Quartz Creek

Community Wildfire Protection Plan

2015

Signature Page

The following agencies participated in the development of this plan and mutually agree to its contents.

_____	_____
Colorado State Forest Service	Date
_____	_____
Division of Fire Prevention and Control	Date
_____	_____
Gunnison Fire Department Chief	Date
_____	_____
Gunnison County Sheriff	Date
_____	_____
Gunnison County Emergency Manager	Date
_____	_____
Bureau of Land Management	Date
_____	_____
Quartz Creek HOA	Date
_____	_____
United States Forest Service	Date
_____	_____
West Region Wildfire Council	Date

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Quartz Creek: Community Wildfire Protection Plan

Introduction

The Quartz Creek (QC) Community Wildfire Protection Plan (CWPP) builds off of the Gunnison County CWPP to detail the community's specific risks to wildfire. This plan should be viewed as an addendum to the Gunnison County CWPP.

The Need for a Community Specific CWPP

In an effort to reduce potentially catastrophic outcomes from wildfires, Congress passed the Healthy Forests Restoration Act (HFRA) in 2003 which aimed to encourage communities to better prepare for wildfire events while addressing forest health initiatives. Among other outcomes, HFRA encouraged communities in the 'Wildland Urban Interface' (WUI) to plan ahead for wildfires by identifying at risk areas and outlining specific risk reduction actions. Simply put, the wildland urban interface is "the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel" (National Wildland Course Guide).

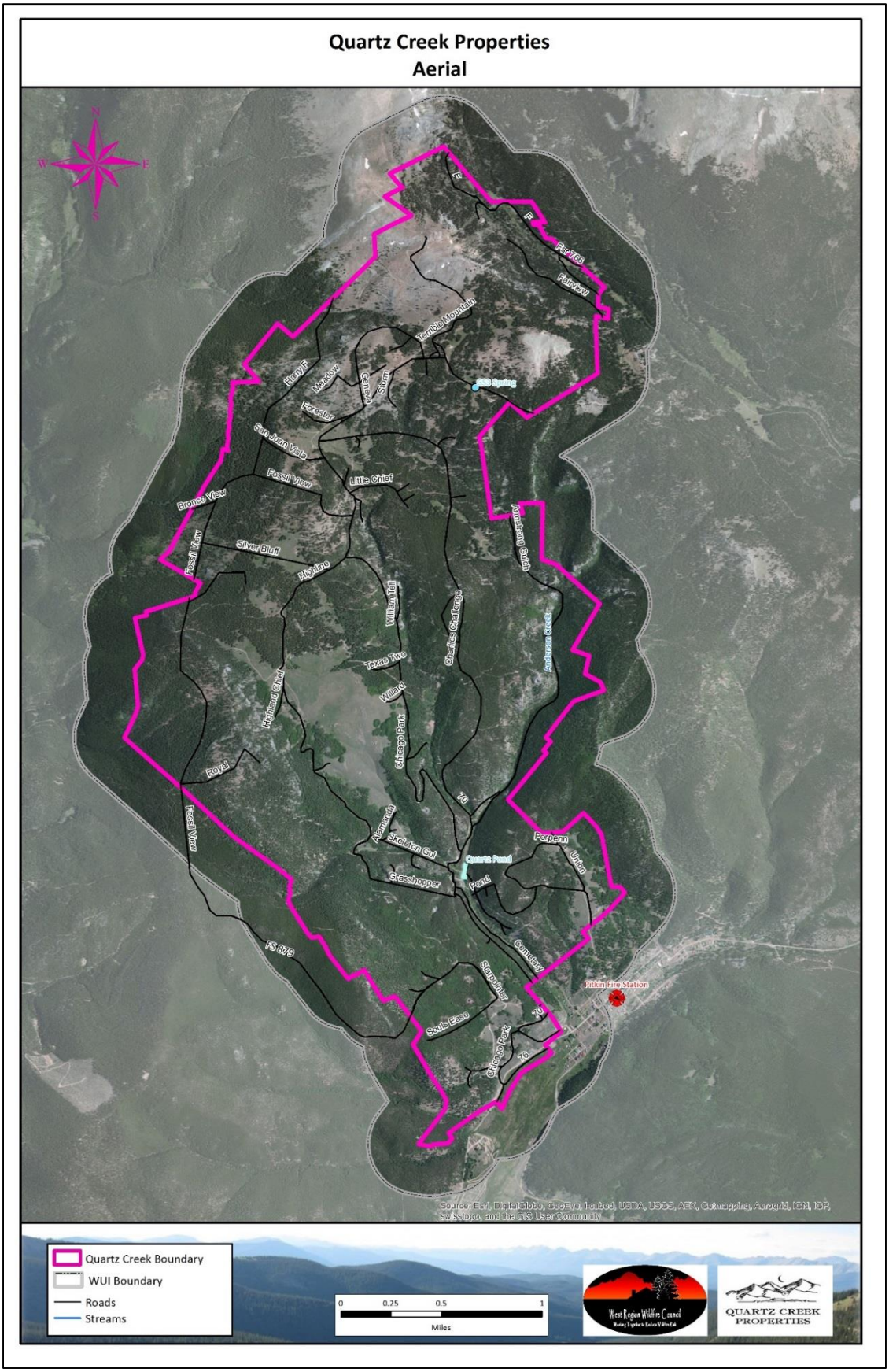
To compliment HFRA, The Colorado Senate passed Senate Bill 09-001 (SB 09-001) which required all Colorado Counties to have completed a Community Wildfire Protection Plan by June 1, 2011. Furthermore, the Colorado State Forest Service (CSFS) came up with a set of 'Minimum Standards' which outlined specific details required of CWPPs. Gunnison County met SB 09-001 and CSFS Minimum Standards requirements by completing their County-wide plan in June of 2011.

Before the completion of the County plan, Quartz Creek had expressed interest in completing a community specific CWPP. As part of this effort, the Quartz Creek Property Owners Association designated select members of the community to head up the 'wildfire mitigation and education' effort in the community. Quartz Creek felt that a community specific CWPP would help provide its residents with an educational tool that was specific to each homeowner in the community. Quartz Creek, Gunnison Fire Protection District and other planning stakeholders felt that a critical analysis of the community's structures, fuel type, access points and potential fire behavior would further prepare the community and responding firefighters in the case of a wildfire event.

Quartz Creek: Wildland Urban Interface

As a requirement of Community Wildfire Protection Plans, a specific wildland urban interface (WUI) boundary must be defined. Given the community's size (129 primary structures), remote location, terrain and fuel type, the planning stakeholders decided that for the purposes of this CWPP, the wildland urban interface boundary is one quarter mile beyond the Quartz Creek community boundary (as identified in the Gunnison County CWPP). The map on the following page outlines the QC community boundary as well as the WUI boundary as identified.

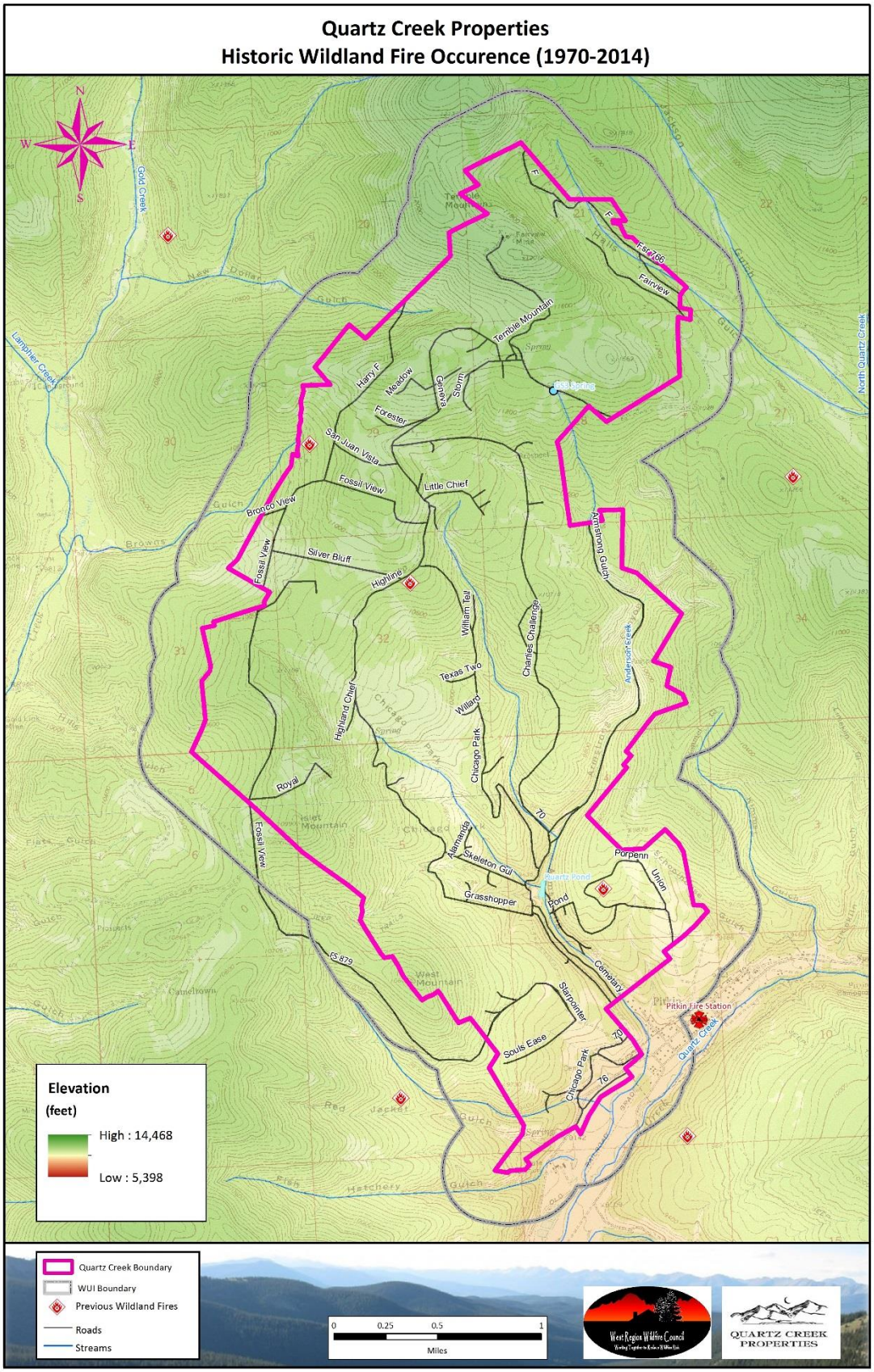
Aerial Map: WUI Boundary



Historic Fires

Records indicate that from 1970 to 2014 there have been approximately 30 wildfires within close proximity to the Quartz Creek community boundary. The map on the following page shows fire occurrence within the first few miles of the community, but when viewed over a larger scale, additional occurrences within close proximity are visible. The size of these reported wildfires varies from single tree events to larger acreage. The National Fire Incident Reporting System (NFIRS) is a nationwide database that tracks fire events. While subject to certain limitations, this system provides data on fire history, size and ignition source for fires that have been reported. Please see the map on the following page outlining the approximate location of historical fires within or within close proximity to the Quartz Creek community.

Historic Wildland Fire Occurrence Map



Values at Risk

In addition to the land values and structure values at risk, the Gunnison County Community Wildfire Protection Plan outlines Areas of Special Interest (ASIs) in Gunnison County that could be impacted by a wildfire event. As defined in the Gunnison County plan, Areas of Special Interest are "places within [a] CWPP study area that could be threatened from wildfire and have a social or economic value which is not based on residential development… Frequent candidates for ASIs include recreation areas such as parks, reservoirs, ski areas and defined open space." Some of the ASIs outlined in the Gunnison County plan are the Taylor Reservoir, Crested Butte Ski Area, Blue Mesa Recreation Areas and the Curecanti National Recreation Area. Please reference the County CWPP under the 'Areas of Special Interest' section for more information and locator map.

Additionally, there are several values within or near the Quartz Creek community that could have significant impact on the community if they were to be damaged by wildfire.

- Town of Pitkin
- Pitkin Cemetery
- Quartz Creek Road System

The following table was taken from the Draft 2012 Gunnison County Multi-Hazards Mitigation Plan and shows the value at risk from wildfire in the County.

Population and Structures at Risk by Community Wildfire Protection Plan Community

CWPP Community	Community Hazard Rating	Structure Count	Building Value	Building Contents	Total Value
Almont	H	123	$30,971,505	$16,594,446	$47,565,951
Antelope Hills	H	91	$10,217,594	$5,108,797	$15,326,391
Arrowhead	VH	276	$66,107,699	$33,433,911	$99,541,610
Blue Mesa Subdivision	H	78	$18,197,386	$9,064,399	$27,261,785
Cranor Acres	M	19	$5,674,885	$2,837,443	$8,512,328
Crested Butte South	H	572	$196,403,904	$99,766,569	$296,170,473
Danni Ranch	H	8	$7,006,005	$3,503,002	$10,509,007
Dos Rios	M	389	$83,937,992	$45,037,912	$128,975,905
Evergreen	H	29	$10,581,539	$5,290,770	$15,872,309
Gold Basin	H	92	$17,911,325	$8,955,662	$26,866,987
Gothic	VH	1	$579,969	$579,969	$1,159,938
Gunnison Highlands	VH	32	$3,155,013	$1,820,852	$4,975,865
Lake Irwin	E	3	$178,941	$89,470	$268,411
Marble & Upper Crystal River	H	236	$59,158,130	$30,616,492	$89,774,622
Mt Crested Butte	M	2,233	$698,225,676	$361,326,500	$1,059,552,176
North Valley Subdivision	M	32	$6,207,802	$3,103,901	$9,311,702
Ohio City	H	60	$8,696,514	$4,534,094	$13,230,608
Pitkin	H	197	$27,695,106	$14,272,057	$41,967,163
Quartz Creek	E	133	$17,142,112	$8,541,278	$25,683,391
Rainbow Services	H	54	$9,351,401	$4,675,701	$14,027,102
Red Mountain	H	23	$19,919,135	$11,030,362	$30,949,497
Skyland	H	416	$201,856,985	$101,332,082	$303,189,067
Spring Creek	VH	93	$22,238,038	$11,161,877	$33,399,915
Star Mountain Ranch	H	11	$9,609,194	$9,552,105	$19,161,299
The Reserve	H	3	$5,569,898	$2,784,949	$8,354,847
Tin Cup	H	78	$6,859,479	$3,600,748	$10,460,227
Tomichi Heights	M	65	$13,669,796	$7,776,506	$21,446,302
Town of Crested Butte	M	1,036	$369,436,620	$220,407,644	$589,844,264
Trappers	E	40	$46,493,474	$23,119,419	$69,612,893
Washington Gulch	H	134	$68,626,814	$34,254,742	$102,881,556
White Pine	VH	47	$2,933,905	$1,466,952	$4,400,857
Wilderness Streams	VH	73	$25,232,664	$12,772,417	$38,005,081
Totals		**6,678**	**$2,069,849,501**	**1,098,413,028**	**$3,168,259,529**

Source: Gunnison County Multi-Hazards Mitigation Plan

The 2012 Gunnison County Multi-Hazard Mitigation Plan states that $17,142,112 of the county's $3,168,259,529.00 in estimated value at risk exists within the Quartz Creek community. The Gunnison County Multi-Hazard Mitigation Plan also points out that a large portion of Gunnison County residents are seasonal. That is true in the Quartz Creek community as most residents are present only during the summer months.

Historic Values at Risk

There are a few notable historic structures within the Quartz Creek community. The surrounding area is rich in mining history and therefore, there are historic cabins and structures at risk. Notably, the Silver Islet Mine is "possibly the most intact remaining structural artifact of mining history in the Pitkin Area." Accessible from the Quartz Creek Road, the Silver Islet Mine processed silver ore. For more information please visit Pitkin Adventures: www.pitkincolorado.com

Silver Islet Mine- Main building (*Source: http://www.pitkincolorado.com/Adventure/Glen%20K/SilverIslet.html)*

Additional historic values within or near the Quartz Creek community that could have significant impact on the community if they were to be damaged by wildfire:

- Numerous Historic mining cabins
- Historic mining equipment on Chicago Park Road
- Historic Campbelltown5
- Fairview Fire Lookout Tower:

  Accessible from Quartz Creek, the tower is one of two standing historic fire towers in Colorado. "In 1910 Forest Ranger, William Kreutzer commissioned the fire lookout station at the top of Fairview Peak. The station provided a watchman with clear views of both the Pitkin district and the Tincup district. However, at an elevation of 13,214 feet, the station took frequent hits from lighting and was deemed unsafe for the watchmen. After 1914, the Forest Service continued to use the structure for a remote controlled relay station for their radio communications. The building is made of stone and has a metal roof." More information: http://www.firelookout.org/cohost-co/fairview.html

Fairview Fire Tower (*Source: http://www.firelookout.org/cohost-co/fairview.html*

Gunnison Fire Protection District Profile

The Gunnison Fire Protection District was started in 1974 and has since taken a very active stance on wildfire and the protection of its residents across the 3,300 square miles it serves. The District has two employees, an Assistant Fire Marshall and a Maintenance Technician. The staffing for all responses within the District comes from the Gunnison Volunteer Fire Department. The Gunnison Fire Protection District also works closely with the City of Gunnison and the Fire Marshal's Office.

The Gunnison Volunteer Fire Department is run on a volunteer basis. As of January 2015, the department has 30 active members. There is a Chief, one Assistant Chief, two Captains and four Lieutenants. One of the officers is always on duty; and all other members carry pagers for response.

The Gunnison Volunteer Fire Department shares station space with the City of Gunnsion, the Gunnison Fire Protection District and Gunnison County. Each entity has apparatus and equipment stored at the station. Additionally, Arrowhead, Ohio City, Pitkin and Sargents have their own groups of volunteers and apparatus.

The Gunnison Volunteer Fire Department is organized and equipped to fight fires in the wildland urban interface. The Department provides fire suppression for structural and wildland fires, as well as rescue service for vehicles and structures. Fire safety education, fire investigations and inspections are handled through the City of Gunnison Fire Marshall's Office.

Gunnison Volunteer Fire Department is also equipped to assist neighboring districts, such as Crested Butte Fire Protection District, with incidents. The Gunnison Fire Protection District has mutual aid agreements with Crested Butte, Montrose and Arrowhead Fire Districts/ Departments. Each member of the Gunnison Volunteer Fire Department is equipped with both structure firefighting gear and wildland firefighting gear.

Training is an essential part of ensuring firefighter safety. The Department holds trainings once a week on subjects that cover both structure and wildland fire. In addition to regularly scheduled training opportunities, firefighters can participate in events throughout the year, as well as attend fire academies.

Gunnison Volunteer Fire Department

Gunnison Fire Department Equipment

Title	Description
Engine 33	Engine 33 was purchased new in 1995 and is a 4-wheel drive structural engine, carries 750 gallons of water and has a 1250 gpm pump. It was built by Smeal on an International chassis. It carries 3 firefighters, has a cascade air system and carries 12 SCBA.
Engine 24	Engine 24 was purchased in 2005 as an urban interface engine. It is an E-One built on an International chassis. It carries 750 gallons of water, 30 gallons of class A foam and has a 1250 gpm pump with pump and roll capability. It is 4 wheel drive and carries 2 firefighters. Rural 2 carries both wildland and structural firefighting equipment.
Tender 26	Tender 26 is a 4 wheel drive, 1550 gallon tender with pump and roll capability. It carries 3 firefighters. It was built by Welch on an International chassis.
Brush 27	Brush 27 is a Type 6 engine build on a 2009 single cab Chevrolet 3500 chassis with a Darley skid mount. It carries 3 personnel, 250 gallons of water and 10 gallons of class "A" foam.
Utility 29	Utility 29 is a 2000 Ford F-250 used for carrying additional personnel to a fire scene. It also carries Hurst hydraulic rescue tools so it can operate as a backup rescue when needed.
Tender 25	Tender 25 is a 2006 Smeal on a Freightliner chassis 3000 gallon tender. It carries 3 personnel.
Brush 28	Brush 26 is a Type 6 engine built on a 2005 single cab Chevrolet 3500 chassis with a Darley skid mount. It carries 3 personnel, 250 gallons of water and 10 gallons of class "A" foam.
Rescue 21	Rescue 21 is light rescue built on a 2004 Ford F-550 chassis. It carries 5 personnel, a large compliment of stabilization and rescue tools as well as having a 30 gallon CAFS unit.
Rescue 22	Rescue 22 is a medium rescue built by SVI on an International chassis. It carries and even larger compliment of stabilization and rescue tools than Rescue 21 as well as having air and light capabilities and a full complement of RIT tools. It carries 5 personnel and SCBA for all but the driver.
Fire Officer 1	Fire Officer 1 is a 2007 Chevrolet Tahoe that is set up to be a mobile command post. It allows the duty officer to respond ahead of apparatus to get a size up and staging planned prior to arrival of other responding units.
Fire Marshall 2	Fire Marshall 2 is a 2007 Chevrolet 1500 that has the ability to transport 5 personnel to any scene if the need arises.

Pitkin Volunteer Fire Department

Pitkin Volunteer Fire Department (PVFD) is within the Gunnison Fire Protection District and provides first response to the Town of Pitkin and surrounding areas. PVFD has mutual aid agreements with Gunnison Fire Protection District as well as the Ohio City Volunteer Fire Department. The PVFD has ten active department volunteers and trains twice monthly between May and October.

Pitkin Volunteer Fire Department Equipment:

Title	Description
Engine 41	1000 gallon pumper
Engine 42	500 gallon pumper with foam capability
Brush 43	300 gallon wildland unit

Creating a CWPP: The Planning Process

Quartz Creek contracted the West Region Wildfire Council (WRWC) to complete their CWPP. After an initial planning stakeholder meeting (via conference call) involving the Quartz Creek Wildfire Mitigation Advocate (WMA), Quartz Creek HOA Board members, West Region Wildfire Council representatives, Colorado State Forest Service as well as Gunnison County Emergency Management, the planning process for the QC CWPP began to unfold.

Stakeholder Group

NAME	AGENCY
Terry Davis	Quartz Creek Properties HOA President
Steve Fraizer	Quartz Creek Properties Fire and Safety Chair
Dennis Spritzer	City of Gunnison Fire Marshall
Hugo Ferchau	Gunnison Fire Protection District
Lilia Falk	West Region Wildfire Council
Damon Lange	Colorado State Forest Service
Sam Pankratz	Colorado State Forest Service
Luke Odom	Division of Fire Prevention and Control
Scott Morrill	Gunnison County Emergency Management
Chris Barth	Bureau of Land Management
Pat Medina	United States Forest Service

Community Involvement

- **Stakeholder Conference Call (April 9th, 2014)**
  The conference call was an opportunity for planning stakeholders to discuss the planning process and intended outcomes of the QC CWPP. During this call, the West Region Wildfire Council reviewed CWPP planning requirements as outlined by the Colorado State Forest Service Minimum Standards. The group also discussed the details of the parcel specific wildfire risk assessment. The group also reviewed a course of action for the public input process while outlining the involvement from the HOA members in the planning process. A date to give a presentation at the Annual HOA meeting was set for July 3rd.

- **Letter to Residents (sent June 18th, 2014)**
  The West Region Wildfire Council worked in coordination with the Quartz Creek HOA board to send direct mailings to each resident within the QC community. This mailing included information about the upcoming CWPP planning process and asked residents to sign up for the wildfire risk assessment. Additionally, the letter invited residents to the Annual HOA meeting to learn more about the development of the CWPP. The QC HOA also emailed electronic copies of the letter to their mailing list.

- **Article in the Gunnison Times (June 19th, 2014)**
  Staff writer Alan Wartes summarized all the wildfire risk reduction efforts that the Quartz Creek Community continues to support. The article gives a brief description of the Gunnison County Community Wildfire Protection Plan and outlines some details about the wildfire risk assessment and 'community' CWPP. See full article below.

- **Quartz Creek Property and Homeowners Association (July 3rd , 2014)**
  On July 3rd, the WRWC Gunnison County Coordinator and other planning stakeholders attended the QC Annual HOA Meeting to give a presentation about the upcoming CWPP planning effort. The presentation highlighted the wildfire risk in the Quartz Creek community, detailed the planning process for the CWPP and asked homeowners to participate in the 'wildfire risk assessment' by providing the WRWC with permission to assess homes within the community.

