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 Suunoto Clineometer. 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. <u>The survey conducted by Rubicon Wildfire Solutions determined that this level (Moderate) is inappropriate for the Fuel Model observed</u>.**

However, given the time needed for Ground-Truthing, a Moderate Fire Intensity Classification will be maintained at this time.

We highly recommend future Ground-Truthing to align this Filing within a Low Fire Intensity Classification for the following reasons:

1. 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.

2. 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.
3. 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. As indicated above, a Moderate Fire Intensity Classification will be maintained.

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 # 8 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.

CWRC INTENSITY CLASSIFICATION

This survey and an understanding of the mitigation requirements by the Developer in this project and compliance with the CWRC Mitigation Standards will create an environment that puts this parcel in the **Moderate Fire Intensity Classification (303.2.1).** This classification is identified in areas with light to medium surface fuels, such as grasses, shrubs and scattered low-density vegetation. These fuels are often discontinuous, which limits flame propagation but can sustain burning under moderate weather conditions. Fires in this class may occur on gentle or moderate slopes, where topography begins to influence the rate of spread. Flame lengths remain relatively small typically less than two feet, limited spotting may occur, especially with wind.

WILDFIRE STRUCTURE HARDENING

Each Builder and Architect must possess a copy of the CWRC Chapter 4 – Structure Hardening Standards to develop the resilient structure today's homeowner requires and the insurance industry demands and the CWRC stipulations require in these environments.

The Wildfire Hazard Identification of Flying Horse North Filing #8 as a Moderate Fire Intensity Classification (CWRC 303.2.2) dictates that structures must be designed and constructed to meet the requirements in both Section 403 Class 1 Structure Hardening as well as Section 404 Class 2 Structure Hardening requirements.

The reasoning in building Structure Hardening to this degree is not the issue with the mitigation the Developer does prior to construction or the mitigation that the Homeowner will need to carry out on the individual parcel, rather it is to protect the structure from the ember flow that can exceed one mile travel distance from a source to the structure and in some instances further in high wind events which are relevant to the Palmer Divide as evidenced by the Black Forest Fire of 2013. The insurance industry is increasing their demand for structure hardening and resilience on a frequent basis making the communication between the Homeowner, the Builder and Architect with the owner's insurance company highly recommended and in some instances required for any requirements they may have above the CWRC and local Building Codes.

CWRC Chapter 4 Structure Hardening

Following are the primary focus points of CWRC 403.1 Class 1 Structure Hardening and CWRC 404 Class 2 Structure Hardening requirements. NOTE: Not all details of requirements are reprinted in this report or added as an Appendix. It is the responsibility of the Home Builder and the Architect to obtain the current version of the CWRC that is applicable at the time of

obtaining a Building Permit. As of October 2026 CWRC version 2 is in development and will likely be in use before structures in Flying Horse North Filing #8 are completed.

Section 403 Class 1 Structure Hardening

403.2 Roofing. Roofs shall have a roof covering or roof assemblies classified as Class A when tested in accordance with ASTM E108 or UL 790.

403.2.1 Shall apply – Verify Building Code requirements with CWRC for most restrictive which shall apply.

403.2.2 Shall apply – Verify Building Code requirements with CWRC for most restrictive which shall apply.

403.3 Gutters and Downspouts. Gutters and downspouts shall be constructed on noncombustible material.

403.4 Ventilation Openings. Ventilation openings for enclosed attics, enclosed rafter spaces and underfloor spaces shall be in accordance with Section 403.4.1 or Section 403.4.2 as applicable.

403.4.2 Prescriptive Requirements. Ventilation openings for enclosed attics, enclosed rafter spaces and underfloor spaces shall be covered with noncombustible, corrosion-resistant mesh with openings not to exceed 1/8 inch.

Section 404 Class 2 Structure Hardening

404.1 General. Class 2 Structure Hardening shall be in accordance with Sections 404.2 through 404.10.1 of the 2025 CWRC version 1 as well as provisions of Class 1 structure hardening in Sections 403.2 – 403.4.2 and shall apply to buildings and structures hereafter constructed, modified or relocated into or within areas of the wildland-urban interface having a Moderate or High Hazard severity.

