FIRE HAZARD MITIGATION PLAN
Wildhaven Yosemite Project

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# Table of Contents

## SECTION | PAGE NO.
---|---
1 | INTRODUCTION ....................................................................................................................... 1
   | 1.1 Applicable Codes, Regulations, and Conditions ................................................................. 1
   | 1.2 Project Summary ............................................................................................................... 2
      | 1.2.1 Location ...................................................................................................................... 2
      | 1.2.2 Project Description .................................................................................................... 5
2 | FIRE RISK ANALYSIS ............................................................................................................. 9
   | 2.1 Field Assessment ............................................................................................................ 9
   | 2.2 Project Area Fire Environment ...................................................................................... 9
      | 2.2.1 Topography ............................................................................................................... 9
      | 2.2.2 Climate .................................................................................................................... 10
      | 2.2.3 Fuels (Vegetation) .................................................................................................. 10
      | 2.2.4 Fire History ............................................................................................................. 11
   | 2.3 Potential Fire Behavior ................................................................................................11
      | 2.3.1 BehavePlus Fire Behavior Modeling Analysis ............................................................. 11
      | 2.3.2 Modeling Results .................................................................................................... 15
   | 2.4 Project Fire Risk Assessment ....................................................................................... 17
3 | EMERGENCY RESPONSE AND SERVICE ........................................................................... 21
   | 3.1 Existing Fire Department Response Capabilities ........................................................... 21
   | 3.2 Project-Related Emergency Response Calls ................................................................. 23
4 | FIRE SAFETY STANDARDS.................................................................................................... 24
   | 4.1 Vegetation/Forest Management ..................................................................................... 24
      | 4.1.1 Developed Area Vegetation Management ................................................................. 24
      | 4.1.2 Roadside and Footpath Vegetation Management ....................................................... 26
      | 4.1.3 Routine Maintenance .............................................................................................. 27
   | 4.2 Roads and Access ......................................................................................................... 30
   | 4.3 Water Supply ................................................................................................................. 30
      | 4.3.1 Water Tank .............................................................................................................. 30
      | 4.3.2 Fire Hoses ............................................................................................................... 31
   | 4.4 Operations ..................................................................................................................... 31
   | 4.5 Equipment Inventory and Maintenance ....................................................................... 32
   | 4.6 Staff Training ................................................................................................................. 32
   | 4.7 Visitor Education ......................................................................................................... 32
5 | EVACUATION ....................................................................................................................... 36
6 LIST OF PREPARERS ................................................................................................................. 38
7 REFERENCES CITED (INCLUDING REFERENCES CITED IN APPENDICES) ........................................... 40

APPENDICES
A Fire Behavior Modeling
B CAL FIRE Brochure

FIGURES
1 Project Location .......................................................................................................................... 3
2 Site Plan ........................................................................................................................................ 7
4 BehavePlus Analysis Map ......................................................................................................... 19
5 Fuel Modification Areas .......................................................................................................... 28
6 QR Code for Local Emergency Alert Systems ........................................................................... 34

TABLES
2.2.3 Habitat Types Within the Project Site ................................................................................. 10
2.3.1.A Fuel Models used for Fire Behavior Modeling ............................................................... 12
2.3.1.B Fuel Moisture and Wind Inputs ..................................................................................... 15
2.3.2.1 Fire Behavior Model Results Existing Conditions ......................................................... 16
2.3.2.2 Fire Behavior Modeling Results for Post-Project Conditions ....................................... 16
1 Introduction

This Fire Hazard Mitigation Plan (FHMP) has been prepared for the Wildhaven Yosemite Project (Project), located in Mariposa County, California. The purpose of this FHMP is to evaluate potential wildland fire hazards, identify measures to reduce wildfire risk to the Project, and memorialize the Project’s fire safety requirements. Wildfire risk reduction recommendations detailed in this FHMP are based on site-specific characteristics, applicable code requirements, and input from Wildhaven. As part of the assessment, this FHMP includes the evaluation of property location, topography, vegetation (fuel types), climate, and fire history. This FHMP addresses water supply, access/egress, fuel treatment (vegetation management), fire protection features, defensible space, fire prevention and evacuation.

The following tasks were performed to complete this FHMP:

- Gathered site specific vegetation, terrain, and access data.
- Processed and analyzed the data using the latest GIS technology.
- Modeled fire behavior using scientifically based fire behavior models, comparisons with actual wildfires in similar terrain and fuels, and experienced judgment.
- Analyzed the proposed Project development plan and the Project’s proposed wildfire hazard reduction measures.
- Analyzed existing emergency response capabilities.
- Assessed fire risk associated with the Project.

1.1 Applicable Codes, Regulations, and Conditions

This FHMP demonstrates that the Project would comply with applicable portions of the Mariposa County Fire Safety Standards. The Project is within an area statutorily designated as a Moderate Fire Hazard Severity Zone by the California Department of Forestry and Fire Protection (CAL FIRE) (CAL FIRE 2007), which under Chapter 7A of the California Building Code requires new structures located in any Fire Hazard Severity Zone to comply with the ignition resistant construction provisions of the chapter. The Project is proposing manufactured structures and tent structures with wood platforms; however, the Project will implement a number of design features (detailed below) that meet the requirements of Chapter 7A to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses. The Project also would be consistent with applicable portions of the 2019 California Building Code, Chapter 31; and the 2019 California Fire Code, Chapter 3. Chapter 31 of the California Building Code addresses special building construction (e.g., membrane structures, temporary structures). Sections 307 and 308 in Chapter 3 of the California Fire Code provide regulations for open burning, recreational fires, and portable outdoor fireplaces.
1.2 Project Summary

1.2.1 Location

The Project site is located west of the town of Mariposa and west of Yosemite National Park in central Mariposa County on the Mariposa, CA 7.5’ U.S. Geological Survey (USGS) Quadrangle (Figure 1, Project Location), on private land in the foothills southwest of Mariposa. It is within the area of Rancho Las Mariposas, Township 5 South, Range 18 East, Mount Diablo Baseline and Meridian. The Project site is located within unincorporated Mariposa County and is located on one parcel (APN 012-180-0560), totaling approximately 36 acres. Access to the site is available directly off CA Highway 140. Elevation on the Project site ranges from 2,100 feet above mean sea level (amsl) in the northeast to 2,455 feet amsl in the southeast.

The site consists of mostly undeveloped land that for many years has supported cattle and horse grazing and is currently used as a zipline adventure facility. Structures on site include an existing office building, and manager’s residence. All adjacent land uses to the east, south and west are active private cattle ranches. The adjacent property to northwest is the Mariposa County Fire/CalFire administrative office building and training facility; Highway 140 borders the remainder of the northern property line.

Based on Fire Hazard Severity Zone (FHSZ) mapping data (CAL FIRE 2007), the Project site is located in a Moderate FHSZ. The California Department of Forestry and Fire Protection (CAL FIRE) uses FHSZs to classify anticipated fire-related hazards for the entire state and includes classifications for State Responsibility Areas (SRAs), Local Responsibility Areas (LRAs), and Federal Responsibility Areas (FRAs). Fire hazard severity classifications consider the following elements: vegetation, topography, weather, crown fire production, and ember production and movement. The Fire Hazard Severity designations are attributed to a variety of factors including flammable vegetation; seasonal winds; and a Mediterranean climate that results in vegetation drying during the summer and fall months.
FIGURE 1
Project Location

SOURCE: USGS 7.5-Minute Series Mariposa Quadrangle
1.2.2 Project Description

1.2.2.1 Overview and Background

Wildhaven (or project applicant) is proposing the Wildhaven Yosemite Project (Project), which is an 80 tent “glamping” campground with supporting facilities (constructed in two phases) located adjacent to Highway 140 (CA-140) in the vicinity of Mariposa and west of Yosemite National Park, in Mariposa County, California. Wildhaven Yosemite would be open for guests year-round, as weather allows. Wildhaven specializes in camps with added amenities and currently has one other operational camp within the United States, responding to the increased demand for camping accommodations where the host provides all the provisions necessary to camp in a specific location. Wildhaven camps provide guests with canvas tents, beds, bathroom facilities, and fire pits. Potable water and sanitary sewer would be provided by on-site public systems owned and operated by Wildhaven. A total of 80 tents are proposed for the Wildhaven Yosemite camp along with a clubhouse tent with dining area, communal bathrooms, storage area, kiosk and manager’s residence. Utility improvements to support the camp would include a water tank (with generator), water supply wells and commercial power. The Project would provide propane campfire pits for each of the premium tents in Phase 2, with no solid fuel (wood) fire pits to be installed on the Project site. A single communal propane fire pit will also be installed in the communal fire pit between the bathhouse and office. Figure 2, (Project Site Plan) depicts the Project’s proposed site plan.

1.2.2.2 Project Wildfire Hazard Reduction Measures

The following summarizes identified wildfire hazard reduction measures that would be implemented by the Project.

Fuel Treatment

Initial Project site development activities would include hazardous fuel reduction efforts. These fuel reduction treatments would reduce the size and distribution of surface fuels to a level that moderate fire behavior to facilitate direct attack by firefighters. The initial hazardous fuels reduction efforts would entail removal of ladder fuels and treatment of surface fuels in specific areas of the Project site.