Quartz Creek HOA readily provides resources to homeowners about wildfire risk and steps they can take to reduce their risk to wildfire. Source: www. *http://www.pitkincolorado.com/QCPOA/*

Letter sent to Quartz Creek residents

June 18, 2014

Dear Quartz Creek Resident,

We have recently seen the devastating effects of wildfire in Colorado communities. We do not want to see homes destroyed by a wildfire in the Quartz Creek community. Therefore, the Quartz Creek POA, Gunnison County, Gunnison Fire Department and the West Region Wildfire Council (WRWC) are working together to help homeowners reduce their risk from wildfire.

Wildfire Risk Analysis
Quartz Creek POA is working with WRWC to complete a wildfire risk analysis for each primary structure within the District. You are receiving this letter because your address has been identified as being located in an area at risk to wildfire. The Gunnison County Community Wildfire Protection Plan, which identifies areas at risk, can be found at: www.COwildfire.org/

This summer, WRWC and QC POA will be conducting a detailed wildfire risk analysis to determine how residents in the community can be better prepared in the event of a wildfire. We encourage you to sign up and participate in the **FREE** wildfire risk analysis of your home and property. If you would like to sign up for the analysis, please email or call Ben Brack, West Region Wildfire Council Gunnison County Coordinator.

Public Meeting:
QCPOA and the WRWC Gunnison County Coordinator will be hosting a public meeting on **July 3rd at 3:00pm, immediately following the QCPOA Annual Meeting.** The meeting will be held at the Newcomb Community Center in Pitkin, CO (801 State Street) to give an overview of the wildfire risk analysis process. We invite you to join us and ask any questions you may have.

If you have any questions about the meeting or wildfire risk analysis, please call Ben Brack (719)588-9888, or email at wrwc.brack@gmail.com.

Sincerely,

Terry Davis	Scott Morrill	Lilia Falk	Dennis Spritzer
Quartz Creek POA	**Gunnison County**	**West Region Wildfire Council**	**Gunnison Fire Dept.**
Board President	Emergency Management	Director	Fire Marshal

Property owners near Pitkin taking wildfire precautions 6-19-14

Quartz Creek subdivison utilizing grant for project

Alan Wartes
Times Staff Report

Bruce Saunders discusses wildfire mitigation work near his home in the Gold Basin subdivision in 2009. The Quartz Creek development near Pitkin is the latest neighborhood in the wildland-urban interface in Gunnison County to pursue a Community Wildfire Protection Plan.

Times file photo

The countryside all across the Upper Gunnison River Basin is greener than it has been for several years, thanks to a relatively wet winter and spring. Yet, the members of the Quartz Creek Property Owners Association have not forgotten a sobering fact of life in their neck of the woods that has grown steadily more urgent in recent years — the threat of wildfire.

This summer, the association will complete a Community Wildfire Protection Plan (CWPP), a comprehensive assessment of the subdivision's specific vulnerabilities and a recommendation of actions to mitigate those risks.

The work will be done by staff of the West Region Wildfire Council (WRWC), a non-profit consortium of federal, state and local agencies and governments. A WRWC grant will pay for the $11,000 project.

The Quartz Creek development, established in the 1970s, consists of 52 miles of private roads servicing more than 400 properties on 4,000 acres of historic mining claims near Pitkin. The 10-acre tracts range in elevation from roughly 9,200 feet close to town to near tree line around 12,000 feet.

In 2011, Gunnison County completed a county-wide protection plan which identified the Quartz Creek development as an area of "extreme" fire hazard. It is a designation they share with only two other subdivisions in the county — Lake Irwin and Trapper's Crossing near Crested Butte.

"That was sort of the 30,000-foot view of the whole county to assess our vulnerability to wildfire," said Gunnison County Emergency Manager Scott Morrill. "It identified those areas that were in need of closer attention and Quartz Creek is near the top of that list."

Among many factors that contribute to a community's hazard rating, wildfire planners pay particular attention to accessibility and how quickly residents can be evacuated in the event of a fire. Roads must be sufficient to allow traffic to move in both directions.

"We have been looking at doing this for several years now," said Terry Davis, president of the Quartz Creek association. "Since the county did their own CWPP a few years ago a lot of our residents have been working to create defensible space around their homes. We have also been doing some road projects and clear cutting projects trying to make it easier for residents to get off the mountain at the same time that firefighters are trying to get on the mountain."

In addition to taking a community-wide view, the CWPP will assess individual properties within the development.

"Every residence will get a rating as to what their fire hazard is," said Davis. "There is nothing mandatory about any of this, but we are hoping it will provide an incentive for our property owners to start doing mitigation projects on their property."

Morrill believes an increase in the number of dramatic and costly fires in Colorado in recent years has made homeowners more aware of the risks — and more amenable to taking appropriate actions to prepare. Prolonged drought and shifting weather patterns are leading to increasingly volatile and unpredictable wildfire behavior, he said.

"I tell homeowners, the time for mitigation and planning is now, not when you smell smoke in the air," Morrill said. "It doesn't take much time or a whole lot of money to start planning, but it sure makes a big difference in the event of a fire."

Grants for fire protection planning and mitigation — for subdivisions as well as individual homeowners — is available through the WRWC. For more information, visit www.cowildfire.org.

- **Draft Plan:**
  On February 9, 2015 the West Region Wildfire Council and the Quartz Creek Properties HOA sent an email to all QC residents detailing the completion of the draft QC CWPP. The email included information about:
  - The website where the draft plan could be accessed: http://www.cowildfire.org/2015/02/05/quartz-creek-cwpp-open-review/
  - the opportunity to join a conference call where questions about the draft plan could be answered; and
  - submitting comments or feedback on the draft plan.

  Additionally, all planning stakeholders were sent information regarding the draft plan and the request for comments and or planning feedback.
- **www.COwildfire.org:**
  Quartz Creek utilized the West Region Wildfire Council's website (www.COwildfire.org) to post a draft copy of the plan. QC residents were directed to the website to download and review a copy of the draft plan for comments.
- **Draft Plan Comments:**
  The West Region Wildfire Council accepted comments on the draft plan for two weeks following the email sent to Quartz Creek residents. Comments were accepted in hard copy form, via fax, over the phone and though email.
  Draft Plan Comments:
  -Request from CSFS Forester to add language about Spruce Beetle
  -Question from Quartz Creek Board Member about parcel boundary alignment on maps
  -Question from Quartz Creek resident about the feasibility of labeling parcel ownership by last name on the maps in the document. Follow up question about changing risk ratings based on risk reduction actions that are completed over time.
- **Final CWPP Presentation (Scheduled for July 3rd 2015)**
  Most of the residencies in Quartz Creek are seasonal and are mainly occupied during the summer months only. Winter access is limited to snowmobiles and 4-wheel drive. Since a majority of the homeowners were not present at their homes in Quartz Creek when the plan was completed, the WRWC agreed to give a final plan presentation at the 2015 Quartz Creek HOA Annual Meeting.

Wildfire Risk Assessment

The wildfire risk assessment is the foundation for the Quartz Creek CWPP. The parcel specific wildfire risk analysis builds off of research based on the Home Ignition Zone concept developed by Jack Cohen at the Fire Science Lab in Missoula, Montana and the latest research and findings from the Institute for Business and Home Safety (IBHS) on factors that play into a home's survivability during a wildfire event.

The wildfire risk assessment used in the Quartz Creek CWPP takes advantage of the science used to understand the factors contributing to home ignition during wildfires and adds additional, locally-specific components that influence home survivability. The wildfire risk assessment provides a baseline understanding of wildfire risk – as well as contributes to an understanding of the social science of risk perception and mitigation behaviors of the Quartz Creek community. The West Region Wildfire Council has a strong partnership with researchers and is a part of a Wildfire Research group called **WiRe.** This group is an interdisciplinary research collaboration and brings diverse expertise in economics, sociology, and wildfire risk mitigation to a multiyear research project on homeowner wildfire risk mitigation and community wildfire adaptedness.

The purpose of the parcel specific wildfire risk assessment is to give each individual homeowner an educational tool to help them be better prepared in the event of a wildfire. The results of the parcel specific assessment provide a visual depiction of the risk ratings and give each homeowner a list of specific recommendations to implement in order to reduce their wildfire risk.

In the beginning of the CWPP development, Quartz Creek POA and the WRWC asked residents to sign up to receive the parcel specific wildfire risk assessment. Residents were also given the opportunity to make an appointment with WRWC staff and a representative from Quartz Creek POA to be present during the assessment of their home. A few homeowners took advantage of this opportunity and were given a step by step assessment of their wildfire risk. Homeowners who signed up to be present during the assessment had the opportunity to ask questions and look at specific risk factors on their property.

All primary homes were assessed for wildfire risk between August 22nd and September 10th 2014. . Only primary residential structures were given consideration; out-buildings were not included in the wildfire risk assessment.

Wildfire Risk Assessment Elements

All homes in the Quartz Creek community were reviewed using the following criteria:

- **Addressing:** Having correct, visible and reflective addressing is a crucial component to any type of emergency response effort. Smokey environments during a wildfire event reduce visibility. Reflective, contrasting addressing is much easier to see in such conditions.

- **Ingress/ Egress:** Knowing primary and secondary ingress/ egress routes is crucial for successful evacuation. Having more than one way in and out of your neighborhood reduces the risk of becoming trapped by a fast moving wildfire. Furthermore, fire department

knowledge of residential areas where there is only one point of access is a helpful tool in pre-planning for evacuation, suppression operations and firefighter safety.

- **Driveway Width:** It is important for firefighters to know that they can safely get apparatus in and out of a home's driveway. Driveway width analysis is a combination of approximate shoulder to shoulder measurement as well as the distance between overhanging obstructions and the driveway.

- **Dangerous Topography:** These are areas where wildfires can move quickly and increase in intensity. Steep chimneys and cliff edges are two examples of dangerous topography. A home's location relative to dangerous topography can largely affect its survivability during a wildfire event. Dangerous topography can have severe impacts on fire behavior over a given landscape.

- **Slope:** The slope category characterizes the *average overall* slope across the parcel where a home is situated. Homes situated on the steepest **slopes** (Greater than 45%) are exposed to higher wildfire risk.

- **Background Fuel:** The fuel type and density directly surrounding a home can affect the fire behavior in the particular area. This category focuses on the fuel on the land surrounding the property, whereas *Defensible* Space focus on the fuel on the property. Given varying weather conditions, grassy open meadows tend to be conducive to fast moving, yet low intensity fire behavior, whereas fire in a heavily forested environments can be much more intense. The community specific fire behavior maps provide further detail on how fuel loading and weather conditions impact fire behavior.

- **Defensible Space:** Defensible space is "an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure." Having defensible space is one of the "primary determinants of the home's ability to survive a wildfire" (CSFS Creating Wildfire-Defensible Zones: Fire-12). Whether or not a home has adequate defensible space is a factor that wildland firefighters take into consideration when deciding where to stage resources. It is also important to remember that during a large wildfire event, resources are often limited. Having defensible space can increase the survivability of a home without firefighter intervention.

- **Roofing Material:** A home's roofing material has been proven to be a primary factor in a home's survivability during wildfire event. Class A, non-combustible roof construction increases a home's survivability, whereas wood shake shingle roofing material increases a home's wildfire risk drastically.

- **Siding Material:** Whether a home's siding is made out of combustible material or a non-combustible material also effects survivability. Vinyl/ wood siding is more likely to fail or ignite than a heavy log, stucco or composite siding material.

- **Other Combustibles:** Firewood piles, patio or deck furniture, propane tanks and other combustibles near a structure can be factors that compromise a home's resistance to

wildfire. These materials are often found stacked under elevated decks which can cause the deck to ignite and compromise the structure.

- **Decks and Fences:** Decking and fencing material have proven to add potential vulnerability to a home's resistance to wildfire. Combustible fencing attached to a structure can become the conduit for a home to ignite. Well maintained wood deck can be less combustible than an unmaintained dry deck.

*NOTE: It is important to consider vulnerability points of the structure. When the wildfire risk assessment was completed, homes were assessed for their 'weakest' point. If a home's siding had both non-combustible material as well as wood siding, the home was considered to have 'wood siding' since the wood siding is a component that increases the home's risk to damage or loss from a wildfire.

Scoring

Each criterion in the wildfire risk assessment has an attached 'score' that corresponds directly with the elements' potential to compromise a structure during a wildfire event. In other words, elements that make a structure significantly more vulnerable to wildfire are given more weight when considering the wildfire risk. Roofing material and defensible space are the two most significant survey criteria and therefore carry the heaviest weight. The following pages show the wildfire risk analysis scoring sheet that was completed for each structure within the community.

Wildfire Risk Assessment Rating Key

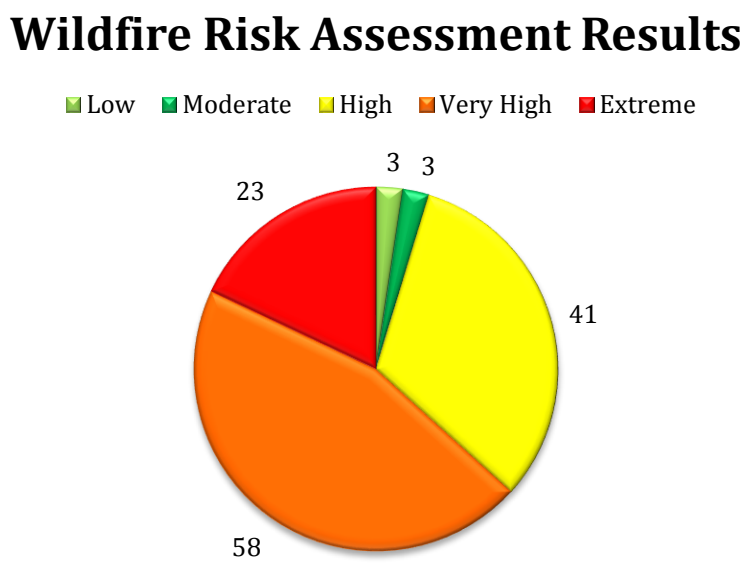
CATGEORY	OBSERVED CONDITION	POINTS
Address Visible	Posted and Reflective	0
	Posted, NOT Reflective	5
	Not visible from the road	15
Ingress / Egress	Two or more roads In/Out	0
	One road In/Out	10
Driveway Clearance	Greater than 24'	0
	Between 20'-24'	5
	Less than 20'	10
Distance to Dangerous Topography	Greater than 150'	0
	Between 50'-150'	30
	Less than 50'	75
Slope	Less than 20%	0
	Between 20%-45%	20
	Greater than 45%	40
Background Fuels	Light	25
	Moderate	50
	Heavy	75

CATGEORY	OBSERVED CONDITION	POINTS
Defensible Space	Greater than 100'	0
	Between 30'-100'	50
	Between 10'-30'	75
	Less than 10'	100
Roofing Material	Class A: Non-Combustible (Tile, Metal, Asphalt)	0
	Class B or C: Combustible (Wood)	200
Building Exterior	Non-combustible	0
	Log, heavy timbers	20
	Wood, vinyl	60
Other Combustibles	None, Greater than 30' from structure	0
	Between 10'-30' from structure	10
	Less than 10' from structure	30
Decks & Fencing	None	0
	Non-combustible Deck/Fence attached to structur	20
	Combustible Deck/Fence attached to structure	50

Overall Total Rating	Min	Max
Low	25	150
Moderate	151	175
High	176	270
Very High	271	365
Extreme	366	665

Wildfire Risk Analysis Results

After reviewing the Gunnison County Assessor data and parcel information, 129 primary structures were identified in the Quartz Creek community. The results of the wildfire risk analysis found that **3** homes were given a **low** wildfire risk rating, **3** homes were assessed to have a **moderate** risk rating, **41** homes were assessed to have a **high** risk rating, **58** homes had a **very high** risk rating and **23** homes were assessed to have an **extreme** risk to wildfire.



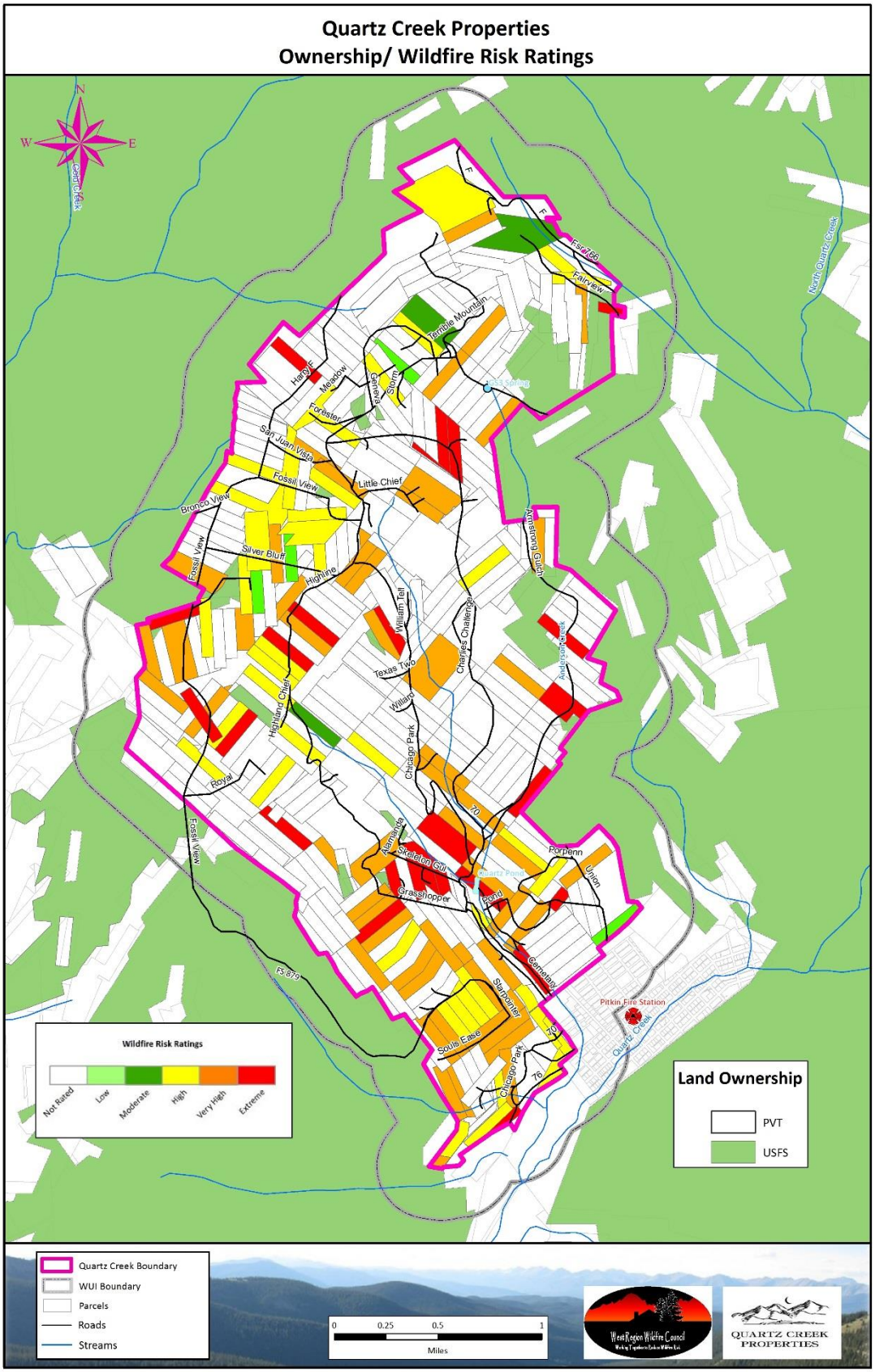
Relative Risk

The wildfire risk analysis results are a demonstration of relative risk; meaning that the risk ratings are based on the level of risk within Quartz Creek community and not an absolute risk rating. These risk ratings do not reflect or inform insurance rates or policies. Each insurance provider utilizes their own underwriting guidelines. An 'EXTREME' rating versus a 'LOW' rating is not an absolute indicator of whether a home will burn or survive in a wildfire event. Factors such as response, weather, etc. will influence a specific homes outcome during a wildfire. The risk ratings and subsequent risk reduction recommendations are intended to provide educational information to the QC community in order to help better prepare for a wildfire event.

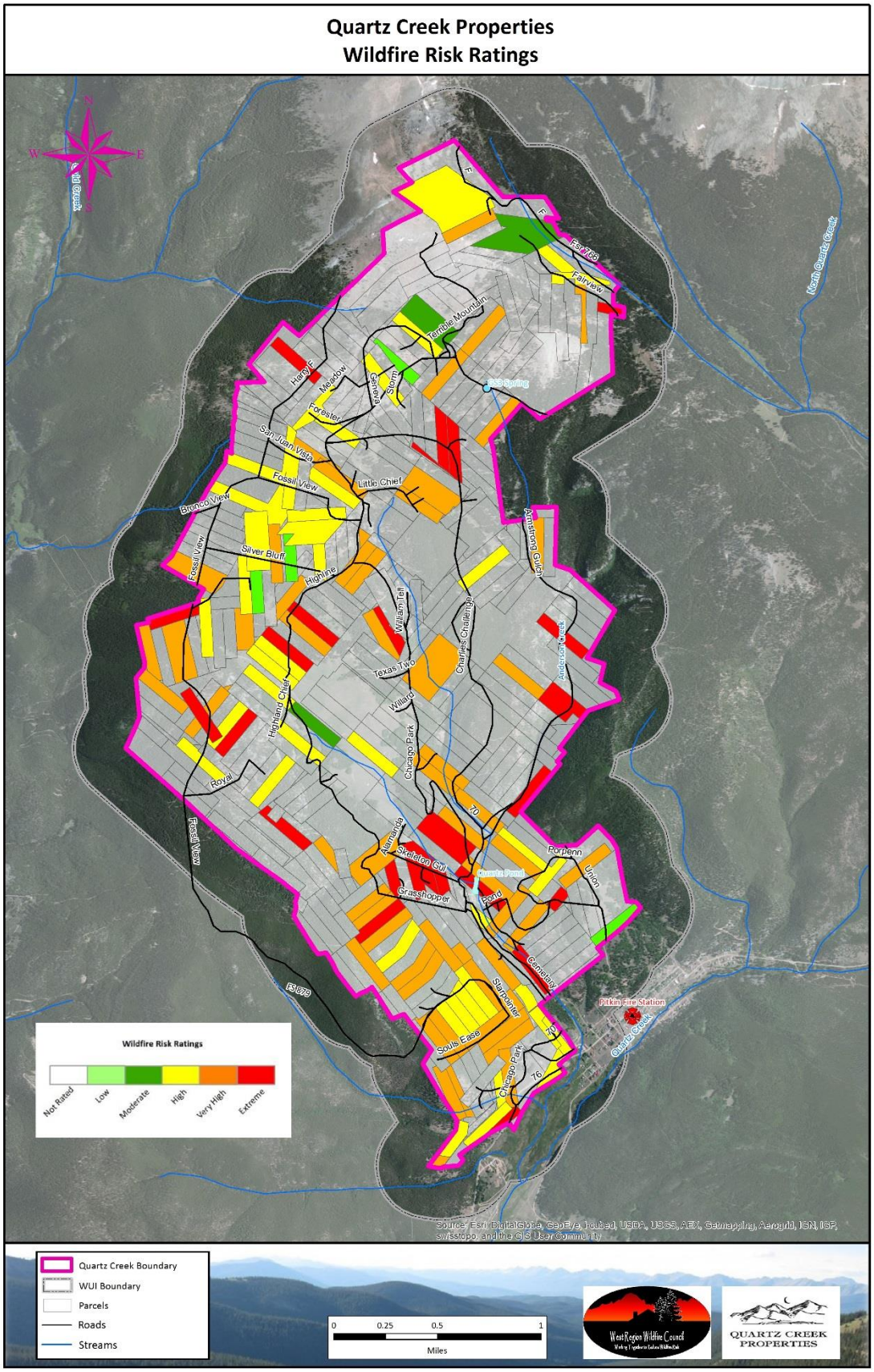
The following maps depict the results of the wildfire risk analysis.

To see your parcel specific wildfire risk analysis results please refer to the appendix of this document. Wildfire risk analysis results are listed in alphabetical order by street name.

