowest level of the forest canopy are the overtopped trees. These are completely shaded by the dominant and co-dominant trees.

Since the diameter of a tree is not a reliable indicator of its age, the co-dominant and overtopped trees, despite their smaller size, are often as old as or older than the dominant trees. For shade-intolerant trees, such as ponderosa, young trees are usually found in openings in the canopy. In stands of shade-tolerant trees, such as Engelmann spruce, young trees can be found underneath an existing canopy.

In either case, young trees usually have a diameter proportionate to their height and a conical shape. If there are young trees in a stand, it is desirable to leave some to increase diversity even if the larger trees are cut. Thickets of young trees should be thinned to give adequate growing space.

The dominance of shallow-rooted Engelmann Spruce in Indian Mountain requires modification of the usual prescription for fuel breaks since thinning dominant trees to reduce canopy closure could result in blow down of the remaining spruce. Fortunately, the spruce is intermixed with large patches of aspen that can be used to the community's advantage.

Thinning in patches of spruce should be limited to the removal of the overtopped trees and light thinning of the co-dominants to prevent wind throw. Spruce clumps that are lightly thinned will begin to anchor themselves more firmly as they are exposed to more wind. After ten years, the clumps may be lightly thinned again to reduce canopy closure. This light thinning can be repeated at ten-year intervals.

Aspen patches (stands) can be used to separate spruce clumps. It is important to preserve aspen patches. Many of them are developing an understory of spruce that will eventually overtop and shade out the aspen. To prevent this, owners should remove most of the spruce regeneration from the aspen stands. Some spruce may remain, but they should be widely spaced. Most of the down wood should be removed from aspen stands to reduce ground fuels.
It is important to maintain the health of aspen stands for effective wildfire mitigation, so owners should consider clear cutting one-half to three-acre patches of over mature, diseased aspen to regenerate healthy sprouts. In addition, the low sprouts will be a source of browse for deer and elk.

Insects and Disease

Spruce Budworm: The spruce budworm is wreaking havoc on the Douglas-fir and spruce trees in Indian Mountain. In certain areas of Indian Mountain, the spruce budworm has killed up to 75% of all firs and spruce trees.