Wildfire Prevention

Wildfire prevention measures would include:

- All tent fabrics would be California State Fire Marshal approved for flame resistance.
- All heating stoves on the site would be equipped with spark arrestors, which would be constructed of woven or welded wire screening of 12 USA standard gage wire (0.1046 inch) having openings not exceeding 1/2-inch. The net free area of the spark arrestor would not be less than four times the net free area of the outside of the chimney outlet.
- The ashes from the stoves would be removed by camp staff in metal containers and disposed of in a steel container. Firewood and combustible materials would not be stored in unenclosed spaces, beneath tents, or on decks under eaves, canopies or other projections or overhangs. Firewood and combustible material would be stored in fuel modification areas and separated from the crown of trees by a minimum horizontal distance of 15 feet.
- Smoking would be restricted to designated areas with receptacles for cigarette waste. The area and a minimum 50-foot buffer would have vegetative material cleared to bare mineral soil.
• Branches and other vegetation above each fire area would be removed, and a cone of clearance to the sky
  would be established. Fires would not be allowed whenever Mariposa County Fire/Cal Fire imposes
  restrictions on campfires.
• Fire tool lockers and fire extinguishers would be provided throughout the site, meeting the requirements of
  Public Resources Code (PRC) 4428 and 4429. Fire extinguishers (2A 10BC) would be located in each guest
  tent structure, as well as in all other facilities as required.
• Fire hose stations with fire hoses and nozzles would be provided within the site, with 200 feet of fire hose
  provided at each station. These stations would be located in such a manner that no tent structure would
  be greater than 150 feet from a fire hose station.
• Basic fire and first aid training would be provided to all employees, and it is recommended that at least one
  employee onsite at any given time has advanced first aid training (Emergency Medical Technician or similar)
  to be coordinated with the fire department.
• Prior to operation, an Emergency Operations Plan would be developed to address wildfire and other
  emergency incidents at the site. This plan would be subject to review and approval by applicable emergency
  services providers. The plan would include, at a minimum:
  o A Training and Exercise Plan, to be implemented annually with all employees, covering the Emergency
    Operation Plan and issues such as response to fire, fire extinguisher and firehose use, first aid and
    emergency medical response, and dealing with problem guests.
  o An orientation briefing for guests concerning potential hazards and what to do in the event of an
    emergency incident.
  o Provision of a site fire and emergency alert system to notify site occupants in the event of an emergency.
  o A site evacuation plan, defining routes of ingress and egress, rally points, and protocols for disabled
    guests and/or guests without their own transport.
  o Establishment and maintenance of temporary refuge areas if evacuation is not possible.
  o Establishment of an emergency helicopter landing site. The site would not be a permitted heliport as
    described in California Code of Regulations §3554 and would be maintained for use in emergencies only.
2 Fire Risk Analysis

2.1 Field Assessment

Following review of available digital Project site and area information, including topography, vegetation types, fire history, and the Project’s development plan, Dudek conducted a field assessment of the Project site with other Project Team members on March 11, 2021. Among the field tasks completed were the following:

- Fuel type/load analysis
- Topographic features documentation
- Photographic documentation
- Confirmation/verification of hazard assumptions
- Ingress/egress documentation

Project site photographs were collected and fuel conditions were documented. Field observations augmented existing Project site data in generating the fire behavior models and formulating the fire safety recommendations provided in this FHMP.

2.2 Project Area Fire Environment

Fire environments are dynamic systems and are influenced by many types of environmental factors and site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. The three major components of fire environment are vegetation (fuels), climate, and topography. The state of each of these components and their interactions with each other determines the potential characteristics and behavior of a wildfire. The following sections provide more information regarding the fire environment associated with the Project site.

2.2.1 Topography

Topography influences fire risk by affecting fire spread rates. Typically, steep terrain results in faster fire spread upslope and slower spread downslope. Terrain that forms a funneling effect, such as chimneys, chutes, or saddles on the landscape can result in especially intense fire behavior. Conversely, flat terrain tends to have little effect on fire spread, resulting in fires that are driven by vegetation and wind.

The Project site’s topography ranges from gentle to moderate slopes, with the majority of the area on slopes less than 30%. Most of the site has a northern aspect, with the southern portion of the property having a southern aspect. The southeast corner and highest point of the property is near Crows Peak, with an elevation of 2,455 feet asml. Conversely the lowest point of the property at the northeast corner is near the stream bottom of what is locally referred to as Chicken Gulch, with an elevation of 2,100 feet amsl.
Off site, slopes drop to the southwest to Buckeye Creek, and to the southeast down to the Mariposa River. Slope is important relative to wildfire because steeper slopes facilitate more rapid fire spread up slope. Slopes within the Project Site are generally to the northeast and east. Off site to the northwest the slopes rise gradually to an unnamed peak that is about 2,400 feet amsl. Between this peak to the west, and Crows Peak to the east, the land forms a saddle in the southern portion of the property (also a separation between watersheds).

The Project area’s topography is in direct alignment with the typical major wind events (Diablo’s), which affect the western slopes of Sierra Nevada and can influence fire spread by creating wind-driven fires, especially when moving upslope. Chicken Gulch on the north of the property is in an northeast-west alignment, so a northeastern wind may have an indirect impact to the site. The saddle in the southern portion of the property is a fire-sensitive location, but not in direct alignment with typical wind events. It would, however, be subject to a topography driven wildfire approaching the project site from the south-southeast.

2.2.2 Climate

Mariposa County, including the Project area, experiences a Mediterranean type of climate with hot and dry summers and mildly cold and wet winters. Local climate, which has a large influence on fire risk, is typical of a Mediterranean area. The average high temperature reaches 89°F (31.7°C) in the middle of July. Drying vegetation (fuel moisture of less than 5% for 1-hour fuels is possible) during the summer months becomes fuel available to advancing flames should an ignition occur. Relative humidity of 20% or less is possible during fire season (Weather Spark 2020). Winters are mildly cold, with an average low temperature of 33°F (0.6°C) at the peak of December. The climate varies with elevation with a drop in temperatures, an increase in rain, and snowfall at higher altitudes. Rainfall mainly occurs during the winter months as the annual precipitation averages 31 inches (878.4mm). Spring and autumn have more mild weather compared to the summer and winter.

2.2.3 Fuels (Vegetation)

The Project site is currently partially developed and is comprised of several vegetation types. Vegetation type mapping is useful for fire planning because it enables each vegetation community to be assigned a fuel model, which is used by a software program to predict fire characteristics, as discussed in Section 2.3 below.

As shown in Table 2.2.3, the Project site’s habitat is primarily montane hardwood-conifer woodland, intermixed with grazed annual grassland, and disturbed/developed areas (roads, parking areas, structures, corrals, etc.)¹. The dominant woodland tree species include interior live oak (Quercus wislizeni), canyon live oak (Quercus chrysolepis), foothill pine (Pinus sabiniana), and California buckeye (Aesculus californica). Dominant shrubs include toyon (Heteromeles arbutifolia), poison oak (Toxicodendron diversilobum), buck brush (Ceanothus cuneatus), and California coffeeberry (Frangula californica). Dominant non-native annual grasses include wild oats (Avena spp.), bromes (Bromus spp.), dogtail grass (Cynosurus echinatus), fescues (Festuca spp.), and barleys (Hordeum spp.).

1. Vegetation types and dominant species provided by ESA. See the Biology section for specific details regarding flora and fauna observed on site.
Table 2.2.3. Habitat Types Within the Project Site

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbed/developed</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>

*Source: ESA 2021*

2.2.4 Fire History

Fire history is an important component in understanding a site’s wildfire risk. As represented in Figure 3 (Fire History), there have been 21 fires recorded by CAL FIRE from 1911 to 2019 on the Fire and Resource Assessment Program database within five miles of the Project (CAL FIRE 2020a). There have been no fires that burned onto the Project property. The largest was the 2017 Detweiler Fire which burned almost 82,000 acres. Mariposa County Fire Department may have data regarding other smaller, undocumented fires that have occurred in the Project area that have not been included herein as fires under 10 acres are not recorded in CAL FIRE’s database (CAL FIRE 2020a).

2.3 Potential Fire Behavior

Following field data collection efforts and available data analysis, fire behavior modeling was conducted to document the type and intensity of fire that would be expected on the project site given characteristic site features such as topography, vegetation, and weather. Dudek utilized BehavePlus software package version 6 (Andrews, Bevins, and Seli 2008) to analyze potential fire behavior. [A discussion of fire behavior modeling is presented in Appendix A, Fire Behavior Modeling.]

2.3.1 BehavePlus Fire Behavior Modeling Analysis

An analysis was conducted to evaluate fire behavior variables and to objectively predict flame lengths, intensities, and spread rates for three modeling scenarios. These fire scenarios incorporated observed fuel types representing the dominant vegetation representative of the site and adjacent land, in addition to slope gradients, and wind and fuel moisture values. Modeling scenario locations were selected to better understand different fire behavior that may be experienced on or adjacent to the site.

Vegetation types, which were derived from available resource materials and confirmed during the field assessment for the Project, were classified into a fuel model. Fuel models are selected by their vegetation type, fuel stratum most likely to carry the fire, and depth and compactness of the fuels. Fire behavior modeling was conducted for vegetative types that are both on and adjacent to the proposed development. Fuel models were also assigned to illustrate post-project fire behavior changes.

Based on the anticipated pre- and post-project vegetation conditions, six different fuel models were used in the fire behavior modeling effort presented herein. Table 2.3.1.A provides a description of the three fuel models observed that were subsequently used in the analysis for this project. Modeled areas include grass dominated ground fuel

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2 Each scenario utilizes a different set of modeling input variables including location, fuel type (vegetation), fuel moisture, weather (wind), topography (slope and aspect), and other related factors.
(Fuel Models GR1 and GR4); woodland litter ground fuel (Fuel Models TL6, TL8, 9). For modeling the post-development condition, fuel model assignments were re-classified to Fuel Models GR1 and TL4.