404.2 Protection of Eaves. Eaves and soffits shall be protected on the exposed underside by noncombustible material, ignition-resistant materials or by materials approved for not less than 1-hour fire-resistance-rated construction.

404.3 Exterior Walls. Exterior walls of buildings or structures shall be constructed with one of the following methods:

1. Exterior wall assemblies with a minimum of 1-hour fire-resistance rating, rated for exposure on the exterior side.

2. Approved noncombustible materials.

3. Heavy timber or log wall construction.

4. Non-combustible materials complying with Section 402.2 on the exterior side.

5. Fire-retardant treated wood complying with section 402.3 on the exterior side.

6. Ignition-resistant materials complying with section 402.4 on exterior side.

404.3.1 Exterior Wall Coverings, Exterior wall coverings shall be limited to the following:

1. Non-combustible materials.

2. Fire-retardant-treated wood.

3. Ignition-resistant building materials.

404.5 Decking, Unenclosed decks shall have the deck walking surface constructed of one of the following:

1. Approved noncombustible materials

2. Class A rated material.

3. Fire-retardant-treated wood identified for exterior use.

4. Ignition-resistant building materials in accordance with Section 402.4

404.6 Appendages and Projections, appendages and projections shall be constructed in accordance with Section 404.3.

404.7 Exterior Glazing, Exterior windows, window walls and glazed doors, windows within exterior doors and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire protection rating of not less than 20 minutes.

404.8 Exterior Doors, Exterior doors shall be approved noncombustible construction, solid core wood not less than 1 ¾-inches thick, or have a fire protection rating of not less than 20 minutes.

404.9 Vehicle Access Door Perimeter Gap. Exterior vehicle access doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the head, sill and jamb of doors and door openings from exceeding 1/8 inch as approved by AHJ.

404.10 Detached Accessory Structures. Detached accessory structures located less than 50 feet from a building containing habitable or occupiable space shall have exterior walls constructed in accordance with Section 404.3 through 404.3.2.

WARNING

The focused Sections for the CWRC June 2025 v-1 are not the complete and detailed sections found in the CWRC. The Homeowner, Architect, Builder and Designer must have a complete and current copy of the Colorado Wildfire Resilience Code, v-1 June 2025 to complete the design and building compliance to remain in alignment with this

version of the CWRC. As some structures may not begin the permitting process and building during the life of the 2025 CWRC the AHJ must be contacted for the current version that is in use for that AHJ.

SITE AND AREA REQUIREMENTS

The responsibility for parcel mitigation remains with each individual Homeowner in perpetuity. The responsibility to develop a fire resistant environment in wildfire country cannot be placed on any other individual or professional and the determination to adapt and alter human behaviors for those who purchase homes and live in these areas must develop an awareness much like those who live in tornado or hurricane prone areas, the hazard is different, but people can and must adapt. **Being private property parcels of land the FHN Filing #8 forested areas are not subject to any Colorado State Forest Service Forest Planning oversight and are not within the scope of authority of the U. S Forest Service.**

Each Homeowner or Landscape Designer must have a copy of the current CWRC in effect at time of Building Permit issuance to guide decisions and actions. **Site and Area Requirements, Chapter 5 of the CWRC must be designed into the homes surrounding environment to facilitate compliance with the CWRC and survivability through resilience of the Structure. With the Moderate Wildfire Threat Risk Classification properties in the Flying Horse North Filing #8 subdivision need to comply with Section 502 Class 1 Requirements and Section 503 Class 2 Requirements.**

MITIGATION ZONES CRITICAL: Research conducted by various insurance companies, government agencies and National Institute for Safety and Technology (NIST), the Institute for Business and Home Safety (IBHS) as well as the study of the Black Forest Fire Mitigation Study (post Black Forest Fire) develop conclusive evidence that the Immediate Zone (0'-5') from the siding of the home is violated the most for reducing combustibility by placing combustibles in this zone, this is now known as the Zero Zone or 0-5 foot zone in some areas where nothing combustible can be placed in this zone.

