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# Fire Protection Plan

# First Hathaway Logistics Project County of Riverside

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**MARCH 2024**



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# Executive Summary

This Fire Protection Plan (FPP) has been prepared for the First Hathaway Logistics Project(Project) located in the City of Banning in the County of Riverside, California. This FPP evaluates and identifies the potential fire risk associated with the Project's land uses and identifies requirements for water supply, fuel modification and defensible space, access, building ignition and fire resistance, and fire protection systems, among other pertinent fire protection criteria, including a conceptual development plan for the Project site described below. The purpose of this plan is to generate and memorialize the fire safety requirements and standards of the Riverside County Fire Department (RCFD) along with Project-specific design features and implementation measures based on the Project site, its intended use, and its fire environment.

This document provides analysis of the Project site's fire environment and its potential impact on the Project as well as the Project's potential impact on the existing fire protection service. Requirements and recommendations herein are based on Project site-specific fire environment analysis and Project characteristics and incorporates area fire planning documents, Project site risk analysis, and standard principles of fire protection planning.

As determined during the analysis of the Project site and its fire environment, in its current condition, may include characteristics that, under favorable weather conditions, could have the potential to facilitate fire spread. Under extreme conditions, wind-driven wildfires from nearby undeveloped land could cast embers onto the property. Once the Project is built, the Project's on-site fire potential will be much lower than its current condition due to conversion of wildland fuels to buildings, parking areas, managed landscapes, fuel modification areas, improved accessibility for fire personnel, and structures built to the latest ignition and ember resistant fire codes.

It is important to note that the fire safety requirements that will be implemented on the Project site, including ignition resistant construction standards, along with requirements for water supply, fire apparatus access, fuel modification and defensible space, interior fire sprinklers and five minute or less fire response travel times were integrated into the code requirements and internal guidelines based on results of post-fire assessments, similar to the After Action Reports that are now prepared after large fire events. When it became clear that specifics of how structures were built, how fire and embers contributed to ignition of structures, what effects fuel modification had on structure ignition, how fast firefighters could respond, and how much (and how reliable) water was available, were critically important to structure survivability, the Fire and Building codes were revised appropriately. Riverside County now boasts some of the most restrictive codes for building within Wildland Urban Interface (WUI) areas that focus on preventing structure ignition from heat, flame, and burning embers.

The developed portion of this property is proposed for improvements that include construction of an approximately 1,420,722 square foot warehouse on 84.23 acres. The entire Project site has been designed with fire protection as a key objective. The Project site improvements are designed to facilitate emergency apparatus and personnel access throughout the Project site. Driveway and road improvements with fire apparatus turnarounds provide access to the sides of every building. Water availability and flow will be consistent with requirements including fire flow and hydrant distribution required by local and state codes. These features along with the ignition resistance of all buildings, the interior sprinklers, and the pre-planning, training and awareness will assist responding firefighters through prevention, protection, and suppression capabilities.

As detailed in this FPP, the Project site's fire protection systems will include a redundant layering of protection methods that have proven to reduce overall fire risk. The requirements and recommendations included herein are performance based and Project site-specific, considering the Project site's unique characteristics rather than a

prescriptive, one-size-fits-all approach. The fire protection systems are designed to increase occupant and building safety, reduce the fire risk on site, to minimize risks associated with typical uses, and aid the responding firefighters during an emergency. No singular measure is intended to be relied upon for the Project site's fire protection, but rather, a system of fire protection measures, methods, and features combine to result in enhanced fire safety, reduced fire potential, and improved safety at the project site.

Early evacuation for any type of wildfire emergency at the Project is the preferred method of providing for occupant and business safety, consistent with the Owner's and RCFD current approach for evacuation. As such, it is recommended that the Project's Owner and Property Management Company formally adopt, practice, and implement a "Ready, Set, Go!" (Riverside County Fire Department 2020) approach to Project site evacuation. The "Ready, Set, Go!" concept is widely known and encouraged by the state of California and most fire agencies, including: Pre-planning for emergencies, including wildfire emergencies, focuses on being prepared, having a well-defined plan, minimizing potential for errors, maintaining the Project site's fire protection systems, and implementing a conservative (evacuate as early as possible) approach to evacuation and Project site uses during periods of fire weather extremes. While this concept was generally created for homeowners, it proves useful for any occupancy in the Wildland Urban Interface (WUI).

Based on the results of this FPP's analysis and findings, the following FPP implementation measures will be provided by First Hathaway Logistics Project as part of the proposed development plan. These measures are discussed in more detail throughout this FPP.

The following measures shall be established to the satisfaction of the City prior and as a condition to issuance of a building permit for any building on that Planning Area.

1. Project building will be constructed of ignition resistant<sup>1</sup> construction materials and include automatic fire sprinkler systems based on the latest adopted Building and Fire Codes for occupancy types.
2. Fuel Modification will be provided as needed around the perimeter of the Project site as required by RCFD and will be a minimum of 100 feet wide. At least 100 feet is provided between the perimeter of the structure and the property line allowing this minimum 100 foot fuel modification to be obtainable on property owned by the owners of the structure. Further, all portions of the 100 foot perimeter are either paved or landscaped, and any landscaping will comply with the applicable fuel modification zone.
3. If the square footage or footprint of a proposed building has been modified from that described in this fire protection plan, the applicant shall submit and the RCFD shall have approved the revised fire protection plan, consistent with Item 2 above.
4. Landscape plantings will not utilize prohibited plants that have been found to be highly flammable.
5. Fire apparatus access roads (i.e., public and private streets) will be provided throughout the commercial development and will vary in width and configuration but will all provide at least the minimum required unobstructed travel lanes, lengths, turnouts, turnarounds, and clearances required by applicable codes. Primary access and internal circulation will comply with the requirements of the RCFD.
6. Buildings will be equipped with automatic commercial fire sprinkler systems meeting RCFD requirements.
7. The Project shall demonstrate provision of water capacity and delivery to ensure a reliable water source for operations and during emergencies which may require extended fire flow.

<sup>1</sup> A type of building material that resists ignition or sustained flaming combustion sufficiently to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with wildfire exposure of burning embers and small flames, as prescribed in CBC, Chapter 7A and State Fire Marshal Standard 12-7A-5, Ignition-Resistant Materials.



8. Should future iterations of the Project's site plan result in buildings that do not achieve a minimum of 100 feet of defensible space, then alternative materials and methods may be proposed to provide the functional equivalency of a full 100 feet of defensible space. Alternative materials and methods will be to the satisfaction of the RCFD and may include structural hardening enhancements or landscape features, like non-combustible walls.

The following measures shall be the responsibility of the Property Owners but may be delegated to the Property Manager or assigned to the tenant through an approved lease. Annual maintenance should occur before May 1st of each year and inspected by RCFD or an approved third party.

1. On-going maintenance of all fuel modification will be managed by Owner's, Property Management Company, or another approved entity, at least annually or as needed.
2. The Property Owner or Property Management Company will provide the business owner/tenant informational brochures at time of occupancy, which will include an outreach and educational role to ensure fire safety measures detailed in this FPP have been implemented and prepare development-wide "Ready, Set, Go!" plans.

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# 1 Introduction

This Fire Protection Plan (FPP) has been prepared for the proposed First Hathaway Logistics Project (Project) in Riverside County (County), California, and within the City of Banning Sphere of Influence. This FPP evaluates and identifies the potential fire risk associated with the Project's land uses and identifies requirements for water supply, fuel modification and defensible space, access, building ignition and fire resistance, and fire protection systems, among other pertinent fire protection criteria, including a conceptual development plan for the Project site described below. The purpose of this plan is to generate and memorialize the fire safety requirements and standards of the Riverside County Fire Department (RCFD) along with Project-specific design features and implementation measures based on the Project site, its intended use, and its fire environment, including both the conceptual land use plan and any modifications to buildings permitted pursuant to the Project Plan

As part of the assessment, the plan has considered the property location, topography, surrounding combustible vegetation (fuel types), climatic conditions, and fire history for the Project site and the surrounding area. The plan addresses water supply, access, structural ignitability and fire resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management for the Project site and to address potential fire impacts to the surrounding area. The plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect structures and essential infrastructures within the Project site. The following tasks were performed toward completion of this plan:

- Gather Project site specific climate, terrain, and fuel data;
- Collect Project site photographs;
- Process and analyze the data using the latest GIS technology;
- Predict fire behavior using scientifically based fire behavior models, comparisons with actual wildfires in similar terrain and fuels, and experienced judgment;
- Analyze and guide design of proposed infrastructure;
- Analyze the existing emergency response capabilities;
- Assess the potential fire risk posed by the construction and operation of the Project to the Project site and surrounding area; and
- Prepare this FPP detailing how fire risk will be mitigated on the Project site and in the surrounding area through a system of fuel modification, structural ignition resistance enhancements, and fire protection delivery system upgrades.

Field observations were utilized to augment existing digital Project site data in generating the fire behavior models and formulating the recommendations presented in this FPP. Refer to Appendix A for Project site photographs of existing conditions.

## 1.1 Applicable Codes/Existing Regulations

This FPP demonstrates that First Hathaway Logistics Project will comply with applicable portions of RCFD Fire Prevention Standards and County Ordinances No. 460 and No. 787.10. The Project will also be consistent with the 2022 edition of the California Building Code (CBC), Chapter 7A; 2022 edition of the California Fire Code (CFC),

Chapter 49; or applicable code as adopted and amended by RCFD and the City of Banning at the time of construction. Additionally, RCFD references Fire Prevention Standards for informational purposes in clarifying and interpreting provisions of the CFC, National Fire Protection Association (NFPA) and California Public Resources Code (PRC). The Project will also comply with Chapter 7A of the CBC which focuses primarily on preventing ember penetration into buildings, a leading cause of structure loss from wildfires.