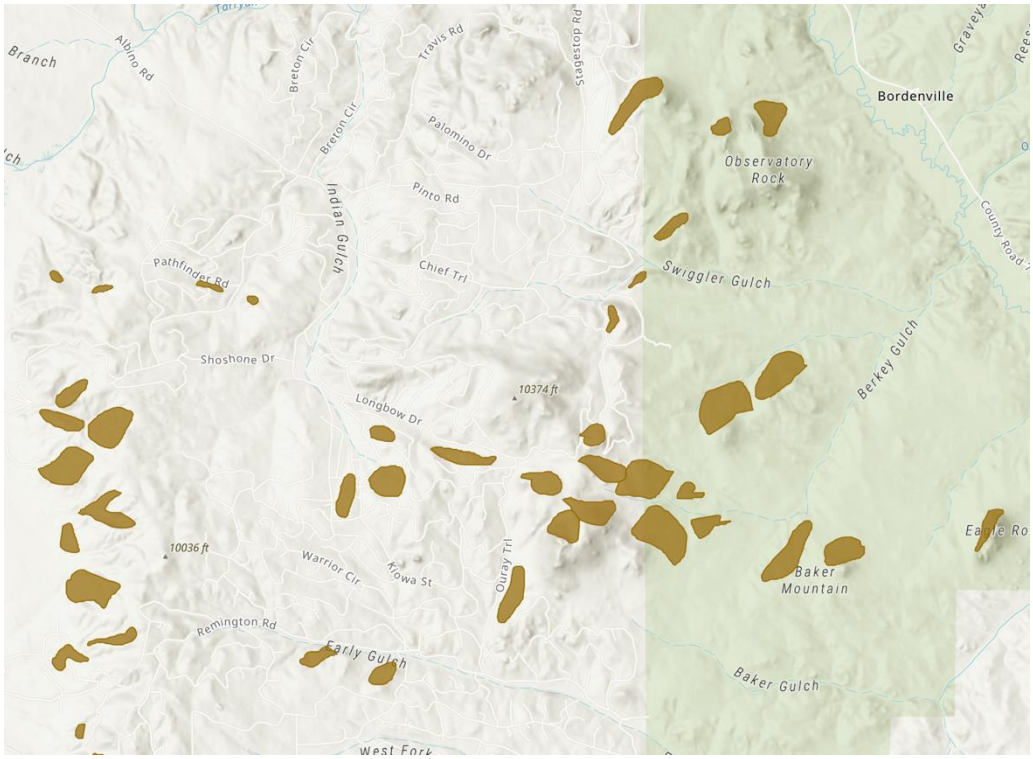


Fig. 6.4 Spruce Budworm infestation in Indian Mountain in 2023.

Western spruce budworms (Choristoneura freemani) are native insects that defoliate spruce and fir trees in Colorado. Trees impacted by a defoliator can look ragged, and heavy defoliation over an extended period of time reduces tree vigor, eventually causing branch and/or top dieback. This lack of vigor also makes a tree more inviting to bark beetles.

Despite their name, spruce budworms prefer to feed on Douglas-fir and white fir trees. Engelmann spruce and blue spruce are occasional hosts, however.

Adult budworms are small, non-descript moths that are gray or brown in color. Most often, the moths emerge from pupal cases in July. They do not feed on host trees but lay green egg masses on the underside of needles. The eggs hatch in about 10 days. Each tiny larva spins a hibernaculum (cocoon) around itself and remains in a bark crevice or tucked into lichen on the tree until the following spring. In April or May, the larvae (caterpillars) become active and begin to feed by "mining" older needles or tunneling into closed buds and flowers. After the tree buds open, the larvae produce webbing to loosely hold the new needle tips together while feeding on the base of the needles inside this makeshift shelter. As new needles are consumed, the caterpillars rappel down from the tree on webbing they produce to reach more needles. If few new needles remain, the

larvae transition to feeding on older needles. In July, the life cycle is repeated when the larvae pupate on branch tips amidst dying needles and twigs held together by webbing.

Western spruce budworms can affect large areas of forest aesthetically. During an outbreak, partially consumed Douglas-fir needles turn reddish-brown, often with webbing visible among the needles. The trees can have a scorched look, with green needles remaining in the interior but branch tips farther from the trunk showing more discoloration.

After multiple years of defoliation, a tree impacted by this insect will lose vigor, particularly if the surrounding forest is dense. Loss of vigor becomes visible when the foliage in the top of the tree thins, and after a few more years of infestation, the very top of the tree dies. If the budworm population remains high, the tree gradually dies from the top down. Also, if and when the dead portion of the tree exceeds the live portion, the tree will probably not recover and will succumb to bark beetles.

Bark beetle species that will take advantage of struggling trees include the Douglas-fir beetle (Dendroctonus psuedotsugae), which prefers mature trees, and Douglas-fir pole beetle (Pseudohylesinus nebulosus) and the Douglas-fir engraver beetle (Scolytus unispinosus), which will attack smaller-diameter trees.

Because this is a native insect, nature does provide some natural controls of the population. Parasitizing wasps and flies may attack the eggs, larvae or pupa, and some birds eat larvae and adults. However, when the spruce budworm population blossoms, it takes some time for populations of these natural controls to increase in numbers correspondingly. Even then, the percentage of spruce budworms killed by predators is small. Weather can also take a toll on spruce budworm populations, such as during a late-spring freeze or due to high winds that dislodge and displace hibernacula.

The forest structure can favor or oppose western spruce budworms. Because the budworm's feeding strategy is to move down through the forest canopy, populations flourish in dense forests of Douglas-fir/white fir with variable tree heights. The budworm prefers the older trees but eventually drops down into the younger trees growing underneath.

A less-hospitable environment for western spruce budworm is an open forest setting, where tree crowns do not touch and the height of the tree canopy is fairly uniform. The less Douglas-fir/white fir understory available between the ground and the top of the tallest trees, the more likely the budworm larvae will drop all the way to the ground and have a more arduous journey back up into the trees.