**Table 2.3.1.A. Fuel Models used for Fire Behavior Modeling**

<table>
<thead>
<tr>
<th>Fuel Model Type</th>
<th>Title</th>
<th>Description</th>
<th>Application (Behave Run)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing conditions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GR1</td>
<td>Grass – Light Load, Dry Climate</td>
<td>The primary carrier of fire is sparse grass, though small amounts of fine dead fuel may be present. Nearly pure grass and/or forb type. The grass is generally short, either naturally or by grazing, and may be sparse or discontinuous. Spread rate moderate; flame length low.</td>
<td>Grazed grassland. (2, 3)</td>
</tr>
<tr>
<td>GR4</td>
<td>Grass – Moderate Load, Dry Climate</td>
<td>The primary carrier of fire is coarse grass. Nearly pure grass and/or forb type. Moderately coarse continuous grass, average depth about two feet. Spread rate very high; flame length high.</td>
<td>Non-grazed grasslands. (2)</td>
</tr>
<tr>
<td>TL6</td>
<td>Timber Litter – Moderate Load, Broadleaf</td>
<td>Dead and down woody fuel (litter) beneath a forest/woodland canopy (hardwood). Fuelbed not recently burned; composed of broadleaf (hardwood) litter. Moderate load, less compact. Spread rate moderate; flame length low.</td>
<td>Beneath an oak canopy. (1, 3)</td>
</tr>
<tr>
<td>TL8</td>
<td>Timber Litter – Moderate Load, Long-needle Pine</td>
<td>Dead and down woody fuel (litter) beneath a forest/woodland canopy (conifer); Fuelbed not recently burned. Fuelbed composed of long-needle pine litter. Moderate load and compactness may include small amount of herbaceous load. Spread rate moderate; flame length low.</td>
<td>Beneath a pine canopy. (1)</td>
</tr>
<tr>
<td>FM9</td>
<td>Timber (Woodland)</td>
<td>Both long-needle conifer and hardwood stands, are typical. Fall fires in hardwoods are representative, but high winds will actually cause higher rates of spread due to spotting caused by rolling and blowing leaves. Closed stands of long-needled pine are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning. Spread rate high; flame height high.</td>
<td>Closed canopy of hardwood-pine woodland. (1)</td>
</tr>
<tr>
<td><strong>Post-Project</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GR1</td>
<td>Grass – Short, Sparse Dry Climate</td>
<td>The primary carrier of fire is sparse grass, though small amounts of fine dead fuel may be present. Nearly pure grass and/or forb type. The grass is generally short, either naturally or by grazing, and may be sparse or discontinuous. Spread rate moderate; flame length low.</td>
<td>Fuel treatment in areas primarily of grassland. (1, 2, 3)</td>
</tr>
<tr>
<td>TL4</td>
<td>Timber Litter – Small Downed Branches</td>
<td>The primary carrier of fire is moderate load of fine litter and coarse fuels. Includes small diameter downed branches. Spread rate is low; flame length low.</td>
<td>Fuel treatment in areas primarily of hardwood-pine woodland. (1, 3)</td>
</tr>
</tbody>
</table>
Project Site
5-Mile Buffer

Quantity of Times Burned

1
2
3
4

FIGURE 3
Fire History Map

SOURCE: FIRE DATA-CAL FIRE 2020
Table 2.3.1.B summarizes the weather and wind input variables used in the BehavePlus modeling process.

**Table 2.3.1.B. Fuel Moisture and Wind Inputs**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Weather Condition (90th Percentile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1h Moisture</td>
<td>4%</td>
</tr>
<tr>
<td>10h Moisture</td>
<td>5%</td>
</tr>
<tr>
<td>100h Moisture</td>
<td>7%</td>
</tr>
<tr>
<td>Live Herbaceous Moisture</td>
<td>70%</td>
</tr>
<tr>
<td>Live Woody Moisture</td>
<td>50%</td>
</tr>
<tr>
<td>20-foot Wind Speed (mph)</td>
<td>40</td>
</tr>
<tr>
<td>BehavePlus Wind Adjustment Factor</td>
<td>0.4</td>
</tr>
</tbody>
</table>

### 2.3.2 Modeling Results

The results of fire behavior modeling analysis for pre- and post-project conditions are presented in Tables 2.3.2.1 and 2.3.2.2, respectively. Identification of modeling run (fire scenarios) locations is presented graphically in Figure 4, Fire Behavior Analysis Map.

Fire Scenario locations and descriptions:

- **Scenario 1.** Fire flaming front approaching from the northeast along CA-140 toward the hardwood-conifer woodland (Fuel Models TL6, TL8, 9) in the northeast portion of the property, with north/northeastern winds. Post-development includes the fuel treatment recommendations (Fuel Model GR1, TL4).
- **Scenario 2.** Fire flaming front approaching from the southeast from off site along the CA-49 towards the southeast portion of the property, through the adjacent grassland groundcover and scattered woodland (Fuel Model GR4), approaching the grazed grassland (Fuel Model GR1) with southeastern winds. Post-development includes the fuel treatment recommendations (Fuel Model GR1).
- **Scenario 3.** Fire flaming front approaching from the west towards the western portion of the property, through the oak woodland (Fuel Model GR1), (TL6) with western winds. Post-development includes the fuel treatment recommendations (Fuel Model GR1, TL4).

### 2.3.2.1 Existing Conditions

As presented in Table 2.3.2.1, wildfire behavior in grass groundcover fuel beds, presented as Fuel Model GR4, represents the most extreme conditions in Scenario 2. In this case, flame lengths are calculated to reach 17.8 feet with 40 mph winds; spread rates reach 0.9 mph. The spotting distance, where airborne embers can ignite new fires downwind of the initial fire, is calculated at 1.1 mile. In comparison, a timber litter fuel type in Scenario 1 could generate flame lengths up to 8.2 feet high with a spread rate of 0.9 mph. The fire could potentially be spotting for a distance of 0.4 mile.
Table 2.3.2.1. Fire Behavior Model Results Existing Conditions

<table>
<thead>
<tr>
<th>Fire Scenarios</th>
<th>Flame Length (feet)</th>
<th>Fireline Intensity (BTU/feet/second)</th>
<th>Spread Rate (mph)</th>
<th>Spotting Distance (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 1: Hardwood-conifer woodland, 40% uphill slope, 40 mph wind</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Model TL6 – Timber litter, Moderate Load, Broadleaf</td>
<td>6.6</td>
<td>346</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Fuel Model TL8 – Timber litter, Moderate Load, Long-needle pine</td>
<td>7.9</td>
<td>502</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Fuel Model 9 – Timber (Woodland)</td>
<td>8.2</td>
<td>549</td>
<td>0.9</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Scenario 2: Grassland, 30% uphill slope, 40 mph wind</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Model GR4 – Grass, Moderate Load, Dry Climate</td>
<td>17.8</td>
<td>2971</td>
<td>4.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Fuel Model GR1 – Grass, Light Load, Dry Climate</td>
<td>1.9</td>
<td>22</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Scenario 3: Grassland, Oak Woodland, 30% slope, 20 mph wind</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Model GR1 – Grass, Light Load, Dry Climate</td>
<td>1.9</td>
<td>22</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Fuel Model TL6 – Timber litter, Moderate Load, Broadleaf</td>
<td>4.2</td>
<td>127</td>
<td>0.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Notes:** Spotting distance from a wind driven surface fire.

2.3.2.2 Post-Project Conditions

As presented in Table 2.3.2.2, Dudek conducted modeling of the site for post-development fuel modification recommendations for this project. The existing fuel model assignments were re-classified for each scenario to reflect the fuel modification recommendations. Fuel modification includes the fuel treatment proposed as part of the site preparation and ongoing vegetation management.

The treatments in each area resulted in a reduction in flame length and intensity. The 17.8-foot tall flames predicted in the grass fuel bed during pre-development were reduced to 1.9 feet tall; the fireline intensity was reduced from 2971 BTU/ft/sec to 22 BTU/ft/sec.

Table 2.3.2.2. Fire Behavior Modeling Results for Post-Project Conditions

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Flame Length (feet)</th>
<th>Fireline Intensity (BTU/feet/second)</th>
<th>Spread Rate (mph)</th>
<th>Spotting Distance (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 1: Hardwood-conifer woodland, 40% uphill slope, 40 mph wind</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Model GR1 – Grass, Light Load, Dry Climate</td>
<td>1.9</td>
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</tr>
<tr>
<td>Fuel Model TL4 – Timber litter, Small downed branches</td>
<td>2.4</td>
<td>39</td>
<td>0.1</td>
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</tr>
<tr>
<td><strong>Scenario 2: Grassland, 30% uphill slope, 40 mph wind</strong></td>
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<tr>
<td>Fuel Model GR1 – Grass, Light Load, Dry Climate</td>
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<td>22</td>
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</tr>
<tr>
<td><strong>Scenario 3: Grassland, Oak Woodland, 30% slope, 20 mph wind</strong></td>
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</tr>
<tr>
<td>Fuel Model GR1 – Grass, Light Load, Dry Climate</td>
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<td>2.0</td>
<td>26</td>
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</tr>
</tbody>
</table>
2.4 Project Fire Risk Assessment

Based on the Project site’s location, climate, and fire history, it can be anticipated that periodic wildfires may start on, burn onto, or spot into the Project site. On-site wildfire ignitions could occur as a result of campfires, stoves, cigarettes, arson, or equipment use. Off-site ignitions could occur along CA-140 (vehicle fire, discarded cigarette, dragging tow chain), or through adjacent lands. However, the provided maintained areas and fuel modification buffers will significantly reduce the likelihood of fire spreading off the site. Fire risk at the site will be managed through annually maintaining the recommended fuel modification around the Project, ensure the required fire department access roadways and water supply systems are fully operational, and regularly informing guests of the fire protection features and evacuation plans for the Project at acceptable levels.
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Table 2.3.2.1. Fire Behavior Model Results Existing Conditions

<table>
<thead>
<tr>
<th>Fire Scenarios</th>
<th>Flame Length (feet)</th>
<th>Fireline Intensity (Btu/ft/sec/second)</th>
<th>Spread Rate (mph)</th>
<th>Spotting Distance (miles)</th>
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<tr>
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<td>Fuel Model TL6 - Timber litter, Moderate Load, Broadleaf</td>
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<td>Fuel Model TL6 - Timber litter, Moderate Load, Broadleaf</td>
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Table 2.3.2.2. Fire Behavior Modeling Results for Post-Project Conditions

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Flame Length (feet)</th>
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<td>26</td>
<td>0.1</td>
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</tr>
</tbody>
</table>
3 Emergency Response and Service

3.1 Existing Fire Department Response Capabilities

The Project site is on private land, with surrounding private lands in all directions, aside from the fire station along a portion of the northern boundary. As is the case with all private land parcels in the vicinity, the site is located within a State Responsibility Area (SRA) for fire protection responsibility.

