

Wildfire Hazard Evaluation Report

And

Wildfire Mitigation Report

For the

Flying Horse Development

Filing # 8

El Paso County, CO

Conducted By

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Warning and Disclaimer: The degree of protections from wildfire hazards intended provided by this plan is considered reasonable for planning purposes and is site specific. It is based on accepted forestry and fire science methodology. This plan is intended to aid the Flying Horse North Filing #8 in minimizing the dangers and impacts from wildfire threats. Fire is a natural force and a historical part of the Ponderosa Pine and Native Grasslands ecosystem. Therefore, unforeseen or unknown wildfire conditions, natural or man-made changes in conditions such as climate, vegetation, fire breaks, forest fuels, built environment, fire protection devices and ignition sources may contribute to future damages to structures and lands even though properly permitted within designated wildfire hazard areas. Wildfire impacts can be reduced by proper wildfire mitigation, maintaining mitigation and structure hardening to develop a more fire resilient property, but human behavior factors can have a negative impact on these positive factors.

General Description

The Flying Horse North subdivision Filing #8 represents the southern most subdivision of the Flying Horse North project located south of the existing Filing #5. The development as surveyed is situated on the Palmer Divide, a ridge line that runs West to East perpendicular to the Rampart Range that is located approximately 8 miles from the development site. The Flying Horse North site is situated in northern El Paso County in the Black Forest region and is under the fire protection services of Black Forest Fire Rescue Protection District. Flying Horse North Filing #8 consists approximately 156 acres and will serve up to 50 residential lots.

Local Fire History

The Black Forest Region does have a significant wildfire history that extends back into the early 1900's, a history that many do not think about and only focus on the Black Forest Fire of 2013. An areas' fire history is important as it provides indication of fire behavior, changing fuel types and their age class which relates to fire susceptibility.

1915 Black Forest Burn – While little is written about the fire in 1915 evidence indicates it burned an area larger than the Black Forest Fire of 2013. Very brief newspaper articles indicate the fire burned for “weeks” and was likely started by a logging operation within the forest. At the time of this fire the Black Forest had a very limited amount of homesteads, ranches and farms, the human and structure impact is unknown.

2002 Pine Glenn Fire – During the grass cure period in 2002 a homeowner was performing wildfire mitigation improvements causing the sub-canopy and pine canopy to become involved in fire, This fire devastated approximately 125 acres before air attack assets contained the fire, no structures were lost and no civilian casualties in this event.

2013 Black Forest Fire – After months of drought in the region and a consistent Red Flag Warning for two weeks prior to the fire an ignition(s) occurred on Falcon Road just inside the BFFR District jurisdiction. Increasing temperatures, decreasing relative humidity and winds ranging in speed from 35 mph to a recorded 62 mph created a flame front that was measured at just over 2 miles across (measured on Black Forest Rd.). The Black Forest Fire would consume 14,000 acres, destroy 511 homes.

These significant fires in Black Forest have one commonality, and that is the wind component, each fire had winds that moved fire west to east and at times moving the fire downslope, directly contradictory to wildfire dynamics that typically sees fire move upslope through convective and radiant pre-heating of fuels. In the Pine Glenn Fire and the Black Forest Fire of 2013 the ember stream was in excess of 600 yards, well above the standard 200 yard spotting factor generally used at the time in wildfire suppression operations. Of course very little information about the fire in 1915 exists and most of the observations from Colorado Springs was to note that a large smoke column existed well outside the city and seemed to move east.

Previous fire incidents have very little to no impact on the Flying Horse North Development fuels inventory due to dissimilar fuel models. FHN Filing #8 in its entirety are classified as GR-1 (Scott and Burgan, June 2005) or Fuel Model A – Western Grasslands while the historic fires have been in Fuel Models B – Mature Dense Brush, Fuel Model G – Conifer stands with heavy accumulations of ground litter and woody surface fuels, Fuel Model K – Slash fuels from thinning operations. Fuel model representations are found in NFPA 1144 and are derived from the document Gaining an understanding of the National Fire Danger Rating system

(NFDRS) from the National Wildfire Coordinating Group (NWCG) in Document PMS 932/NFES 2665.