This preference for dense, unbroken forest presents an opportunity to control populations of western spruce budworm by thinning forests and removing some of the trees. A good rule of thumb for ideal tree spacing is to multiply tree diameter in inches by 1.5 to determine the desired number of feet between tree trunks. (Thus a 12-inch diameter tree should be at least 18 feet away from the trunk of the nearest tree.)

Spruce budworms do not feed on pine trees (i.e., lodgepole, ponderosa, bristlecone, limber, pinyon) or aspen trees, so having a variety of tree species in the forest also makes a positive difference in controlling spruce budworm populations.

Western spruce budworm is a native insect in Colorado and therefore has "been in business" for a very long time. Douglas-fir and white fir are still a part of the native forest, so a spruce budworm outbreak is not the end of the world. On the other hand, watching these defoliators feed on trees for multiple years can be hard to watch, particularly if it's happening in your own yard.

Use of a control product (i.e., insecticide sprays) may be warranted after 3-4 consecutive years of significant defoliation of high-value trees. Significant defoliation means the budworms are feeding on the new growth and older needles of a tree. The reason it is wise to wait so long to spray is that anything used to kill the budworm will also kill other insects that are considered beneficial. Over-spraying also can lead to different insect problems in the future.
Consider this: To effectively control spruce budworms feeding on a tree, nearly all the foliage needs to be covered with the insecticide. But broadly spraying to achieve this means much of the spray also is going somewhere other than on needles, and contacting more than just spruce budworms. If there's any breeze, the product will be carried elsewhere. Note that most products used for this budworm also cannot safely be used near lakes, streams and other bodies of water.

With insecticide treatments, timing is everything. The products require direct contact with the caterpillars, so the time to spray is just after the bud caps come off the tree tips and the new tips and needles begin to expand. Depending on elevation and aspect, this generally occurs in Colorado during the first half of May, and the opportune time to spray lasts about two weeks. If you miss this window, you are wasting your time and money and mostly killing non-target insects.

Read the labels on insecticides carefully before purchasing and applying them to learn where and how to use the product and what insects and other creatures it kills.

Products for Ground-Based Application

Permethrin (e.g., Astro, Onyx)
• Attacks the neurological system of insects, paralyzing them on contact or through ingestion.
• Breaks down relatively quickly in the environment when exposed to UV light; must be applied annually for effective treatment.
• Highly toxic to bees, fish and aquatic invertebrates during the application process. Impacts a broad range of insects in addition to Douglas-fir tussock moth or other *Lepidoptera* species (butterflies and moths).
• At least 24 hours without precipitation is necessary after application to allow the product to adhere to foliage and not run into surface water/drainage systems.
Carbaryl (e.g., Sevin, Sevinmol)
• Neurotoxin that kills insects through ingestion or on contact.
• Persists in the environment longer than permethrin, being less affected by UV light.
• Extremely toxic to aquatic organisms and bees; water sources and blooming plants must be protected when applying this pesticide.
• Impacts a broad range of insects besides Douglas-fir tussock moth or other *Lepidoptera* species.
• May leave a white residue on applied surfaces.
• At least 24 hours without precipitation is necessary after application to allow the product to adhere to foliage and not run into surface water/drainage systems.
***Bacillus thuringiensis* var. *kurstaki* (e.g., Dipel, Foray)**
• Bacterium that kills caterpillars shortly after ingestion by rupturing internal organs.
• Most effective when timed with early caterpillar stages.
• Persists in the environment only for a few days to a week, so applying while larvae are small and feeding is important to ensure effectiveness; a second application may be necessary, depending pest population levels.
• Specific to *Lepidoptera* species, therefore non-target species impacted by this insecticide will be limited to *Lepidoptera*.
Tebufenozide (e.g., Confirm, Mimic)
• Insect growth regulator that specifically targets the caterpillars of butterflies and moths and induces premature molting once ingested, causing death shortly thereafter. Will cause death to non-target butterfly and moth species.
• Persists in the environment longer than biological insecticides (i.e., Btk), which may increase efficacy.
• Application timing should target small caterpillars, early in the season.
• At least six precipitation-free hours necessary after application to allow the product to adhere to foliage.
• Toxic to aquatic invertebrates, and has a potential via runoff or drift to enter surface water supplies for months after application.