Quartz Creek Wildfire Risk Rating with Land Ownership



Quartz Creek Wildfire Risk Rating Aerial



Fire Behavior Maps

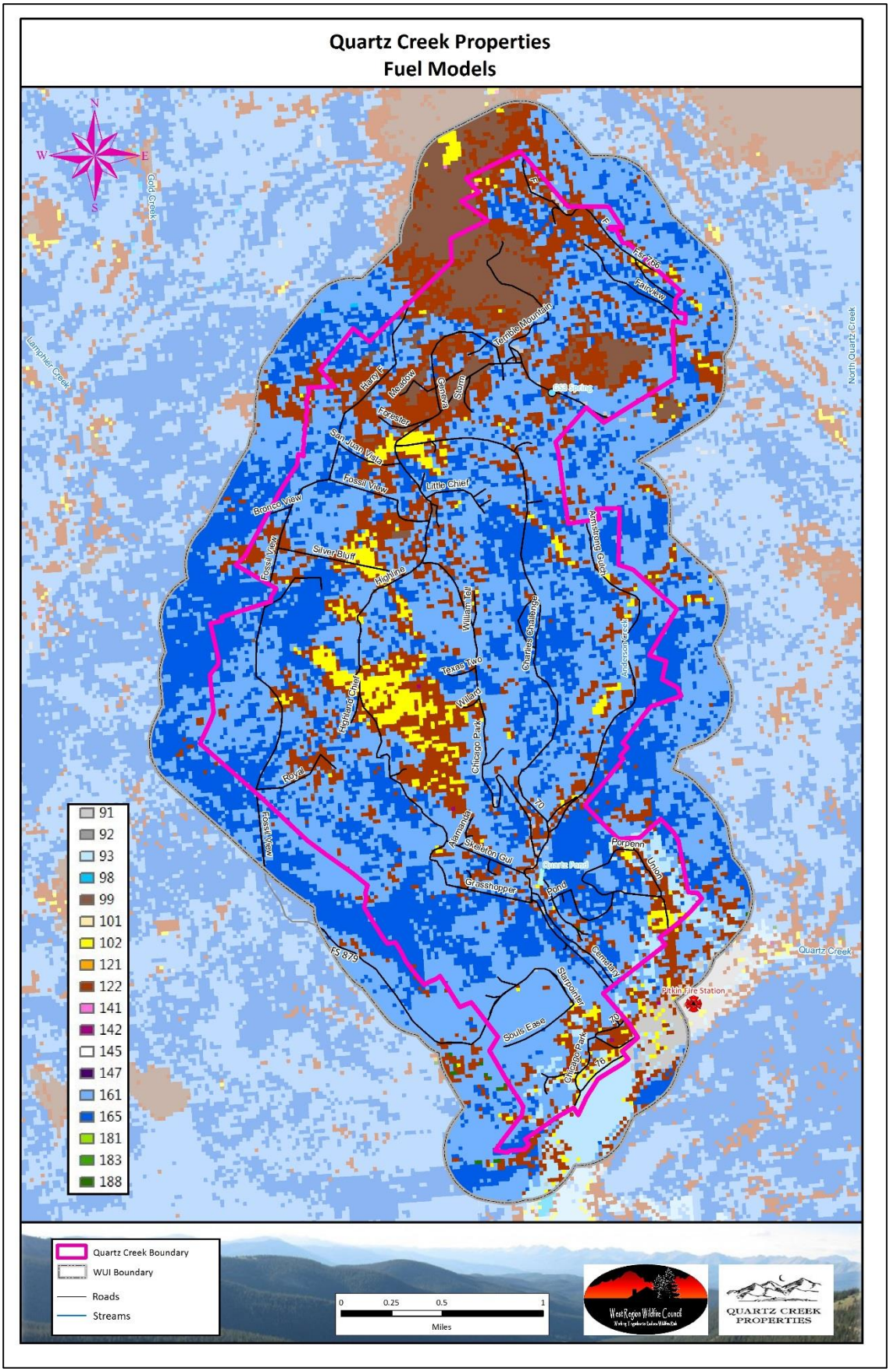
Quartz Creek Fuel Model Map Key

The Fuel Model Map is based on the Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model. This publication outlines the identified fuel models, gives a brief description of the fuel model and associated fire behavior and gives pictures of examples of that type of fuel model. The table below identifies the fuel models found within the Quartz Creek Community. Please reference this table when reviewing the map on the following page.

Color	ID #	Title	Description
	NB1 **(91)**	Urban/ Developed	Fuel model NB1 consists of land covered by urban and suburban development. To be called NB1, the area under consideration must not support wildland fire spread. In some cases, areas mapped as NB1 may experience structural fire losses during a wildland fire incident; however, structure ignition in those cases is either house-to-house or by firebrands, neither of which is directly modeled using fire behavior fuel models. If sufficient fuel vegetation surrounds structures such that wildland fire spread is possible, then choose a fuel model appropriate for the wildland vegetation rather than NB1.
	NB1 **(92)**	Snow/Ice	Land covered by permanent snow or ice is included in NB2. Areas covered by seasonal snow can be mapped to two different fuel models: NB2 for use when snow-covered and another for use in the fire season.
	NB3 **(93)**	Agricultural	Fuel model NB3 is agricultural land maintained in a nonburnable condition; examples include irrigated annual crops, mowed or tilled orchards, and so forth. However, there are many agricultural areas that are not kept in a nonburnable condition. For example, grass is often allowed to grow beneath vines or orchard trees, and wheat or similar crops are allowed to cure before harvest; in those cases use a fuel model other than NB3.
	NB8 **(98)**	Open Water	Land covered by open bodies of water such as lakes, rivers and oceans comprises NB8.
	NB9 **(99)**	Bare Ground	Land devoid of enough fuel to support wildland fire spread is covered by fuel model NB9. Such areas may include gravel pits, arid deserts with little vegetation, sand dunes, rock outcroppings, beaches, and so forth.
	GR1 **(101)**	Short, Sparse Dry Climate Grass (Dynamic)	The primary carrier of fire in GR1 is sparse grass, though small amounts of fine dead fuel may be present. The grass in GR1 is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture of extinction of GR1 is indicative of a dry climate fuelbed, but GR1 may also be applied in high-extinction moisture fuelbeds because in both cases predicted spread rate and flame length are low compared to other GR models.
	GR2 **(102)**	Low Load, Dry Climate Grass (Dynamic)	The primary carrier of fire in GR2 is grass, though small amounts of fine dead fuel may be present. Load is greater than GR1, and fuelbed may be more continuous. Shrubs, if present, do not affect fire behavior.
	GS1 **(121)**	Low Load, Dry Climate Grass-Shrub (Dynamic)	The primary carrier of fire in GS1 is grass and shrubs combined. Shrubs are about 1 foot high, grass load is low. Spread rate is moderate; flame length low. Moisture of extinction is low.
	GS2 **(122)**	Moderate Load, Dry Climate Grass-Shrub (Dynamic)	The primary carrier of fire in GS2 is grass and shrubs combined. Shrubs are 1 to 3 feet high, grass load is moderate. Spread rate is high; flame length moderate. Moisture of extinction is low.

	SH1 **(141)**	Low Load Dry Climate Shrub (Dynamic)	The primary carrier of fire in SH1 is woody shrubs and shrub litter. Low shrub fuel load, fuelbed depth about 1 foot; some grass may be present. Spread rate is very low; flame length very low.
	SH2 **(142)**	Moderate Load Dry Climate Shrub	The primary carrier of fire in SH2 is woody shrubs and shrub litter. Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuel present. Spread rate is low; flame length low.
	SH7 **(147)**	Very High Load, Dry Climate Shrub	The primary carrier of fire in SH7 is woody shrubs and shrub litter. Very heavy shrub load, depth 4 to 6 feet. Spread rate lower than SH7, but flame length similar. Spread rate is high; flame length very high.
	TU1 **(161)**	Low Load Dry Climate Timber-Grass-Shrub (Dynamic)	The primary carrier of fire in TU1 is low load of grass and/or shrub with litter. Spread rate is low; flame length low.
	TU5 **(165)**	Very High Load, Dry Climate Timber-Shrub	The primary carrier of fire in TU5 is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length moderate.
	TL1 **(181)**	Low Load Compact Conifer Litter	The primary carrier of fire in TL1 is compact forest litter. Light to moderate load, fuels 1 to 2 inches deep. May be used to represent a recently burned forest. Spread rate is very low; flame length very low.
	TL3 **(183)**	Moderate Load Conifer Litter	The primary carrier of fire in TL3 is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length low.
	TL8 **(188)**	Long-Needle Litter	The primary carrier of fire in TL8 is moderate load long-needle pine litter, may include small amount of herbaceous load. Spread rate is moderate; flame length low.

Quartz Creek Fuel Models Map

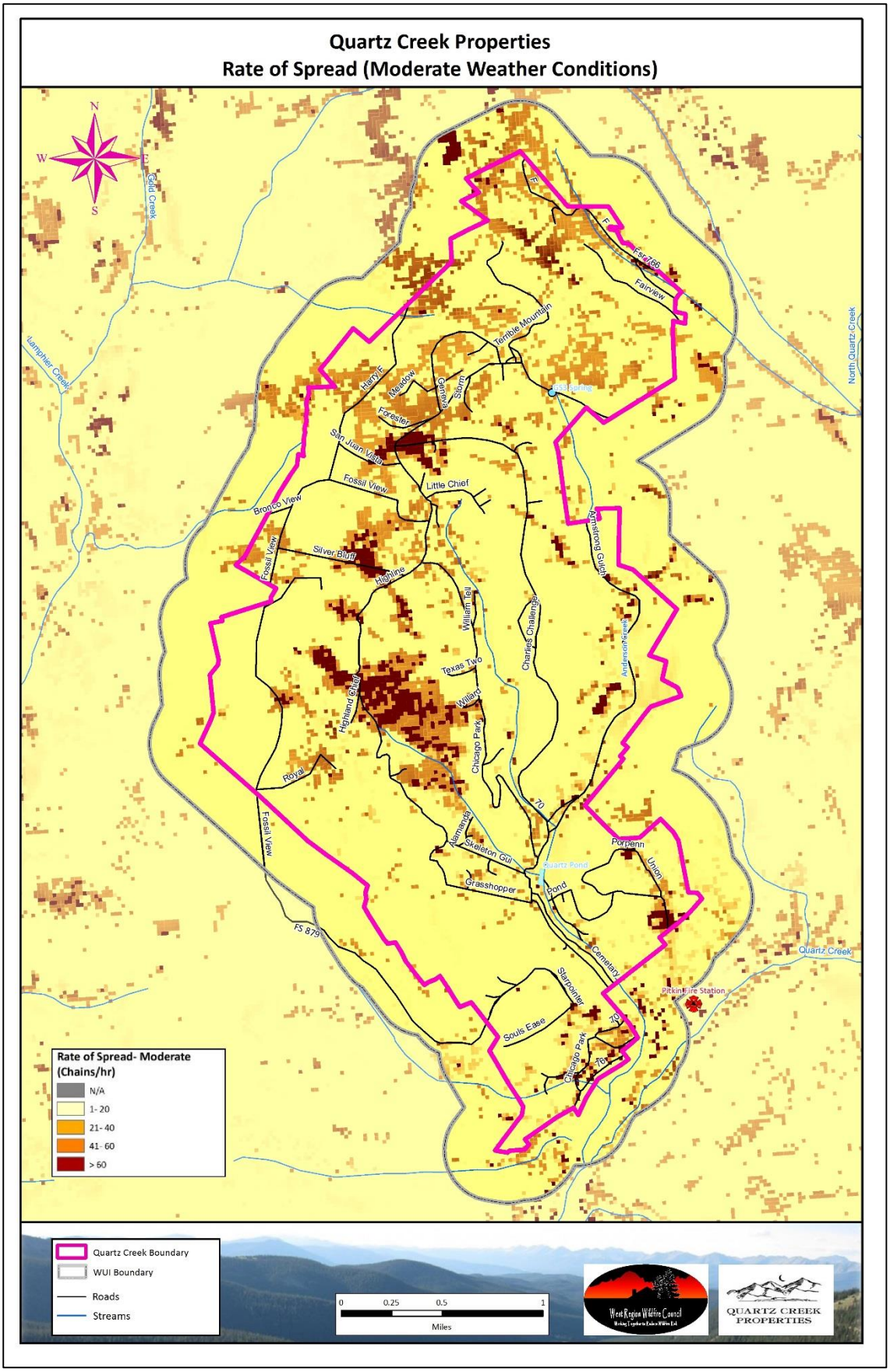


Rate of Spread

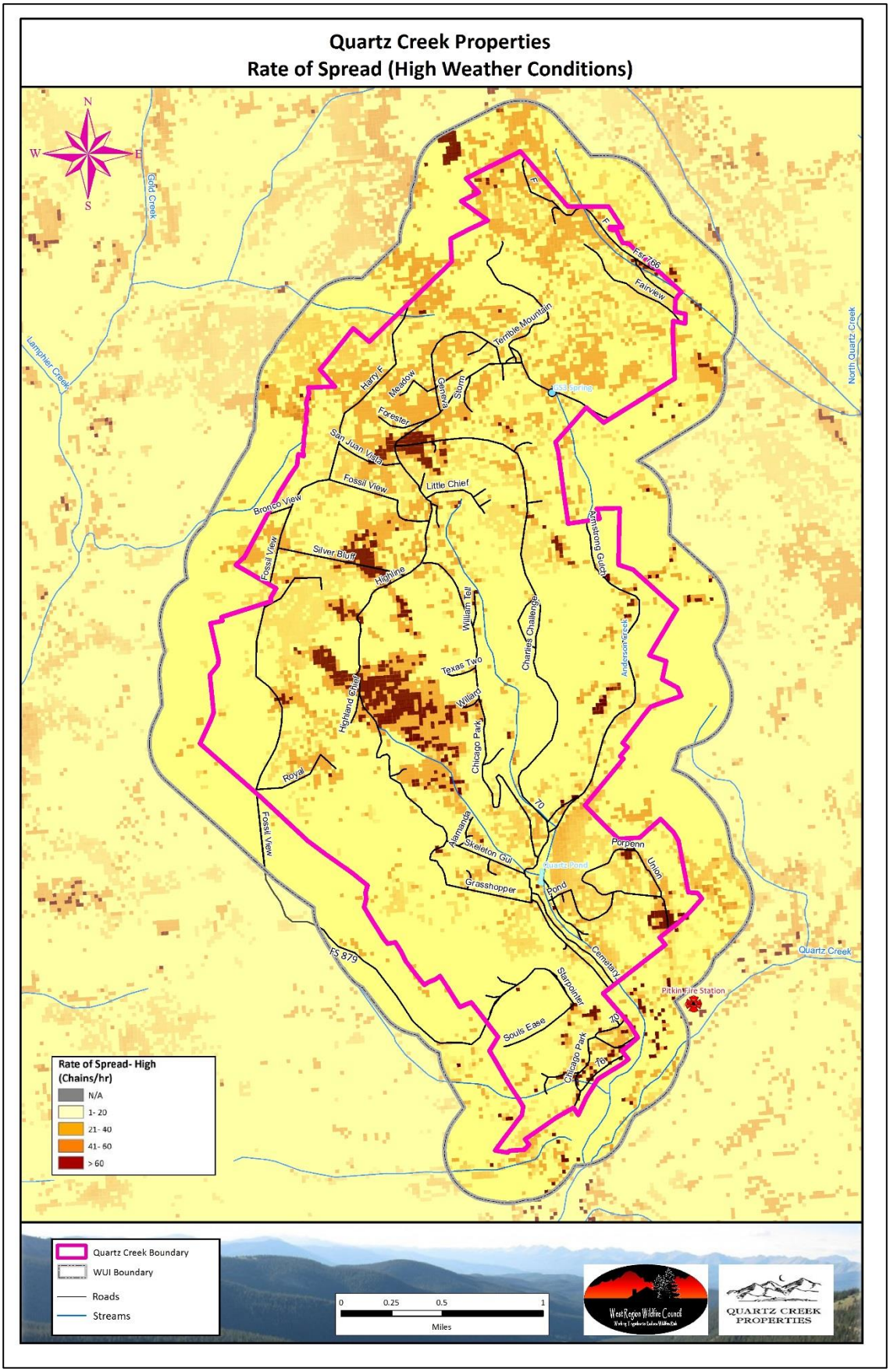
Rate of Spread values are generated by FlamMap and are classified into four categories based on standard ranges: 0-20 ch/hr (chains/hour), 20.1-40 ch/hr, 40.1-60 ch/hr, and greater than 60 ch/hr. A chain is a logging measurement that is equal to 66 feet. One mile equals 80 chains. 1 ch/hr equals approximately 1 foot/minute or 80 chains per hour equals 1 mile per hour.

***It should be noted that a high rate of spread is not necessarily severe. Fire will move very quickly across grass fields but may not cause any major damage to the soil.**

Moderate Weather Conditions Rate of Spread Map



High Weather Conditions Rate of Spread Map

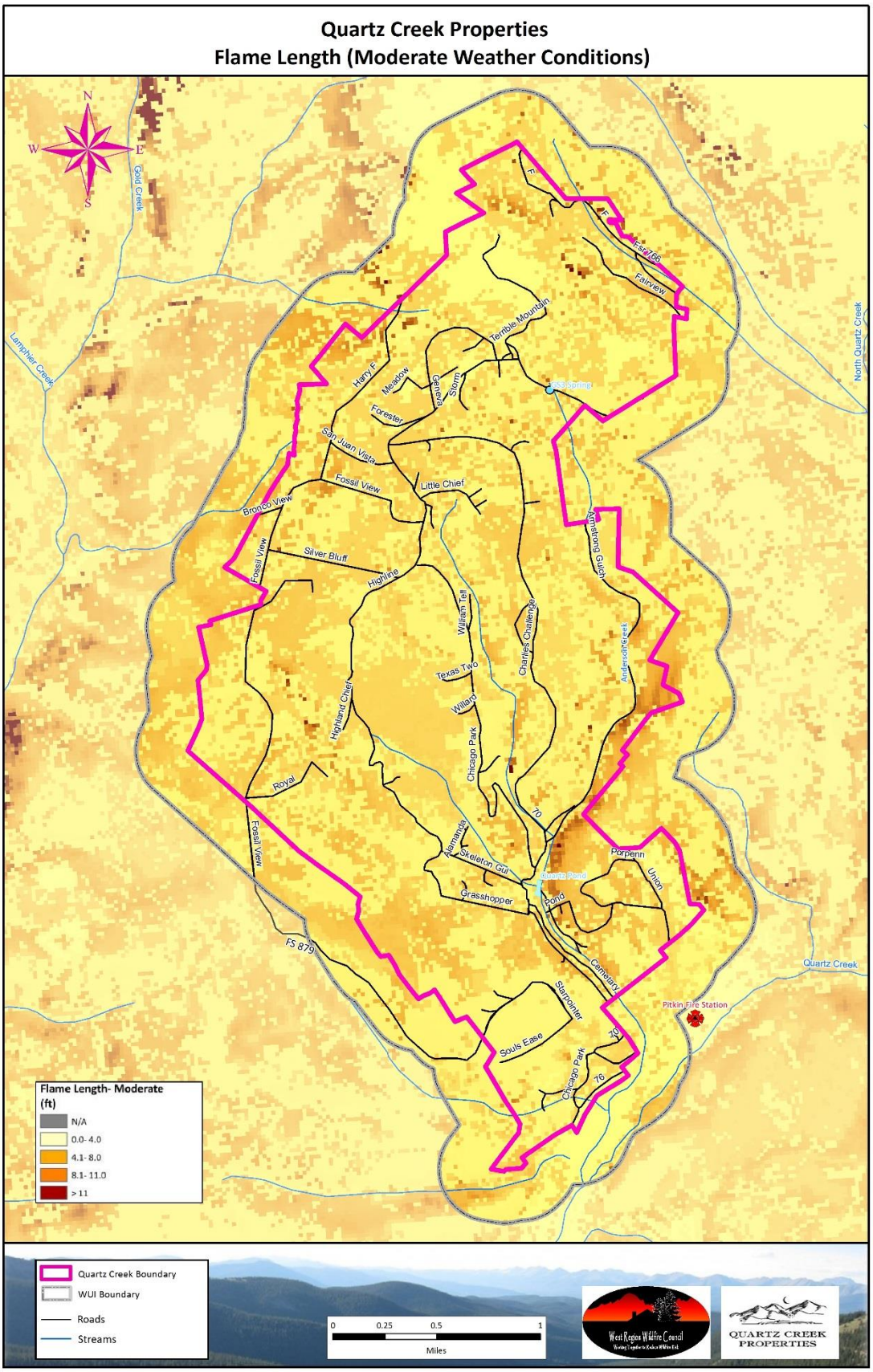


Flame Length

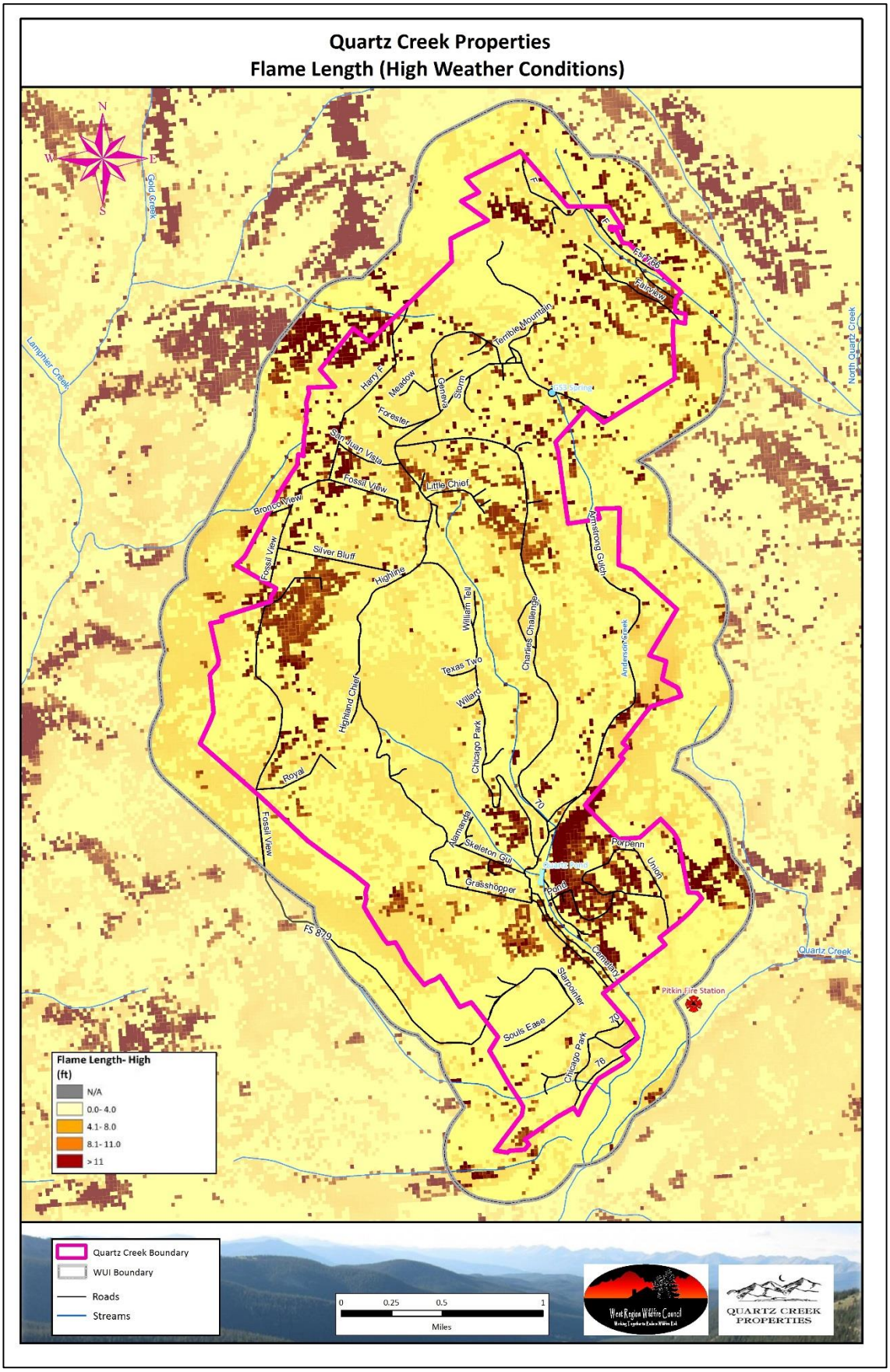
Flame length values are generated by the FlamMap, a fire behavior mapping and analysis program, model and were classified into four categories based on standard ranges: 0.1-4.0 feet, 4.1-8.0 feet, 8.1-11.0 feet and greater than 11.0 feet.