Predicted Wildfire Behavior

With the complete Flying Horse North Development Filing #8 being a singular wildfire fuel classification the aspect of GR-1 (Scott and Burgan, June 2005) or Fuel Model A – Western Grasslands fire suppression forces are met with fewer challenges than would be faced in the remaining mixed Fuel Models of the Black Forest Region. The area of the Flying Horse North Development has the second lowest wildfire risk of the district with only the extreme south end of the BFFRPD having a lower rating for risk due to topographical features absence.

Flying Horse North Filing #8 in prior ownership was a tract of significant grazing land attached to the Shamrock Ranch. Grazing in this area contributed to the grass species being the predominate fuel as cattle and elk would graze in this area reducing other species of shrub.

Wildfire behavior is controlled by three primary dynamics: weather, fuels and topography.

Weather and fuels can be dynamic but topography remains static with development making less than significant impacts on the fire behavior with the exception of roadways, streets and pathways that create barriers in the observed fuel model fire progression or fire breaks.

Fuels

The field survey was utilized to gain specific data in relation to the ratings found in the Colorado State Forest Service Forest Atlas in the Colorado Wildfire Risk Viewer, and the 2025 Colorado Wildfire Resiliency Code Map. Observations of FHN #8 verified to be a singular Fuel Model in entirety, that being a Fuel Model A (NFDRS) or GR-1 (Scott and Bergan June 2005) which describes Western Grasslands without an impacting Brush or Timber Fuel Model element. During the field survey the grasses were green and had not begun to enter the cure phase of drying. The grasses averaged 4" tall above the surface. It was noted that per square inch the grass bases were spaced enough to observe bare plains soil at approximately 45% of each square foot. The continuity of the GR-1 Fuel Model is consistent with the array of Fuel Models that are available, in this case Fuel Continuity is graded as low and patchy.

Continuity relates to the ability of fire to travel from stem to stem in the case of grass, the spacing observed would indicate a slower progress in flame propagation than in a closer stem spacing.

Even with a wind input that will drive smoke direction the flame lengths in this profile of grass will remain low, the 4" to 12" range depending on the wind ability to lay flame over. Flame depth in this fuel configuration is typically no greater than 4" as the fuels are rapidly consumed as the flame front progresses with no remaining fuel to sustain residual burning.

Topography

Topography provides a significant factor in fire spread, as the slope increases the ability of fire to spread uphill at a more rapid rate increases due to convective heat and radiant heat being transferred to preheat fuels upslope from the flame front. Fire intensity increases near ridge tops and chimneys as the wind element seeks lower elevation passages which can have significant impacts on increasing fire behavior.

Slope: With the slope input being a critical factor on increased wildfire activity the recognized threshold where slope can be calculated in fire behavior is 8% using manual namogram methods (S-390). During the field survey slope readings were conducted using a Suunto Clinometer. The field survey found that the average slope was 2% with short increases to 3%. Some arroyos feeding stock ponds were found to have a 5% slope, but these did not meet the rate of rise criteria (feet of rise per 100' horizontal) and are not considered an impact on fire activity and fire behavior impact due to slope input.

Aspect: Relates to the direction the primary fuel bed faces (N S, E, W), While the Development area is situated on the north aspect of the Palmer Divide the lack of any canopy to provide shading of fuels (grasses) will make any fire ignition act as if it were the south aspect. The south aspect is known as the hot aspect in that it receives fuel bed solar heating throughout the entire burning period of 1300-1800 hours and is responsible for a reported 70% of wildfire ignitions occurring, the east aspect accounts for 10% of wildfire ignitions, the north 5% and the west accounts for 15% of ignitions due to the various solar heating periods the aspect receives. **Aspect will not provide a major factor in the suppression of a wildfire in FHN #8 due to the flat nature of the topography.**

Weather

Weather is the single factor that cannot be controlled but has significant impact on wildfire behavior, suppression capabilities and the fuel conditions that suppression forces would face.