The Mariposa County Fire Department (MCFD) and CalFire are jointly responsible for providing structural fire protection and emergency medical services to the Project site, though it also has wildland firefighting resources and can provide wildland fire protection as needed. The MCFD is administered by CAL FIRE under a cooperative agreement with Mariposa County. MCFD is headquartered in Mariposa with administrative offices adjacent to the Project site, and includes 14 fire stations, with 14 response zones dispersed across the County and resourced by volunteer firefighters. Regional response support is available in the form of CALFIRE initial attack resources. Additional resources in the region are available through cooperative agreements that include National Park Service fire resources and USDA Forest Service fire response resources.³

The nearest MCFD firefighting resources are located at Fire Station 27 in the Mormon Bar area, approximately 2.8 road miles from the project site on CA-49. Resources at the station include a Type 6 engine.

Fire Station 22 is located in Mariposa (2.3 miles away) and is managed by the Mariposa Public Utility District (MPUD) and fire personnel from the MPUD staff. Rescue 22 (Light Rescue Unit) responds to all structure fires, medical aids, vehicle accidents and other incidents south of the Merced River.⁴

There are three MCFD Fire Stations that provide secondary coverage to Mariposa: Stations 25, 23 and 21. Station 25 is located at the Mariposa County Airport (6 miles away). Resources include one Type 1 fire engine and one Type 6 engine. Station 23 is located at McKay Park in Catheys Valley (10 miles away). Resources include one Type 1 fire engine, one Type 1 water tender and one Type 6 engine. Station 21 is located at the Midpines Park (11 miles away). Resources include one Type 1 fire engine, one Type 1 water tender and one Type 6 engine assigned to the company. Though not designated for secondary response to Mariposa, Station 37 is within 7 miles of the Project site in the Bootjack community. Resources include one Type 1 fire engine, one Type 1 water tender and one Type 6 engine.⁵

The MCFD prepared a Standards of Coverage in 2002 to create a system to increase fire prevention and protection opportunities for property owners. Communities throughout the county are classified with an ISO rating: those with hydrant systems are rated Rural 5 or 6; the MPUD service area is assigned a rating of 3; outlying areas are classified as ISO Rural 8, 9 or 10. ISO 8 is within the coverage response time of a fire station (area within 5 road miles of a fire station operating an engine and water tender); ISO 9 have fire protection, but longer response times (area over 5 miles but less than ten miles from a fire station operating an engine and water tender); ISO 10 areas are considered unprotected (area over ten miles from a fire station; no recognized service).⁶ In 2005 the County had

³ Mariposa County CWPP.
⁴ MCFD website.
⁵ Ibid.
⁶ Mariposa County General Plan Safety Element.
an ISO rating of 5. The Project site is located in the ISO 8 Area just outside the Mariposa Town Planning Area (TPA) and the MPUD district boundary.
MCFD response time objectives:

1. Three minutes for turnout time.
2. Ten additional minutes or less for the arrival of the first arriving engine company at a fire suppression incident and/or 12 minutes or less for the deployment of a full first alarm assignment at a fire suppression incident. Note: this response zone will be no more than 5.9 road miles from the fire station and is referred to the "Eight Zone". 
3. A total thirteen minutes or less for the arrival of a unit with first responder or higher-level capability at an emergency medical incident within the “Eight Zone”.
4. Safely initiate attack on fire within a total of fifteen minutes 90% of the time for all areas within the "Eight Zone".

In addition to MCFD, CAL FIRE has entered into various cooperative and fire assistance agreements with the USFS, U.S. Bureau of Land Management, National Park Service. Based upon these and other interagency agreements, most large wildfire events in the region are responded to by multiple agencies operating under the varying levels of the incident command structure, which is a standardized approach to the command, control, and coordination of emergency response providing a common hierarchy within which responders from multiple agencies can be effective.

3.2 Project-Related Emergency Response Calls

The Mariposa County Fire Department (MCFD) responds to about 530 calls annually. With a population of approximately 18,000 in the county, that is a per capita call rate of 0.03. With a maximum daily facility population of 165 guests and staff, it is estimated that the proposed Project will generate approximately five calls per year, which is well within the capacity of the MCFD based on current call volume.

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7 MCFD Standards of Cover, 2002.  
8 Data obtained from the weekly Fire Call Log posted online by Sierra Sun Times; goldrushcam.com/sierrasuntimes.
4 Fire Safety Standards

The fire safety standard included in the following sections have been developed to reduce wildfire risk during operations of the proposed Project.

4.1 Vegetation/Forest Management

Initial Project site development activities would include selective hazardous fuel reduction efforts throughout the property. These fuel reduction treatments would reduce the size and distribution of surface fuels to a moderate fire behavior level to facilitate direct attack by firefighters. The reduction efforts would include treatment of surface (thinning of grass and shrubs, removal of litter) and ladder fuels (pruning and thinning large shrubs, small trees and tree branches).

4.1.1 Developed Area Vegetation Management

The Project includes development of a transient camp area with tents, communal bathrooms, and a clubhouse tent with a dining area. Utility improvements to support the camp would include water supply wells, wastewater treatment, and commercial power.

Following is a list of the proposed facilities, along with the recommended vegetation management and/or fuel treatments to occur within the Fuel Modification Area surrounding them.

Guest Tents

The project proposes a total of 80 guest tents in two phases with access to a communal bathroom. The approximate tent footprints would range from 200 to 288 square feet. Tents would be made from fire-retardant-treated canvas mounted on 10’x20’ to 12’x24’ wood platforms.

- A 30-foot Fuel Modification Area is recommended for all Guest Tents, measured horizontally from the outermost edge of the tent, platform or support stakes in all directions.
- For guest tents with wood heating stoves, tree branches and other vegetation above the stove flue/chimney are to be removed and maintained to establish clearance to the sky, 10 feet horizontally.

Bathroom Facilities

To serve the tents, communal bathroom facilities would be provided, which would be manufactured off site; the units would be prefabricated.

- A 30-foot Fuel Modification Area is recommended for the bathroom facilities, measured horizontally from the outermost edge of the units in all directions.

Reception/Dining Tent and Support Facilities

One reception/dining tent would be provided, as well as several support facilities.
A 30-foot Fuel Modification Area is recommended for the Reception/Dining Tents and Support Facilities, measured horizontally from the outermost edge of the tents, platforms, support stakes, or portable units in all directions.

Communal Facilities

A 30-foot Fuel Modification Area is recommended for all Communal Facilities, measured horizontally from the outermost edge of the equipment in all directions.

Communal Campfire Pits

The project would provide communal campfire pits interspersed around the project site. Large metal rings would be installed to contain burning material, with a mesh screen installed to encompass and cover the fire as a spark arrestor. The lighting, maintenance, and extinguishing of these campfires would be managed by camp staff.

A 30-foot Fuel Modification Area is recommended for the Communal Fire Pits, measured horizontally from the outermost edge of the fire pit enclosure in all directions. Tree branches and other vegetation above each fire pit area are to be removed and maintained to establish clearance to the sky.

Water Wells, Cisterns, Pumps

Drinking and potable water at the camp would be provided by groundwater source wells; water distribution would include storage cisterns and pumps.

A 30-foot Fuel Modification Area is recommended for the Water Wells, Tank, Cisterns and Pumps, measured horizontally from the outermost edge of the equipment or enclosure in all directions.

Standby Generator and Propane Tank

To provide electric power to the site during power outages, a propane-powered standby generator would be installed. The generator would be placed inside its own enclosure for protection against the elements and for noise abatement purposes.

A 30-foot Fuel Modification Area is recommended for the Standby Generator and Propane Tank, measured horizontally from the outermost edge of the equipment, enclosure or tank in all directions. Branches and other vegetation above the generator exhaust pipe are to be removed and maintained to establish clearance to the sky.

Storage Area

A Workshop/Storage area will be maintained on site to store supplies and other equipment during operations.

A 50-foot Fuel Modification Area is recommended for the Storage area, measured horizontally from the outermost edge of the equipment or enclosure in all directions.
Manager’s Residence

A Workshop/Storage area will be maintained on site to store supplies and other equipment during operations.

- A 36 to 50-foot Fuel Modification Area is recommended for the residence, measured horizontally from the outermost edge of the equipment or enclosure in all directions.
- The existing residence is within 36 feet of the property line – the entire area between the structure and the property line should be maintained as a treatment area.

Property Perimeter

- A 50-foot-wide Fuel Modification Area is recommended along the southern property boundary line, the southeastern property boundary line, the southwestern property line, and along the northern property line from the Fire Department Headquarters to the seasonal drainage streambed (Figure 5, Fuel Modification Areas).