Source: https://csfs.colostate.edu/wp-content/uploads/2017/06/csfs-the-budworms-are-back-synopsis-june-2017.pdf

Other Forest Management Considerations

One objective of any mitigation project should be to enhance the diversity of forest stands. If a forest stand consists of one species, owners should attempt to leave trees of different ages, or thin in such a way that regeneration of new trees is promoted. A forester can recommend methods of thinning that reduce fire hazard and increase forest diversity.

When thinning for fuel breaks it is not necessary, or even desirable, to remove all dead trees or pick up all dead wood from the forest floor. Some standing dead trees, or snags, should remain as habitat for wildlife. The most desirable snags are trees larger than ten inches in diameter that are widely spaced; owners should avoid leaving more than three snags per acre. Owners should not leave dead trees where they might fall across roads or power lines. Trunks of large trees on the ground do not pose a high fire risk and may be beneficial in erosion control and habitat diversity.

Maintenance

Creating survivable space, thinning fuel breaks, or any type of forest management does not end when the initial project is finished. Continued maintenance is an essential part of any forest management

program. Even in well-managed forests, trees die, storms and wind damage trees, and new trees germinate.

Trees should be inspected every spring for any sign of damage from winter or spring snow or wind. Owners should prune any broken branches that are not too high in the tree, and trees bent by heavy winter snows should be removed. Owners should also check for any signs of insect activity or disease.

At five-year intervals, owners should check the canopy closure, especially in zones one and two of a survivable space. They should remove any trees necessary to maintain openings in the canopy and perform additional pruning or removal of trees and shrubs to eliminate ladder fuels. To avoid damaging smaller, younger trees, at least 2/3 of green branches should remain when ladder fuels are removed.