The legend boxes display flame length in ranges which are meaningful to firefighters. Flame lengths of four feet and less are deemed to be suitable for direct attack by hand crews, and therefore represent the best chances of direct extinguishment and control. Flame lengths of less than eight feet are suitable for direct attack by equipment such as bulldozers and tractor plows. Flame lengths of eight to 11 feet are usually attacked by indirect methods and aircraft. In conditions where flame lengths exceed 11 feet, the most effective tactics are fuel consumption ahead of the fire by burnouts or mechanical methods. It should be noted that much higher flame lengths of 60-100 feet or more were modeled on steeper slopes with heavy fuel loads.

Moderate Weather Conditions Flame Length Map



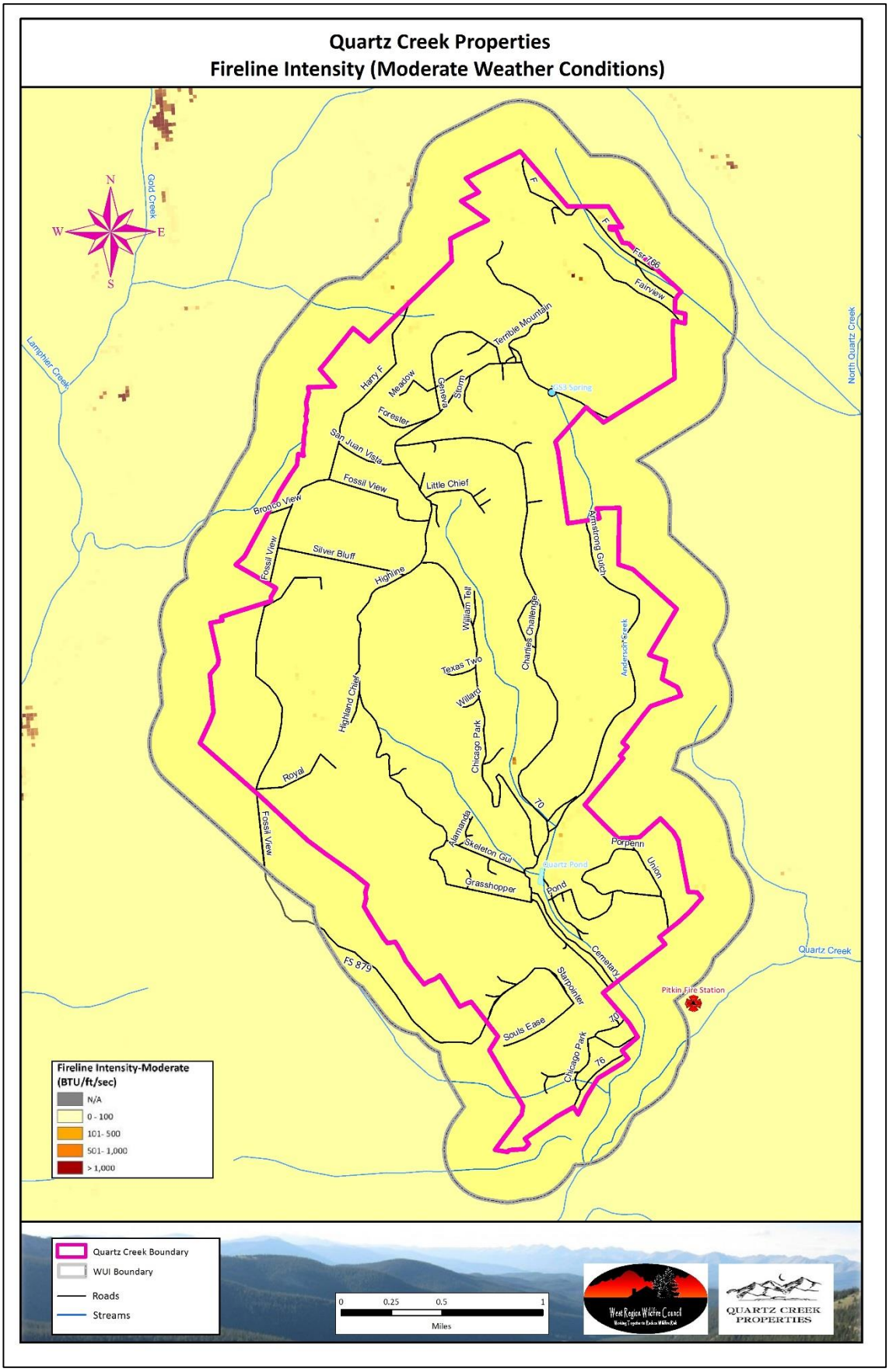
High Weather Conditions Flame Length Map



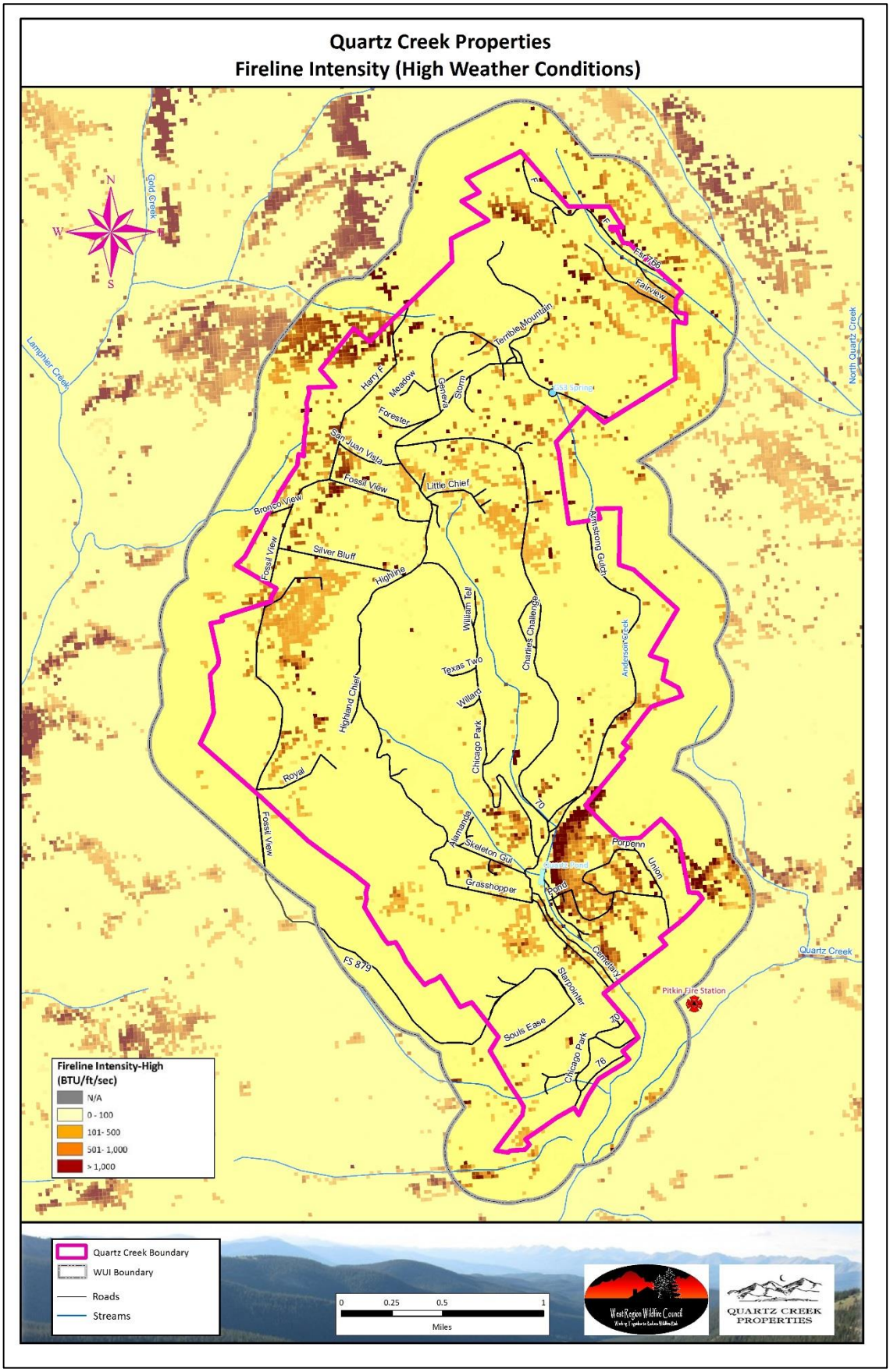
Fireline Intensity

Fireline intensity is a function of rate of spread and heat per unit area and is directly related to flame length. Fireline intensity and the flame length are related to the heat felt by a person standing next to the flames.

Moderate Weather Conditions Fireline Intensity Map



High Weather Conditions Fireline Intensity Map



Conclusions

Implementing Your Risk Reduction Recommendations

The Quartz Creek CWPP is an educational document intended to help homeowners understand their risk from wildfire and provide them with recommendations that can be completed to help mitigate wildfire risk. Quartz Creek Property Owners Association is hopeful that by providing this document, homeowners will take a proactive role in actively mitigating their homes and properties and preparing for wildfire.

Homeowners who implement the recommendations in this plan have the opportunity to change their wildfire risk rating.

Project Implementation Funding Assistance

By having an approved Community Wildfire Protection Plan, additional funding options for implementing projects is possible. There are grant and cost-share programs that provide funding assistance to landowners who want implement fuels reduction projects. Below is a list of a few websites that provide information on funding sources.

- West Region Wildfire Council: www.COwildfire.org
- Colorado State Forest Service: http://csfs.colostate.edu/pages/funding.html
- NFPA FireWise: http://www.firewise.org/Communities/USA-Recognition-Program/

West Region Wildfire Council

The West Region Wildfire Council (WRWC) promotes wildfire preparedness, prevention and mitigation education throughout Delta, Gunnison, Hinsdale, Montrose, Ouray and San Miguel Counties. The WRWC's mission is to mitigate loss due to wildfire in wildland urban interface communities while fostering interagency partnerships to help prepare counties, fire protection districts, communities and agencies to plan for and mitigate potential threats from wildfire.

WRWC members include private citizens, local, county, state, and federal agencies with an interest in, and a commitment to addressing wildfire risk across the region. The WRWC provides communities with education about wildfire risk, assists with the development of wildfire planning initiatives and encourages homeowner risk reduction actions through implementing strategic fuels reduction projects and the creation of defensible space.

There are several funding assistance programs available to private landowners who are interested in implementing defensible space or completing fuels reduction projects. The WRWC actively collaborates with Gunnison County in their effort to reduce wildfire risk to residents by carrying out FireWise activities. For more information, please visit: www.COwildfire.org or contact the West Region Wildfire Council at (970)615-7300

FireWise Communities/ USA

FireWise Communities/ USA recognition program is a great way for communities to be actively engaged in promoting wildfire risk reduction and education. By completing this CWPP, the Quartz

Creke community has already completed one of the FireWise Communities/ USA recognition requirements. For more information, please visit: www.Firewise.org.

Other Available Resources

For a complete listing of funding and wildfire related resources, please refer to the Gunnison Community Wildfire Protection Plan in the 'Resources for Implementing CWPP Recommendations' section.

Plan Maintenance and Updates

The Quartz Creek CWPP should be considered a living document. The plan should be updated annually to reflect wildfire risk reduction actions taken by homeowners. The wildfire risk assessment maps will also need to be updated when a homeowner completes recommendations to reduce their risk. Significant wildfire events, new home construction or large scale fuels reduction projects may warrant plan revision as well. Updating the plan annually provides Quartz Creek with an opportunity to reach out to community members and address wildfire concerns, highlight mitigation efforts and provide current information on funding and mitigation resources.

Appendix

Appendix A: Wildfire Risk Analysis Results

HOUSE NUMBER	STREET NAME	ADDRESS VISIBLE	INGRESS / EGRESS	DRIVEWAY CLEARANCE	DISTANCE TO DANGEROUS TOPOGRAPHY	SLOPE	BACKGROUND FUELS	DEFENSIBLE SPACE	ROOF	BUILDING EXTERIOR	OTHER COMBUSTIBLES	DECKS & FENCING	WILDFIRE RISK
70	ALAMANDA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS B OR C	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
180	ARMSTRONG CLIFFS	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
300	ARMSTRONG GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
185	BONNIE BRAVE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS B OR C	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
167	BRONCO VIEW	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
2010	CHARLIES CHALLENGE	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	LIGHT	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
2535	CHARLIES CHALLENGE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
2540	CHARLIES CHALLENGE	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
3345	CHARLIES CHALLENGE	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
125	CHICAGO PARK	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	LESS THAN 50'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
126	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
127	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
191	CHICAGO PARK	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
2144	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
2222	CHICAGO PARK	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
2465	CHICAGO PARK	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
3404	CHICAGO PARK	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
403	CHICAGO PARK	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
4080	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS B OR C	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
4100	CHICAGO PARK	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
605	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
750	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	NONE	HIGH
756	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
761	CHICAGO PARK	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
830	CHICAGO PARK	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
861	CHICAGO PARK	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 30' - 100'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH

HOUSE NUMBER	STREET NAME	ADDRESS VISIBLE	INGRESS / EGRESS	DRIVEWAY CLEARANCE	DISTANCE TO DANGEROUS TOPOGRAPHY	SLOPE	BACKGROUND FUELS	DEFENSIBLE SPACE	ROOF	BUILDING EXTERIOR	OTHER COMBUSTIBLES	DECKS & FENCING	WILDFIRE RISK
14219	CR 76	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
14325	CR 76	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	GREATER THAN 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
14815	CR 76	NOT VISIBLE FROM THE ROAD	TWO OR MORE ROADS IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	NONE	HIGH
325	FOREST	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
380	FOREST	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
485	FOREST	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
200	FOREST TRAIL	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
220	FOSSIL VIEW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
255	FOSSIL VIEW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
720	FOSSIL VIEW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
866	FOSSIL VIEW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS B OR C	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	NONE	EXTREME
89	FOSSIL VIEW	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	GREATER THAN 100'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	LOW
986	FOSSIL VIEW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
1099	FS 770	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
4250	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS B OR C	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
4515	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
4650	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
5085	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	NONE	MODERATE
5085	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 30' - 100'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	NONE	HIGH
5326	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
727	FS 770	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	GREATER THAN 100'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	LOW
100	G	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
1170	GENEVA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 30' - 100'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
1238	GENEVA	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	GREATER THAN 100'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	LOW
220	GENEVA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	BETWEEN 50' - 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
95	GENEVA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
10	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
1610	GRASSHOPPER	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	LIGHT	GREATER THAN 100'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	MODERATE
1877	GRASSHOPPER	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH

HOUSE NUMBER	STREET NAME	ADDRESS VISIBLE	INGRESS / EGRESS	DRIVEWAY CLEARANCE	DISTANCE TO DANGEROUS TOPOGRAPHY	SLOPE	BACKGROUND FUELS	DEFENSIBLE SPACE	ROOF	BUILDING EXTERIOR	OTHER COMBUSTIBLES	DECKS & FENCING	WILDFIRE RISK
2000	GRASSHOPPER	NOT VISIBLE FROM THE ROAD	TWO OR MORE ROADS IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
242	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
244	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
411	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
541	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
567	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
651	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
754	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
789	GRASSHOPPER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
870	GRASSHOPPER	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
101	GREGORY	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
1	HARRY F	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
333	HIGHLAND CHIEF	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	BETWEEN 30' - 100'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
450	HIGHLAND CHIEF	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
2600	HIGHLINE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
660	HIGHLINE	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
860	HIGHLINE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
N/A	HIGHLINE	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	NONE	HIGH
60	IRON POINT	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
101	ISLET	POSTED, NOT REFLECTIVE	TWO OR MORE ROADS IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
201	ISLET	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
350	ISLET	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
75	JENNY CUT-OFF	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
245	LIME BLUFF	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
600	LITTLE TYCOON	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	BETWEEN 50' - 150'	GREATER THAN 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
160	LITTLE ANIA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
80	LITTLE ANIA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
315	LITTLE CHIEF	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
378	LOWER ARMSTRONG GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME

HOUSE NUMBER	STREET NAME	ADDRESS VISIBLE	INGRESS / EGRESS	DRIVEWAY CLEARANCE	DISTANCE TO DANGEROUS TOPOGRAPHY	SLOPE	BACKGROUND FUELS	DEFENSIBLE SPACE	ROOF	BUILDING EXTERIOR	OTHER COMBUSTIBLES	DECKS & FENCING	WILDFIRE RISK
360	MEADOW	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	LIGHT	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
N/A	N/A	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
N/A	N/A	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
183	NEW DOLLAR	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	GREATER THAN 100'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	MODERATE
189	NORTH POND	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
190	NORTH POND	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	NONE	HIGH
291	NORTH POND	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
295	NORTH POND	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
100	PANORAMA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
55	PANORAMA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
450	PINE BURR	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
110	PORPENN	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
226	PORPENN	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
404	PORPENN	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
405	PORPENN	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
500	PORPENN	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	NON-COMBUSTIBLE	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
58	RAINBOW	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
60	RAINBOW	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
310	ROUNDABOUT	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
330	ROYAL	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
289	SAN JUAN VISTA	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	LIGHT	GREATER THAN 100'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	LOW
410	SAN JUAN VISTA	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
485	SAN JUAN VISTA	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	LIGHT	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
240	SANTIAGO BASIN	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
20	SILVER BLUFF	POSTED AND REFLECTIVE	ONE ROAD IN/OUT	GREATER THAN 24'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
467	SILVER BLUFF	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
280	SKELETON GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
350	SKELETON GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS B OR C	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
180	SOULSEASE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH

HOUSE NUMBER	STREET NAME	ADDRESS VISIBLE	INGRESS / EGRESS	DRIVEWAY CLEARANCE	DISTANCE TO DANGEROUS TOPOGRAPHY	SLOPE	BACKGROUND FUELS	DEFENSIBLE SPACE	ROOF	BUILDING EXTERIOR	OTHER COMBUSTIBLES	DECKS & FENCING	WILDFIRE RISK
306	SOULSEASE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
434	SOULSEASE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
435	SOULSEASE	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
210	STAR POINTER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
60	STAR POINTER	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	MODERATE	BETWEEN 10' - 30'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
67	STAR POINTER	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	BETWEEN 20' -24'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	BETWEEN 10' - 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
206	STORM	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	LESS THAN 20%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
244	STORM	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
330	STORM	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	GREATER THAN 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
5156	TERRIBLE MOUNTAIN	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	MODERATE	LESS THAN 10'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
5156	TERRIBLE MOUNTAIN	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	BETWEEN 20% - 45%	HEAVY	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	VERY HIGH
280	TEXAS TWO	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	BETWEEN 50' - 150'	GREATER THAN 45%	LIGHT	BETWEEN 30' - 100'	CLASS A	LOG, HEAVY TIMBERS	NONE, GREATER THAN 30' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	HIGH
1070	UPPER ARMSTRONG GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	LESS THAN 10'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
820	UPPER ARMSTRONG GULCH	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	BETWEEN 20% - 45%	HEAVY	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME
350	WILLIAM TELL	POSTED, NOT REFLECTIVE	ONE ROAD IN/OUT	LESS THAN 20'	GREATER THAN 150'	BETWEEN 20% - 45%	HEAVY	LESS THAN 10'	CLASS A	WOOD, VINYL	BETWEEN 10' - 30' FROM STRUCTURE	NONE	VERY HIGH
390	WILLIAM TELL	NOT VISIBLE FROM THE ROAD	ONE ROAD IN/OUT	LESS THAN 20'	LESS THAN 50'	GREATER THAN 45%	MODERATE	BETWEEN 10' - 30'	CLASS A	WOOD, VINYL	LESS THAN 10' FROM STRUCTURE	COMBUSTIBLE DECK/FENCE ATTACHED TO STRUCTURE	EXTREME

Access

Ingress/ Egress: When communities only have one way in and out, evacuation of residents during an emergency can result in traffic congestion. A second access road, even if only used in emergency situations, can provide an alternate escape route.

Addressing: The home's address should be clearly posted and easily visible from the street. The address sign should be made of reflective, non -combustible material. White numbering on a green background is most effective. Characters should be no less than 4 inches high.

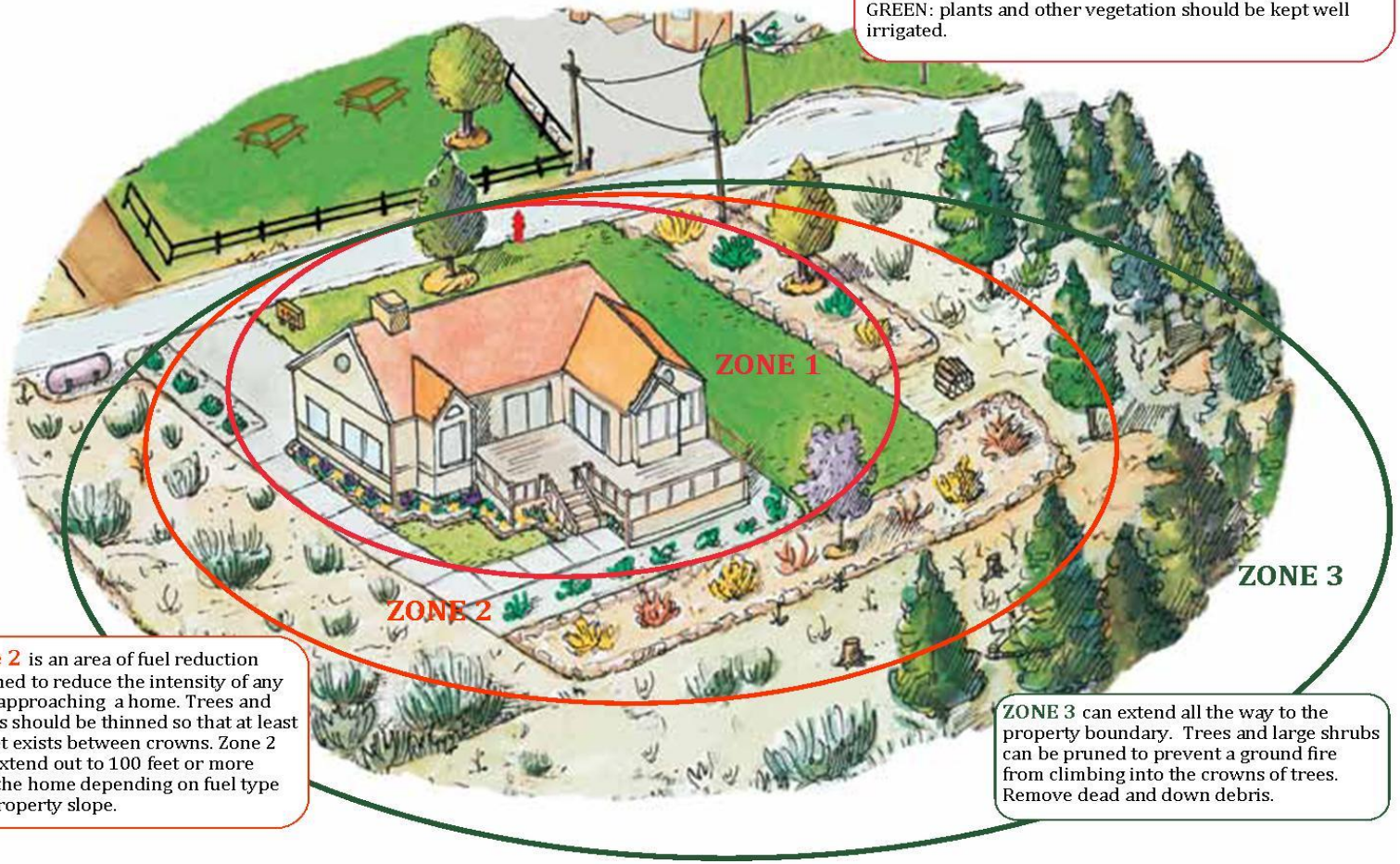
Driveway Width: Driveways should be at least 24 feet wide. Driveways should also have at least 13.5 feet of vertical clearance. Remove flammable vegetation overhead and along the sides of the driveway.

Gated Driveways: If your driveway is gated, consider sharing gate combination information or keys with the fire department.

Defensible Space

Zone 1 extends 15 feet beyond the structure, including decks, patios, etc. This area should be lean, clean and green.