Weather factors cannot be altered to benefit a developer or fire suppression forces, adaptation to the known weather factors provides for positive outcomes.

Winds: Local winds are those observed on a typical day and depending on locality do not exceed 15 mph, Local winds are typically derived from a specific direction as a normal part of the daily weather cycle and can be factored in on making strategic and tactical decisions. Diurnal winds are those winds that are created that move up or down slope depending on the time of day and heating of the surrounding environment, upslope winds occur during the morning hours as the rising sun heats the Earth's surface

and downslope winds occur in the evening hours as the lower plains type areas cool off after sunset. Fohen winds are also known as Chinooks, Santa Annas and Mono winds depending on the region of the country one is in. Fohen winds are dry and warm winds that are generated as a result of highly unstable upper atmosphere disturbance. The fohen winds impacting the FHN Development are typically out of the west with increased speeds in excess of 30 mph.

Local Winds: Local winds across the Palmer divide tend to be generated from the NNW which would push a fire behavior direction SSE toward the ridge of the Palmer Divide

Diurnal Winds: Diurnal winds are not a factor on the Palmer Divide including FHN as there are no significant topographical rises that would generate this class of air movement.

Fohen Winds: These winds in the Palmer Divide and Pikes Peak Region are for the most part westerly winds that drive fire behavior west to east, even against slope conditions (Black Forest Fire 2013 and Waldo Canyon Fire 2012). **In the case of the Black Forest Fire (2013) the winds moving west to east kept the fire from entering the grasslands of the Flying Horse North Development with not a single house on the north aspect of the Divide sustaining damage during the fire event.** On the second day of the fire the winds shifted and provided a wind shift where the wind now developed from the south and carried fire to the north in the Falcon FPD jurisdiction

2025 COLORADO WILDFIRE RESILIENCY CODE MAP

The 2025 Colorado Wildfire Resiliency Code Map indicates that the development site of Flying Horse North Filing #8 is rated in the moderate threat level for wildfire. The surrounding lands for a distance of 2 miles or more are also given this generic rating. **There has been no Ground-Truthing or verification measure by the Colorado Division of Fire Prevention and Control or the Colorado State Forest Service. The survey conducted by Rubicon Wildfire Solutions determined that this level (Moderate) is inappropriate for the Fuel Model observed.** The 2025 CWRCM makes some broad assumptions that actually contradict the Colorado Wildfire Risk Viewer Map. This mismatch of communications is primarily in the projected fire behavior in the designated Fuel Model of the CWRV Map of GR-1 for semi-arid climates. In Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model (Scott and Burgan USDA Forest Service, June 2025) states in GR-1 Grass is short, patchy and possibly heavily grazed Spread rate is moderate; flame length low. The GR-1 Fuel Model is a perfect match for the surface fuels located in the FHN #8 subdivision. Scott and Burgan do not assign a flame length in the GR-1 Fuel Model, that

does not occur until GR-2 which shows higher continuity with a Flame Length of 1' with a low rate of spread.

Colorado Wildfire Risk Viewer

After conducting the field survey the Colorado Wildfire Risk Viewer by the Colorado State Forest Service was reviewed for the assignment of risks related to this parcel of land. The tool provided for the risk valuation in the Flying Horse North Filing #8 subdivision indicates the fuel inventory to be Low risk threat in the field survey. The fire intensity level in this area according to the CWRV Map indicate as Low, Moderate and a portion indicating no wildfire threat to the area.

While this tool works well in developing a wildfire fuels potential and ability to control on a large scale concept its value as an up to date tool that depends on satellite inputs must be verified by ground surveys. For the FHN project with focus in this particular area the data is deemed accurate.

The critical factors of Slope and Fuels interaction to develop fire behavior predictions is not present in either the Colorado Wildfire Risk Viewer or the 2025 Colorado Wildfire Resiliency Code Map. A color code for slope does not give the fire behavior modeling a the multi-dimensional view to predict the most critical measurement in wildfire behavior and that is Flame Length along with Flame Depth, without this piece of information fire suppression strategy and suppression tactics cannot be accurately developed.