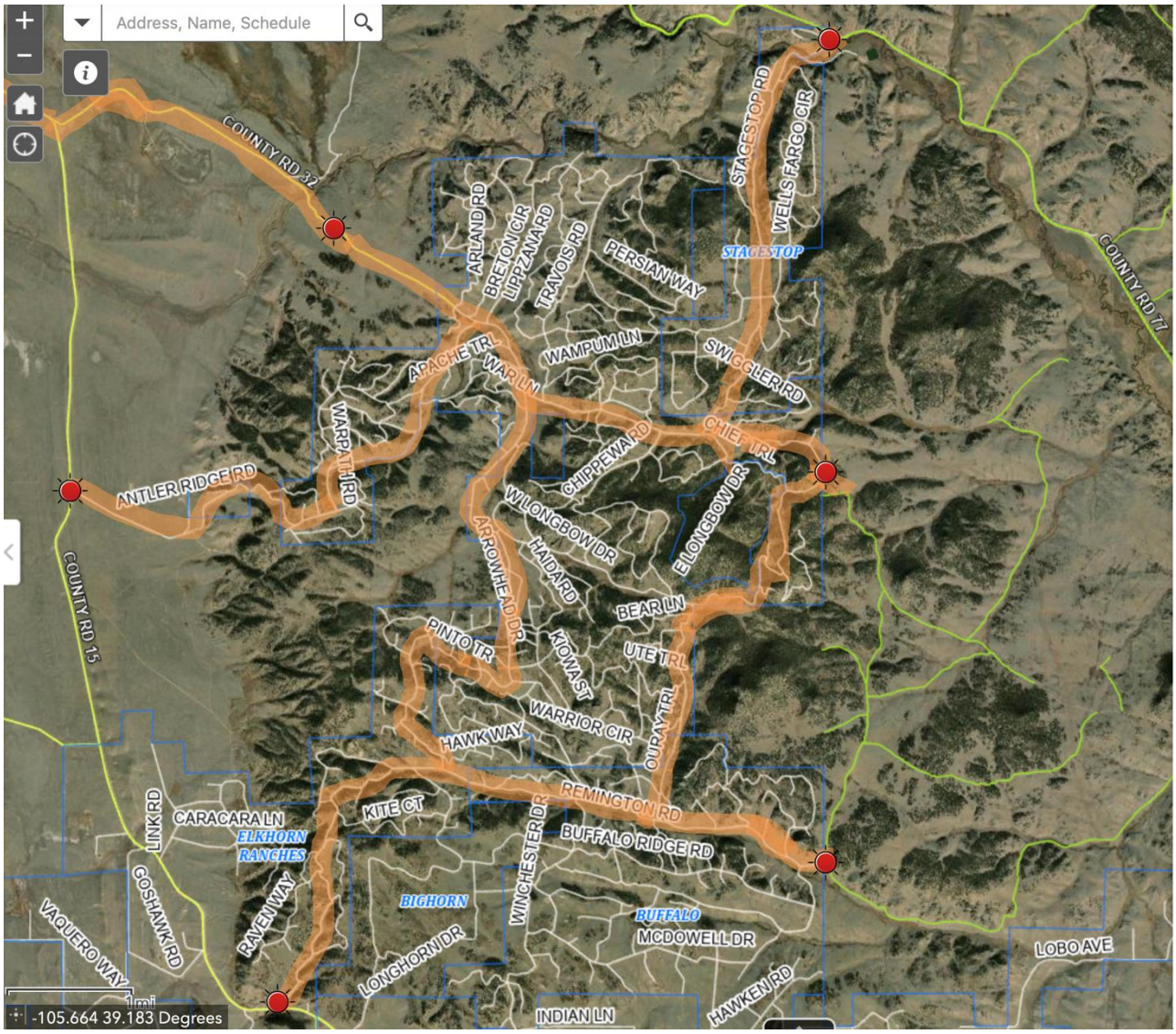
After ten years, dense thickets of young trees (regeneration) may become established, and these will need to be thinned. Not all regeneration should be cut since trees of various ages are important for forest diversity. Young trees in openings with adequate room to grow should remain. Regeneration that is likely to become ladder fuel or crowded by other trees should be cut. Depending on their objectives, landowners may want to consider removing some of the larger trees to make room for the younger ones.

7.0 Evacuation Routes

There are various evacuation routes to exit Indian Mountain. It would be good for all Indian Mountain residents to familiarize themselves with all of these routes in advance of any emergency situation presenting itself.

The exit points, as market by red sun symbols on the below map, are:

- Arrowhead Drive, which turns into Albino Rd. (County Rd. 32). Go straight at the Fire House to get to Hwy 285. Go left at the Fire House to take Elkhorn Rd (Cnty Rd. 15) south to Hwy 24.
- Stagestop Road, which dead ends onto County Rd 77. Go left to get to Hwy 285. Go right to get to Hwy 24.
- Antler Ridge Road, which dead ends onto Elkhorn Rd. (County Rd 15). Go right to get to Hwy 285. Go left to get to Hwy 24.
- Longbow Drive, which has an entry into the Pike National Forest (4WD only)
- Remington Road. Go right to get to Elkhorn Road (Cnty Rd 15). Go left and make a left onto Pin Fire to get to the Pike National Forest (4WD recommended).



8.0 Goals, Objectives and Planned Actions

This CWPP for the Indian Mountain subdivision is intended as a first step in the wildfire mitigation planning process and takes into account the survey results received. The next steps necessary are outlined below. Many of these steps are overlapping and occur throughout the years ahead. Priorities are identified for completion of each action, ranging from A for highest priority to C for moderate priority. The intention is to accomplish all of the actions that are identified herein.

Goal I - Using this Plan

Objective 1.1: Provide a basis for the management of priorities established by this plan.

Establish a standing Community Wildfire Protection Committee (CWPC) with broad representation to manage activities that support the priorities and ongoing implementation of this CWPP. (A)

Objective 1.2: Within the CWPC, develop protocols and outline responsibilities for wildfire prevention in Indian Mountain in the future.