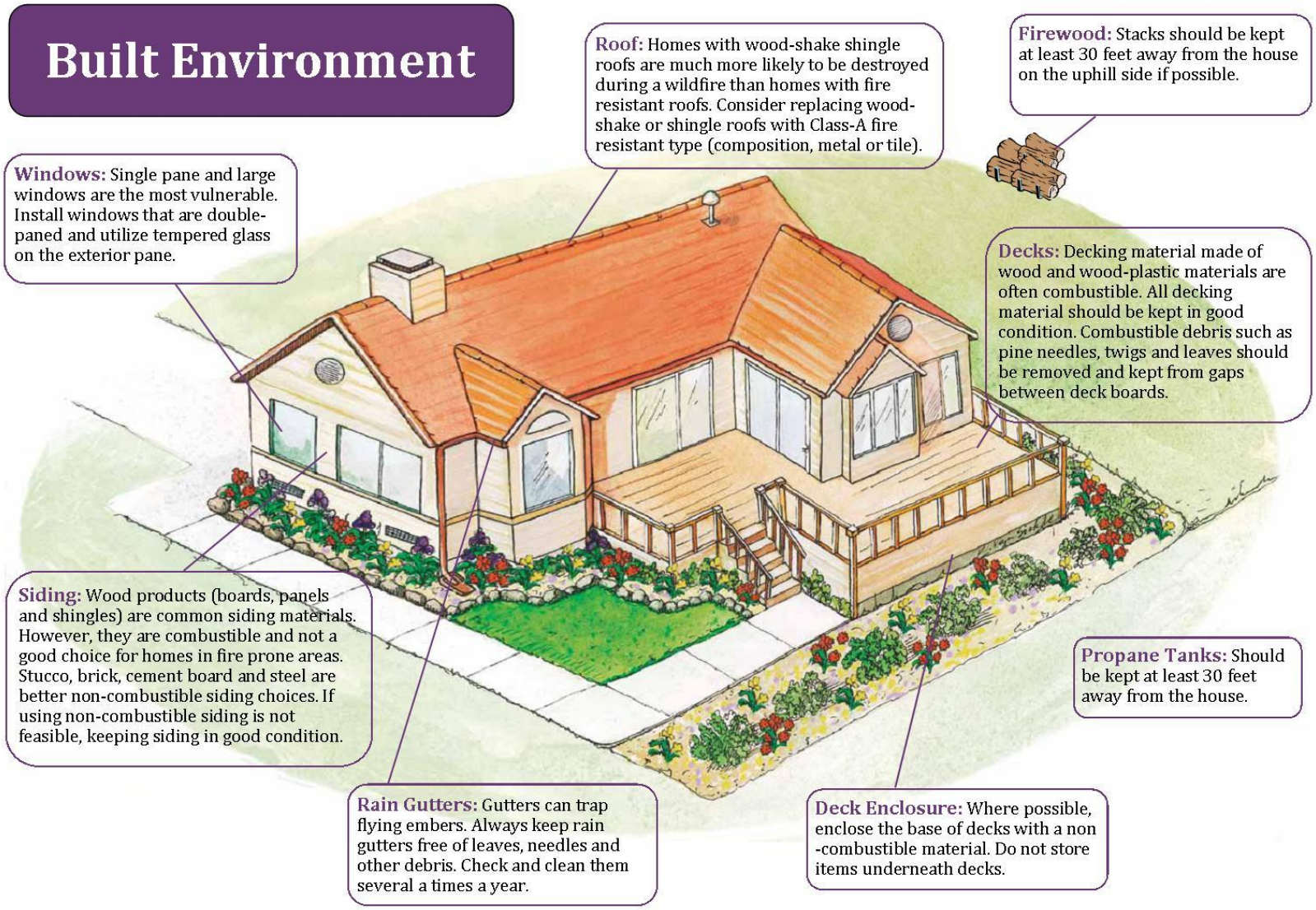
LEAN: only a small amount of vegetation should be present within the first 15 feet from the structure.
CLEAN: no accumulation of dead vegetation or flammable debris.
GREEN: plants and other vegetation should be kept well irrigated.



Zone 2 is an area of fuel reduction designed to reduce the intensity of any fire approaching a home. Trees and shrubs should be thinned so that at least 10 feet exists between crowns. Zone 2 may extend out to 100 feet or more from the home depending on fuel type and property slope.

ZONE 3 can extend all the way to the property boundary. Trees and large shrubs can be pruned to prevent a ground fire from climbing into the crowns of trees. Remove dead and down debris.

Built Environment



Appendix C: Parcel Specific Risk Reduction Recommendations (Key)

Addressing	Risk Reduction Recommendation
A1: (Address posted but not reflective)	Replace address markers with reflective signage. Green and white reflective address markers with numbers that are at least four inches in height, and made out of a non-combustible material, are recommended to assist emergency responders.
A2: (Address not visible)	Replace address markers with reflective signage. Green and white reflective address markers with numbers that are at least four inches in height, and made out of a non-combustible material, are recommended to assist emergency responders.
Ingress/ Egress	**Risk Reduction Recommendation**
I/E1: (only one ingress/ egress route)	Work with community members and appropriate landowners to identify primary and, if available, secondary emergency egress routes. Develop an Emergency Plan and have a 72 Hour Emergency Kit. Additionally, ensure that your home phone(s), mobile phone(s) and email addresses are signed up to receive emergency notifications from Gunnison County's CodeRED. Visit the Gunnison County Emergency Management website to learn more about all of these thinks and for a link to the online CodeRED registration by going to: http://www.gunnisoncounty.org/145/Emergency-Management
Driveway Width	**Risk Reduction Recommendation**
DW1: (driveway width 20-24 feet)	Remove flammable vegetation from overhead and along the sides of driveways. Driveways should be at least 24' wide and have 13.5' of vertical clearance that is free of vegetation and other obstructions.
DW2: (driveway width less than 20 feet)	Remove flammable vegetation from overhead and along the sides of driveways. Driveways should be at least 24' wide and have 13.5' of vertical clearance that is free of vegetation and other obstructions.
Background Fuel	**Risk Reduction Recommendation**
BF1: (Light background fuel)	Keep grasses mowed and other combustible materials clear from at least 15' around your home.
BF2: (Moderate background fuel)	Implement a defensible space project around your home. Consider extending your defensible space out to Zone 2 and 3. Refer to Colorado State Forest Service publication "Protecting Your Home From Wildfire: Creating Wildfire-Defensible Zones" for further information. This publication can be found online (see below for a link to the PDF document).
BF3: (Heavy background fuel)	Implement a defensible space project around your home. Consider extending your defensible space out to Zone 3. Refer to Colorado State Forest Service publication "Protecting Your Home From Wildfire: Creating Wildfire-Defensible Zones" for further information. This publication can be found online (see below for a link to the PDF document).
Defensible Space	**Risk Reduction Recommendation**
DS1: (less than 10 feet of defensible space)	A defensible space project is recommended to reduce your home's risk to wildfire. Refer to Colorado State Forest Service publication "Protecting Your Home From Wildfire: Creating Wildfire-Defensible Zones" for further information. This publication can be found online (see below for a link to the PDF document).

DS2: (10-30 feet of defensible space)	Expand your defensible space. Refer to Colorado State Forest Service publication "Protecting Your Home From Wildfire: Creating Wildfire-Defensible Zones" for further information. This publication can be found online (see below for a link to the PDF document).
DS3: (30-150 feet of defensible space)	Maintain your defensible space. Consider extending your defensible space.
DS4: (greater than 150 feet of defensible space)	Maintain your defensible space.
Roofing Material	**Risk Reduction Recommendation**
R1: (wood shake-shingle roof)	Consider replacing wood roof with non-combustible, Class A, fire-resistant roofing material. Tile, metal or composite shingles; or metal roofing material is recommended.
R2: (Non-combustible roof)	Ensure no flammable materials such as pine needles, leaves or other debris accumulate in roof valleys or gutters.
Building Exterior	**Risk Reduction Recommendation**
BE1: (Vinyl, wood or other combustible siding	Replace siding with a non-combustible material such as stucco, brick or cement fibrous siding.
Other Combustibles	**Risk Reduction Recommendation**
C1: (combustible materials within 30 feet of home)	Move all combustible materials at least 30' away from the structure. Needles, leaves, patio furniture and a variety of other objects can be ignited by firebrands. Firewood piles and propane tanks should be located uphill from the structure. Keep grasses mowed around your structures.
Decks & Fencing	**Risk Reduction Recommendation**
DKF1: (Combustible decking material)	Maintain wood decks and/ or replace with a non-combustible material. Where possible, enclose the base of decks with a non-combustible material. Do not store items underneath decks and keep them free of combustible materials such as leaves and pine needles. Combustible fencing is another common source of home ignition. Consider replacing with a non-combustible material, especially in areas where the fencing is close to or attached to structures.

Appendix D: Parcel Specific Risk Reduction Recommendations

House Number	Street Name	Address Visible	Ingress/ Egress	Driveway Width	Background Fuel Type	Defensible Space	Roof	Building Exterior	Other Combustibles	Decks & Fencing
70	ALAMANDA	A2	I/E1	DW2	BF2	DS1	R1	BE1	C1	DKF1
180	ARMSTRONG CLIFFS	A2	I/E1	DW2	BF2	DS2	R2	BE1	None	DKF1
300	ARMSTRONG GULCH	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
185	BONNIE BRAVE	A1	I/E1	DW2	BF3	DS1	R1	BE1	C1	DKF1
167	BRONCO VIEW	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
2010	CHARLIES CHALLENGE	A2	I/E1	DW2	BF1	DS3	R2	BE1	C1	DKF1
2535	CHARLIES CHALLENGE	A1	I/E1	DW1	BF3	DS2	R2	BE1	C1	DKF1
2540	CHARLIES CHALLENGE	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
3345	CHARLIES CHALLENGE	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
125	CHICAGO PARK	None	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
126	CHICAGO PARK	A2	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
127	CHICAGO PARK	A2	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
191	CHICAGO PARK	A1	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
2144	CHICAGO PARK	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
2222	CHICAGO PARK	None	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
2465	CHICAGO PARK	None	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
3404	CHICAGO PARK	None	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
403	CHICAGO PARK	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
4080	CHICAGO PARK	A2	I/E1	DW2	BF3	DS1	R1	BE1	C1	DKF1
4100	CHICAGO PARK	A1	I/E1	DW2	BF2	DS2	R2	BE1	None	DKF1
605	CHICAGO PARK	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
750	CHICAGO PARK	A2	I/E1	DW2	BF1	DS2	R2	BE1	None	None
756	CHICAGO PARK	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
761	CHICAGO PARK	A1	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
830	CHICAGO PARK	A2	I/E1	DW2	BF2	DS1	R2	BE1	None	DKF1
861	CHICAGO PARK	A1	I/E1	DW2	BF2	DS3	R2	BE1	None	DKF1
14219	CR 76	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1

House Number	Street Name	Address Visible	Ingress/ Egress	Driveway Width	Background Fuel Type	Defensible Space	Roof	Building Exterior	Other Combustibles	Decks & Fencing
14325	CR 76	A2	I/E1	DW2	BF2	DS4	R2	BE1	C1	DKF1
14815	CR 76	A2	I/E1	None	BF1	DS1	R2	BE1	C1	None
325	FOREST	A2	I/E1	None	BF2	DS2	R2	BE1	C1	DKF1
380	FOREST	A2	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
485	FOREST	A2	I/E1	DW2	BF2	DS2	R2	BE1	None	DKF1
200	FOREST TRAIL	A2	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
220	FOSSIL VIEW	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
255	FOSSIL VIEW	A2	I/E1	None	BF1	DS2	R2	BE1	C1	DKF1
720	FOSSIL VIEW	A2	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
866	FOSSIL VIEW	A2	I/E1	DW2	BF2	DS2	R1	BE1	C1	None
89	FOSSIL VIEW	A1	I/E1	None	BF1	DS4	R2	BE1	C1	DKF1
986	FOSSIL VIEW	A2	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
1099	FS 770	A1	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
4250	FS 770	A2	I/E1	DW2	BF2	DS1	R1	BE1	None	DKF1
4515	FS 770	A2	I/E1	DW2	BF3	DS2	R2	BE1	None	DKF1
4650	FS 770	A2	I/E1	None	BF2	DS3	R2	BE1	C1	DKF1
5085	FS 770	A2	I/E1	DW2	BF2	DS2	R2	BE1	None	None
5085	FS 770	A2	I/E1	DW2	BF2	DS3	R2	BE1	None	None
5326	FS 770	A2	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
727	FS 770	A2	I/E1	None	BF1	DS4	R2	BE1	None	DKF1
100	G	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
1170	GENEVA	A2	I/E1	DW2	BF1	DS3	R2	BE1	C1	DKF1
1238	GENEVA	A1	I/E1	DW1	BF1	DS4	R2	BE1	None	DKF1
220	GENEVA	A2	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
95	GENEVA	A2	I/E1	None	BF1	DS1	R2	BE1	C1	DKF1
10	GRASSHOPPER	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
1610	GRASSHOPPER	A2	I/E1	DW2	BF1	DS4	R2	BE1	None	DKF1
1877	GRASSHOPPER	A2	I/E1	DW2	BF1	DS3	R2	BE1	C1	DKF1

House Number	Street Name	Address Visible	Ingress/ Egress	Driveway Width	Background Fuel Type	Defensible Space	Roof	Building Exterior	Other Combustibles	Decks & Fencing
2000	GRASSHOPPER	A2	I/E1	None	BF1	DS2	R2	BE1	C1	DKF1
242	GRASSHOPPER	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
244	GRASSHOPPER	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
411	GRASSHOPPER	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
541	GRASSHOPPER	A1	I/E1	DW1	BF2	DS3	R2	BE1	C1	DKF1
567	GRASSHOPPER	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
651	GRASSHOPPER	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
754	GRASSHOPPER	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
789	GRASSHOPPER	A1	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
870	GRASSHOPPER	A2	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
101	GREGORY	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
1	HARRY F	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
333	HIGHLAND CHIEF	A1	I/E1	DW1	BF2	DS3	R2	BE1	C1	DKF1
450	HIGHLAND CHIEF	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
2600	HIGHLINE	A1	I/E1	DW1	BF3	DS2	R2	BE1	C1	DKF1
660	HIGHLINE	None	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
860	HIGHLINE	A1	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
N/A	HIGHLINE	A2	I/E1	None	BF2	DS1	R2	BE1	None	None
60	IRON POINT	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
101	ISLET	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
201	ISLET	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
350	ISLET	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
75	JENNY CUT-OFF	None	I/E1	None	BF3	DS2	R2	BE1	C1	DKF1
245	LIME BLUFF	A1	I/E1	DW1	BF2	DS3	R2	BE1	None	DKF1
600	LITTLE TYCOON	A1	I/E1	DW1	BF3	DS2	R2	BE1	C1	DKF1
160	LITTLE ANIA	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
80	LITTLE ANIA	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
315	LITTLE CHIEF	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1

House Number	Street Name	Address Visible	Ingress/ Egress	Driveway Width	Background Fuel Type	Defensible Space	Roof	Building Exterior	Other Combustibles	Decks & Fencing
378	LOWER ARMSTRONG GULCH	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
360	MEADOW	A2	I/E1	DW1	BF1	DS3	R2	BE1	C1	DKF1
N/A	N/A	A2	I/E1	DW2	BF3	DS1	R2	BE1	None	DKF1
N/A	N/A	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
183	NEW DOLLAR	A2	I/E1	None	BF1	DS4	R2	BE1	C1	DKF1
189	NORTH POND	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
190	NORTH POND	A2	I/E1	DW2	BF3	DS2	R2	BE1	None	None
291	NORTH POND	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
295	NORTH POND	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
100	PANORAMA	A2	I/E1	DW1	BF2	DS1	R2	BE1	C1	DKF1
55	PANORAMA	A2	I/E1	DW1	BF1	DS2	R2	BE1	C1	DKF1
450	PINE BURR	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
110	PORPENN	A1	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
226	PORPENN	A1	I/E1	DW1	BF3	DS2	R2	BE1	C1	DKF1
404	PORPENN	None	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
405	PORPENN	A1	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
500	PORPENN	None	I/E1	DW2	BF3	DS1	R2	None	None	DKF1
58	RAINBOW	A1	I/E1	None	BF2	DS2	R2	BE1	None	DKF1
60	RAINBOW	A1	I/E1	None	BF2	DS3	R2	BE1	None	DKF1
310	ROUNDABOUT	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
330	ROYAL	None	I/E1	DW1	BF2	DS2	R2	BE1	C1	DKF1
289	SAN JUAN VISTA	A2	I/E1	DW1	BF1	DS4	R2	BE1	None	DKF1
410	SAN JUAN VISTA	None	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
485	SAN JUAN VISTA	A1	I/E1	DW2	BF1	DS2	R2	BE1	C1	DKF1
240	SANTIAGO BASIN	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
20	SILVER BLUFF	None	I/E1	None	BF2	DS3	R2	BE1	C1	DKF1
467	SILVER BLUFF	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
280	SKELETON GULCH	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1

House Number	Street Name	Address Visible	Ingress/ Egress	Driveway Width	Background Fuel Type	Defensible Space	Roof	Building Exterior	Other Combustibles	Decks & Fencing
350	SKELETON GULCH	A2	I/E1	DW2	BF3	DS1	R1	BE1	C1	DKF1
180	SOULSEASE	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
306	SOULSEASE	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
434	SOULSEASE	A1	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
435	SOULSEASE	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
210	STAR POINTER	A1	I/E1	DW1	BF3	DS3	R2	BE1	C1	DKF1
60	STAR POINTER	A1	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1
67	STAR POINTER	A2	I/E1	DW1	BF2	DS3	R2	BE1	C1	DKF1
206	STORM	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
244	STORM	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
330	STORM	A2	I/E1	DW2	BF3	DS1	R2	BE1	C1	DKF1
5156	TERRIBLE MOUNTAIN	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
5156	TERRIBLE MOUNTAIN	A2	I/E1	DW2	BF3	DS3	R2	BE1	C1	DKF1
280	TEXAS TWO	A2	I/E1	DW2	BF1	DS3	R2	BE1	None	DKF1
1070	UPPER ARMSTRONG GULCH	A2	I/E1	DW2	BF2	DS1	R2	BE1	C1	DKF1
820	UPPER ARMSTRONG GULCH	A2	I/E1	DW2	BF3	DS2	R2	BE1	C1	DKF1
350	WILLIAM TELL	A1	I/E1	DW2	BF3	DS1	R2	BE1	C1	None
390	WILLIAM TELL	A2	I/E1	DW2	BF2	DS2	R2	BE1	C1	DKF1

Appendix E: Gunnison County CWPP Risk Reduction Recommendations

The Gunnison County Community Wildfire Protection Plan outlined landscape scale risk reduction recommendations for the Quartz Creek community. Please refer to the table below and the map on the following pages. *For more specific information about the projects including suggested methodology for completing the projects, please refer to the Gunnison County CWPP in the 'Quartz Creek' section of the plan.*

Gunnison County CWPP: Quartz Creek Landscape Scale Fuels Treatments

Charlie's Challenge Roadside Thinning	The Charlie's Challenge roadside thinning is located along one of the primary access routes into the Quartz Creek Subdivision. This roadside thinning is designed to increase the emergency access and civilian egress.
Road 879 Roadside Thinning	This second egress recommendation is focused on improving and maintaining a USFS road so that it is a viable access to the southwest side of the community. Also thinning the fuels along the egress route would provide safer egress for civilians and provide an access for response from Ohio City.
Quartz Creek Fuels Treatment	This fuels treatment area is designed to expand the impact of the Charlie's Challenge Rd by encouraging further stand management.
Patch Cutting	Multiple acre patch cuts should be spread out throughout the community on the property of cooperating landowners in order to reduce the crown continuity of the spruce/fir and lodgepole pine fuels in and around the community.

Quartz Creek Recommendations:

As part of the stakeholder meeting held during the planning process, fuels reduction projects and other recommendations were identified. The QC CWPP Planning Stakeholders discussed several additional recommendations (other than those identified in the Gunnison County CWPP) for the QC community. These recommendations include:

Roadside Thinning Projects:

1. Charlie's Challenge Roadside Thinning and mosaic patch cuts. Charlie's Challenge is a main route through the Quartz Creek community. A majority of the road is overgrown with dense fuel. In many places, it is difficult for two cars to pass each other going in opposing directions. The Stakeholder group recommends mosaic patch cuts in addition to the roadside thinning. These patch cuts should extend at least 150ft from the centerline of the road.

2. Forest Service Road 879 Roadside Thinning. The stakeholder group reviewed the recommendation from the County CWPP and agree that the thinning project should remain a target for treatment. This road is the only other ingress/egress route for the community. This project also ties in with West Mountain Fuels Reduction Project that is identified in the Fuels Reduction Map in the next section.

Typical roadside thinning and fuels reduction projects involve thinning trees to increase crown spacing, pruning of residual tress to raise canopy height and removing ladder fuels to reduce the vertical fuel continuity among residual trees.

*To obtain more specific information on implementing these recommendations, please see appendix F in the back of this document.

Fuels Treatments:

The Quartz Creek community is almost entirely surrounded by National Forest System Lands. The planning stakeholders discussed several cross-boundary fuels reduction projects that would benefit the community greatly in helping to mitigate wildfire risk.

1. West Mountain Fuels Reduction Project has been identified by the USFS GMUG as a fuels reduction priority. To date approximately 223 acres have been treated to the southwest of the Quartz Creek Community along Forest Service Road 879. Plans are in place to complete an additional 45+/- acres further to the north near Fossil View Drive. The purpose of this project is to change the fuel continuity that currently exist, opening up crown canopy, removing ladder fuels and ground fuels that will help reduce crown fire and spread potential. Ideally, if there was a fire in the area, the treatment would help keep the fire on the ground instead of in the crowns of the trees. The treatment would also allow line officers and firefighters strategic and tactical options to help control the fire and reduce impacts to the community. These projects increase firefighter and civilian safety by reducing fire intensity in proximity to homes and ingress/egress routes.

2. Quartz Creek Fuels Treatment. The Stakeholder group reviewed the Quartz Creek Fuels Treatment recommendation as outlined in the Gunnison County CWPP and made the determination that project boundary adjustments needed to be made in order to make the project feasible. The proposed project is located where Schoolhouse Gulch and Kimmel Gulch intersect on the east side of the Quartz Creek community.

Other Recommendations:

1. Visit http://www.gunnisoncounty.org/emergency_management.html and register your phone to receive emergency notification alerts.
2. Obtain FireWise Communities/USA recognition and hold an annual FireWise event within the community (community clean-up/chipping day, discuss wildfire risk at annual HOA meeting, etc.).
3. Incorporate evacuation planning discussions into annual HOA meetings.
4. Consider establishing a designated slash piling area in the Quartz Creek Community or encouraging landowners/homeowners to participate in Community Chipping Events. Doing so will help encourage community residents to remove dead/ flammable materials from around their homes and lots.