Wildfire Suppression

With the positive factors in the wildfire environment the ability to suppress a wildfire in the Flying Horse North Developments of Filins # 7 is achievable with local resources (AHJ). Due to the regional automatic aid system in place sufficient engines and tenders are available to maintain the level of attack needed to prevent structure involvement of a grasslands intensity fire.

The standard for recognized fire attack in this topography and fuels is to provide mobile attack utilizing Type 6 and Type 3X Engines in a flanking attack or pincer attack if sufficient attack engines are on scene. In the grass fuel model it is critical to establish an anchor point to begin the attack to secure each perimeter without the fire burning around the attacking force. Type 1 Engines would typically be deployed to the structures most threatened by the fire advance to conduct emergency action mitigation for structure resilience and to extinguish any fire that entered the safety zone around the structure.

WILDFIRE HAZARD IDENTIFICATION

(CWRC Chapter 3)

Ground-Truthing found in the survey conducted by Rubicon Wildfire Solutions LLC indicates that the proper wildfire threat classification for Flying Horse North Filing #8 be reduced to Low Fire Intensity Classification as found in CWRC 303.2.1 and allowed by Ground-Truthing in CWRC Section 304.2

STRUCTURE HARDENING

(CWRC Chapter 4)

All structures will be constructed to the Class 1 Structure Hardening standard as found in the CWRC 403.1 through 403.4.2

To avoid conflict of redundancy inclusion of the CWRC v-1, 2025 in this survey and determination report the Builder, Architect, Homeowner and specific trades people should have a copy of the current CWRC version at the time a Building Permit is being issued. This prevents this report from being in conflict with any revised CWRC requirements that would impact the construction at the time the Building Permit issue. All CWRC requirements must be noted on plans, schedules or other such drawings as be necessary to allow the AHJ to conduct a thorough review and approval.

SITE and AREA REQUIREMENTS

MITIGATION REQUIREMENTS

(CWRC Chapter 5)

All properties in Flying Horse North Filing #8 shall comply with the requirements and restrictions stipulated in the CWRC Section 501, and specifically in

Section 502 CLASS 1 REQUIREMENTS through and including Section 502.4.1 The lack of a timber or brush class fuel on site is seen as a positive in wildfire mitigation and fire control providing the AHJ and supporting agencies ample opportunity to suppress a fire before it endangers a structure or owner improvements.

To prevent redundancy the specific points in Section 502 are not printed in this report. The Homeowner, Builder, Landscaper and the various trades people must be required to have in their possession the current edition of the CWRC at the time of Building Permit issue and all mitigation factors must be noted on the site development plans for AHJ review.

The lot size of 2.5 acres in Flying Horse North Filing #8 provides significant building footprint areas that the structures will be constructed at a greater distance than the minimum 30' SSD (Safe Structure Distance) as determined in NIST Studies for structure proximity.

All utilities including natural gas and electricity are underground service and provide no inherent issues related to wildfire.

FINDING OF FACT

As provided in the CWRC Section 304.2 Rubicon Wildfire Solutions conducted the Finding of Fact that specific conditions to reduce the Wildfire Threat Classification from a Moderate rating as found in the 2025 Colorado Wildfire Resiliency Code Map did in fact exist to reduce the Classification to a Low Fire Intensity Classification. The existing conditions of very sparse and low fire propagation wildfire fuels (Grass, sparse and patchy) and the low slope input factor should not move this subdivision into the Moderate Fire Intensity Classification.

There is a singular Fuel Model with no intervening shrub or timber fuel model that would impact fire behavior. As the subdivision develops with roadways and paths the parcels will be further protected from grass fires by manmade fuel breaks stopping fire progression. Of note is the fact that during the Black Forest Fire of 2013 there were no spot fires generated from the

main body of fire in the Timber Fuel Model that required suppression and this area was used for an emergency helicopter landing point during fire operations.

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