Establish "lead" for education, information and activities, implementation planning and funding, and contacts for collaboration with various agencies and neighboring communities. (A)

Use responses and contact information obtained in the January 2011 Indian Mountain survey to guide CWPC actions and to involve community in implementation goals and actions. (A)

Objective 1.3: Maintain continuity and progress.

Convene standing CWPC at least every 6 months to track and update the plan. (B) Report to IM community by means of website, newsletter and at meetings such as IMPOA annual meeting. (B)

Review and update CWPP every third year beginning in 2024 and develop new priorities as necessary. (B)

Goal II - Information and Education

Under the management of the CWPC there are several topics that would provide necessary guidance for property owners. A major component of this plan emphasizes offering this information and educational opportunities to IM property owners. Survey responses indicated these three areas as items of interest.

Objective 2.1: Provide sources for wildfire prevention information that are readily available to all Indian Mountain property owners.

46% - More information to reduce risk
46% - Information regarding emergency planning
25% - Want to know about treating vacant lots

- Contact sources of educational materials related to wildfire (i.e., Colorado State Forest Service, Firewise, US Forest Service) and select an assortment of materials that is pertinent to Indian Mountain. (A)
- Obtain and maintain a supply of key publications at the new Indian Mountain community center, including a list of web-based resources. Notify property owners of the availability of these publications. (B)
- Distribute copies of key publications to residents and new property owners at the July 4 annual picnic, Dumpster Days, Community Garage Sale and other community functions every year. (B)
- Place articles regarding current fire prevention tips on Indian Mountain websites and update regularly. (A)
- Develop an interpretive display for the Indian Mountain Community Center or outdoor kiosk and advertise location on the website and in newsletters. (B)

Objective 2.2: Provide active educational opportunities for property owners.

- Host a Wildfire Protection open house at the IMMD community center on alternating years. Include demonstration projects when possible. (A)
- Create a "fire prevention moment" to describe this CWPP, show fire protection documents or videos and make motivational talks or demonstrate protection measures. (B)

- Plan and host at least one collaborative educational project each year, including one on mountain pine beetle/spruce budworm and one on emergency preparedness. (C)

Goal III - Fuel Reduction Implementation

This plan includes project proposals to mitigate high-risk areas in the subdivision and involves collaboration with the owners of public and private properties that adjoin the subdivision. The intent is to create an attitude of continuous improvement and maintenance of fire prevention among the owners of property in Indian Mountain.

Objective 3.1: Create fuel reduction demonstration sites.

- The data obtained during the creation of this plan were used to identify areas of Indian Mountain Park that have extreme fuel hazards (see map below). These areas provide an opportunity for IMMD to develop a program for demonstrating fuel reduction on Indian Mountain Park lands adjoining private lots.

  22% - Interested in participating in community projects
  17% - Interested in volunteering
  33% - Want community fire breaks established
  21% - Need information about physical or financial assistance