Compliance with the above building and fire code requirements is an important component of the requirements of this FPP given the Project's wildland-urban interface (WUI) location is primarily in an area statutorily designated as a Very High Fire Hazard Severity Zone (VHFHSZ) and High Fire Hazard Severity Zone (HFHSZ) (Figure 1) local responsibility area (LRA) by California Department of Forestry and Fire Protection (CAL FIRE) (FRAP 2008). Adjacent to the Project site the land is primarily designated as a Very High Fire Hazard Severity Zone (VHFHSZ) state responsibility area (SRA). The designations of Fire Hazards are based on topography, vegetation, and weather, amongst other factors with more hazardous sites, which include steep terrain, un-maintained fuels/vegetation, and WUI locations. As described in this FPP, the Project will meet all applicable fire and building code requirements for building in these higher fire hazard areas or meet the intent of the code through the application of Project site-specific fire protection measures. These codes have been developed through decades of after fire structure save and loss evaluations to determine what causes building loss during wildfires. The resulting fire codes now focus on mitigating former structural vulnerabilities through construction techniques and materials so that the buildings are resistant to ignitions from direct flames, heat, and embers, as indicated in the 2022 California Building Code (Chapter 7A, Section 701A Scope, Purpose and Application).

## 1.2 Project Summary

### 1.2.1 Project Overview

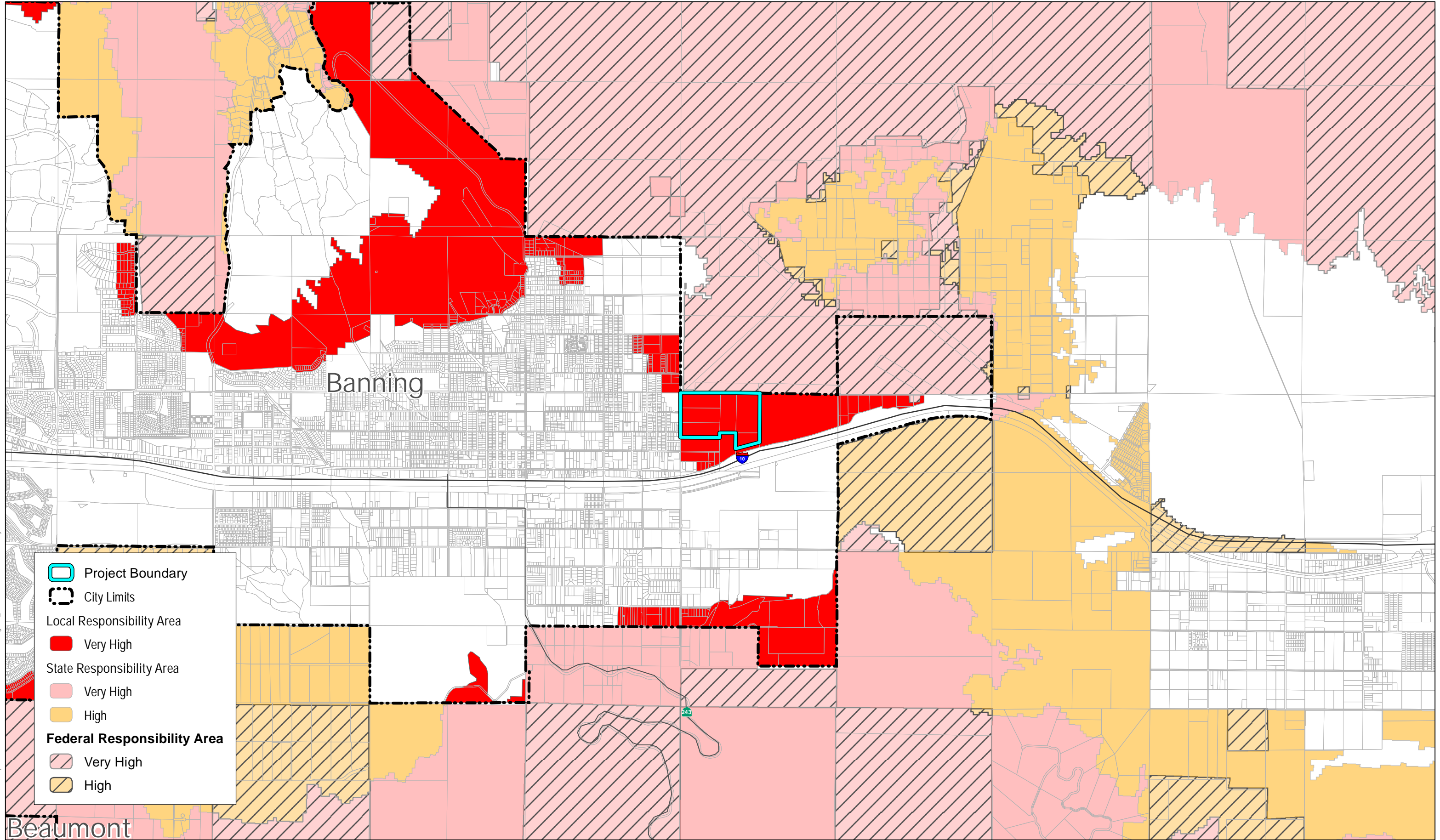
The Project provides for a logistics warehouse and trailer parking on approximately 84.23 acres (See Project Description, below).

### 1.2.2 Location

The 84.23 acre Project site is located in the City of Banning area in Riverside County. The Project site is along the northern city limits in the eastern portion of the City of Banning. (Figure 2, Project Location Map). More specifically, the Project site is located immediately north of I-10, east of Hathaway St, and immediately south of the Morongo Reservation.

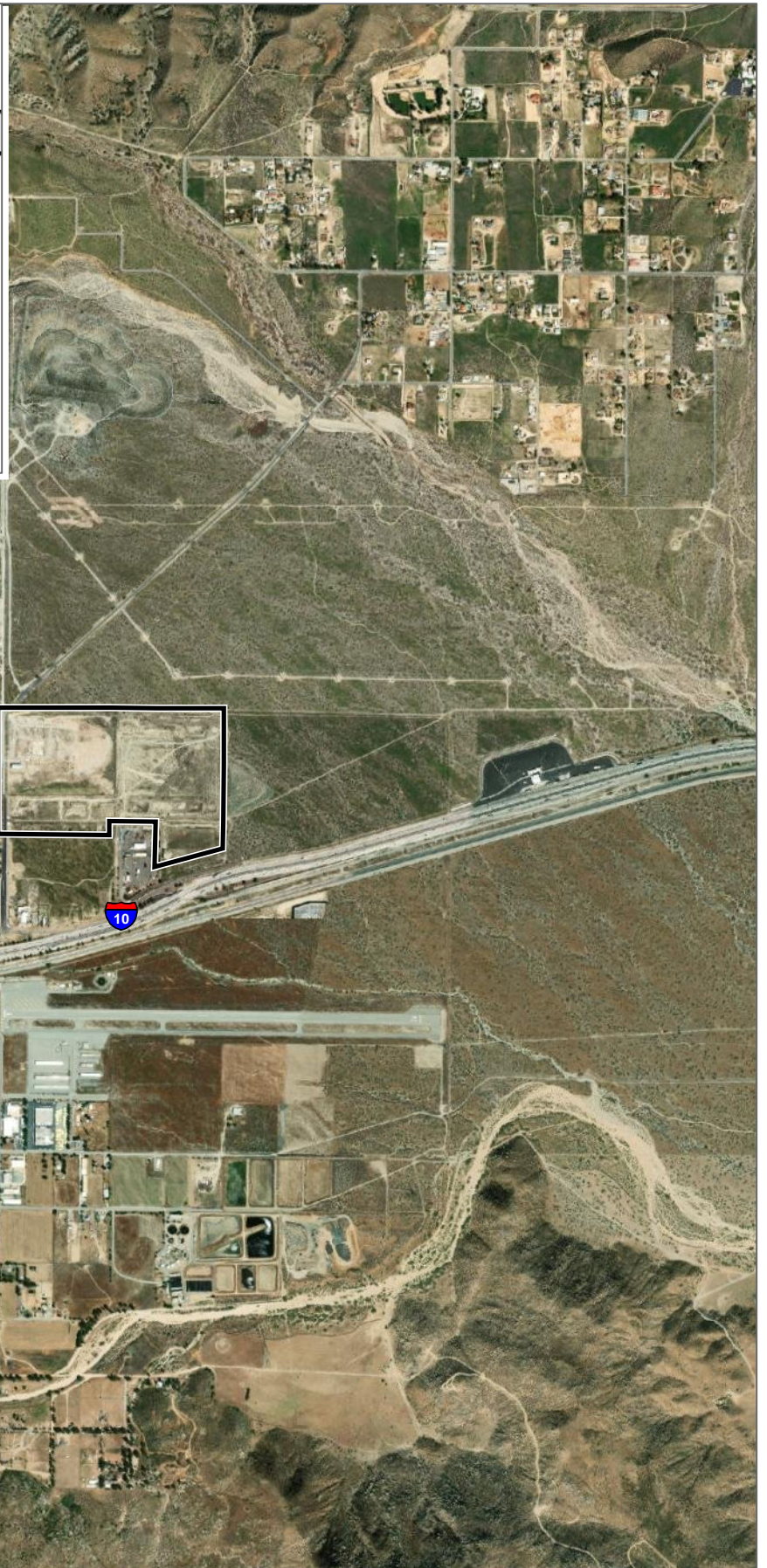
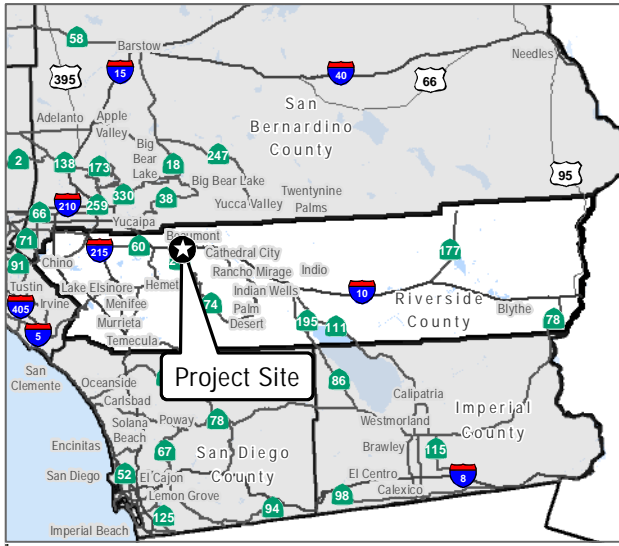
The First Hathaway Logistics Project site is located on the following Riverside County Assessors Parcels: 5321-10-001, 5321-10-002, 5321-10-003, 5321-10-008, 5321-10-009, 5321-10-01