4.1.1.1 Treatment Standards

The following vegetation management and fuel treatment standards are applicable to the Project’s Fuel Modification Areas (Figure 5, Fuel Modification Areas), as defined above:

- Removal of dead, down, dying, diseased, and hazard trees.
- Pruning (limbing) of live branches within six (6) to eight (8) feet above ground level, but no more than one-third (1/3) the live crown, for all trees in a Fuel Modification Area.
- Trimming and/or thinning of shrubs to eliminate ladder fuels.
- Cutting of annual grasses to within 3” of ground level.
- All accumulations of needle and leaf litter shall be removed regularly from tents, roofs, decks/platforms.
- Firewood shall be stored a minimum of thirty (30) feet from any tent, structure, or facility unless covered in a fire resistant material or enclosure.
- Remove any portion of trees, which extend within ten (10) feet of the outlet of a chimney.
- Liquid Propane Gas tanks shall have a minimum of ten (10) feet of bare mineral soil clearance with no flammable vegetation around their exterior.
- Debris and trimmings produced by thinning and pruning shall be removed, except for larger woody debris that may be chipped and left for weed and erosion control.

4.1.2 Roadside and Footpath Vegetation Management

Internal circulation would be provided by a main internal access road, tent access loop road, internal cart paths and footpaths. On-site roadways and pathways would be covered with gravel where needed. The main access roadway would be constructed to have an unobstructed width of not less than 20 feet (two lanes of travel) and an unobstructed vertical clearance of not less than 13.5 feet. All other roadways would be constructed to have an unobstructed width of not less than 12 feet and an unobstructed vertical clearance of not less than 13.5 feet.

Parking would be provided in a designated parking area located near the camp entrance. All of the tents would be accessed via paths and trails.
Roadside Vegetation Management

The following vegetation/fuel treatment standards are applicable to the Project’s roadside management areas, as defined above (applicable within 20 feet of the outside edge of the road surface, on both sides of all on-site Project roads and along the edge of CA-140 where the 20-foot treatment area occurs on the Project site:

- Maintain all designated fire access roads (any road that a responding fire engine would use to access an emergency) unobstructed at all times, no branches or tree canopies lower than 13.5 feet, no tree trunks intruding into roadway width, and clear of flammable vegetation.
- Maintain 10 feet from the edge of all parking areas and deluxe/suite tent driveways.
- Treat or maintain vegetation on each side, as follows:
  - Remove dead, down, dying, diseased, and hazard trees.
  - Pruning (limbing) of live branches within six (6) to eight (8) feet above ground level, but no more than one-third (1/3) the live crown, for all trees in a Fuel Modification Area.
  - Trimming and/or thinning of shrubs to eliminate ladder fuels.
  - Cutting of annual grasses to within 3” of ground level.
  - Debris and trimmings produced by thinning and pruning shall be removed, except for larger woody debris that may be chipped and left for weed and erosion control.

Cart path and Footpath Vegetation Management

The following vegetation/fuel treatment standards are applicable to the Project’s cart path and footpath management areas, as defined above (applicable within 10 feet of the outside edge of the path surface, on both sides of all on-site Project pathways:

Treatment or maintenance of vegetation on each side, as follows:

- Remove dead, down, dying, diseased, and hazard trees.
- Pruning (limbing) of live branches within six (6) to eight (8) feet above ground level, but no more than one-third (1/3) the live crown, for all trees in a Fuel Modification Area.
- Trimming and/or thinning of shrubs to eliminate ladder fuels.
- Cutting of annual grasses to within 3” of ground level.
- Debris and trimmings produced by thinning and pruning shall be removed, except for larger woody debris that may be chipped and left for weed and erosion control.

4.1.3 Routine Maintenance

Vegetation management as described above would be completed annually before opening day of the camping season of each year and more often as needed for fire safety, as determined by the MCFD.
**Fuel Modification Plan**

**Fire Hazard Mitigation Plan for the Wildhaven Yosemite Project**

**Proposed Land Use**
- Guest Tents, Structures, and Infrastructure
- Parking Area
- Access Road (Gravel or Pavement)
- Gravel Walking Trail

**Fuel Modification Areas**
- 50-Ft wide Fuel Modification Area (Boundary Perimeter)
- 50-Ft Fuel Modification Area (Manager's Residence)
- 50-Ft Fuel Modification Area (Storage Area)
- 30-Ft Fuel Modification Area
- Offsite Fuel Modification Area of 50-Ft Fuel Modification Area (Manager's Residence)
- Offsite Fuel Modification Area of 50-Ft Fuel Modification Area (Storage Area)
- Offsite Fuel Modification Area of 30-Ft Fuel Modification Area

*NOTE:* 30-foot Fuel Modification Area is recommended for all Guest Tents, bathroom facilities, Reception/Dining Tents and Support Facilities, Communal Facilities, Communal Fire Pits, Water Wells, Tank, Cisterns and Pumps, Standby Generator and Propane Tank, measured horizontally from the outermost edge of structure in all directions.

**FIGURE 5**
- Project Site
- Seasonal Drainage Streambed
- Proposed Fire Hydrant Location

**SOURCE:** BING MAPPING SERVICE; LOTUS WATER ENGINEERING 2021
4.2 Roads and Access

Internal circulation would be provided by a main internal access road and internal cart paths and footpaths. The proposed access road would begin from CA-140 in front of the Mariposa Fire Department administrative offices. On-site roadways and paths would be covered with gravel where needed. Portions of the existing emergency access road may require grading and the addition of gravel; rolling dips are proposed to improve drainage conditions (ESA 2020).

The main access roadway would be constructed to have an unobstructed width of not less than 20 feet (two lanes) and an unobstructed vertical clearance of not less than 13.5 feet. All other roadways would be constructed to have an unobstructed width of not less than 12 feet and an unobstructed vertical clearance of not less than 13.5 feet. For any dead-end roadways in excess of 150 feet in length, the project would provide a turnaround for fire apparatus.

Access Roads

Project site access, including road widths and connectivity, would comply with the requirements of the Mariposa County Fire Department. Figure 2 (Project Site Plan) presents the proposed roads.

- All fire access and vehicle roadways would be of approved surfacing materials and designed and maintained to support the imposed loads of fire apparatus (not less than 75,000 pounds) that may respond, typically Type III engines and ambulances.
- The main access roadway would have an unobstructed width of not less than 20 feet (two lanes); all other roadways would have an unobstructed width of not less than 12 feet.
- Any dead-end roads longer than 150 feet would have approved provisions for a fire apparatus turnaround.
- Roadways and/or driveways would provide fire department access to within 150 feet of all tent platforms and camp infrastructure facilities.
- Vertical clearance of vegetation along roadways would be maintained at 13.5 feet.

Secondary Access/Egress

The need for a secondary point of access/egress will not be required by the Fire Chief, provided the main access road is 24 foot wide two lane road.

4.3 Water Supply

Water service for the Project would be provided on site by the use of wells and a water tank. The source would be developed as a Public Water System and classified as a Transient Non-Community water system. Water distribution would include a water tank, storage cisterns, small diameter distribution lines, re-pressure pumps, source development, and services to the clubhouse tent and bathroom tents. All water storage, mains, and water pressures would be designed to fully comply with Mariposa County requirements.

4.3.1 Water Tank

A 50,000-gallon water tank will be provided on site to supply backup domestic and fire suppression needs. Of that, approximately 30,000 will be dedicated to fire suppression, based on NFPA Standard 1142 (Standard on Water
Supplies for Suburban and Rural Fire Fighting). The tank shall be equipped with a with pump that meets the requirements of NFPA Standard 1142. The pump shall be provided with a generator for backup power.

4.3.2 Fire Hoses

Fire hose stations/standpipes with 1 ½” fire hose connections will be provided throughout the camp at locations spaced such that no tent structure is further than 150 feet from a fire hose station. Fire hose stations/standpipes should also be placed no further than 150 feet from communal facilities, communal campfire pits, pumps, generators, and propane tanks. It is not anticipated that responding fire agency personnel (e.g., CAL FIRE, MCFD) would utilize these water connections and hoses for fire suppression activities. The intent of these water connections/hoses would be for use by trained staff should a small fire occur on site.

4.4 Operations

The business model of the facility is to operate a camping facility consisting of tents and support facilities throughout the year. As a result, fire safety operational standards presented below are designed for the camping operational period when the facility will be staffed and occupied.

The following facility operational standards shall be implemented:

- All fires occurring on site shall be immediately reported to MCFD.
- Wildhaven shall identify a Fire Safety Coordinator. Considering staff scheduling, it is anticipated that more than one staff person will fill this role so that a Fire Safety Coordinator will be on site at all times when staff and visitors are on site. The Fire Safety Coordinator shall be responsible for the following:
  - Initial point of contact for all emergencies
  - Communication with fire agencies
  - Annual Staff Training (see Section 4.6)
  - Annual inspection and regular operation of all emergency tools and equipment
  - Annual vegetation management and fuel treatment
  - Oversight of Visitor Education program (see Section 4.7)
  - Oversight of evacuations
- Scheduling and conducting an annual risk assessment with MCFD, implementing all risk reductions measures identified during this assessment, and scheduling follow-up assessments with MCFD, as necessary.
- Certain weather conditions can increase fire risk, resulting in the declaration of a Red Flag Warning (RFW) by the National Weather Service (NWS). To ensure compliance with Red Flag Warnings restrictions, the NWS website shall be monitored no less than daily when staff and visitors are on site. When a RFW is issued by the NWS, all open flame fires (campfires, tent wood-burning stoves, and charcoal fires) will be prohibited. If vehicles are required to be used during RFW conditions, vehicles shall remain only on designated Project roads.
4.5 Equipment Inventory and Maintenance

While it is not expected that the Wildhaven staff assume the role intended for professional firefighters, there should be an inventory on site of tools and equipment that can be used in an initial attack role for small ignitions that originate on site. In all instances, MCFD should be called first. If the fire appears manageable, evacuate guests, and then attack the fire.

It is recommended that some basic initial attack firefighting equipment be maintained in a centrally located, on-site cache (fire tool locker). This would include:

- Fire extinguishers and backpack pumps;
- Fire line tools: round pointed shovels, Pulaski’s, and adze hoes (approximately 10 each) and one chain saw;
- Spare fire hose, adapters and wrenches;
- Personal Protective Equipment: helmets, nomex jackets and pants, gloves, goggles.