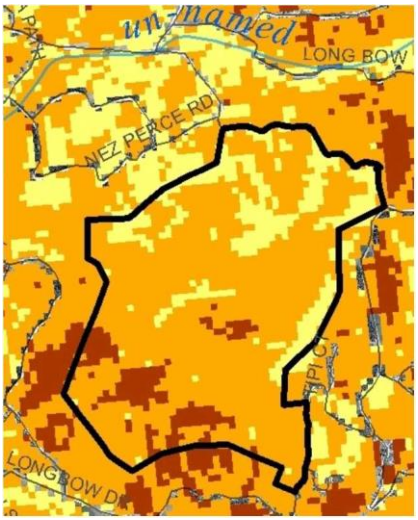


Fig. 8 Indian Mountain Park "hazard" areas, excerpted from Fig. 4.4

- These following projects were completed between 2011 – 2024:
  - April 2011: First project in cooperation with CUSP and Fairplay, CO schools to demonstrate thinning of a one-acre plot on Indian Mountain Park land using CUSP and volunteer labor and CUSP chipper.
  - Fall 2011: Second project. Accomplished by the CWPC:
    - Contacted the CSFS for help in designing the project, e.g., location, size and treatment method;
    - Obtained funding for project and bids for contracted work. Consider use of mechanized treatment of 15 to 30 acres; and
    - Promoted the project throughout the community to increase public awareness.
  - In conjunction with JCFPD, obtained grant funding to assist in the creation of defensible space in 2012 and 2013 on 6 residences in highest risk areas whose owners need assistance.
  - Summer 2024:
    - Mitigated 20 feet on each side of all hiking trails in Indian Mountain Park and improved accessibility for fire engines to access the park and chipped and spread the slash.
    - Built a logging road on the North side of Indian Mountain Park and removed 10 acres of dead and dying trees and masticated the slash.

Current goals:

- Continue to provide chipping for property owners to reduce and thin burnable materials.
- Continue to provide the IMMD burn pit for property owners to dispose of slash.
- Continue to remove dead and dying trees in Indian Mountain Park.
- Educate property owners with Firewise information.
- Maintain Firewise Status for community.

Objective 3.2: Funding Opportunities

- Pursue eligible grants associated with all fire prevention and fuel reduction priorities at IM. Request assistance from IMMD, IMPOA and property owners for funds to match federal and state grants where appropriate. (A)
- Maintain and refer to a list of interested property owners including those that are in need of financial or physical assistance to reduce wildfire hazards on private property. (A)

Objective 3.3: Provide assistance for seasonal fuel reduction projects.

- Fabricate and install signs at primary entrances to IM to mimic fire danger postings of JCFPD; assign responsibility to interested property owner(s) for maintaining the signs current with the postings of JCFPD. (A)
- Coordinate and publicize community "chipping" dates at least once a year to provide on-site slash treatment. (A)
- Coordinate and publicize community "trailer" dates at least once a year to assist in moving slash to burn pit with community trailer and volunteer private vehicles and trailers. (A)
- Conduct collaborative fuel reduction project on adjoining lots having multiple owners as often as possible with available funding and volunteer labor. (B)

Goal IV - Collaboration and Communication

Working together as a community, with neighboring subdivisions and public land managers, mitigation efforts have far-reaching results. The survey was the first step in reaching out to the community to discover its value, concerns, and needs regarding wildfire protection planning. Continued communications on current conditions, mitigation opportunities, and property owners' values are essential.

Objective 4.1: Create and maintain various levels of communication with agencies and property owners.

- Contact public land managers in the area (Colorado State Land Board, BLM and USFS) to establish and maintain a collaborative working relationship regarding fire mitigation activities on lands adjoining Indian Mountain. (A)

  41% - See the need to protect historic sites
  14% - Need information regarding fire department access to property
  46% - Want information about emergency planning

- Contact CSFS, USFS, BLM, JCFPD, Park County (Sheriff, Planning, etc.), IMMD, IMPOA,

Buffalo, Elkhorn and Stagestop Subdivisions to establish points of contact for ongoing cross boundary fire prevention measures in the Indian Mountain region. (B)

- Maintain list of volunteers willing to assist in projects on properties in the subdivision. (A)
- Send list of residents that want to know more about making their property more accessible to the JCFPD. Allow fire district to manage this request. (A)
- Contact those wanting to know about the development of an emergency plan and historical site preservation and invite them to set up committees to address these issues. (B)
- In alternate years, survey property owners who have made mitigation efforts on their property to deterine the extent of voluntary mitigation. Create and maintain a lot map showing mitigation efforts within the subdivision. (B)
- Continue to pursue the installation of a fire cistern at the location of the old RV dump station utilizing the existing well. (A)

9.0 Summary

The goals and objectives outlined in this CWPP are the first steps to preserving the beauty and value of Indian Mountain property and improving the safety of the community as a whole. A CWPP does not compel any owner to take action but does provide the foundation and information necessary for owners to choose which actions to take. As time passes and objectives are met or changed, this document will be re-evaluated and updated to meet the needs and goals of the community.