Document Path: Z:\Projects\1521000\MAPDOC\DOCUMENT\Fire\Fire Hazard Severity Zone (R)side.mxd



- Project Boundary
- City Limits
- Local Responsibility Area**
- Very High
- State Responsibility Area**
- Very High
- High
- Federal Responsibility Area**
- Very High
- High

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 Project Boundary

SOURCE: ESRI 2023



FIGURE 2  
Project Location

Fire Protection Plan for the First Hathaway Logistics Project

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### 1.2.3 Existing Land Use

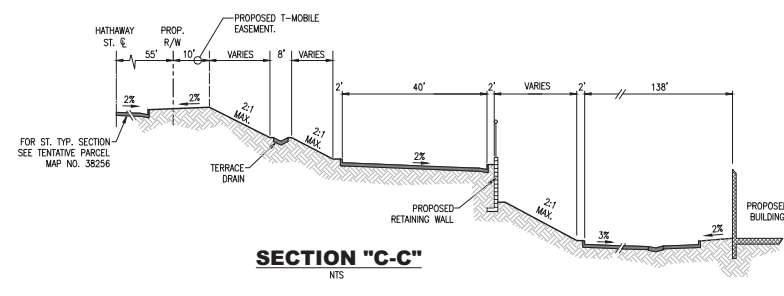
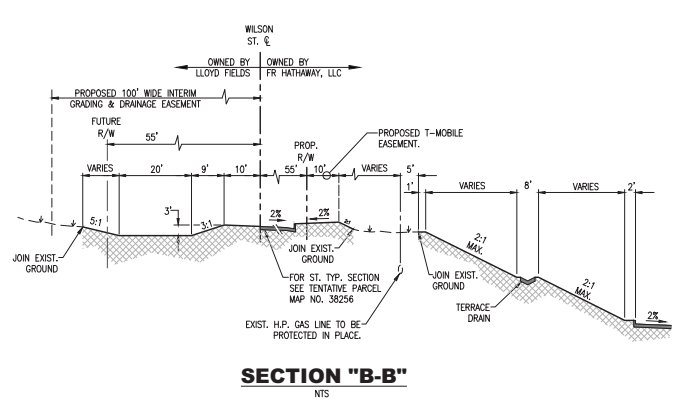
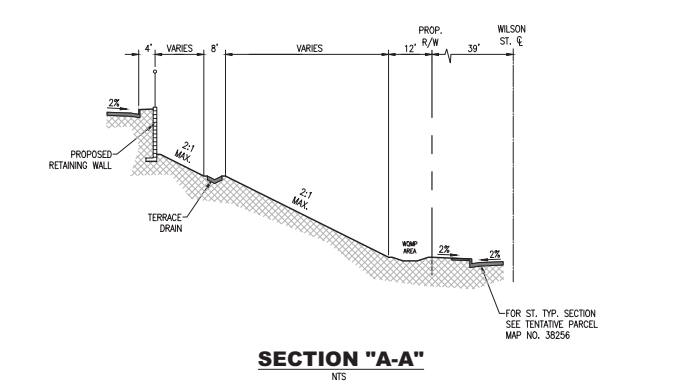
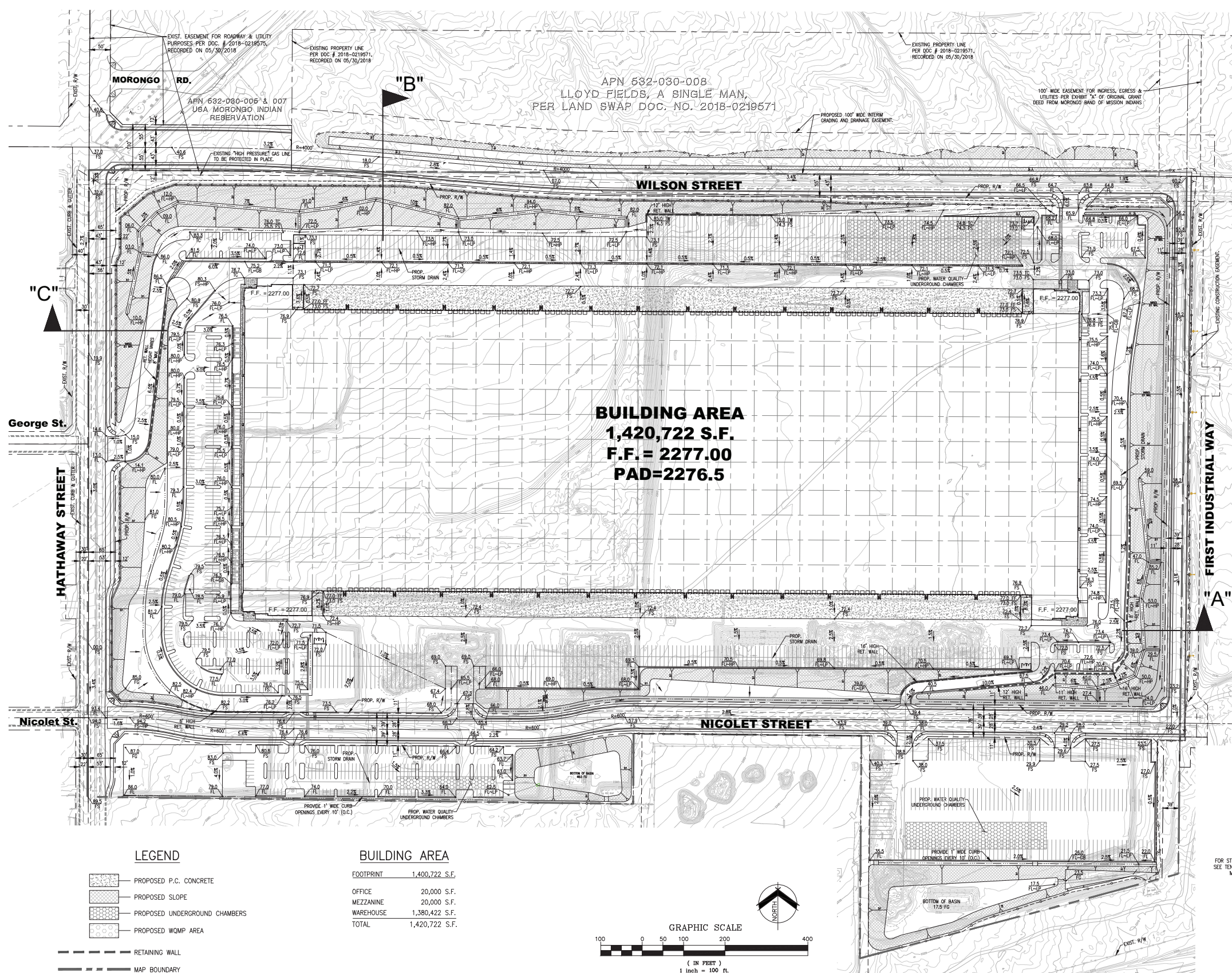
The Project site is currently undeveloped land that has been subject to disturbances from various sources including off-road vehicles and previous grading which left undeveloped pads, roadways, rock piles, etc. The Project area is sparsely vegetated with low shrubs as are the areas around the project site.

Surrounding Land uses that lie adjacent to the Project site include an existing residential area to the west, the Morongo Reservation to the north, open space to the east, and Interstate 10 to the south.

### 1.2.4 Project Description

The First Hathaway Logistics Project proposes development of approximately 82.81 acres for a logistics warehouse (Figure 3). The project provides for a 1,400,722 square foot warehouse footprint including 1,380,722 square feet of warehouse floor area, and two stories of office area each covering 20,000 square feet resulting in a final square footage of 1,420,722 square feet. This project includes trailer parking and automobile parking around the perimeter of the warehouse while allowing for a minimum 26 foot access way between any parking and the structure. There are 480 trailer parking spots and 875 automobile parking spots around the perimeter of the building. At the designated trailer parking located in the southeast corner of the project area, 181 trailer parking spots are provided.