For additional fire protection support, a water tank with pump (and generator for backup power) for fire suppression water that meets the requirements of NFPA 1142 standard (approximately 30,000 gallons) will also be provided on site.

Located throughout the Project will be approved fire hose station/standpipes with 1 ½” fire hose connections so that no tent structure is further than 150 from a fire hose station.

4.6 Staff Training

All staff should be trained each year following the guidelines in the Training and Exercise Plan for fire prevention, initial response, medical emergencies, and fire reporting, along with reviewing the Emergency Operations Plan. The training should also include a comprehensive site and facility field review identifying all camp emergency features, equipment and resources. Where applicable, the safe and proper operation of emergency equipment and tools should be demonstrated.

The primary purpose of the project staff is guest safety. Staff will follow the guidelines established by the wildland fire and operational plans approved by MCFD. Those plans will include emergency alert and evacuation guidelines that staff will implement to ensure the safety of all guests.

4.7 Visitor Education

The Owner/Operator would be required to educate visitors/guest regarding fire risk and prevention, which would include providing emergency evacuation information, and a wildfire preparedness information brochure (CAL FIRE’s Wildfire Is Coming Are You Ready To…Go?, Appendix B) to each guest. Educational materials shall be available in the clubhouse as well in each of the guest tents. It is also recommended that visitors/guests are encouraged to subscribe to the National Park Service Yosemite Alert System, https://member.everbridge.net/index/453003085619123/#/signup. To encourage visitors/guests to register, the QR Code in Figure 6 shall be posted/provided in the clubhouse, each tent, and communal or informational areas within the Project site. Additionally, this information should be made available on the Project’s website.
Emergency Operations Plan

All guests should be invited to attend a regularly scheduled orientation briefing, reviewing the applicable portions of the Emergency Operations Plan concerning potential hazards and what to do in the event of an emergency incident.

- Review the site fire and emergency alert system designed to notify site occupants in the event of an emergency.
- Review the site evacuation plan, defining routes of ingress and egress, rally points, and protocols for disabled guests and/or guests without their own transport.
- Review temporary refuge areas if evacuation is not possible.

The Owner/Operator of the Project would be responsible for maintaining fire breaks, ensuring fire safety measures detailed in this FHMP have been implemented, and educating guests/visitors on wildfire. MCFD would review and approve all wildfire educational material/programs before printing and distribution.
Figure 6  QR Code for Local Emergency Alert Systems

NPS Yosemite Alert System
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Evacuation

Early evacuation for any type of wildfire emergency at the Project is the preferred method of providing for visitor safety, consistent with CAL FIRE’s current approach and adopted by Mariposa County. As such, the Project would formally adopt, practice, and implement a “Ready, Set, Go!” (International Fire Chiefs Association 2013) approach to evacuation. The “Ready, Set, Go!” concept is widely known and encouraged by the State of California and most fire agencies. Pre-planning for emergencies, including wildfire emergencies, focuses on being prepared, having a well-defined plan, minimizing potential for errors, maintaining the Project’s fire protection systems, and implementing a conservative (evacuate as early as possible) approach to evacuation and Project operations during periods of fire weather extremes.

Note that large-scale evacuations during wildfire or other emergencies are managed by agencies including the Office of Emergency Services, law enforcement, and fire agencies. Emergencies are often fluid events and on-scene emergency personnel provide key information and direction regarding evacuations. This FHMP provides limited information regarding wildfire evacuation, and actual evacuation procedures would be a case-by-case basis and managed and controlled by the aforementioned agencies.

Directions provided by the Mariposa County Office of Emergency Services would be the basis for evacuation planning for the Project site.

Notifications

Evacuation notifications at the Project site may be made using several methods: Everbridge Emergency Response Notification System, local radio stations, online at MyMotherlode.com, and face-to-face when feasible. Two types of warnings are used: an Evacuation Warning is issued when an evacuation order is imminent; an Evacuation Order is issued when there is an immediate threat to life and/or property.

It is crucial to leave when an evacuation is ordered. The direction of the evacuation route will depend upon the location of the fire in relation to the camp.

Preparation

Guests and staff must be prepared for an evacuation at all time because of the remote location of the camp. With guests typically traveling off site each day for sight-seeing, it is important that a meeting place is designated in advance for reuniting during and after an evacuation. Likewise, staff should also have a designated meeting place. All guests and staff should become familiar with travel route options in advance.

If a wildfire is approaching, or following issuance of an Evacuation Warning, vehicles should be parked facing the road for a quick departure. If time permits, belongings should be placed in vehicles and staff/guests should put on a long sleeve shirt and long pants and cover face with bandanas. Following issuance of an Evacuation Order, staff and guests should leave immediately.

The Fire Safety Coordinator shall ensure that all Project gates are unlocked and open to vehicle traffic following issuance of an Evacuation Warning or Order. This includes ensuring that the secondary access/egress road is unlocked and unobstructed.
During an Evacuation

Leave immediately after being notified of the Evacuation Order.

Observe instructions provided by emergency personnel for areas to be evacuated, travel routes, traffic control and safe locations. Never block the travel route.

If trapped by fire while evacuating, park in a clear area, close all windows and vents, cover up and lie low if possible.

Refuge Area

Temporary refuge areas are designed as temporary holding areas for smaller groups of people. Because of the project location, surrounding vegetation, lack of suitable sites usable as refuge areas, and the large number of potential guests at the camp, it is not recommended that a refuge area be designated or utilized.

Resources

Emergencies: 911

Mariposa County Office of Emergency Services: The Mariposa County Office of Emergency Services (OES) is housed under the Mariposa County Sheriff's Office. OES coordinates planning and preparedness, response, and recovery efforts for disasters occurring within the unincorporated area of the County.

Sheriff's Office

Physical Address
5099 Old Highway Road
Mariposa, California 95338

Mailing Address
P.O. Box 276
Mariposa, California 95338

Phone: 209.966.3615

Online: myMotherlode.com
6 List of Preparers

Project Manager

Scott Eckardt, RPF
Senior Fire Protection Planner
Dudek

Fire Protection Planners

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Senior Fire Protection Specialist
Dudek

GIS and Mapping

Lesley Terry
GIS and CADD Specialist
Dudek
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7 References Cited
(Including References Cited in Appendices)


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Mariposa County Local Hazard Mitigation Plan, 2020

Mariposa County Community Wildfire Protection Plan, 2021

Mariposa County Fire Department, Standards of Cover, 2002


NFPA Standard 1142


1 Fire Behavior Modeling Background

Fire behavior modeling has been used by researchers for approximately 50+ years to predict how a fire will move through a given landscape (Linn 2003). The models have had varied complexities and applications throughout the years. One model has become the most widely used for predicting fire behavior on a given landscape. That model, known as “BEHAVE,” was developed by the U. S. Government (USDA Forest Service, Rocky Mountain Research Station) and has been in use since 1984. Since that time, it has undergone continued research, improvements, and refinement. The current version, BehavePlus, V6, includes the latest updates incorporating years of research and testing. Numerous studies have been completed testing the validity of the fire behavior models’ ability to predict fire behavior given site specific inputs. One of the most successful ways the model has been improved has been through post-wildfire modeling (Brown 1972, Lawson 1972, Sneeuwjagt and Frandsen 1977, Andrews 1980, Brown 1982, Rothermel and Rinehart 1983, Bushey 1985, McAlpine and Xanthopoulos 1989, Grabner, et. al. 1994, Marsden-Smedley and Catchpole 1995, Grabner 1996, Alexander 1998, Grabner et al. 2001, Arca et al. 2005). In this type of study, BehavePlus is used to model fire behavior based on pre-fire conditions in an area that recently burned. Real-world fire behavior, documented during the wildfire, can then be compared to the prediction results of BehavePlus and refinements to the fuel models incorporated, retested, and so on.

Fire behavior modeling includes a high level of analysis and information detail to arrive at reasonably accurate representations of how wildfire would move through available fuels on a given site. Fire behavior calculations are based on site specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. Predicting wildland fire behavior is not an exact science. As such, the minute-by-minute movement of a fire will probably never be predictable, especially when considering the variable state of weather and the fact that weather conditions are typically estimated from forecasts made many hours before a fire. Nevertheless, field-tested and experienced judgment in assessing the fire environment, coupled with a systematic method of calculating fire behavior yields surprisingly accurate results. To be used effectively, the basic assumptions and limitations of fire behavior modeling applications must be understood.

1. First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is the dead fuels less than 0.25 inches in diameter. These are the fine fuels that carry fire. Fuels greater than one inch have little effect, while fuels greater than three inches have no effect on fire behavior.

2. Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within six feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.

3. Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, creating their own weather, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.

4. Fourth, fire behavior computer modeling systems are not intended for determining sufficient fuel modification zone/defensible space widths. However, it does provide the average length of the flames, which is a key element for determining defensible space distances for minimizing structure ignition.

Although BehavePlus has limitations, it can still provide valuable fire behavior predictions, which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able to recognize the variations in these fuels. Natural fuels are
made up of the various components of vegetation, both live and dead, that occur in a particular landscape. The type and quantity will depend upon soil, climate, geographic features, and fire history. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

2 Modeling Inputs

2.1 Fuels

The seven fuel characteristics help to define the 13 standard fire behavior fuel models (Anderson 1982). According to the model classifications, fuel models used for fire behavior modeling (BehavePlus) have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface-to-volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in modeling efforts. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models:

- Grasses Fuel Models 1 through 3
- Brush Fuel Models 4 through 7
- Timber Fuel Models 8 through 10

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 additional fire behavior fuel models (Scott and Burgan 2005) developed for refining use of the BehavePlus modeling system. These models attempt to improve the accuracy of the 13 standard fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the 40 new fuel models:

- Non-burnable Models NB1, NB2, NB3, NB8, NB9
- Grass Models GR1 through GR9
- Grass shrub Models GS1 through GS4
- Shrub Models SH1 through SH9
- Timber understory Models TU1 through TU5
- Timber litter Models TL1 through TL9
- Slash blowdown Models SB1 through SB4.