Special Considerations for Spruce Beetle:

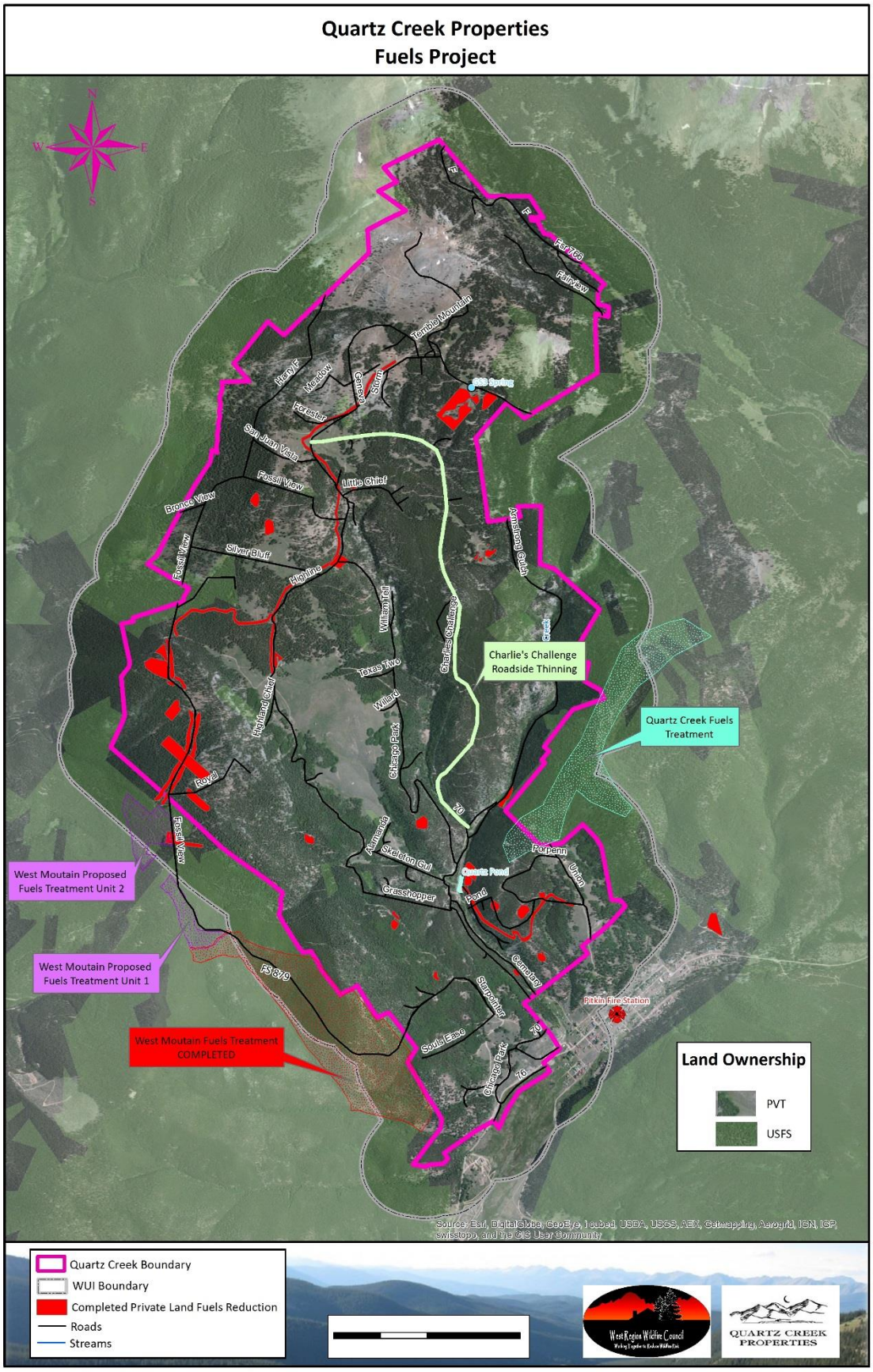
In the midst of the largest Spruce Beetle epidemic on record, there are some important things to consider when managing your forest for long-term resiliency. First, be sure to take a look through the attached Spruce Beetle publication for information on Spruce Beetle, its habits and impact. Get familiar with the signs and symptoms of an infested tree. The 2014 Report on the Health of Colorado's Forest is also an excellent resource for all forest health issues and in particular, monitoring Spruce Beetle population growth. The report can be found at www.csfs.colostate.edu.

The Colorado State Forest Service website contains excellent publications on a variety of topics. It is recommended that Quartz Creek residents learn some basic tree identification so that you can continue to promote tree species diversity.

Considerations for forest management:

1. *Encourage tree species and age diversity when thinning or planting trees.* Most forest health agents are specific to a tree species or genus and generally prefer mature and over-mature trees. Continued promotion of seedling/sapling sized trees in good health will ensure long-term resiliency. If you must make a choice between retaining an over-mature tree vs. a healthy sapling when thinning consider removing the mature trees.
2. *Minimize damage to existing trees.* Avoiding wounding or stressing trees will reduce their susceptibility to forest health pests. Avoid pruning during the growing season when forest health pests are most active. Although this is not always feasible, pruning while a tree is dormant will reduce the energy the tree needs to close a wound during the growing season. Publications on proper pruning techniques are also available on our website.
3. *Consider landscape-scale forest management*. Proactive forest management on a larger scale will have a greater impact on a stand or group of trees and can mimic a natural disturbance such as a small scale wildfire, windthrow event, mortality due to maturity or pest outbreak. Landscape scale management is more economically feasible as forest products can be utilized and can be aesthetically pleasing. Talk to your neighbors when planning management activities to gauge interest.
4. *Consult with a professional forester prior to spraying trees for Spruce Beetle.* Tree spraying can be an effective method at preventing Spruce Beetle attacks but should only be considered on a small scale for individual tree retention. Spraying must be done by a Colorado Certified Applicator. Tree spraying can be costly and must be applied on an annual basis within a small window prior to adult bark beetle emergence. Individual tree spraying is currently the ONLY preventative method shown effective against Spruce Beetle. Although research continues on other preventative options, results are inconclusive as to their efficacy.
5. *Firewood*. During beetle epidemics, populations are easily spread through the movement of firewood. If firewood collectors are cutting on your property ask them where the wood will end up. Standing dead and down and dead trees are safest for firewood use and transport.

Quartz Creek Fuels Recommendations



General Risk Reduction Recommendations

These general recommendations are taken from the Gunnison County CWPP in the Quartz Creek section of the plan.

Home Construction	• Discourage the use of combustible materials for decks, siding and roofs, especially where homes are upslope from heavy vegetation. • Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above heavy fuels.
Landscaping/ Fuels	• Clean leaf and needle litter from roofs and gutters and away from foundations. • Thin vegetation alongside roads and driveways. This is especially important for narrow driveways and road segments, and for any areas where ravines with heavy fuels are below the access. Focus on removing vegetation in drainages that cross roads. • Remove wood piles and propane tanks to at least 30 feet from structures. Wood piles should be located uphill from the home. • Encourage individual landowners to mow fuels near homes and along roadways and fence lines during times of high fire danger.
Preparedness Planning/ Evacuation	• Add reflective addressing to all driveways or homes. A good guideline is to use all metal white markers that are 4 inches in height on a green background. These should be placed three to five feet above ground level. • Ensure that all road signs and attachments are made of reflective, noncombustible materials, and that they are easily understood. • A large-animal evacuation plan should be developed where applicable. Where available, large safety zones should be maintained and identified in all evacuation planning. These safety zones will need to be of adequate size and quality in order to be effective.
Infrastructure	• Provide adequate turnarounds for fire apparatus throughout the community. • Identify all water sources within the community, including hydrants, cisterns and ponds, and make sure that they are visible, maintained and operable.

While the landscape scale fuel reduction treatments are essential for wildfire risk reduction, Quartz Creek wanted to supply its residents with a more specific list of risk reduction elements. The intention is to give each homeowner in the community a list of specific actions that they can complete in order to reduce their risk to wildfire.

To see your specific list of risk reduction recommendations, please reference the appendix of this document. Parcel specific risk reduction recommendations are listed in alphabetical order by street name.

Appendix F: 'Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones'

Colorado State Forest Service

QUICK GUIDE SERIES **FIRE 2012-1**

Protecting Your Home from Wildfire:

Creating Wildfire-Defensible Zones

Formerly CSU Extension Factsheet 6.302

If your home is located in the natural vegetation of Colorado's grasslands, shrublands, foothills or mountains, you live in the **wildland-urban interface** (WUI) and are inherently at risk from a wildfire. The WUI is any area where structures and other human developments meet or intermingle with wildland vegetative fuels. In many vegetation types, it is not a matter of ***if*** a wildfire will impact your home, but ***when***.

Figure 1: ***Firefighters will do their best to protect homes, but ultimately it is the homeowner's responsibility to plan ahead and take actions to reduce fire hazards around structures. Photo: National Interagency Fire Center***

Wildfires are a natural part of Colorado's varied forest ecosystems. Many rural communities are located in areas historically prone to frequent natural wildfires. Living in the wildland requires more self-reliance than living in urban areas. It may take longer for a fire engine to reach your area, and a small fire department can easily become overwhelmed during an escalating wildfire. Planning ahead and taking actions to reduce fire hazards can increase your safety and help protect your property. As more people choose to live in areas prone to wildfire, additional homes and lives are potentially threatened every year. Firefighters always do their best to protect rural residents, but ultimately, **it is YOUR responsibility to protect your life, family, animals and property from wildfire.**

The information contained in this document is for use by individual landowners to help reduce wildfire risk on their property. In order to effectively protect subdivisions and communities, all landowners must work together to reduce fire hazards within and adjacent to communities. This includes treating individual home sites and common areas within communities, and creating fuelbreaks within and adjoining the community where feasible. This document will focus on actions individual landowners can take to reduce wildfire hazards on their property. For additional information on broader community protection, go to www.csfs.colostate.edu.

Figure 2: *Colorado's grasslands, shrublands, foothills and mountains all have areas in the wildland-urban interface where human development meets wildland vegetative fuels. Photo: CSFS*

In this guide, you'll read about steps you can take to protect your property from wildfire. These steps focus on beginning work closest to your house and moving outward. Also, remember that keeping your home safe is not a one-time effort – it requires ongoing maintenance. It may be necessary to perform some actions, such as removing pine needles from gutters and mowing grasses and weeds several times a year, while other actions may only need to be addressed once a year. While

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you may not be able to accomplish ALL of the actions described in this document to prepare your home for wildfire, each completed activity will increase the safety of your home, and possibly your family, during a wildfire.

Figure 3: ***Burning embers can be carried long distances by wind. Embers ignite structures when they land in gaps, crevices and other combustible places around the home. Photo: CSFS***

(Note: These guidelines are adapted for ponderosa pine, Douglas-fir and mixed-conifer ecosystems below 9,500 feet. See page 9 for guidelines adapted to other forest ecosystems.)

This guide primarily will help design your defensible space. **Defensible space** is the natural and landscaped area around a home or other structure that has been modified to reduce fire hazard. Defensible space gives your home a fighting chance against an approaching wildfire. Creating defensible space also reduces the chance of a structure fire spreading to the surrounding forest and other homes.

Three factors determine wildfire behavior: **fuels, weather** and **topography**. We cannot alter weather or topography, so we must concentrate on altering fuels. Fuels include vegetation, such as trees, brush and grass; near homes, fuels also include such things as propane tanks, wood piles, sheds and even homes themselves. Some plant species are more flammable than others, and the flammability of vegetative fuels changes depending on the season, recent weather events, and other factors such as drought. Fuel continuity and density also play an important role in wildfire.

Wildfire often creates its own weather conditions. Hot rising air and associated winds can carry embers and other burning materials into the atmosphere for long distances, where they can ignite vegetation and structures up to several miles away. Embers have caused the loss of many homes during wildfires.

As you think about protecting your home and property from wildfire, consider how you can manage fuels on your property to prevent fire from spreading to your home and other structures.

For more information on wildfire behavior, please see *FireWise Construction: Site Design and Building Materials* at www.csfs.colostate.edu.

Remember...

- ***Reducing fuels around a home will increase the chances for survival in a wildfire, but there is no guarantee.***
- ***This quick guide provides minimum guidelines. The more fuels you remove, the greater the chance your home will survive.***
- ***Working with your neighbors and community will increase the effectiveness of your home's defensible space.***

Fuel Arrangement and Types

When fuels are abundant, a fire can be uncontrollable and destructive. But when fuels are scarce, a fire cannot build momentum and intensity, which makes it much easier to control and is more likely to be beneficial to the land.

The more dense and continuous the fuels, the bigger the threat they pose to your home. The measure of fuel hazard refers to its continuity, both horizontal and vertical. Horizontal continuity refers to fuels across the ground, while vertical continuity refers to fuels extending from the ground up into the crowns of trees and shrubs. Fuels with a high degree of both vertical and horizontal continuity are the most hazardous, particularly when they occur on slopes. Mitigation of wildfire hazards focuses on breaking up the continuity of horizontal and vertical fuels.

Heavier fuels, such as brush and trees, produce a more intense fire than light fuels, such as grass. However, grass-fueled fires travel much faster than heavy-fueled fires. Some heavier surface fuels, such as logs and wood chips, are potentially hazardous heavy fuels and also should be addressed.

Vertical/Ladder Fuels

Ladder fuels are defined as smaller trees and brush that provide vertical continuity, which allows a fire to burn from the ground level up into the branches and crowns of larger trees. Lower branches on large trees also can act as ladder fuels. These fuels are potentially very hazardous, but are easy to mitigate. The hazards from ladder fuels near homes are especially important to address. Prune all tree branches from ground level up to a height of 10 feet above ground or up to 1/3 the height of the tree, whichever is less. Do not prune further up because it could jeopardize the health of the tree. Shrubs should be pruned based on specifications recommended for the species. Dead branches should be removed whenever possible.

Figure 4: *Ladder fuels are shrubs and low branches that allow a wildfire to climb from the ground into the tree canopy. Photo: CSFS*

Surface Fuels

Logs/Branches/Slash/Wood Chips

Naturally occurring woody material on the ground and debris from cutting down trees (also known as slash) may increase the intensity of fires. Increased fire intensity makes a fire harder to control and increases the likelihood of surface fires transitioning to crown fires. Dispose of any heavy accumulation of logs, branches and slash by chipping, hauling to a disposal site or piling for burning later. Always contact your county sheriff's office or local fire department first for information about burning slash piles. Another alternative is to lop and scatter slash by cutting it into very small pieces and distributing it widely over the ground. If chipping logs and/or slash, it's essential to avoid creating continuous areas of wood chips on the ground. Break up the layer of wood chips by adding nonflammable material, or allow for wide gaps (at least 3 feet) between chip accumulations. Also, avoid heavy accumulation of slash by spreading it closer to the ground to speed decomposition. If desired, two or three small, widely spaced brush piles may be left for wildlife habitat. Locate these well away from your home (NOT in Zones 1 or 2; see page 5-8 for zone descriptions).

Figure 5: *Surface fuels include logs, branches, wood chips, pine needles, duff and grasses. Photo: CSFS*

Pine Needles/Duff Layers

Due to decades of fire suppression, decomposing layers of pine needles, twigs and other organic debris–called duff – is deeper under many large trees today than it would have been a century ago. This is especially true in ponderosa pine forests where frequent and naturally occurring fires have been absent. These large trees often are lost when fires occur, because flames burning in the duff layer can pre-heat live vegetation and ignite the trees, or the tree's roots can be damaged from the intense heat of the smoldering duff, killing the tree. It is important to rake needle or duff layers deeper than 2 inches at least 3 feet away from the base of large trees. This should be done annually, and the additional duff also should be removed from the area.

Grasses

Grasses are perhaps the most pervasive and abundant surface fuel in Colorado. Mow grasses and weeds as often as needed throughout the growing season to keep them shorter than 6 inches. This applies to irrigated lawns and wild or native grasses. This is critical in the fall, when grasses dry out, and in the spring, after the snow is gone but before plants green-up.

Be especially careful when mowing in areas with rocks. Mower blades can hit rocks and create sparks, causing fires in dry grass. Consider mowing only on days with high humidity or after recent moisture to reduce the risk of starting an unwanted fire.

When mowing around trees, be sure to avoid damaging the root system and tree trunk by using a higher blade setting on the mower and trimming grass that grows against the trunk only by hand.

Figure 6: *Tree canopies offer fuel for intense crown fires. Photo: Paul Mintier*

Crown Fuels

An intense fire burning in surface fuels can transition into the upper portion of the tree canopies and become a crown fire. Crown fires are dangerous because they are very intense and can burn large areas. Crown fire hazard can be reduced by thinning trees to decrease crown fuels, reducing surface fuels under the remaining trees, and eliminating vertical fuel continuity from the surface into the crowns. Specific recommendations are provided in the Defensible Space Management Zones, pages 5-8.

The Home Ignition Zone

Figure 7: ***Addressing both components of the Home Ignition Zone will provide the best protection for your home. Credit: CSFS***

Two factors have emerged as the primary determinants of a home's ability to survive a wildfire – the quality of the defensible space and a structure's ignitability. Together, these two factors create a concept called the **Home Ignition Zone** (HIZ), which includes the structure and the space immediately surrounding the structure. To protect a home from wildfire, the primary goal is to reduce or eliminate fuels and ignition sources within the HIZ.

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 ignitability to an existing home.

The **roof** has a significant impact on a structure's ignitability because of its extensive surface area. When your roof needs significant repairs or replacement, use only fire-resistant roofing materials. Also, check with your county building department – some counties now have restrictions against using wood shingles for roof replacement or require specific classifications of roofing material. Wood and shake-shingle roofs are discouraged because they are highly flammable, and are prohibited in some areas of the state. Asphalt shingles, metal sheets and shingles, tile, clay tile, concrete and slate shingles are all recommended roofing materials.

Figure 8: ***(above) Wood shingle roofs are highly flammable and not recommended. Photo: CSFS***

Figure 9: ***(above right) Class A roofing materials including tile, clay, concrete, slate and asphalt shingles are fire-resistant options. Photo: CSFS***

The extension of the roof beyond the exterior structure wall is the eave. This architectural feature is particularly prone to ignition. As fire approaches the building, the exterior wall deflects hot air and gasses up into the eave. If the exterior wall isn't ignition-resistant, this effect is amplified.

Most **decks** are highly combustible. Their shape traps hot gasses, making them the ultimate heat traps. Conventional wooden decks are so combustible that when a wildfire approaches, the deck often ignites before the fire reaches the house.

The **exterior walls** of a home or other structure are affected most by radiant heat from the fire and, if defensible space is not adequate, by direct contact with flames from the fire.

Figure 10: ***Decks, exterior walls and windows are important areas to examine when addressing structure ignitability. Photo: CSFS***

Windows are one of the weakest parts of a building with regard to wildfire. They usually fail before the building ignites, providing a direct path for flames and airborne embers to reach the building's interior.

Burning embers are produced when trees and structures are consumed by wildfire. These embers sometimes can travel more than a mile. Flammable horizontal or nearly horizontal surfaces, such as wooden decks or shake-shingle roofs, are especially at risk for ignition from burning embers. Since airborne embers have caused the loss of many homes in the WUI, addressing structural ignitability is critical, even if the area surrounding a home is not conducive to fire spread.

This guide provides only basic information about structural ignitability. For more information on fire-resistant building designs and materials, refer to the CSFS *FireWise Construction: Site Design and Building Materials* publication at www.csfs.colostate.edu.

Defensible Space

Defensible space is the area around a home or other structure that has been modified to reduce fire hazard. In this area, natural and manmade fuels are treated, cleared or reduced to slow the spread of wildfire. Creating defensible space also works in the reverse, and reduces the chance of a structure fire spreading to neighboring homes or the surrounding forest. Defensible space gives your home a fighting chance against an approaching wildfire.

Figure 11: ***Homesite before defensible space. Photo: CSFS***

Creating an effective defensible space involves a series of management zones in which different treatment techniques are used. Develop these zones around each building on your property, including detached garages, storage buildings, barns and other structures.

The actual design and development of your defensible space depends on several factors: size and shape of building(s), construction materials, slope of the ground, surrounding topography, and sizes and types of vegetation on your property. You may want to request additional guidance from your local Colorado State Forest Service forester, fire department or a consulting forester as you plan a defensible space for your property.

Figure 12: ***Homesite after creating a defensible space. Photo: CSFS***

Defensible space provides another important advantage during a fire: increased firefighter safety. Firefighters are trained to protect structures only when the situation is relatively safe for them to do so. They use a process called "structural triage" to determine if it is safe to defend a home from an approaching wildfire. The presence or absence of defensible space around a structure is a significant determining factor used in the structural triage process, as defensible space gives firefighters an opportunity to do their job more safely. In turn, this increases their ability to protect your home.

If firefighters are unable to directly protect your home during a wildfire, having an effective defensible space will still increase your home's chance of survival. It is important to remember that with wildfire, there are no guarantees. Creating a proper defensible space does not mean that your home is guaranteed to survive a wildfire, but it does significantly improve the odds.

Defensible Space Management Zones

Three zones need to be addressed when creating defensible space:

Zone 1 is the area nearest the home and other structures. This zone requires maximum hazard reduction.

Zone 2 is a transitional area of fuels reduction between Zones 1 and 3.

Zone 3 is the area farthest from the home. It extends from the edge of Zone 2 to your property boundaries.

Figure 13: ***Defensible space management zones. Credit: CSFS***

Figure 14: ***This homeowner worked hard to create a defensible space around the home. Notice that all fuel has been removed within the first 5 feet of the home, which survived the Waldo Canyon Fire in the summer of 2012. Photo: Christina Randall, Colorado Springs Fire Department***

Figure 15: ***Clearing pine needles and other debris from the roof and gutters is an easy task that should be done at least once a year. Photo: CSFS***

Figure 16: ***Enclosing decks with metal screens can prevent embers from igniting a house. Photo: Marilyn Brown, La Plata County***

Zone 1

The width of Zone 1 extends a minimum distance of 15-30 feet outward from a structure, depending on property size. Most flammable vegetation is removed in this zone, with the possible exception of a few low-growing shrubs or fire-resistant plants. Avoid landscaping with common ground junipers, which are highly flammable.

Increasing the width of Zone 1 will increase the structure's survivability. This distance should be increased 5 feet or more in areas downhill from a structure. The distance should be measured from the outside edge of the home's eaves and any attached structures, such as decks. Several specific treatments are recommended within this zone:

- Install nonflammable ground cover and plant nothing within the first 5 feet of the house and deck. This critical step will help prevent flames from coming into direct contact with the structure. This is particularly important if a building is sided with wood, logs or other flammable materials. Decorative rock creates an attractive, easily maintained, nonflammable ground cover.
- If a structure has noncombustible siding (i.e., stucco, synthetic stucco, concrete, stone or brick), widely spaced foundation plantings of low-growing shrubs or other fire-resistant plant materials are acceptable. However, do not plant directly under windows or next to foundation vents, and be sure areas of continuous grass are not adjacent to plantings. Information on fire-resistant plants is available on the CSFS website at www.csfs.colostate.edu.
- Prune and maintain any plants in Zone 1 to prevent excessive growth. Also, remove all dead branches, stems and leaves within and below the plant.
- Irrigate grass and other vegetation during the growing season. Also, keep wild grasses mowed to a height of 6 inches or less.
- Do not store firewood or other combustible materials anywhere in this zone. Keep firewood at least 30 feet away from structures, and uphill if possible.
- Enclose or screen decks with $^1/_8$-inch or smaller metal mesh screening ($^1/_{16}$-inch mesh is preferable). Do not use areas under decks for storage.
- Ideally, remove all trees from Zone 1 to reduce fire hazards. The more trees you remove, the safer your home will be.
- If you do keep any trees in this zone, consider them part of the structure and extend the distance of the entire defensible space accordingly.
- Remove any branches that overhang or touch the roof, and remove all fuels within 10 feet of the chimney.
- Remove all pine needles and other debris from the roof, deck and gutters.
- Rake pine needles and other organic debris at least 10 feet away from all decks and structures.
- Remove slash, wood chips and other woody debris from Zone 1.

Zone 2

Zone 2 is an area of fuels reduction designed to diminish the intensity of a fire approaching your home. The width of Zone 2 depends on the slope of the ground where the structure is built. Typically, the defensible space in Zone 2 should extend at least 100 feet from all structures. If this distance stretches beyond your property lines, try to work with the adjoining property owners to complete an appropriate defensible space.

The following actions help reduce continuous fuels surrounding a structure, while enhancing home safety and the aesthetics of the property. They also will provide a safer environment for firefighters to protect your home.

Tree Thinning and Pruning

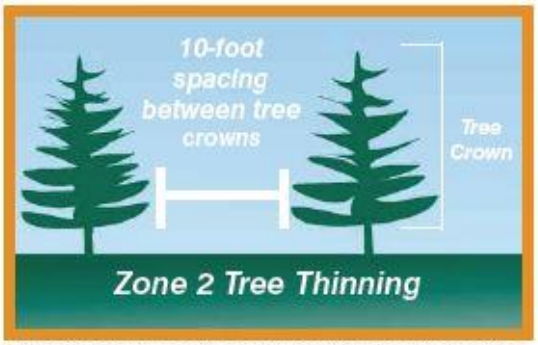

Figure 17: *In Zone 2, make sure there is at least a 10-foot spacing between tree crowns. Credit: CSFS*

- Remove stressed, diseased, dead or dying trees and shrubs. This reduces the amount of vegetation available to burn, and makes the forest healthier.
- Remove enough trees and large shrubs to create at least 10 feet between crowns. Crown separation is measured from the outermost branch of one tree to the nearest branch on the next tree. On steep slopes, increase the distance between tree crowns even more.
- Remove all ladder fuels from under remaining trees. Prune tree branches off the trunk to a height of 10 feet from the ground or $^1/_3$ the height of the tree, whichever is less.
- If your driveway extends more than 100 feet from your home, thin out trees within a 30 foot buffer along both sides of your driveway, all the way to the main access road. Again, thin all trees to create 10-foot spacing between tree crowns.
- Small groups of two or three trees may be left in some areas of Zone 2, but leave a minimum of 30 feet between the crowns of these clumps and surrounding trees.
- Because Zone 2 forms an aesthetic buffer and provides a transition between zones, it is necessary to blend the requirements for Zones 1 and 3. For example, if you have a tree in Zone 2 with branches extending into Zone 1, the tree can be retained if there is proper crown spacing.
- Limit the number of dead trees (snags) to one or two per acre. Be sure snags cannot fall onto the house, power lines, roads or driveways.
- As in Zone 1, the more trees and shrubs removed, the more likely your house will survive a wildfire.