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## 2 Project Site Risk Analysis

### 2.1 Field Assessment

A field assessment of the First Hathaway Logistics Project area was conducted on April 19, 2023 in order to confirm/acquire Project site information, document existing conditions, and to determine potential actions for addressing the protection of the Project's structures. While on the Project site, Dudek's Fire Protection Planner assessed the area's topography, natural vegetation and fuel loading, surrounding land use and general susceptibility to wildfire. Among the field tasks that were completed are:

- Vegetation estimates and mapping refinements
- Fuel load analysis
- Topographic features documentation
- Photograph documentation
- Confirmation/verification of hazard assumptions
- Ingress/egress documentation.

Field observations were utilized to augment existing Project site data in generating the fire behavior models and formulating the recommendations detailed in this report.

### 2.2 Project Site Characteristics and Fire Environment

Fire environments are dynamic systems and include many types of environmental factors and Project site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. Areas of naturally vegetated open space are typically comprised of conditions that may be favorable to wildfire spread. The three major components of fire environment are topography, climate, and vegetation (fuels). The state of each of these components and their interactions with each other determines the potential characteristics and behavior of a fire at any given moment. It is important to note that wildland fire may transition to urban fire if structures are receptive to ignition. Structure ignition depends on a variety of factors and can be prevented through a layered system of protective features including fire resistive landscapes directly adjacent to the structure(s), application of known ignition resistive materials and methods, and suitable infrastructure for firefighting purposes. Understanding the existing wildland vegetation and urban fuel conditions on and adjacent to the Project site is necessary to understand the potential for fire within and around the Project site.

The following sections discuss the Project site characteristics, local climate, and fire history within and surrounding the Project site. The First Hathaway Logistics Project is similar concerning topography, vegetative cover, and proximity to adjacent residential areas, available access, and planned use. The following sections discuss the characteristics of the Project site at a regional scale. The intent of evaluating conditions at this macro-scale is to provide a better understanding of the regional fire environment, which is not constrained by property boundary delineations.

## 2.2.1 Topography

Topography influences fire risk by affecting fire spread rates. Typically, steep terrain results in faster fire spread up-slope and slower fire spread down-slope in the absence of wind. Flat terrain tends to have little effect on fire spread, resulting in fires that are driven by wind. The Project site is primarily flat with a slight downhill slope averaging 1.9% from the Morongo Reservation to the north to Interstate 10 to the south. The open area to the east and the residential area to the west both follow this slight natural slope. The slight north to south slope continues for about 1.25 miles to the north before transitioning into the foothills that lead to San Gorgonio and the mountain communities of the San Bernardino National Forest. The elevations on the Project site range from approximately 2,319 feet above mean sea level (amsl) in the northwest portion of the Project site to approximately 2,216 feet amsl in the southeast portion of the Project site.

## 2.2.2 Climate

Throughout southern California, and specifically at the Project site, climate has a large influence on fire risk. The climate of Riverside County is typical of a Mediterranean area, with warm, dry summers and cold, wet winters. Temperatures average (average annual) around 67° F and reach up to 94° F. Precipitation has been averaging less than 4 inches and typically occurs between December and March. The prevailing wind is an on-shore flow between 4 and 10 mph from the Pacific Ocean.

Fires can be a significant issue during summer and fall, before the rainy period, especially during dry Santa Ana wind events. The seasonal Santa Ana winds can be particularly strong in the Project area as warm and dry air is channeled through the San Gorgonio Pass from the dry, desert land to the east. Although Santa Ana events can occur anytime of the year, they generally occur during the autumn months, although the last few years have resulted in spring (April - May) and summer events. Santa Ana winds may gust up to 75 miles per hour (mph) or higher. This phenomenon markedly increases the wildfire danger and intensity in the Project area by drying out and preheating vegetation (fuel moisture of less than 5% for 1-hour fuels is possible) as well as accelerating oxygen supply, and thereby, making possible the burning of fuels that otherwise might not burn under cooler, moister conditions.

## 2.2.3 Vegetation

### 2.2.3.1 Fuels (Vegetation)

The Project property and surrounding areas primarily support sage scrub plant community, non-native grasslands and disturbed habitat. Vegetation types were derived from an on-site field assessment of the Project site. The majority of the area adjacent to the Project site are vegetated with sage scrub interspersed with grasses. The vegetation cover types were assigned corresponding fuel models for use during Project site fire behavior modeling. Section 3.0 describes the fire modeling conducted for the Project Area.

### 2.2.3.2 Vegetation Dynamics

The vegetation characteristics described above are used to model fire behavior, discussed in Section 3.0 of this FPP. Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf

size, branching patterns), and overall fuel loading. For example, non-native grass dominated plant communities become seasonally prone to ignition and produce lower intensity, higher spread rate fires. In comparison, sage scrub can produce higher heat intensity and higher flame lengths under strong, dry wind patterns, but does not typically ignite or spread as quickly as light, flashy grass fuels.

As described, vegetation plays a significant role in fire behavior, and is an important component to the fire behavior models discussed in this report. A critical factor to consider is the dynamic nature of vegetation communities. Fire presence and absence at varying cycles or regimes disrupts plant succession, setting plant communities to an earlier state where less fuel is present for a period of time as the plant community begins its succession again. Simply stated, high frequency fires tend to convert shrublands to grasslands or maintain grasslands, while fire exclusion tends to convert grasslands to shrublands, over time. In general, biomass and associated fuel loading will increase over time, assuming that disturbance (fire, or grading) or fuel reduction efforts are not diligently implemented.

It is possible to alter successional pathways for varying plant communities through manual alteration. This concept is a key component in the overall establishment and maintenance of the proposed fuel modification zones on-site. The fuel modification zones on the Project site will consist of irrigated and maintained landscapes as well as thinned native fuel zones that will be subject to regular “disturbance” in the form of maintenance and will not be allowed to accumulate excessive biomass (live or dead) over time, which results in reduced fire ignition, spread rates, and intensity. Conditions adjacent to the Project’s footprint (outside the fuel modification zones), where the wildfire threat will exist post-development, are classified as low to medium fuel loads due to the dominance of sage scrub-grass fuels.

## 2.2.4 Fire History

Fire history is an important component of an FPP. Fire history data provides valuable information regarding fire spread, fire frequency, most vulnerable areas, and significant ignition sources, amongst others. In turn, this understanding of why fires occur in an area and how they typically spread can then be used for pre-planning and designing defensible communities.

Fire history represented in this FPP uses the Fire and Resource Assessment Program (FRAP) database. FRAP summarizes fire perimeter data dating to the late 1800s, but which is incomplete due to the fact that it only includes fires over 10 acres in size and has incomplete perimeter data, especially for the first half of the 20th century (Syphard and Keeley 2016). However, the data does provide a summary of recorded fires and can be used to show whether large fires have occurred in the Project area, which indicates whether they may be possible in the future.

Appendix B – Project Vicinity Fire History exhibit, presents a graphical view of the Project area’s recorded fire history. As presented in the exhibit, there have been 98 fires recorded since 1900 by CALFIRE in their FRAP database (FRAP 2018)<sup>2</sup> in the vicinity of the Project. These fires, occurring in 1900, 1906, 1909 (x2), 1909, 1910, 1911 (x2), 1914 (x5), 1915, 1916 (x2), 1919 (x2), 1919, 1920, 1921, 1923 (x2), 1925 (x2), 1926 (x2), 1927, 1928, 1929, 1930, 1933 (x2), 1940 (x2), 1941, 1944 (x2), 1945, 1949, 1951 (x6), 1954, 1957 (x3), 1958, 1961, 1963, 1965, 1967, 1968 (x3), 1970 (x2), 1971 (x3), 1972 (x3), 1973 (x4), 1974, 1976, 1977 (x3), 1978 (x2), 1979 (x14), 1980 (x3), 1981 (x2), 1982 (x2), 1983 (x3), 1986 (x3), 1988 (x5), 1989, 1991, 1992 (x5), 1993, 1994 (x3), 1995 (x6), 1996 (x6), 1997, 1998, 1999, 2001, 2004, 2005 (x3), 2006 (x3), 2009 (x2), 2010, 2011 (x3), 2012 (x3),

<sup>2</sup> Based on polygon GIS data from CAL FIRE’s FRAP, which includes data from CAL FIRE, USDA Forest Service Region 5, BLM, NPS, Contract Counties and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater between 1878–2018.

2013 (x4), 2016 (x2), 2017 (x2), 2020 (x2), 2021 burned within a five mile radius of the Project area. Zero fires have burned onto any portion of the Project site since they year 1900 when records commenced. Based on an analysis of the CAL FIRE FRAP fire history data set, specifically the years in which the fires burned, the average interval between wildfires in the area (includes areas up to roughly 5 miles from the Project site) was calculated to be six months with intervals ranging between zero and six years. Based on this analysis, it is expected that wildfire that could impact the Project may occur, if weather conditions coincide, roughly every year with the realistic possibility of shorter or longer interval occurrences, as observed in the fire history records.