Section 502 Class 1 Requirements

502.1 Structure Ignition Zone 1: Immediate Zone is designed to reduce or eliminate ember ignition and direct flame contact with the structure, deck, stairs and attachments.

502.1.2 Materials. Use noncombustible, hard surface materials in this zone, such as rock, gravel, sand, concrete, bare earth or stone/concrete pavers.

502.1.3 Plantings. Remove all plantings in Zone 1 including shrubs, slash. Combustible mulch and other woody debris, with the exception of ignition-resistant vegetation.

502.1**.4 Trees**. There shall be no planting of new trees in the Immediate Zone. Mature trees of no less than 10 inch diameter and 4.5 feet above ground level may be maintained. **Tree crowns extending to within 10 feet of any structure shall be pruned to maintain a minimum clearance of 10 feet. Prune tree branches to a height of 6-10 feet from ground or a third of the total height of the tree, whichever is less.**

502.2.3 Address Markers. Buildings shall have a permanently posted address, which shall be placed on each driveway entrance and be visible from both directions of travel along the road.

502.3.1 Retaining Walls. Retaining walls shall be constructed with either noncombustible of ignition-resistant materials when any of the following conditions exist:

1. The retaining wall is within 8 feet of a structure regulated by the CWRC or up to the property line when the property line is less than 8 feet away from the structure.

2. The retaining wall is integral to the support of the structure regulated by this code.

3. The retaining wall is integral to the egress from a structure regulated by this code to a public way, easement or private road**. Note: the use of combustible materials such as untreated dimensional lumber or untreated landscaping timbers or creosote laden railroad ties cannot be used in window well retaining walls or subsurface exit paths such as exterior basement doorway to the exterior of the structure.**

502.4.1 Fencing. Fencing within 8 feet of a structure regulated by this code or up to the property line when the property line is less than 8 feet away from the structure shall be constructed with noncombustible or ignition resistant materials.

Section 503 Class 2 Requirements

The Class 2 site and area requirements shall be in accordance with section 503. 2 through 503.3.2 and include all requirements of Class 1 in Sections 502.1 through 502.4

503.2 Structure Ignition Zone 2 (5-30 feet) Intermediate Zone.

503.2.1 Objective. This zone is designed to give an approaching fire less fuel, which will help reduce fire intensity as it gets near to structures.

503.2.2 Dead Material. Within the fuel modification area, hazardous dead plant material must be removed from live vegetation.

503.2.3 Fuels Accumulation. Avoid large accumulations of surface fuels such as logs, branches, slash and combustible mulch.

503.2.4 Trees. Tree crowns extending to within 10 feet of any structure shall be pruned to maintain a minimum clearance of 10 feet. Prune tree branches to a height of 6-10 feet from the ground or a third of the total height of the tree, whichever is less.

503.2.4.1 Tree Spacing. Tree crowns within this zone shall be spaced to prevent structure ignition and promote fuel discontinuity to limit fire spread.

503.2.5 Shrubs. Shrub groups within this zone shall be spaced to prevent structure ignition. Shrubs shall be at least 10 feet away from the edge of the tree branches.

503.3 Structure Ignition Zone 3 (30-100 feet) Expanded Zone

503.3.1 Objective. This zone focuses on mitigation that keeps fire on the ground

503.3.2 Tree Spacing. Tree crowns within this zone shall be spaced and a minimum of 6-10 feet.

An encompassing mitigation plan for the subdivision is not a practical approach as building location on the parcel of land dictates a more direct approach for developing a parcel custom Mitigation Plan that takes into consideration the existing landscape, vegetation and the intent of Landscape Design to alter the parcel size fire dynamics. A CWMS should be consulted before developing final landscaping plans that could create negative impacts on wildfire resilience for the property.

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