Shrub Thinning/Pruning and Surface Fuels

Figure 18: *Pruning trees will help prevent a wildfire from climbing from the ground to the tree crowns. Credit: CSFS*

- Isolated shrubs may be retained in Zone 2, provided they are not growing under trees.
- Keep shrubs at least 10 feet away from the edge of tree branches. This will prevent the shrubs from becoming ladder fuels.
- Minimum spacing recommendations between clumps of shrubs is 2 $^1/_2$ times the mature height of the vegetation. The maximum diameter of the clumps themselves should be twice the mature height of the vegetation. As with tree-crown spacing, all measurements are made from the edge of vegetation crowns.
- Example – For shrubs 6 feet high, spacing between shrub clumps should be 15 feet or more (measured from the edge of the crowns of vegetation clumps). The diameter of these shrub clumps should not exceed 12 feet.
- Periodically prune and maintain shrubs to prevent excessive growth, and remove dead stems from shrubs annually. Common ground junipers should be removed whenever possible because they are highly flammable and tend to hold a layer of duff beneath them.
- Mow or trim wild grasses to a maximum height of 6 inches. This is especially critical in the fall, when grasses dry out.
- Avoid accumulations of surface fuels, such as logs, branches, slash and wood chips greater than 4 inches deep.

Firewood

- Stack firewood uphill from or on the same elevation as any structures, and at least 30 feet away.
- Clear all flammable vegetation within 10 feet of woodpiles.
- Do not stack wood against your home or on/under your deck, even in the winter. Many homes have burned as a result of a woodpile that ignited first.

Figure 19: *Keep firewood, propane tanks and natural gas meters at least 30 feet away from structures. Photo: CSFS*

Propane Tanks and Natural Gas Meters

- Locate propane tanks and natural gas meters at least 30 feet from any structures, preferably on the same elevation as the house.
- The tank should not be located below your house because if it ignites, the fire would tend to burn uphill. Conversely, if the tank or meter is located above your house and it develops a leak, gas will flow downhill into your home.
- Clear all flammable vegetation within 10 feet of all tanks and meters.
- Do not visibly screen propane tanks or natural gas meters with shrubs, vegetation or flammable fencing. Instead, install 5 feet of nonflammable ground cover around the tank or meter.

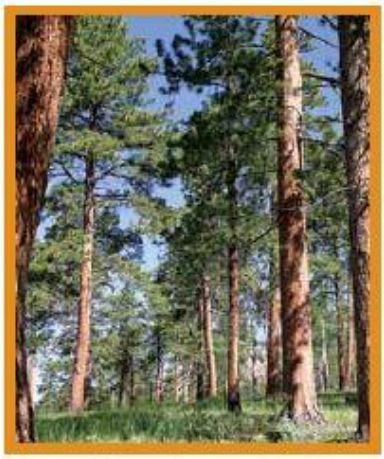

Figure 20: *This ponderosa pine forest has been thinned, which will not only help reduce the wildfire hazard, but also increase tree health and vigor. Photo: CSFS*

Zone 3

Zone 3 has no specified width. It should provide a gradual transition from Zone 2 to areas farther from the home that have other forest management objectives. Your local Colorado State Forest Service forester can help you with this zone.

This zone provides an opportunity for you to improve the health of the forest through proper management. With an assortment of stewardship options, you can proactively manage your forest to reduce wildfire intensity, protect water quality, improve wildlife habitat, boost the health and growth rate of your trees, and increase tree survivability during a wildfire.

In addition, properly managed forests can provide income, help protect trees against insects and diseases, and even increase the value of your property. Typical forest management objectives for areas surrounding home sites or subdivisions provide optimum recreational opportunities; enhance aesthetics; improve tree health and vigor; provide barriers against wind, noise, dust and visual intrusions; support production of firewood, fence posts and other forest commodities; or cultivate Christmas trees or trees for transplanting.

Consider the following when deciding forest management objectives in Zone 3:

- The healthiest forest is one that includes trees of multiple ages, sizes and species, and where adequate growing room is maintained over time.
- Remember to consider the hazards associated with ladder fuels. A forest with a higher canopy reduces the chance of a surface fire climbing into the tops of the trees, and might be a priority if this zone has steep slopes.
- A greater number of snags – two or three per acre, standing or fallen – can be retained in Zone 3 to provide wildlife habitat. These trees should have a minimum diameter of 8 inches. Make sure that snags pose no threat to power lines or firefighter access roads.
- While tree pruning generally is not necessary in Zone 3, it may be a good idea from the standpoint of personal safety to prune trees along trails and firefighter access roads. Or, if you prefer the aesthetics of a well-manicured forest, you might prune the entire area. In any case, pruning helps reduce ladder fuels within tree stands, thus reducing the risk of crown fire.
- Mowing grasses is not necessary in Zone 3.
- Any approved method of slash treatment is acceptable, including piling and burning, chipping or lop-and-scatter.

Other Recommendations

Windthrow

In Colorado, some tree species, including lodgepole pine, Engelmann spruce and Douglas-fir, are especially susceptible to damage and uprooting by high winds or windthrow. If you see evidence of this problem in or near your home, consider making adjustments to the defensible space guidelines. It is highly recommended that you contact a professional forester to help design your defensible space, especially if you have windthrow concerns.

Figure 21: ***During high winds, these lodgepole pine trees fell onto the house. Lodgepole pine is highly susceptible to windthrow. Photo: CSFS***

Water Supply

If possible, make sure that an on-site water source is readily available for firefighters to use, or that other water sources are close by. Lakes, ponds, swimming pools and hot tubs are all possible options. If there are no nearby water sources, consider installing a well-marked dry hydrant or cistern. If your primary water source operates on electricity, be sure to plan for a secondary water source. During wildfires, structures often are cut off from electricity. For more information on how to improve the accessibility of your water source, contact your local fire department.

Recommendations for Specific Forest Types

The above recommendations refer primarily to ponderosa pine, Douglas-fir and mixed-conifer ecosystems. For other forest types, please refer to the additional recommendations below:

Figure 22: ***Mature aspen stands can contain many young conifers, dead trees and other organic debris. This can become a fire hazard. Photo: CSFS***

Aspen

Tree spacing and ladder fuel guidelines do not apply to mature stands of aspen trees. Generally, no thinning is recommended in aspen forests, regardless of tree size, because the thin bark is easily damaged, making the tree easily susceptible to fungal infections. However, in older stands, numerous dead trees may be on the ground and require removal. Conifer trees often start growing in older aspen stands. A buildup of these trees eventually will increase the fire hazard of the stand, so you should remove the young conifers. Brush also can increase the fire hazard and should be thinned to reduce flammability.

Lodgepole Pine

Lodgepole pine management in the WUI is much different than that for lodgepole pine forests located away from homes, communities and other developments. Normally, it is best to develop fuels management and wildfire mitigation strategies that are informed and guided by the ecology of the tree species. This is not the case with lodgepole pine.

Figure 23: ***A young lodgepole pine stand. Thinning lodgepole pines early on in their lives will help reduce the wildfire hazard in the future. Photo: CSFS***

Older lodgepole pine stands generally do not respond well to selective thinning, but instead respond better to the removal of all trees over a defined area to allow healthy forest regeneration. Selectively thinning lodgepole can open the stand to severe windthrow and stem breakage. However, if your home is located within a lodgepole pine forest, you may prefer selective thinning to the removal of all standing trees.

To ensure a positive response to thinning throughout the life of a lodgepole pine stand, trees must be thinned early in their lives – no later than 20 to 30 years after germination. Thinning lodgepole pine forests to achieve low densities can best be

The defensible space guidelines in this quick guide are predominantly for ponderosa pine and mixed-conifer forests. These guidelines will vary with other forest types.

accomplished by beginning when trees are small saplings, and maintaining those densities through time as the trees mature.

Thinning older stands of lodgepole pine to the extent recommended for defensible space may take several thinning operations spaced over a decade or more. When thinning mature stands of lodgepole pine, do not remove more than 30 percent of the trees in each thinning operation. Extensive thinning of dense, pole-sized and larger lodgepole pine often results in windthrow of the remaining trees. Focus on removing trees that are obviously lower in height or suppressed in the forest canopy. Leaving the tallest trees will make the remaining trees less susceptible to windthrow.

Another option is leaving clumps of 30-50 trees. Clumps are less susceptible to windthrow than solitary trees. Allow a minimum of 30-50 feet between tree crowns on the clump perimeter and any adjacent trees or clumps of trees. Wildfire tends to travel in the crowns of lodgepole pine. By separating clumps of trees with large spaces between crowns, the fire is less likely to sustain a crown fire.

Figure 24: ***Piñon-juniper forests are often composed of continuous fuels. Creating clumps of trees with large spaces in between clumps will break up the continuity. Photo: CSFS***

Piñon-Juniper

Many piñon-juniper (PJ) forests are composed of continuous fuel that is highly flammable. Fire in PJ forests tend to burn intensely in the crowns of trees. Try to create a mosaic pattern when you thin these trees, with a mixture of individual trees and clumps of three to five trees. The size of each clump will depend on the size, health and location of the trees. The minimum spacing between individual trees should be 10 feet between tree crowns, with increasing space for larger trees, clumps, and stands on steeper slopes.

Tree pruning for defensible space is not as critical in PJ forests as in pine or fir forests. Instead, it is more important to space the trees so that it is difficult for the fire to move from one tree clump to the next. Trees should only be pruned to remove dead branches or branches that are touching the ground. However, if desired, live branches can be pruned to a height of 3 feet above the ground. Removing shrubs that are growing beneath PJ canopies is recommended to reduce the overall fuel load that is available to a fire.

It is NOT recommended to prune live branches or remove PJ trees between April and October, when the piñon ips beetle is active in western Colorado. Any thinning activity that creates the flow of sap in the summer months can attract these beetles to healthy trees on your property. However, it is acceptable to remove dead trees and dead branches during the summer months.

For more information, please refer to the CSFS *Piñon-Juniper Management Quick Guide* at www.csfs.colostate.edu.

Figure 25: ***Gambel oak needs to be treated in a defensible space at least every 5-7 years because of its vigorous growing habits. Photo: CSFS***

Gambel Oak

Maintaining Gambel oak forests that remain resistant to the spread of wildfire can be a challenge because of their vigorous growing habits. Gambel oak trees grow in clumps or groves, and the stems in each clump originate from the same root system. Most reproduction occurs through vegetative sprouts from this deep, extensive root system. You may need to treat Gambel oak near your home every five to seven years. Sprouts also should be mowed at least once every year in Zones 1 and 2. Herbicides can be used to supplement mowing efforts for controlling regrowth.

For more information, please refer to the CSFS *Gambel Oak Management* publication at www.csfs.colostate.edu.

Note: This publication does not address high-elevation spruce-fir forests. For information on this forest type, please contact your local CSFS district office.

Maintaining Your Defensible Space

Your home is located in a dynamic environment that is always changing. Trees, grasses and shrubs continue to grow, die or are damaged, and drop their leaves and needles each season. Just like your home, the defensible space around it requires regular, ongoing maintenance to be effective. Use the following checklists to build and maintain your defensible space.

Defensible Space: Initial Projects

Figure 26: *Keeping the forest properly thinned and pruned in a defensible space will reduce the chances of a home burning during a wildfire. Photo: CSFS*

- ☐ Properly thin and prune trees and shrubs within Zones 1 and 2.
- ☐ Dispose of slash from tree/shrub thinning.
- ☐ Screen attic, roof, eaves and foundation vents, and periodically check them to ensure that they are in good condition.
- ☐ Screen or wall-in stilt foundations and decks; screens should be $^{1}/_{8}$-inch or smaller metal mesh ($^{1}/_{16}$-inch mesh is best).
- ☐ Post signs at the end of the driveway with your last name and house number that are noncombustible, reflective and easily visible to emergency responders.
- ☐ Make sure that the driveway is wide enough for fire trucks to enter and exit, and that trees and branches are adequately cleared for access by fire and emergency equipment. Contact your local fire department or check the CSFS website for information specific to access.
- ☐ Take pictures of your completed defensible space for comparison of forest growth over time.

Defensible Space Tasks: Annual Requirements

Figure 27: *Sharing information and working with your neighbors and community will give your home and surrounding areas a better chance of surviving a wildfire. Photo: CSFS*

- ☐ Clear roof, deck and gutters of pine needles and other debris. *
- ☐ Mow grass and weeds to a height of 6 inches or less. *
- ☐ Rake all pine needles and other flammable debris away from the foundation of your home and deck. *
- ☐ Remove trash and debris accumulations from the defensible space.*
- ☐ Check fire extinguishers to ensure that they have not expired and are in good working condition.
- ☐ Check chimney screens to make sure they are in place and in good condition.
- ☐ Remove branches that overhang the roof and chimney.
- ☐ Check regrowth of trees and shrubs by reviewing photos of your original defensible space; properly thin and prune trees and shrubs within Zones 1 and 2.
- ☐ Dispose of slash from tree/shrub thinning. *

**Address more than once per year, as needed.*

Be Prepared

- ☐ Complete a checklist of fire safety needs inside your home (these should be available at your local fire department). Examples include having an evacuation plan and maintaining smoke detectors and fire extinguishers.
- ☐ Develop your fire evacuation plan and practice family fire drills. Ensure that all family members are aware of and understand escape routes, meeting points and other emergency details.
- ☐ Contact your county sheriff's office and ensure that your home telephone number and any other important phone numbers appear in the county's Reverse 911 or other emergency notification database.
- ☐ Prepare a "grab and go" disaster supply kit that will last at least three days, containing your family's and pets' necessary items, such as cash, water, clothing, food, first aid and prescription medicines.
- ☐ Ensure that an outdoor water supply is available. If it is safe to do so, make a hose and nozzle available for responding firefighters. The hose should be long enough to reach all parts of the house.

Preparing your home and property from wildfire is a necessity if you live in the wildland-urban interface. It is important to adequately modify the fuels in your home ignition zone. Remember, every task you complete around your home and property will make your home more defensible during a wildfire.

Always remember that creating and maintaining an effective defensible space in the home ignition zone is not a one-time endeavor – it requires an ongoing, long-term commitment.

If you have questions, please contact your local CSFS district office. Contact information can be found at www.csfs.colostate.edu.

Figure 28: ***This house has a high risk of burning during an approaching wildfire. Modifying the fuels around a home is critical to reduce the risk of losing structures during a wildfire. Photo: CSFS***

List of Additional Resources

- The Colorado State Forest Service, http://www.csfs.colostate.edu
- CSFS wildfire-related publications, http://csfs.colostate.edu/pages/wf-publications.html
- Community Wildfire Protection Planning, http://csfs.colostate.edu/pages/community-wf-protection-planning.html
- Colorado's "Are You FireWise?" information, http://csfs.colostate.edu/pages/wf-protection.html
- National Fire Protection Association's Firewise Communities USA, http://www.firewise.org
- Fire Adapted Communities, http://fireadapted.org/
- Ready, Set, Go!, http://wildlandfirersg.org/

Figure 29: *This house survived the Fourmile Canyon Fire in 2010. Photo: CSFS*

Figure 30: ***Firefighters were able to save this house during the 2012 Weber Fire because the homeowners had a good defensible space. Photo: Dan Bender, La Plata County***

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Appendix G: CSFS 'Spruce Beetle Quick Guide'

QUICK GUIDE SERIES FM 2014-1

Spruce Beetle

An Agent of Subalpine Change

The spruce beetle is a native species in Colorado's spruce forest ecosystem. Endemic populations are always present, and epidemics are a natural part of the changing forest. There usually are long intervals between such events as insect and disease epidemics and wildfires, giving spruce forests time to regenerate. Prior to their occurrence, the potential impacts of these natural disturbances can be reduced through proactive forest management.

Figure 1. *Engelmann spruce trees infested with spruce beetles on Spring Creek Pass. Photo: William M. Ciesla*

The spruce beetle (*Dendroctonus rufipennis*) is responsible for the death of more spruce trees in North America than any other natural agent. Spruce beetle populations range from Alaska and Newfoundland to as far south as Arizona and New Mexico. The subalpine Engelmann spruce is the primary host tree, but the beetles will infest any spruce tree species within their geographical range, including blue spruce. In Colorado, the beetles are most commonly observed in high-elevation spruce forests above 9,000 feet.

At endemic or low population levels, spruce beetles generally infest only downed trees. However, as spruce beetle population levels in downed trees increase, usually following an avalanche or windthrow event – a high-wind event that topples trees over a large area – the beetles also will infest live standing trees. Spruce beetles prefer large (16 inches in diameter or greater), mature and over-mature spruce trees in slow-growing, spruce-dominated stands. However, at epidemic levels, or when large-scale, rapid population increases occur, spruce beetles may attack trees as small as 3 inches in diameter. Attacks also have been observed in krummholz – trees near timberline that exhibit stunted growth due to harsh conditions.

Figure 2. *Spruce beetles are no larger than a grain of rice. Photo: William M. Ciesla*

Life History

Spruce beetles have a life cycle of one to three years, and a two-year life cycle is the most common. Adult spruce beetles usually are dark brown to black with reddish-brown or black wing covers. They are cylindrical in shape and

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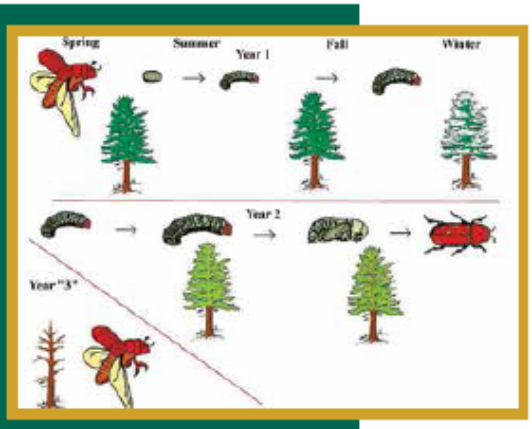

Figure 3. *The spruce beetle life cycle. Graphic: U.S. Forest Service*

Figure 5. *Light reddish-brown boring dust at the base of a tree or in bark crevices can be a sign of spruce beetle infestation. Photo: William M. Ciesla*

approximately ¼-inch (6 millimeters) long and ⅛-inch (3 millimeters) wide, or about the size of a grain of rice.

Each year, adult spruce beetles emerge from dead or dying trees between late May and July. Emerging beetles search for sufficient host material, such as a windthrow; freshly cut logs or stumps; or mature, standing trees. The females bore through the outer bark of the host tree to create galleries in the sapwood, or phloem, where they will lay their eggs. Spruce beetle eggs are minute, oblong in shape and pearly white in color.

After the eggs hatch, the spruce beetle larvae spend the winter developing under the bark of their host trees. The larvae are creamy white and about ¼-inch (6 millimeters) long. They tunnel outward, away from the egg gallery, creating individual feeding galleries, or tunnels, in the phloem of the tree. The phloem layer, which transports nutrients created from photosynthesis throughout the tree, also provides food for the larvae. However, the feeding galleries created by the larvae prevent the flow of nutrients, ultimately killing the tree.

Figure 4. *Spruce beetles in the pupal stage reside under the bark. Photo: William M. Ciesla*

The larvae turn into pupae approximately 18 months after the host tree is attacked. Spruce beetle pupae, like mature adults, have wings, legs and antennae, and turn a pale tan color as they mature.

During the second year of the spruce beetle life cycle, some beetles spend the winter in pupal chambers at the end of larval galleries, while others emerge from their host tree and bore back into the same tree near the base to hibernate for the winter. Overwintering at the litter line, or base of the host tree, decreases the risk of predation by woodpeckers and the risk of beetle mortality due to cold winter temperatures, as accumulating snowpack adds an insulating layer around the lower trunk of the host tree. After the beetles have developed for 2 years, they will exit the host tree and look for a new host.

Signs and Symptoms of Spruce Beetle Infestation

Unlike some other dying and dead conifers infested by bark beetles, needles of infested spruce trees do not turn bright red or orange. Instead, after being attacked by spruce beetles, spruce needles slowly fade to a pale yellowish-green color before turning gray. Spruce trees often retain their needles for several years after being attacked by spruce beetle. Thus, loss of foliage is not readily apparent until a year or more after a tree has been attacked.

After a tree has been infested by spruce beetles, early signs of attack may include:

- Light reddish-brown boring dust accumulates in bark crevices and around the base of the tree, which is produced when beetles bore new entry holes.

- Pitch streamers – strings of resin that look similar to candle wax – generally visible 8 feet or higher on the tree trunk.
- Small pitch tubes, or masses of resin, although these may not be present on an infested tree.

These signs of infestation are most visible during the summer of initial attack and become less visible in the following seasons. Other signs of attack that may be observed later include:

- Small, round holes in the bark of an infested tree. These holes usually are a result of mature beetles exiting the tree after they have completed their development under the bark, but they also may indicate spruce beetle entrance and/or ventilation holes.
- Evidence of increased woodpecker activity. Woodpeckers will attempt to remove tree bark to prey on the underlying bark beetles, usually in the winter and spring, which often results in the accumulation of bark flakes on the snow or ground below the infested tree.
- Pale green needles. As they begin to drop, these needles also will accumulate under the canopies of infested trees.

Spruce beetle attacks also can be detected on the bottom surfaces of downed, windthrown trees or shady surfaces on trees, usually on the north side. For further assistance in identifying spruce trees attacked by spruce beetle, contact your local forester.

Natural Controls

Multiple natural controls keep spruce beetle populations in check when they are not at epidemic levels. Woodpeckers and other insects that feed on spruce beetles account for several of these controls. During epidemics, however, natural control agents, while abundant, do not have a significant impact on the beetle population. Extreme cold temperatures also can increase spruce beetle mortality. However, adult beetles will colonize around the base of a tree, or under the snow line, because the snow will insulate them from extreme cold.

Management/Prevention

One of the best ways to mitigate the effects of spruce beetle outbreaks is to manage for overall forest health and resiliency. Improving tree stand condition, by creating tree age and species diversity, will maintain and support forest health and reduce the potential impact of future spruce beetle attacks. Removing downed spruce also may prevent the build-up of large local spruce beetle populations.

When considering any treatment for spruce beetles, choose an option that best meets individual management objectives. Treatments can be effective if directions are carefully followed, but can be time-consuming and costly, and may not be practical or effective for all situations. Also, it is important to note that spruce forests usually are present only at higher elevations, where access to sites is limited and may be restricted by snow. It is essential to research the best possible treatments for a specific area before taking action.

Figure 7. *Pitch streamers look like candle wax and usually are found above 8 feet on a tree. Photo: Lisa Mason, CSFS*

Figure 8. *Small masses of resin called pitch tubes sometimes can be seen after spruce beetles have infested a tree. Photo: CSFS*

Figure 9. *The accumulation of bark flakes on the ground indicates that woodpeckers have fed on spruce beetles living in this tree. Photo: CSFS*

Figure 10. *Spraying insecticides is an effective management technique to prevent bark beetle attacks. Photo: CSFS*

Preventive Sprays

Use of insecticides is a management technique that has proven effective in preventing spruce beetle infestation of individual trees. Certain formulations of carbaryl and pyrethroids that are registered and have been tested for effectiveness are the primary insecticide sprays used to help reduce the likelihood of attacks on individual, high-value trees. The Colorado State Forest Service (CSFS) recommends spraying only high-value trees, such as those near homes, businesses or recreation sites. Overuse of insecticide sprays may have negative environmental impacts on water supplies and wildlife. Also, these sprays are not cost-effective on a landscape scale.

Before using preventive chemical sprays, consider the following guidelines:

Insecticide sprays may be effective if applied to live, green trees:

- in the late spring or early summer, before the next year's flight
- in the fall, before the next year's flight, if access to the site is difficult in the early spring
- in the proper dosage and mixture
- annually
- consistently, to cover the entire tree

Insecticide sprays will NOT be effective if:

- applied to trees already infested with spruce beetles
- applied in improper dosages or mixtures
- significant rainfall or very high air temperatures occur immediately after application
- chemicals were not properly stored before use

If planning to use preventive sprays, carefully read all label precautions before application. The CSFS recommends that preventive sprays be applied only by a certified applicator.