## 2.3 Analysis of Wildfire Risk from Adding New Development

Humans (i.e., human related activities or human created features, services (i.e., powerlines and electrical equipment), or processes) are responsible for the majority of California wildfires (Syphard et al. 2007, 2008; Romero-Calcerrada et al. 2008). Certain human activities result in sparks, flames, or heat that may ignite vegetative fuels without proper prevention measures in place. These ignitions predominantly occur as accidents, but may also be purposeful, such as in the case of arson. Equipment and powerlines cause a significant number of fires in Riverside County. After that, roadways are a particularly high source for wildfire ignitions due to high usage and vehicle-caused fires (catalytic converter failure, overheated brakes, dragging chains, tossed cigarette, and others) (Romero-Calcerrada et al. 2008). In Southern California, the population living at, working in, or traveling through the wildland urban interface is vast and provides a significant opportunity for ignitions every day. However, it is a relatively rare event when a wildfire occurs, and an even rarer event when a wildfire escapes initial containment efforts. Approximately 90 to 95% of wildfires are controlled below 10 acres (CAL FIRE 2019; Santa Barbara County Fire Department 2019).

Research indicates that the type of clustered, contained development project like First Hathaway Logistics, are not associated with increased vegetation ignitions. Syphard and Keeley (2015) summarize all wildfire ignitions included in the CALFIRE Fire and Resource Assessment Program (FRAP) database dating back over 100 years. They found that equipment-caused fires were by far the most numerous – and these also accounted for most of the area burned – followed closely by the area burned by powerline fires. Ignitions classified as equipment caused frequently resulted from exhaust or sparks from power saws or other equipment with gas or electrical motors, such as lawn mowers, trimmers or tractors and associated with lower density housing. Ignitions were more likely to occur close to roads and structures, and at intermediate density land uses and structure densities.

As exhibits 1 through 3 illustrate, development density directly influences susceptibility to fire because in higher density developments such as compact housing developments or a warehouse (like the Project), there is one interface (the Project perimeter) with the wildlands whereas lower density development creates more structural exposure to wildlands, less or no ongoing landscape maintenance (an intermix rather than interface), and consequently more difficulty for limited fire resources to protect well-spaced buildings. The intermix includes development amongst the unmaintained fuels whereas the proposed Project converts all fuels within the footprint and provides a wide, managed fuel modification zone and paved areas separating buildings from unmaintained fuel and creating a condition that makes defense easier. As discussed in detail throughout this FPP, the Project is an ignition resistant development designed to include professionally managed and maintained fire protection components, modern fire code compliant safety features and specific measures provided where ignitions are most likely to occur (such as along roadways). Therefore the development of the Project would not be expected to materially increase the risk of vegetation ignitions.



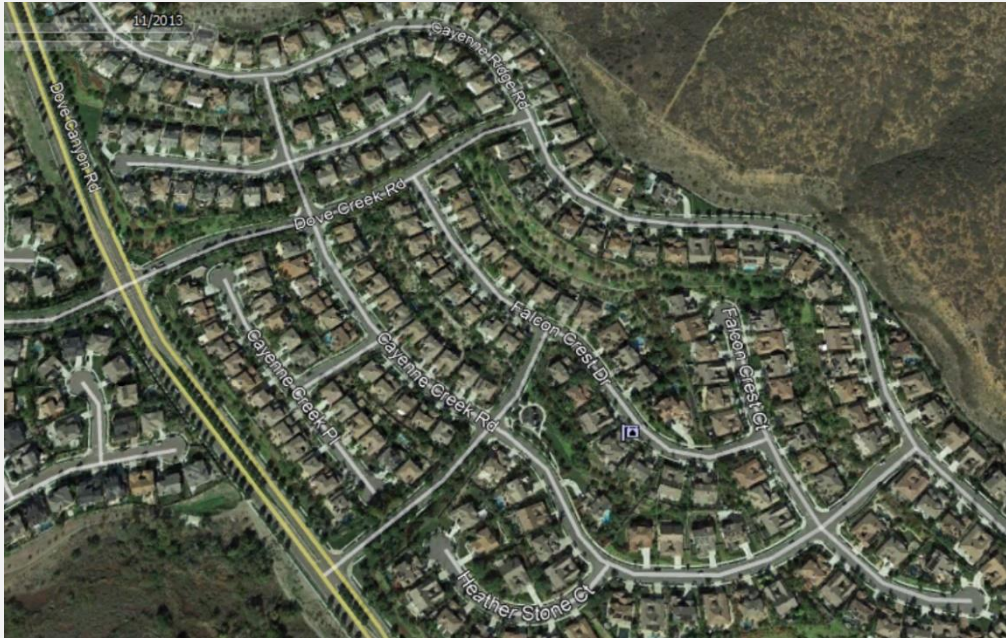
**Exhibit 1.** Example of “lower density” development where homes are interspersed amongst wildland fuels, are of varying ages, and include varying levels of fuel modification zone setbacks. Homes are exposed on most or all sides by flammable vegetation and properties rely solely on owners for maintenance, are often far distances from the nearest fire station, and have minimal buffer from on-site fire spreading to wildlands



**Exhibit 2.** Example of moderate density development. Homes are located on larger properties and include varying levels of ignition resistance and landscape/fuel modification provision and maintenance. This type of development results in a higher wildland exposure level for all homes and does not provide the same buffers from wildfire encroaching onto the site, or starting at a structure and moving into the wildlands as a higher density project



**Exhibit 3.** Example higher density development that is ignition resistant and excludes readily ignitable vegetative fuels throughout and provides a perimeter fuel modification zone. This type of new development requires fewer fire resources to defend and can minimize the likelihood of on-site fires spreading off-site.



The same protections that starve wildfire of fuels and minimize or prevent wildfire from transitioning into a Project such as First Hathaway also serve to minimize or prevent on-site fires from transitioning into the wildlands. Customized project FMZs are crucial as the strategic design and placement of fuels treatments can disrupt or slow fire spread, reduce fire intensity, and facilitate fire suppression within a landscape (Braziunas et al., 2021). This is true regardless of whether a vegetation fire is threatening a structure or a structure fire is threatening the wildland. The risk of a structure being destroyed is significantly lower when defensible space is implemented on both shallow and steep properties (Syphard et al., 2014). Even if just half the landscape is treated, the percentage of houses exposed to fire can decrease from 51% to 16% (Braziunas et al., 2021). Moreover, when FMZs are designed properly, they not only protect homes but also the surrounding environment. For example, when the Tahoe Basin experienced the Angora Fire in 2007, fuel treatments had the dual effect of saving homes and increasing forest survival. (Safford et al., 2009.) In areas where fuel management had been carried out prior to the Angora Fire, home loss was significantly reduced in the adjacent community and 85% of the trees survived, as compared to the 22% that survived in untreated areas. (Safford et al., 2009.) Fuel management treatments also facilitated the ecological benefit of reduced fire severity, including higher post-fire soil litter cover, higher herbaceous plant cover, higher diversity, and lower levels of invasive beetles. (Safford et al., 2009.) At a minimum, managing defensible space can reduce risk across multiple scales by damping fire risk, reducing the impact of fire, and in turn reducing annual fire risk. (Braziunas et al., 2021.)

Further, the requirement that the proposed warehouse will include fire sprinklers, on site fire hydrants, and fire sprinkler monitoring significantly reduces the likelihood that a building fire spreads to the point of flashover, where a structure will burn beyond control and produce embers. Automatic Fire Sprinklers are very efficient, keeping fires to the room of origin, or extinguishing the fire before the responding firefighters arrive. Similarly, the irrigated fuel

modification zones and paved areas are positioned throughout the development areas as well as the first zones on the perimeter of the project. Irrigated zones include plants with high internal moisture and spacing between plants and plant groups that 1) make it difficult to ignite and 2) make it difficult for fire to spread plant to plant. Lastly, the additional humans on the site result in fast detection of fires and fast firefighter response, a key in limiting the growth of fires beyond the incipient stage.

## 2.4 Off-site Wildfire Impacts

It is a rare event when a wildfire escapes initial containment efforts. Approximately 90 to 95% of wildfires are controlled below 10 acres (CAL FIRE 2019). Studies (Keeley & Syphard 2018; Syphard et al. 2007; Syphard & Keeley 2015) show the ignition resistance and fire safety awareness of the Project and its population influences the likelihood of fire ignitions and the potential for fire to spread off-site into adjacent wildland fuels and negatively impact existing communities. As the research indicates, humans can drive wildfire ignition risk, but not discussed, they can also reduce it. When fire protection is implemented at the parcel level and leverages ignition resistant building materials, infrastructure improvements, and landscape design the wildfire risk can be significantly reduced in the surrounding environment (Newman et al., 2013). When wildfire is planned for and incorporated into the building design, such as with the Project, it can not only withstand wildfire, but prevent it. This prevention benefits the Project and the surrounding areas by reducing the landscape level fire risk. Further, given the Project's multi-scaled approach to fire protection, it is unlikely that the Project would be a significant source of ignitions and result in increased off-site impacts related to wildfire, as discussed herein.

Common ignition sources in southern California are related to powerlines and vehicles (Keeley & Syphard, 2018). Powerlines-based ignitions are a major concern with respect to off-site wildfire impacts. However, this risk can be mitigated by burying powerlines, as they would be on the Project. Burying powerlines significantly eliminates a potential ignition source within the Project site and benefits the larger vicinity. The remaining highest likelihood of vegetation ignitions in the Project area would be related to existing Interstate 10 and other roads used by Project employees. However, the Project provides roadside fuel modification along all roads it creates when the roadside is on property within the project scope and the City of Banning's weed abatement program requires adjacent parcels to be completely free of weeds if they are less than three acres, or have a fifty-foot perimeter fire break if the parcel is greater than 3 acres, meaning a given roadway will have at least fifty feet of clearance. Ongoing maintenance along Interstate 10 is provided and is expected to continue, if not increase in frequency as part of overall fire reduction efforts not within the control of the Project. These efforts reduce or minimize the ability for a vehicle related spark, catalytic converter failure, or other ignition source to ignite and spread fire from the roadsides into unmaintained fuels. The Project is not expected to significantly increase the already known fire risk associated with roads and in fact the Project- and road-adjacent fuel modification would aid in reducing the preexisting risk. Interior roadways are also not expected to result in significant vehicle ignitions. The new roadways would comply with all fire department access requirements and be adjacent to fuel modification, while providing a fire break and staging area themselves. Therefore, even if ignition were to occur on the Project interior roadways it is highly unlikely it would spread beyond the Project site and due to the level of hardscape/paving and the adjacent fuel modifications areas, would result in patchy and slow fire spread and reduced fire intensity.