For each fire behavior analyses, fuel model assignments are based on observed field conditions. As is customary for this type of analysis, the terrain and fuels directly adjacent to the proposed development are used for determining flame lengths and fire spread. It is these fuels that would have the potential to affect a project’s structures from a radiant and convective heat perspective, as well as from direct flame impingement.

Fuel beds, including grass, shrubs, timber and slash, may be observed on and adjacent to a proposed development. Often fuel types may produce flying embers that could affect a project; defenses can be built into a project design.
to minimize ember generation and potential impact. In most instances, various combinations of fuels are observed and the predominate fuel likely to carry the flaming front of a wildfire determined the fuel model selected.

Modeling of the site is also conducted for post-development recommendations for this project, including fuel treatment proposed as part of the site preparation and ongoing vegetation management. Fuel modification usually includes routine vegetation management around structures, improvements, alongside roadways, and infrastructure, as well as the project periphery.

2.2 Weather

Analyses are conducted for conservative, worst case, 90th percentile weather condition scenarios. Fuel moisture and wind speed information data is incorporated into the BehavePlus modeling runs. The input wind speed and direction is roughly an average surface wind at 20 feet above the vegetation over the analysis area.

2.3 Slope

Slope is a measure of angle in degrees from horizontal and can be presented in units of degrees or percent. Slope is important in fire behavior analysis as it affects the exposure of fuel beds. Additionally, fires burning uphill spread faster than those burning on flat terrain or downhill as uphill vegetation is pre-heated and dried in advance of the flaming front, resulting in faster ignition rates. For the BehavePlus analysis, slope values are determined by field observation and use of topographical data at the locations selected for each modeling scenario.

3 BehavePlus Analysis

To objectively predict flame lengths, intensities, and spread rates, the BehavePlus V6 fire behavior modeling system (Andrews, Bevins, and Seli 2004) is used in one or more modeling scenarios and incorporates observed fuel types representing the dominant vegetative fuels, slope gradients, and wind and fuel moisture values. Modeling scenario locations are selected to better understand different fire behavior that may be experienced on or adjacent to the site.

Fuel modification includes fuel treatment proposed as part of the site preparation and ongoing vegetation management. For modeling the post-development condition, fuel model assignments are re-classified for each scenario. The fuel treatments in usually result in noticeable reductions of both flame length and intensity.

It should be noted that the results (outputs) depict values based on inputs to the BehavePlus software. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis, but models provide a worst-case wildfire condition as part of a conservative approach. Further, this modeling analysis assumes a correlation between the site vegetation and fuel model characteristics. Model results should be used as a basis for planning only, as actual fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

The Fire Suppression Information in Table B-1 pertains to interpretation of flame length and fireline intensity as it relates to fire suppression efforts. Calculated flame lengths under 4.0 feet tall, fire fighters should be able to conduct a direct attack on the fire.
Table B-1. Fire Suppression Interpretation

<table>
<thead>
<tr>
<th>Flame Length (ft)</th>
<th>Fireline Intensity (Btu/ft/s)</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 4</td>
<td>Under 100</td>
<td>Fires can generally be attacked at the head or flanks by persons using hand tools. Hand line should hold the fire.</td>
</tr>
<tr>
<td>4 to 8</td>
<td>100-500</td>
<td>Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold the fire. Equipment such as dozers, pumpers, and retardant aircraft can be effective.</td>
</tr>
<tr>
<td>8 to 11</td>
<td>500-1000</td>
<td>Fires may present serious control problems -- torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.</td>
</tr>
<tr>
<td>Over 11</td>
<td>Over 1000</td>
<td>Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.</td>
</tr>
</tbody>
</table>

4 References


APPENDIX A
FIRE BEHAVIOR MODELING


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Figure 1. Flame length
Figure 2. Factors affecting spotting
READY, SET, GO!

YOUR PERSONAL WILDFIRE ACTION PLAN
Ready, Set, Go!

Wildfire Action Plan

Saving Lives and Property through Advance Planning

Wildfire is a serious threat to lives, property and natural resources in California. The men and women of CAL FIRE make countless preparations and train frequently in order to be ready for all types of emergencies, including wildfires. Residents need to do the same.

You can dramatically increase your safety and the survivability of your property by preparing well in advance of a wildfire. This brochure provides comprehensive information on how to improve your home’s resistance to wildfires and prepare your family to be ready to leave early in a safe manner. We call this process, “Ready, Set, Go!”

The guide illustrates the importance of having defensible space around your home and it will help educate you about the preparations you need to make so you can leave early and evacuate well ahead of a wildfire. This brochure also provides information on how to retrofit your home with ignition resistant materials to address the threat of flying embers that can travel as far as a mile ahead of a flame front.

Fire is, and always has been, a natural part of the beautiful state we’ve chosen to live in. Wildfires, fueled by a build-up of dry vegetation and driven by hot, dry winds, are extremely dangerous and are challenging for firefighters to control. This publication will help you prepare your home so you can leave early; confident in the fact that you’ve done everything you reasonably can to protect your home from devastating wildfire.

I hope you’ll find the information on the next pages helpful. As always, if you need more information about preparing for wildfire or any other disaster, contact your nearest fire station or visit us on the web at www.fire.ca.gov.

Chief Del Walters
Director, CAL FIRE
Living in the Wildland Urban Interface

Ready, Set, Go! begins with a house that firefighters can defend.

Defensible space works!

If you live next to a natural area, the Wildland Urban Interface, you must provide firefighters with the defensible space they need to protect your home. The buffer you create by removing weeds, brush and other vegetation helps to keep the fire away from your home and reduces the risks from flying embers.

A home within one mile of a natural area is at risk of flying embers. Wind-driven embers can attack your home. You and your home must be prepared well before a fire occurs. Ember fires can destroy homes or neighborhoods far from the actual flame front of the wildfire.
What is Defensible Space?

Defensible space is the required space between a structure and the wildland area that, under normal conditions, creates a sufficient buffer to slow or halt the spread of wildfire to a structure. It protects the home from igniting due to direct flame or radiant heat. Defensible space is essential for structure survivability during wildfire conditions and for the protection to firefighters defending your home.

### ZONE ONE

Zone One extends 30 feet out from buildings, structures, decks, etc.

- Remove all dead or dying vegetation.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from structures and other trees.
- Remove leaf litter (dry leaves/pine needles) from yard, roof and rain gutters.
- Relocate woodpiles or other combustible materials into Zone Two.
- Remove combustible material and vegetation from around and under decks.
- Remove or prune vegetation near windows.
- Remove “ladder fuels” (low-level vegetation that allows the fire to spread from the ground to the tree canopy). Create a separation between low-level vegetation and non-vegetative materials such as patio furniture, wood piles, swing set, etc., from tree branches. This can be done by reducing the height of low-level vegetation and/or trimming low tree branches.

### ZONE TWO

Zone Two extends 30 to 100 feet out from buildings, structures and decks. You can minimize the chance of fire jumping from plant to plant or other non-vegetative combustible, by removing dead material and removing, separating, and/or thinning vegetation. The minimum spacing between vegetation is three times the dimension of the plant or other non-vegetative combustible.

- Remove “ladder fuels.”
- Cut or mow annual grass down to a maximum height of 4 inches.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from other trees.
- Loose surface litter, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches, shall be permitted to a depth of 3 inches if erosion control is an issue.
What is a Hardened Home?

Construction materials and the quality of the defensible space surrounding it are what gives a home the best chance to survive a wildfire. Embers from a wildfire will find the weak link in your home’s fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor. However, there are measures you can take to safeguard your home from wildfire. While you may not be able to accomplish all the measures listed below, each will increase your home’s, and possibly your family’s, safety and survival during a wildfire.

**ROOFS**

Roofs are the most vulnerable surface where embers land because they can lodge and start a fire. Roof valleys, open ends of barrel tiles and rain gutters are all points of entry.

**EAVES**

Embers can gather under open eaves and ignite exposed wood or other combustible material.

**VENTS**

Embers can enter the attic or other concealed spaces and ignite combustible materials. Vents in eaves and cornices are particularly vulnerable, as are any unscreened vents. New vents have been developed that prevent flame and embers from getting through to the attic.

**WALLS**

Combustible siding or other combustible or overlapping materials provide surfaces or crevices for embers to nestle and ignite.

**WINDOWS and DOORS**

Embers can enter gaps in doors, including garage doors. Plants or combustible storage near windows can be ignited from embers and generate heat that can break windows and/ or melt combustible frames.

**BALCONIES and DECKS**

Embers can collect in or on combustible surfaces or the undersides of decks and balconies, ignite the material and enter the home through walls or windows.

To harden your home even further, consider protecting your homes with a residential fire sprinkler system. In addition to extinguishing a fire started by an ember that enters your home, it also protects you and your family year-round from any fire that may start in your home.

All suggestions and requirements are based on State Codes and Regulations, specifically the California Building Code Chapter 7A, California Fire Code, and Title 14 Fire Safe Regulations. Contact your local fire and building department for specific requirements or recommendations for your community.
Tour a Wildfire Ready Home

Home Site and Yard: Ensure you have at least a 100-foot radius of defensible space (cleared vegetation) around your home. Note that even more clearance may be needed for homes in severe hazard areas. This means looking past what you own to determine the impact a common slope or neighbors’ yard will have on your property during a wildfire.

Cut dry weeds and grass before 10 a.m. when temperatures are cooler to reduce the chance of sparking a fire.