Solar Treatments

Solar treatments also can be used to reduce spruce beetle populations in infested stands. These treatments involve felling infested trees and stacking logs in an area with full sun before covering them with clear plastic. Solar treatment of infested trees creates conditions unsuitable for survival of spruce beetles, forcing them to either relocate or die. The temperature under the bark must reach a minimum of 110 degrees F for this treatment to effectively reduce beetle populations. Remember that spruce beetles tend to reside on the bottom side of horizontal trees or logs, where the environment is cooler and moister. Turning the logs periodically is essential for all of the bark to reach 110 degrees F. Solar treatments in spruce forests can be challenging, because spruce forests tend to be cool, moist and shady, without ample sunlight. Talk to your local CSFS forester to determine if this is an appropriate treatment for your area.

Trap Trees

Trap trees are another management option that can prevent the spread of spruce beetle populations. These trees serve as traps for emerging, adult spruce beetles. Trap trees are intentionally baited with a spruce beetle attractant chemical that ideally will be selected as suitable hosts for emerging spruce beetles. After the

trap trees become infested with beetles, they are removed and destroyed by forest managers while all of the spruce beetles are still inside, thereby reducing the population level of the next generation. This method is effective, but requires a significant amount of time and effort to plan, monitor and safely remove trees in a timely manner. Many variables must be considered, including the number of trap trees per acre, tree diameter and timing for tree cutting and removal. It is highly recommended that a local CSFS forester be contacted before using this treatment option.

Figure 11. *Solar treatments can be effective, but also challenging because spruce forests often are cool, moist and shady in the summer. Photo: CSFS*

Pheromones

Studies currently are being conducted on pheromones, including MCH (a successful anti-aggregate pheromone for Douglas-fir beetle), to determine whether they will serve as effective anti-aggregate treatments for spruce beetle. Anti-aggregate pheromones essentially are "No Vacancy" signs that communicate to beetles that specific trees are unavailable to more beetles. The CSFS will make information available on pheromone effectiveness as soon as sufficient research on its use has been conducted.

Mechanical Treatments

Mechanical treatments, such as felling trees and subsequently chipping the wood and/or burning the resulting slash piles, is another management option, but it often is difficult to get the proper equipment on steep, remote terrain where spruce forests exist. Debarking is another mechanical means to kill developing larvae under the tree bark. This is a labor-intensive method that involves peeling away the bark by hand or using machinery. Logs also can be buried under at least 8 inches of soil. However, debarking and burying logs often are not feasible options in native spruce forests because of the terrain.

Contact a local CSFS forester for more information on best forest management practices to improve forest health and mitigate spruce beetle outbreaks.

Figure 12. *The San Juan Mountains in southwestern Colorado have been heavily infested with spruce beetle. In the photo above, 70-90 percent of the mature Engelmann spruce trees have been killed by spruce beetle and have turned gray. Photo: Ron Klatt, USDA Forest Service (retired)*

It is important to remember that transporting infested wood can spread spruce beetles to other areas. Trees and logs are only safe to transport when a tree has lost all of its needles or has been dead for some time and the spruce beetles have long-since emerged.

Potential Implications of Spruce Beetle in Colorado

Figure 13. *The Clark's nutcracker is an important species in spruce-fir forests because it helps disperse tree seeds in the forest. Photo: Dave Leatherman*

Colorado's high-elevation forests provide clean air and water, wildlife habitat, world-class recreational opportunities, wood products and unparalleled scenery. These benefits contribute to quality of life and are vital to state and local economies. However, without careful management of forest resources, these assets and community safety are at risk.

It is important to remember that the spruce beetle is a native insect in Colorado's spruce forest ecosystem and a natural part of the changing forest. However, the potential impacts of these natural disturbances can be reduced through proactive forest management.

Figure 14. *Spruce-fir forests provide habitat for many wildlife species. Photo: Dave Leatherman*

Forests typically attacked and killed by spruce beetles are located at the headwaters of Colorado's rivers, which provide water to 18 states. Water yields may be influenced by the death of so many trees, and the impacts to water quality and quantity may be significant when large wildfires occur in these forests.

Spruce-fir forests provide important habitat to a number of wildlife species, including the red squirrel, snowshoe hare, pine marten, boreal owl, Clark's nutcracker and three-toed woodpecker. Spruce-fir forests also are essential to the habitat matrix required by the reintroduced Canada lynx and one of Colorado's most at-risk amphibians, the boreal toad, which inhabits open, high-moisture areas within spruce-fir forests. Seventeen of Colorado's "Species of Greatest Conservation Need," as identified by Colorado Parks and Wildlife, rely on spruce-fir forests for their primary habitat. Change in forest cover of spruce-fir forests could negatively impact the habitat of these species.

Figure 15. *Spruce beetle mortality in the upper Rio Grande Basin. Photo: Joe Duda, CSFS*

Recreational opportunities, such as downhill and cross-country skiing, camping, hunting and fishing, also are predominant in areas of the state that could be impacted by the spruce beetle.

It is critical to proactively manage spruce forests and for individuals and communities to remain informed about threats to forest health to ensure survival of vast, healthy forests for present and future generations.

Wildfire Safety in Spruce-fir Forests

When addressing spruce beetle concerns in high-elevation forests, it is important to understand historical wildfire occurrence in spruce forests. Unlike many other Colorado forest types, spruce-fir forests are not adapted to frequent fires. The interval between naturally occurring wildfires in Colorado spruce-fir forests may be 300 years or longer. If a wildfire does occur in a spruce forest, the trees' thin bark and the persistence of many dead lower limbs increases their susceptibility to fire, as well as the likelihood of intense crown fires and widespread tree mortality. If a stand-replacing fire occurs in a spruce-fir forest where most or all of the trees in the stand are killed, it may take as long as 400 years for the forest to mature.

Figure 16. *Spruce beetle mortality can contribute to high wildfire risk. Photo: Kent Grant, CSFS*

When treating spruce-fir forests to mitigate wildfire risk, concentrate on reducing fuel loads. Heavier fuels, such as brush and trees, are more hazardous and produce more intense fires than light fuels, such as grasses. Fuels mitigation focuses on breaking up the continuity of fuels, with greater distance between trees and other vegetation.

When managing spruce-fir forests for wildfire hazard reduction around homes or other structures, consider the following:

- Remove dead and downed debris on the ground to break up the continuity of flammable material. This can help slow the spread of a wildfire. Leave rotting wood on the ground.
- Prune off the dead lower branches of any spruce tree within 100 feet of the home or structure. This will reduce the likelihood of a wildfire traveling up the tree.
- Remove all dead trees within one-and-a-half times the tree height around homes, structures or roads. Not only are they a wildfire hazard, they also are more apt to fall.
- Spruce forests are susceptible to windthrow and thinning them can increase this risk. Before thinning spruce forests or designing a defensible space around a home or structure, it is advisable to talk with a forester.
- For more information on reducing wildfire risk on your property, refer to the CSFS website at http://csfs.colostate.edu.

Figure 17. *Blowdown areas in spruce forests can increase the continuity of flammable material during a wildfire. Photo: Rio Grande National Forest*

Figure 18. *Pruning the lower branches of a spruce tree can reduce the chances of a wildfire traveling up a tree. Photo: CSFS*

Figure 19. *Colorado's spruce-fir forests provide clean air and water, wildlife habitat, world-class recreational opportunities, wood products and unparalleled scenery. Photo: William M. Ciesla*

For More Information

For more information on spruce beetles or forest management, contact a local Colorado State Forest Service district office or visit the CSFS website at www.csfs.colostate.edu.

References

Colorado Statewide Forest Resource Assessment: A foundation for strategic discussion and implementation of forest management in Colorado. 2008. Colorado State Forest Service.

Field Guide to Diseases and Insects of the Rocky Mountain Region. 2010. United States Department of Agriculture Forest Service, Rocky Mountain Region.

Holsten E. H., Thier R. W., Munson A. S., and Gibson K. E. 1999. "The Spruce Beetle." Forest Insect and Disease Leaflet 127. U. S. Department of Agriculture Forest Service.

Note: The "Species of Greatest Conservation Need" referred to in this Quick Guide were identified by Colorado Parks and Wildlife as part of Colorado's State Wildlife Action Plan, available online at: http://wildlife.state.co.us/WildlifeSpecies/ColoradoWildlifeActionPlan/Pages/ColoradoWildlifeActionPlan.aspx.

Colorado State FOREST SERVICE

www.csfs.colostate.edu

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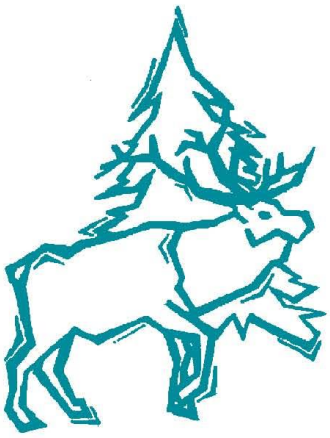
Appendix H: CSFS 'Fire-Resistant Landscaping no. 6.303



NATURAL RESOURCES SERIES

FORESTRY

Fire-Resistant Landscaping no. 6.303

by F.C. Dennis[1]

Quick Facts...

More people are moving into Colorado's rural areas, increasing the chances of wildfire.

"Defensible space" is the primary determinant of a structure's ability to survive wildfire.

Native species are generally the best plant materials for landscaping in defensible space, but others can be grown successfully in Colorado.

To be a FireWise homeowner, plan well, plant well and maintain well.

Colorado State University Cooperative Extension

Putting Knowledge to Work

Colorado's population is growing, its urban areas are rapidly expanding, and people are building more homes in what was once natural forest and brushlands. Newcomers to rural areas need to know how to correctly landscape their property to reduce wildfire hazards.

Improper landscaping worries land managers and fire officials because it can greatly increase the risk of structure and property damage from wildfire. It is a question of *when*, not *if*, a wildfire will strike any particular area.

Vegetative clearance around the house (defensible space) is a primary determinant of a home's ability to survive wildfire. Defensible space is, simply, room for firefighters to do their job. If grasses, brush, trees and other common forest fuels are removed, reduced, or modified to lessen a fire's intensity and keep it away from the home, chances increase that the structure will survive. It is a little-known fact that in the absence of a defensible space, firefighters will often bypass a house, choosing to make their stand at a home where their safety is more assured and the chance to successfully protect the structure is greater.

Landscaping Defensible Space

People often resist creating defensible space because they believe that it will be unattractive, unnatural and sterile-looking. It doesn't have to be! Wise landowners carefully plan landscaping within the defensible space. This effort yields a many-fold return of beauty, enjoyment and added property value. Development of defensible space is outlined in fact sheet 6.302, *Creating Wildfire-Defensible Zones*.

Colorado has great diversity in climate, geology and vegetation. Home and cabin sites can be found from the foothills through 10,000-foot elevations. Such extremes present a challenge in recommending plants. While native plant materials generally are best, a wide range of species can be grown successfully in Colorado.

Many plant species are suitable for landscaping in defensible space. Use restraint and common sense, and pay attention to plant arrangement and maintenance. It has often been said that *how* and *where* you plant are more important than *what* you plant. While this is indeed true, given a choice among plants, choose those that are more resistant to wildfire.

Consider the following factors when planning, designing and planting the FireWise landscape within your home's defensible space:

- Landscape according to the recommended defensible-space zones. That is, the plants near your home should be more widely spaced and lower growing than those farther away.
- Do not plant in large masses. Instead, plant in small, irregular clusters or islands.

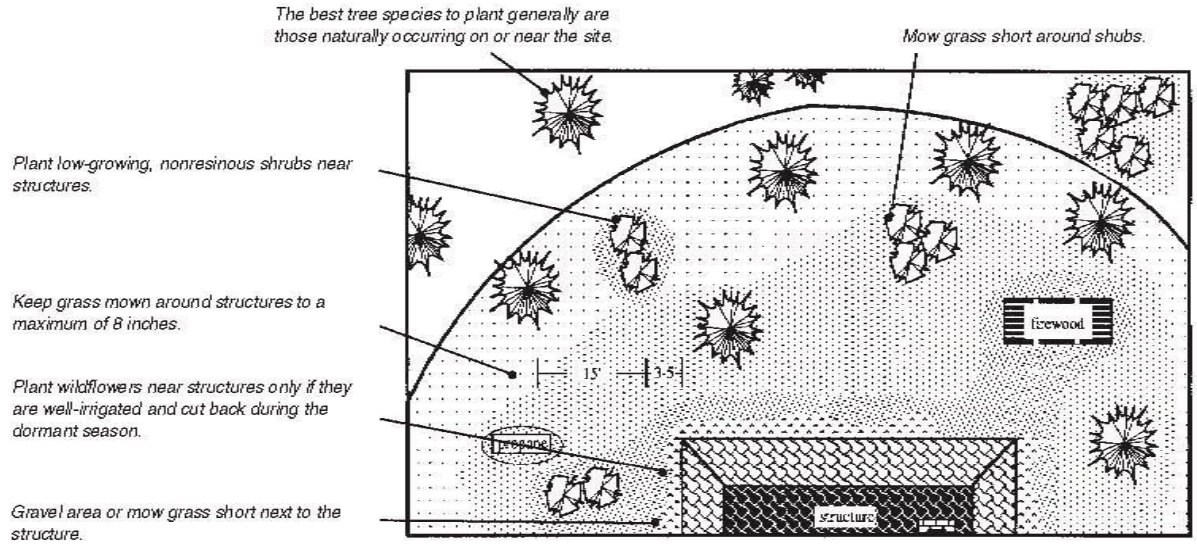


Figure 1: Forested property surrounding a homesite; shows optimum placement of vegetation near the structure.

- Use decorative rock, gravel and stepping stone pathways to break up the continuity of the vegetation and fuels. This can modify fire behavior and slow the spread of fire across your property.
- Incorporate a diversity of plant types and species in your landscape. Not only will this be visually satisfying, but it should help keep pests and diseases from causing problems within the whole landscape.
- In the event of drought and water rationing, prioritize plants to be saved. Provide available supplemental water to plants closest to your house.
- Use mulches to conserve moisture and reduce weed growth. Mulch can be organic or inorganic. Do not use pine bark, thick layers of pine needles or other mulches that readily carry fire.
- Be creative! Further vary your landscape by including bulbs, garden art and containers for added color.

References

- *6.302,* Creating Wild-Fire Defensible Zones
- *6.304,* Forest Home Fire Safety
- *6.305,* FireWise Plant Materials
- *6.306,* Grass Seed Mixes to Reduce Wildfire Hazard
- *7.205,* Pruning Evergreens
- *7.206,* Pruning Shrubs
- *7.207,* Pruning Deciduous Trees
- *7.233,* Wildflowers for Colorado
- *7.406,* Flowers for Mountain Communities
- *7.423,* Trees and Shrubs for Mountain Areas
- *7.413,* Ground Covers for Mountain Communities

Grasses

During much of the year, grasses ignite easily and burn rapidly. Tall grass will quickly carry fire to your house. Mow grasses low in the inner zones of the defensible space. Keep them short closest to the house and gradually increase height outward from the house, to a maximum of 8 inches. This is particularly important during fall, winter and before green-up in early spring, when grasses are dry, dormant and in a "cured" fuel condition. Given Colorado's extremely variable weather, wildfires can occur any time of the year. Maintenance of the grassy areas around your home is critical.

Mow grasses low around the garage, outbuildings, decks, firewood piles, propane tanks, shrubs, and specimen trees with low-growing branches.

Ground Cover Plants

Replace bare, weedy or unsightly patches near your home with ground covers, rock gardens, vegetable gardens and mulches. Ground cover plants are a good alternative to grass for parts of your defensible space. They break up the monotony of grass and enhance the beauty of your landscape. They provide a

Figure 2: Ladder fuels enable fire to travel from the ground surface into shrubs and then into the tree canopy.

variety of textures and color and help reduce soil erosion. Consider ground cover plants for areas where access for mowing or other maintenance is difficult, on steep slopes and on hot, dry exposures.

Ground cover plants are usually low growing. They are succulent or have other FireWise characteristics that make them useful, functional and attractive. When planted in beds surrounded by walkways and paths, in raised beds or as part of a rock garden, they become an effective barrier to fire spread. The ideal groundcover plant is one which will spread, forming a dense mat of roots and foliage that reduces soil erosion and excludes weeds.

Mulch helps control erosion, conserve moisture and reduce weed growth. It can be organic (compost, leaf mold, bark chips, shredded leaves) or it can be inorganic (gravel, rock, decomposing granite).

When using organic mulches, use just enough to reduce weed and grass growth. Avoid thick layers. When exposed to fire, they tend to smolder and are difficult to extinguish. Likewise, while your property might yield an abundance of needles from your native pines or other conifers, don't use them as mulch because they can readily catch and spread wildfire. Rake, gather and dispose of them often within your defensible space.

Wildflowers

Wildflowers bring variety to a landscape and provide color from May until frost. Wildflower beds give a softer, more natural appearance to the otherwise manicured look often resulting from defensible space development.

A concern with wildflowers is the tall, dense areas of available fuel they can form, especially in dormancy. To reduce fire hazard, plant wildflowers in widely separated beds within the defensible space. Do not plant them next to structures unless the beds are frequently watered and weeded and vegetation is promptly removed after the first hard frost. Use gravel walkways, rock retaining walls or irrigated grass areas mowed to a low height to isolate wildflower beds from each other and from other fuels.

Shrubs

Shrubs lend color and variety to the landscape and provide cover and food for wildlife. However, shrubs concern fire professionals because, as the next level in the "fuel continuum," they can add significantly to total fuel loading. Because of the woody material in their stems and branches, they are a potential source of fire brands. When carried in the smoke column ahead of the main fire, fire brands can rapidly spread the fire in a phenomenon known as "spotting."

But the primary concern with shrubs is that they are a "ladder fuel" – they can carry a relatively easy-to-control surface grass fire into tree crowns. Crown fires are difficult, sometimes impossible, to control (see Figure 2).

To reduce the fire-spreading potential of shrubs, plant only widely separated, low-growing, nonresinous varieties close to structures. Do not plant them directly beneath windows or vents or where they might spread under wooden decks. Do not plant shrubs under tree crowns or use them to screen propane tanks, firewood piles or other flammable materials. Plant shrubs individually, as specimens, or in small clumps apart from each other and away from any trees within the defensible space.

Mow grasses low around shrubs. Prune dead stems from shrubs annually. Remove the lower branches and suckers from species such as Gambel oak to raise the canopy away from possible surface fires.

Structural Elements of a FireWise Landscape

When building a deck or patio, use concrete, flagstone or rock instead of wood. These materials do not burn and do not collect flammable debris like the space between planks in wooden decking.

Where appropriate on steeper ground, use retaining walls to reduce the steepness of the slope. This, in turn, reduces the rate of fire spread. Retaining walls also act as physical barriers to fire spread and help deflect heat from the fire upwards and away from structures.

Rock or masonry walls are best, but even wooden tie walls constructed of heavy timbers will work. Put out any fires burning on tie walls after the main fire front passes.

On steep slopes, consider building steps and walkways around structures. This makes access easier for home maintenance and enjoyment. It also serves as a physical barrier to fire spread and increases firefighters' speed and safety as they work to defend your home.

FIREWISE
Community Fire Prevention Partnership
©1999 CSFS

FIREWISE is a multi-agency program that encourages the development of defensible space and the prevention of catastrophic wildfire.

Trees

Trees provide a large amount of available fuel for a fire and can be a significant source of fire brands if they do burn. Radiant heat from burning trees can ignite nearby shrubs, trees and structures.

Colorado's elevation and temperature extremes limit tree selection. The best species to plant generally are those already growing on or near the site. Others may be planted with careful selection and common sense.

If your site receives enough moisture to grow them, plant deciduous trees such as aspen or narrow-leaf cottonwood. These species, even when planted in dense clumps, generally do not burn well, if at all. The greatest problem with these trees is the accumulation of dead leaves in the fall. Remove accumulations close to structures as soon as possible after leaf drop.

When site or available moisture limits recommended species to evergreens, carefully plan their placement. Do not plant trees near structures. Leave plenty of room between trees to allow for their growth. Spacing within the defensible space should be at least 10 feet between the edges of tree crowns. On steep ground, allow even more space between crowns. Plant smaller trees initially on a 20- to 25-foot spacing to allow for tree growth. At some point, you will have to thin your trees to retain proper spacing.

As the trees grow, prune branches to a height of 10 feet above the ground. Do not overprune the crowns. A good rule of thumb is to remove no more than one-third of the live crown of the tree when pruning. Prune existing trees as well as ones you planted.

Some trees (for example, Colorado blue spruce) tend to keep a full crown. Other trees grown in the open may also exhibit a full growth habit. Limit the number of trees of this type within the defensible space. Prune others as described above and mow grasses around such specimen trees.

Maintenance

A landscape is a dynamic system that constantly grows and changes. Plants considered fire resistant and that have low fuel volumes can lose these characteristics over time. Your landscape, and the plants in it, must be maintained to retain their FireWise properties.

- ☐ Always keep a watchful eye towards reducing the fuel volumes available to fire. Be aware of the growth habits of the plants within your landscape and of the changes that occur throughout the seasons.
- ☐ Remove annuals and perennials after they have gone to seed or when the stems become overly dry.
- ☐ Rake up leaves and other litter as it builds up through the season.
- ☐ Mow or trim grasses to a low height within your defensible space. This is particularly important as grasses cure.
- ☐ Remove plant parts damaged by snow, wind, frost or other agents.
- ☐ Timely pruning is critical. Pruning not only reduces fuel volumes but also maintains healthier plants by producing more vigorous, succulent growth.
- ☐ Landscape maintenance is a critical part of your home's defense system. Even the best defensible space can be compromised through lack of maintenance. The old adage "An ounce of prevention is worth a pound of cure" applies here.

Colorado State FOREST SERVICE

This fact sheet was produced in cooperation with the Colorado State Forest Service.

[1] *Wildfire Hazard Mitigation Coordinator, Colorado State Forest Service.*

Appendix I: Quartz Creek Wildfire Risk Analysis Sign-up

Firewise Home Mitigation Assessments				
Name	Phone	Email	Property Address	Available Dates for Site Visit
Spencer Nicholl	970-641-2564	spencer.nicholl@bighornministries.org –	Ferry 7	any –
GARY BANDY	917-459-3745	gbandy@nyc.rr.com	HIGHLAND MARY #2	ANY
Matt Nord	303-666-5785	dnbfne@msn.com	Freesilver #2	Any
Dennis Callaway	970-773-3585	denniscallaway1957@gmail.com	Lime Bluff #1	7/26 – 8/2 if possible
Ron Blue	913-888-3243	rgk.blue@gmail.com	Porphyry 8	July 20 →
Peg Schott	720-394-1569	lunchlady@comcast.net	24405 Chicago Park Rd	~~[illegible]~~ (Gregory 5
RALPH JAMES	228-342-1666	mailg[illegible]@yahoo.com	861 Chicago Park Rd	any (Stryponten 2)
CHARLES RODRIQUE	303-424-2837	[illegible]@[illegible].com	226 PORPHYRY RD.	AFTER JULY 20
Bruce Council	941-525-0262	bruceandkitty@hotmail.com	#20 Silver Bluff Tr.	Any
Dave Davidson	214-957-3722	dd43@verizon.net	333 Highland Chief Way	any - call Fir
Steve Frazier	970-641-0145	sf754gh@att.net	754 Grasshopper Rd Pitkin	July - Sept
Lauana Langston	(214)460-2947	lawmelan@gmail	2600 Highline	July - Sept
Terry Davis	303-618-1995	DCPOA@comcast.net	330 Royal Rd	any
Marshall Mitchell	970-275-5849	Ableclocks@aol.com	2222 Chicago Park Rd	any
Ken Blackwelder	620-770-0440	b4farms@yahoo.com	125 Chicago Park Dr.	any
Laura Smith	936-240-0097	lsmithe@saisd.us	2535 Charlie's Challenge	any
Teresa Smith	832-797-1517	teresal.smith@cfisd.net	1905 Charlies Challenge	any
ANITA WRIGHT	817-480-3388	nitap44@gmail.com	300 LITTLE CHIEF RD.	July thru Aug, 2014
BILL MEDDOCK	970-641-8975	bonimeddock@yahoo.com	830 Chicago Park Rd	any time
Lucinda Clauter	9706413475	Mayorkc@aol.com	101 Fislet Trail	any
Legna Rush	316-648-7363	ramahrenee@yahoo.com	325 Forest Trail	July 3-11 July 21-Aug. 8 Any other no one wi
PAUL GILLMAN	724-991-9060	ahay@earthlink.net	360 MEADOW LANE	JULY 3 - SEPT. 3
Don Grebe	336 402 1543			

Maps 11x17

(Printed separately)