Reducing WUI exposure can address protection of a wide range of highly valued resources and can offer protection to critical resources, habitat communities, and landscapes (Scott et al., 2016). Despite the potential for more frequent fire ignitions from developments, when developments are planned accordingly, such as the Project, the fuel availability and fuel continuity decrease, while the probability of fire suppression increases (Fox et al., 2018). This is a result of planned alterations to fuel, increased ignition resistant construction, enhanced fire protection

features, higher wildfire risk awareness, and maintenance of fire protection features. The dual benefit of building a fire-hardened development, like the Project, is that the same features that protect the development from a wildfire also play a significant role in protecting wildlands and surrounding areas from Project-related fires.

## 2.4.1 Vegetation Management

A study in Southern Italy found that the ignition potential of an area was significantly influenced by landcover types and human drivers were low or inconsistent (Elia et al., 2019). Urban interfaces with shrubland-dominated vegetation were found to be more fire-prone than those with grasslands or other natural spaces (Elia et al., 2019). The Project area is a mixture of shrublands, grasslands, and disturbed habitats. All of the existing fuel on the site and within FMZ areas will be eliminated, displaced by the structure, or converted into hardscape/paving or landscaped areas that are modified to reduce fuel densities that are managed and maintained. The fuel conditions will be addressed through various vegetation management techniques, such as fuel modification zones (FMZs). The original intent of FMZs, also known as defensible space, was to protect natural resources from fires in developed areas and have since evolved to protecting communities and structures. In an FMZ, combustible vegetation would be removed and/or modified and partially or totally replaced with more appropriately spaced drought-tolerant, fire-resistant plants. The goal is to provide a managed area where fire spread is not facilitated toward the Project or away from the Project into wildland areas. Fuel modification works by redistributing the fire risk on a landscape and altering the interaction between fire, fuels, and weather (Cochrane et al., 2012). FMZs typically target surface fires but can also reduce the likelihood of canopy fires, lower ember cast, and have a shadow effect on the untreated landscape by lowering the probability of burning and the potential fire size (Cochrane et al., 2012). As a result, the risk of a structure being destroyed, whether from a fire from within the development or outside the development, is significantly lower when defensible space is implemented.

However, long-term protection of the development and the surrounding area is dependent on the maintenance of fuel modification as even fire-safe designs can degrade over time. To alleviate this the Project will conduct regular assessments of the FMZs. During this maintenance, dead and dying material and undesirable plants will be removed. Thinning will also be conducted as necessary to maintain plant spacing and fuel densities. This will keep the FMZs and landscaped areas in a highly fire resistive condition free of accumulated flammable debris and plants.

Fuel treatments and defensible space do more than just protect structures. When they are a component of a place-based fire-hardened design, such as the Project, they can not only serve to protect structures from wildfire but act as a buffer for natural areas and surrounding communities. These features will further reduce the potential for wildfire in open space areas and potential impacts on surrounding communities.

## 2.4.2 Firefighter Response

As discussed in Section 4 the Project is not anticipated to have a negative impact on response capacity. Further, the on-site roads would be able to provide sufficient access for fire apparatus in a high-risk area. The Project also provides water supply and fire flow which are critical resources in firefighting. The Project defensible space areas will allow firefighters to safely position themselves at the development edge and begin tactical protection efforts (Warziniack et al., 2019). This allows firefighters to not only readily protect structures and reduce the likelihood of building ignition but also gives them a safe position to respond to offsite wildfires. Using the Project's fire protection features firefighters would be able to use the Project as a tactical resource for protecting open space areas, whether it be from an on-site or off-site fires. The Project would create additional access for fire apparatuses that were not

previously existing. Enhancing firefighters' ability to respond to an incident increases their ability to suppress a fire whether both on-site and off-site. The presence of on-site fire resources increases response capacity and could be the difference between a small fire or a full conflagration.

### 2.4.3 Ignition Resistant/Noncombustible Construction

The WUI fire problem is structures lacking ignition resistant features (i.e., ember resistant vents, interior sprinklers); therefore, the best mitigation is to reduce the likelihood of building ignition occurring (Zhou, 2013). Structural characteristics play a large role in whether a building burns, which is important in WUI environments as structures also serve as fuel (Gorte, 2011). The benefit of structure-based mitigation is that it not only lowers the on-site risk but also lowers the risk of wildfire across a landscape (Mockrin et al., 2020). In WUI areas, this is because structures are also fuels that can spread a fire into open space. With the incorporation of ignition-resistant construction, the likelihood of structural ignition occurring within the Project area is minimized. The Project will provide a form in place concrete building that is non-combustible from direct wildfire flames, heat, and embers. This lowers the threat from on-site fires impacting off-site areas as the structure itself is very unlikely to act as fuel. While the Project includes vent coverings to prevent ember penetration the Project building will also include a NFPA 13 commercial automatic sprinklers. This is crucial in preventing off-site impacts as embers can also be generated by a structure fire and can be blown over the fuel modification into native fuels. Automatic sprinklers can isolate a fire to the point of origin, limit its ability to spread to the rest of the building, and even extinguish a fire before the responding firefighters arrive, thus damping the likelihood of ember production. Commercial sprinklers are structure protection level sprinklers that have an extremely high success rate of controlling or suppressing interior structure fires. This also reduces impacts on fire response capacity as the automatic sprinklers will allow firefighters to focus on reducing additional ignitions beyond the point of origin.

Structure design, such as the Project's, is crucial in protecting an area against wind-driven fires. The Project provides features that not only prevent fire intrusion but prevent structure fires from escaping into off-site areas. This allows the Project to not only protect the immediate area but the surrounding environment.

### 2.4.4 Shelter in Place Capability

Sheltering-in-place is the practice of going or remaining indoors during or following an emergency event. This procedure is recommended if there is little time for the public to react to an incident and it is safer for the public to stay indoors for a short time rather than travel outdoors. According to common Emergency Operations Plan language, shelter-in-place is an approach that has been used and is actively contemplated for emergencies, including wildfires. Shelter-in-place advises people to stay secure at their current location.

Consistent with the Project's approach, this tactic shall only be used if an evacuation will cause a higher potential for loss of life. Consideration should be given to assigning incident personnel to monitor the safety of citizens remaining in place. The concept of shelter-in-place is an available option in those instances where physical evacuation is impractical. This procedure is particularly effective for concrete commercial buildings. Sheltering-in-place provides a safe haven within the impacted area.

This Fire Protection Plan provides significant evaluation and conclusions regarding the shelter-in-place capability of the Project's buildings. Among other things, the Project has been designed to include ignition-resistant structures with the use of non-combustible construction materials (e.g., concrete), effective defensible space and fuel management zones, ember protection, and other redundant structure, infrastructure, building code, and water

supply and flow requirements established as containing adequate protective features to act as temporary shelters during wildfires. The on-site structure could be utilized for temporary refuge during a wildfire. In addition, there may be protected open-air areas that would be enhanced to serve as temporary sheltering sites as a contingency plan if evacuation is considered undesirable. These sites would be designated with input from RCFD and may include green spaces, lee-side of buildings, or other protected areas.

Sheltering-in-place also has many advantages because it can be implemented immediately, allowing people to remain in their familiar surroundings, and providing individuals with everyday necessities such as telephone, radio, television, food, and clothing. However, the amount of time people can stay sheltered-in-place is dependent upon availability of food, water, medical care, utilities, and access to accurate and reliable information. It is not anticipated that any wildfire related shelter-in-place action would require longer than a few hours of on-site refuge.

The decision on whether to evacuate or shelter-in-place is carefully considered with the timing and nature of the incident. Sheltering-in-place is the preferred method of protection for people that are not directly impacted or in the direct path of a hazard. This will reduce congestion and transportation demand on the major transportation routes for those that have been directed to evacuate by police or fire personnel. Like with most new developments that incorporate ignition resistant construction, wide fuel modification zones, ember protection, and fire defensibility throughout, responding fire and law enforcement personnel will be able to direct persons to temporarily refuge on-site in designated buildings in the rare situation where shelter-in-place is determined to be safer than evacuating.

Shelter-in-place at this location in the planned structures will also be an option available to emergency managers during a wildfire event. A shelter-in-place plan will be prepared and provided to all on-site personnel outlining the actions to take if a shelter in place notification is provided by emergency management sources.

The Project buildings will be constructed of concrete which is non-combustible and highly resistant to heat. Because of the concrete/ignition resistant construction, fuel modification zone setbacks and the type of lower fire intensity vegetative fuels in the vicinity of the site, sheltering in place is considered to be a safe option if a fast-moving wildfire precludes complete evacuation of the Project site. The heat flux produced by the nearest unmaintained vegetative fuels is not at a high enough temperature to ignite a concrete building even if it is directly next to the building. In this case, the heat would dissipate rapidly in the provided building setbacks that range between 213 and over 273 feet wide and the concrete structures would be capable of absorbing any residual heated air that may intersect with the buildings. The primary concern is anticipated to be with smoke and air quality rather than exposure to flames and heated air. Measures to safely refuge persons within the buildings and minimize smoke and air quality issues would be enacted in this scenario. For example, when wildfire ignites, it is common for HVAC systems to be turned off and they can be fitted with duct detectors that turn them off automatically when smoke is detected. This minimizes the potential for drafting smoke through the ventilation system into the buildings.