Landscape with fire-resistant plants that have a high moisture content and are low-growing.

Keep woodpiles, propane tanks and other non-vegetative combustible materials away from your home and other structures such as garages, barns and sheds.

Ensure that trees are far away from power lines.

Roof: Your roof is the most vulnerable part of your home because it can easily catch fire from wind-blown embers. Homes with wood-shake or shingle roofs are at high risk of being destroyed during a wildfire.

Build your roof or re-roof with ignition resistant materials such as composition, metal or tile. Block any spaces between roof decking and covering to prevent ember intrusion.

Clear pine needles, leaves and other debris from your roof and gutters.

Cut any tree branches within ten feet of your roof.

Vents: Vents on homes are particularly vulnerable to flying embers.

All vent openings should be covered with 1/8-inch to 1/4 inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.

Attic vents in eaves or cornices should be baffled or otherwise protected to prevent ember intrusion (mesh is not enough).

Windows: Heat from a wildfire can cause windows to break even before the home ignites. This allows burning embers to enter and start internal fires. Single-paned and large windows are particularly vulnerable.

Install dual-paned windows with one pane of tempered glass to reduce the chance of breakage in a fire.

Consider limiting the size and number of windows in your home that face large areas of vegetation.

Inside: Keep working fire extinguishers on hand. Install smoke alarms on each level of your home and in bedrooms. Test them monthly and change the batteries twice a year.

Address: Make sure your address is clearly visible from the road.

Decks: Surfaces within 10 feet of the building should be built with ignition resistant, non-combustible, or other approved materials.

Ensure that all combustible items are removed from underneath your deck.
Water Supply: Consider having multiple garden hoses that are long enough to reach any area of your home and other structures on your property. If you have a pool or well, consider a pump.

Garage: Have a fire extinguisher and tools such as a shovel, rake, bucket and hoe available for fire emergencies. Consider installing weather stripping around and under door to prevent ember intrusion. Store all combustibles and flammable liquids away from ignition sources.

Driveways and Access Roads: Driveways should be built and maintained in accordance to the state and local codes to allow fire and emergency vehicles to reach your house. Consider maintaining access roads with a minimum 10-foot clearance on either side of the traveled section of the roadway and allowing for two-way traffic. Ensure that all gates open inward and are wide enough to accommodate emergency equipment. Trim trees and shrubs overhanging the road to allow emergency vehicles to pass.

Fencing: Consider using ignition resistant or non-combustible fencing to protect your home during a wildfire.

Eaves and Soffits Protection: Eaves and soffits should be protected with ignition resistant or non-combustible materials.

Rain Gutters: Screen or enclose rain gutters to prevent accumulation of plant debris.

Walls: Wood products, such as boards, panels or shingles, are common siding materials. However, they are combustible and not good choices for fire-prone areas. Build or remodel with ignition resistant building materials, such as stucco, fiber cement, wall siding, fire retardant, treated wood, or other approved materials. Be sure to extend materials from foundation to roof.

Fencing: Consider using ignition resistant or non-combustible fencing to protect your home during a wildfire.

Eaves and Soffits Protection: Eaves and soffits should be protected with ignition resistant or non-combustible materials.

Rain Gutters: Screen or enclose rain gutters to prevent accumulation of plant debris.

Water Supply: Consider having multiple garden hoses that are long enough to reach any area of your home and other structures on your property. If you have a pool or well, consider a pump.

Patio Cover: Use the same ignition resistant materials for patio covering as a roof.

Chimney: Cover your chimney and stovepipe outlets with an approved spark arrestor non-combustible screen with openings no smaller than 3/8 inch and no larger than 1/2 inch to prevent embers from escaping and igniting a fire. Make sure that your chimney is at least 10 feet away from any tree branches.
Now that you’ve done everything you can to protect your house, it’s time to prepare your family. Your Wildfire Action Plan must be prepared with all members of your household well in advance of a fire.

Use these checklists to help you prepare your Wildfire Action Plan. Each family’s plan will be different, depending on their situation.

Once you finish your plan, practice it regularly with your family and keep it in a safe and accessible place for quick implementation.

Create Your Own Wildfire Action Plan

GET READY

Prepare Your Family

☐ Create a Family Disaster Plan that includes meeting locations and communication plans and practice it regularly. Include in your plan the evacuation of large animals such as horses.

☐ Have fire extinguishers on hand and train your family how to use them.

☐ Ensure that your family knows where your gas, electric and water main shut-off controls are and how to use them.

☐ Plan several different evacuation routes.

☐ Designate an emergency meeting location outside the fire hazard area.

☐ Assemble an emergency supply kit as recommended by the American Red Cross.

☐ Appoint an out-of-area friend or relative as a point of contact so you can communicate with family members who have relocated.

☐ Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit.

☐ Keep an extra emergency supply kit in your car in case you can’t get to your home because of fire.

☐ Have a portable radio or scanner so you can stay updated on the fire.
GET SET

As the Fire Approaches

OUTSIDE CHECKLIST

☒ Evacuate as soon as you are set!
☒ Alert family and neighbors.
☒ Dress in appropriate clothing (i.e., clothing made from natural fibers, such as cotton, and work boots). Have goggles and a dry bandana or particle mask handy.
☒ Ensure that you have your emergency supply kit on hand that includes all necessary items, such as a battery powered radio, spare batteries, emergency contact numbers, and ample drinking water.
☒ Stay tuned to your TV or local radio stations for updates, or check the fire department Web site.
☒ Remain close to your house, drink plenty of water and keep an eye on your family and pets until you are ready to leave.

INSIDE CHECKLIST

☒ Shut all windows and doors, leaving them unlocked.
☒ Remove flammable window shades and curtains and close metal shutters.
☒ Remove lightweight curtains.
☒ Move flammable furniture to the center of the room, away from windows and doors.
☒ Shut off gas at the meter. Turn off pilot lights.
☒ Leave your lights on so firefighters can see your house under smoky conditions.
☒ Shut off the air conditioning.

OUTSIDE CHECKLIST

☒ Gather up flammable items from the exterior of the house and bring them inside (e.g., patio furniture, children’s toys, door mats, etc.) or place them in your pool.
☒ Turn off propane tanks.
☒ Don’t leave sprinklers on or water running - they can waste critical water pressure.
☒ Leave exterior lights on.
☒ Back your car into the driveway. Shut doors and roll up windows.
☒ Have a ladder available.
☒ Patrol your property and extinguish all small fires until you leave.
☒ Seal attic and ground vents with pre-cut plywood or commercial seals if time permits.

IF YOU ARE TRAPPED: SURVIVAL TIPS

☒ Shelter away from outside walls.
☒ Bring garden hoses inside house so embers don’t destroy them.
☒ Patrol inside your home for spot fires and extinguish them.
☒ Wear long sleeves and long pants made of natural fibers such as cotton.
☒ Stay hydrated.
☒ Ensure you can exit the home if it catches fire (remember if it’s hot inside the house, it is four to five times hotter outside).
☒ Fill sinks and tubs for an emergency water supply.
☒ Place wet towels under doors to keep smoke and embers out.
☒ After the fire has passed, check your roof and extinguish any fires, sparks or embers.
☒ Check inside the attic for hidden embers.
☒ Patrol your property and extinguish small fires.
☒ If there are fires that you can not extinguish with a small amount of water or in a short period of time, call 9-1-1.
By leaving early, you give your family the best chance of surviving a wildfire. You also help firefighters by keeping roads clear of congestion, enabling them to move more freely and do their job.

**WHEN TO LEAVE**

Leave early enough to avoid being caught in fire, smoke or road congestion. Don’t wait to be told by authorities to leave. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don’t hesitate!

**WHERE TO GO**

Leave to a predetermined location (it should be a low-risk area, such as a well-prepared neighbor or relative’s house, a Red Cross shelter or evacuation center, motel, etc.)

**HOW TO GET THERE**

Have several travel routes in case one route is blocked by the fire or by emergency vehicles and equipment. Choose an escape route away from the fire.

**WHAT TO TAKE**

Take your emergency supply kit containing your family and pet’s necessary items.

---

**EMERGENCY SUPPLIES**

The American Red Cross recommends every family have an emergency supply kit assembled long before a wildfire or other emergency occurs. Use the checklist below to help assemble yours. For more information on emergency supplies, visit the American Red Cross Web site at www.redcross.org.

- Three-day supply of water (one gallon per person per day).
- Non-perishable food for all family members and pets (three-day supply).
- First aid kit.
- Flashlight, battery-powered radio, and extra batteries.
- An extra set of car keys, credit cards, cash or traveler’s checks.
- Sanitation supplies.
- Extra eyeglasses or contact lenses.
- Important family documents and contact numbers.
- Map marked with evacuation routes.
- Prescriptions or special medications.
- Family photos and other irreplaceable items.
- Easily carried valuables.
- Personal computers (information on hard drives and disks).
- Chargers for cell phones, laptops, etc.

Note: Keep a pair of old shoes and a flashlight handy in case of a sudden evacuation at night.
Write up your Wildfire Action Plan and post it in a location where every member of your family can see it. Rehearse it with your family.

## My Personal Wildfire Action Plan

During High Fire Danger days in your area, monitor your local media for information on brush fires and be ready to implement your plan. Hot, dry and windy conditions create the perfect environment for a wildfire.

### Important Phone Numbers:

Out-of-State Contact: ____________________________ Phone: ____________________________

Work: ____________________________ ____________________________ ____________________________

School: ____________________________ ____________________________ ____________________________

Other: ____________________________ ____________________________ ____________________________

### Evacuation Routes:

______________________________

______________________________

______________________________

### Where to go:

______________________________

______________________________

### Location of Emergency Supply Kit:

______________________________

______________________________

### Notes:

______________________________

______________________________

______________________________