**Project Design Feature:** The Project will include features to turn off the HVAC system when smoke is detected or will prepare an emergency response plan that directs this action to be taken if a wildfire produces smoke that is impacting the Project site.

Most of the primary components of the Project's layered fire protection system are required by Fire and Building codes, because they have been tested in the lab and in real-time wildfires and found to result in saved structures. They are worth listing because they have been proven effective for minimizing structural vulnerability to wildfire. They also make shelter-in-place possible as an evacuation contingency option when evacuation is not possible.

Even though current Building and Fire Codes require these measures, at one time, many of them were used as mitigation measures for buildings in fire hazard areas, because they were known to reduce structure vulnerability to wildfire. These measures were adopted into the 2007 California Building Code and have been retained and enhanced in code updates since then. The following Project features are required for new development in fire hazard areas and would form the basis of the system to provide adequate access by emergency responders and provide the protection necessary to minimize structural ignitions:

- Application of the latest adopted ignition-resistant building codes;
  - Non-flammable roofs, which would be Class “C” listed and fire-rated roof assembly, installed per manufacturer’s instructions, to approval of the City. Roofs would be made tight with no gaps or openings on ends or in valleys, or elsewhere between roof covering and decking, in order to prevent intrusion of flame and embers. Any openings on ends of roof tiles would be enclosed to prevent intrusion of burning debris. When provided, roof valley flashings would not be less than 0.019 inch (No. 26 gage galvanized sheet) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of 72 pound ASTM 3909 cap sheet running the full length of the valley.
- Exterior wall coverings are to be non-combustible form in place concrete;
- Multipane glazing with a minimum of one tempered pane;
- Ember-resistant vents (recommend BrandGuard, O’Hagin, or similar vents);
- Interior, automatic fire sprinklers to code for occupancy type;
- No eaves or soffits.
- There would be no use of paper-faced insulation or combustible installation in attics or other ventilated areas;
- There would be no use of plastic, vinyl (with the exception of vinyl windows with metal reinforcement and welded corners), or light wood on the exterior.
  - Any vinyl frames to have welded corners and metal reinforcement in the interlock area to maintain integrity of the frame certified to ANSI/AAMA/NWWDA 101/I.S 2 97 requirements.
- Skylights to be tempered glass.
- Rain gutters and downspouts to be non-combustible. They would be designed to prevent the accumulation of leaf litter or debris, which can ignite roof edges.
- Doors to be of approved noncombustible construction or would be solid core wood having stiles and rails not less than 1 3/8 inches thick or have a 20-minute fire rating. Doors to comply with City Building Code,
- There would be no combustible awnings, canopies, or similar combustible overhangs.
- No combustible fences to be allowed within 5 feet of structures.
- All chimneys and other vents on heating appliances using solid or liquid fuel, including outdoor fireplaces and permanent barbeques and grills, to have spark arrestors that comply with the City Fire Code. The code requires that openings would not exceed 1/4-inch. Arrestors would be visible from the ground.
- Modern infrastructure, access roads, and water delivery system;
- Maintained FMZs;

Notably, interior fire sprinklers, which will be provided, have an extremely high reliability track record (NFPA 2021) of controlling fire in 96% of reported fires, and statistics indicate that fires in structures with sprinklers resulted in 82% lower property damage and 68% lower loss of life (Hall 2013). NFPA 13 fire sprinklers are designed for

structure protection and life safety. For wildland fire defense, should embers succeed in entering a structure, sprinklers provide an additional layer of life safety and structure protection.

### Sheltering In Place as an Active Emergency Option at First Hathaway Logistics Center

Sheltering in place or providing temporary refuge when evacuation is considered undesirable is not a new idea. Sheltering in place has been a useful tool in the emergency management toolbox since the 1950's. In some wildfire scenarios, temporarily sheltering in a protected structure is safer than evacuating. Huntzinger (2010) states that: "If sheltering in place can provide the community with the same level of protection from an emergency incident as mass evacuation, this will be the recommended practice to use." Many civilian deaths have occurred when the population evacuated late and was exposed to wildfire on unprotected roadways (Braun, 2002, CFA 2004). By contrast, fire hardened communities/projects that have implemented similar fire protection, setback, and building standards have fared well in fire events, making them suitable for temporary shelter. Developments constructed in accordance with modern fire-safe development standards also survived the 2003 Simi Fire, the 2008 Freeway Complex Fire, and the 2020 Silverado Fire without a single building lost. Nasiatke (2003) points out that another advantage to sheltering in place in an appropriately protected location is that there would be a substantial reduction in the number of evacuees that would need to be managed, allowing those evacuees at greater risk (i.e., in older, less protected communities) to more quickly evacuate.

## 2.4.5 Wildfire Risk Awareness Education

The Project recommends an education awareness program that is a key piece in wildfire prevention in the area (Steffey et al., 2020). This program would provide wildfire information for the area and create greater risk awareness for occupants and their employees. The wildfire education program would be facilitated by the business owner of the Project and will disclose the potential wildfire risk and the requirements of the FPP. The educational program would also include information regarding the necessary landscape maintenance and structural-based fire protection features. Having ongoing education included in the Project creates a heightened level of wildfire risk awareness and fire protection measures. This benefits both the Project and the surrounding areas as people would be more aware of the wildfire risk and potential impacts. Further, it decreases the likelihood the Project occupants and users would cause an uncontrolled ignition and they would be aware of what steps to take if they observe an ignition. As such the impact on off-site areas would be further lowered by reducing the probability of ignition.

As described above it is not as simple to say development in areas with high fire hazards will equate to increased wildfire risk. It is possible to develop in these areas when fire is incorporated into Project design and create a site that is not only hardened against fire but designed to prevent fires. The dual benefit of creating a development that can prevent a fire is that it offers protection to the surrounding communities and the environment. The requirements and recommendations outlined in the FPP have been designed specifically for the proposed construction in the Project's location and can significantly reduce the potential threat to off-site areas.



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# 3 Anticipated Fire Behavior

## 3.1 Fire Behavior Modeling

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 adjacent to the Project site given characteristic features such as topography, vegetation, and weather. Dudek utilized BehavePlus software package version 6 (Andrews, Bevins, and Seli 2008) to analyze potential fire behavior if ignition occurred to the northeast (Scenario 1), from the East (Scenario 2), and from the South (Scenario 3) of the Project site (Figure 4), with assumptions made for the pre- and post-Project slope and fuel conditions.

## 3.2 Fire Behavior Modeling Analysis

Dudek utilized the BehavePlus (v6) fire modeling system to analyze potential fire behavior for the Project site, with experienced judgement and assumptions made for the existing fuel conditions. The location of the fire scenarios and summary of fire modeling inputs is presented in Table 1.

The following summarizes the inputs, data sources, and assumptions for the fire behavior modeling analysis:

**Weather and Wind Analysis:** Historical weather data for the region was utilized in determining appropriate fire behavior modeling inputs for the Project site. For this analysis, fuel moisture and wind values were derived from readily available data and knowledge of the region. These data are used as fire weather inputs for extreme fire conditions during summer months and Santa Ana fire weather patterns.

**Terrain:** While average slope gradients were measured at only 1.9%, a 10% slope gradient was utilized for modeling in order to provide an extra layer of caution.

**Fuels:** Vegetation types, which were derived from the field assessment and readily available data for the Project site, were classified into fuel models. The fuel model values were used in the modeling analysis for the fuel types on and adjacent to the Project site as demonstrated below:

- Existing grass-sage scrub: Fuel model GS1 (Low load, dry climate grass-shrub)
- Existing annual grass: Fuel model GR2 (Low load, dry climate grass)
- Landscaping/Fuel modification zone: Fuel model 8 (Closed canopy, compact litter layer)

The adjacent land to the north and east is vegetated predominantly with sage scrub; to the south is annual grassland, aside from the adjacent CalTrans facility to the southeast. To the west is a residential development.

Modeling scenario locations were identified and fuel models were selected based on the Project site characteristics, topography, fuels, weather patterns, and the design and layout of the Project. The models selected are the anticipated highest likelihood of generating the most aggressive types of fires. Three BehavePlus fire behavior modeling runs were identified: Scenario 1 from the Northeast, Scenario 2 from the East, and Scenario 3 from the South, for both existing and modified conditions.

The results of fire behavior modeling analysis for pre- and post-Project conditions are presented in Table 1. Identification of modeling run (fire scenarios) locations is presented graphically in Figure 4, Fire Behavior Analysis Map.

**Table 1. Fire Behavior Modeling Results**

Fire Scenarios	Speed Rate (mph)	Fireline Intensity (BTU/feet/second)	Flame Length	Spotting Distance (miles)
<b>Scenario 1 Existing Conditions: 10% slope, 40 mph NE wind</b>				
Fuel Model GS1 (grass/sage scrub)	1.6	761	9.5	0.7
<b>Scenario 1 Post-Project: 10% slope, 40 mph NE wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	46	2.6	0.3
<b>Scenario 2 Existing Conditions: 10% slope, 40 mph E wind</b>				
Fuel Model GS1 (grass/sage scrub)	1.6	761	9.5	0.7
<b>Scenario 2 Post-Project: 10% slope, 40 mph E wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	46	2.6	0.3
<b>Scenario 3 Existing Conditions: 10% slope, 20 mph S wind</b>				
Fuel Model GR2 (annual grass)	0.6	462	7.6	0.4
<b>Scenario 3 Post-Project: 10% slope, 20 mph S wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	21	1.8	0.1

The results presented in Table 1 depict values based on inputs to the BehavePlus software and are not intended to capture changing fire behavior as it moves across a landscape. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis; rather, the models provide a worst-case wildfire behavior condition as part of a conservative approach. For planning purposes, the averaged worst-case fire behavior is the most useful information for conservative fuel modification design. Model results should be used as a basis for planning only, as actual fire behavior for a given location would be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

### Fire Behavior Modeling Results

Fire Scenarios	Spread Rate (mph)	Fireline Intensity (BTU/feet/second)	Flame Length (feet)	Spotting Distance (miles)
<b>Scenario 1 Existing Conditions: 10% slope, 40 mph NE wind</b>				
Fuel Model GS1 (grass/sage scrub)	1.6	761	9.5	0.7
<b>Scenario 1 Post-Project: 10% slope, 40 mph NE wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	46	2.6	0.3
<b>Scenario 2 Existing Conditions: 10% slope, 40 mph E wind</b>				
Fuel Model GS1 (grass/sage scrub)	1.6	761	9.5	0.7
<b>Scenario 2 Post-Project: 10% slope, 40 mph E wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	46	2.6	0.3
<b>Scenario 3: Existing Conditions 10% slope, 20 mph S wind</b>				
Fuel Model GR2 (annual grass)	0.6	462	7.6	0.4
<b>Scenario 3 Post-Project: 10% slope, 20 mph S wind</b>				
Fuel Model 8 (irrigated landscaping)	0.1	21	1.8	0.1



Path: Z:\Projects\11521000\MAPS\DOC\DOCUMENT\Fire\FPP\Figure 5 BehavePlusAnalysisMap.mxd

SOURCE: AERIAL-BING MAPPING SERVICE



FIGURE 4

BehavePlus Analysis Map

Fire Protection Plan for the First Hathaway Logistics Project

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## 3.3 BehavePlus Fire Behavior Summary

### 3.3.1 Existing Condition

As presented in Table 2, Scenarios 1 through 3 result in the following fire development in existing conditions.

- **Scenario 1:** A wildfire driven by 40 mph winds from the NE would result in a fire spreading in the offsite sage scrub at approximately 1.6 mph with 9.5 foot high flames and 0.7 mile spotting distance;
- **Scenario 2:** A wildfire driven by 40 mph winds from the E would result in a fire spreading in the offsite sage scrub at approximately 1.6 mph with 9.5 foot high flames and 0.7 mile spotting distance;
- **Scenario 3:** A wildfire driven by 20 mph winds from the S would result in a fire spreading in the offsite grassland at approximately 0.6 mph with 7.6 foot high flames and 0.4 mile spotting distance.

### 3.3.2 Post-development Condition

Dudek also conducted modeling of the Project site for post-development fuel recommendations for the Project. The fuel modification area includes paved streets, parking lots and irrigated landscaping on the periphery of the proposed commercial development. For modeling the post-development condition, fuel model assignments were re-classified for the fuel modification area as Fuel Model 8. Fuel model assignments for all other areas remained the same as those classified for the existing condition.

As depicted in Table 1, the fire intensity and flame lengths in untreated, preserved open space areas would remain the same. Conversely, the fuel modification area experienced a significant reduction in flame length and intensity. Within the irrigated landscaping, using the same fuel modeling inputs, the resulting post-Project flame lengths in the FMZ areas nearest the structures would be significantly reduced. Once reaching the irrigated landscaping (fuel modification zones), the wildfire behavior is altered noticeably; flame lengths are reduced to 1.8 to 2.6 feet, which are well within the recommended maximum 4.0 feet flame length for firefighter wildfire control through direct attack.

## 3.4 Project Area Fire Risk Assessment

Wildland fires are a common natural hazard in most of southern California with a long and extensive history. Southern California landscapes include a diverse range of plant communities, including vast tracts of grasslands and shrublands, like those found adjacent to the Project site. Wildfire in this Mediterranean-type ecosystem ultimately affects the structure and functions of vegetation communities (Keeley 1984) and will continue to have a substantial and recurring role (Keeley and Fotheringham 2003). Supporting this are the facts that 1) native landscapes, from forest to grasslands, become highly flammable each fall and 2) the climate of southern California has been characterized by fire climatologists as the worst fire climate in the United States (Keeley 2004) with high winds (Santa Ana) occurring during autumn after a six-month drought period each year. Based on this research, the anticipated growing population of northwest Riverside County WUI areas, and the regions fire history, it can be anticipated that periodic wildfires may start on, burn onto, or spot into the Project site. The most common type of fire anticipated in the vicinity of the Project area is a fire started South of southern property line from a potential roadside ignition (Ramsey Road or I-10 Freeway), burning through annual grass that would likely threaten the facility during periods of strong S winds.

Therefore, it will be critical that the latest fire protection technologies, developed through intensive research and real-world wildfire observations and findings by fire professionals, for both ignition resistant construction and for creating defensible space in the ever-expanding WUI areas, are implemented and enforced. The Project, once developed, would not facilitate wildfire spread and would reduce projected flame lengths to levels that would be manageable by firefighting resources for protecting the Project site's structures, especially given the ignition resistance of the structures and the planned ongoing maintenance of the entire Project site landscape.

# 4 Emergency Response and Service

## 4.1 Emergency Response

The Project site is located within RCFD response area, which includes Banning’s corporate limits and the County areas within the City’s sphere of influence. The City of Banning contracts with RCFD for emergency and administrative services. Table 5, Closest Responding RCFD Fire Stations Summary, presents a summary of the location, equipment, staffing levels, maximum travel distance, and travel time for the two closest, existing RCFD stations responding to the Project. Travel distances are derived from Google road data while travel times are calculated applying the nationally recognized Insurance Services Office (ISO) Public Protection Classification Program’s Response Time Standard formula ( $T=0.65 + 1.7 D$ , where T= time and D = distance). The ISO response travel time formula discounts speed for intersections, vehicle deceleration and acceleration, and does not include turnout time.

E27 7 miles

**Table 2. Closest Responding RCFD Fire Stations Summary**

Station No.	Location	Equipment	Staffing*	Maximum Travel Distance**	Travel Time**
89	172 N Banning St Banning, California 92220	E89, Rescue 89, OES240	E89 - 3	1.2 miles	2.69 minutes
20	1550 E. 6th Street Beaumont, California 92223	E20, E3160, E3170	E20 – 3 year round E3160 E3170 3 each from May through December	5.6 miles	10.17 minutes

**Notes:**

\* Staffing levels as of April 2023

\*\* Assumes travel distance and time to the Project site entrance.

RCFD Banning Station 89 is staffed 24/7 with career firefighters, would provide initial response, and is located at 172 N Banning St. Station 89 has one staffed Type 1 engine, one Type I engine (unstaffed reserve), and one squad unit (also not staffed). Secondary response would be provided from RCFD Station 20, which is located at 1550 E. 6th Street in Beaumont and can respond in approximately 10 minutes to the entrance. Beaumont Station 20 has one staffed Type 1 engine, two staffed Type 3 engines, and a state-owned dozer and dozer tender, and will be capable of responding in approximately 10 minutes to the proposed entrance of the Project.

Within the area’s emergency services system, fire and emergency medical services are also provided by other RCFD Fire Stations. Generally, each agency is responsible for structural fire protection and wildland fire protection within their area of responsibility. However, mutual aid agreements enable non-lead fire agencies to respond to fire emergencies outside their district boundaries. In the Project area, fire agencies cooperate under a statewide master mutual aid agreement for wildland fires.

The primary department providing mutual aid for all call types in the City of Banning is the Morongo Fire Department. The nearest station is Station #1, 2.86 miles from the Project site located at 11581 Potrero Rd. Station 1 is staffed 24/7 with 8 career firefighters who have several apparatus available for use by call type, including two

Type 1 engines, a brush engine, a ladder truck, a Type 6 engine, and 2 ambulances. A second Morongo Fire Department is planned for and may be complete around the completion of the Project, further bolstering response capabilities to the project site.

**Table 3. Closest Responding Mutual Aid Fire Stations Summary**

Station No.	Location	Equipment	Staffing*	Maximum Travel Distance**	Travel Time**
1	11581 Potrero Rd Banning, California 92220	2 Type 1 engines, 1 Brush engine, 1 Truck, 1 Type 6, 2 Ambulances	8 people staffed	2.86 miles	5.22 minutes

**Notes:**

\* Staffing levels as of April 2023

\*\* Assumes travel distance and time to the Project site entrance.

On March 7, 2017, the Riverside County Board of Supervisors (Board) received and filed RCFD’s “Alternative Staffing Model Recommendation.” The Alternative Staffing Model Recommendation was fiscally driven and developed by RCFD due to funding difficulties to retain 3-person engine companies. The RCFD FY 17-18 Service Alternatives report, dated March 7, 2017, recommends the following response times based on four Board Approved Land Use Classifications as described in Table 4:

**Table 4. Land Use Classification Information with Staffing/Time Response Standards**

Land Classification	Population Density	Fire Staffing Characteristics	Response Time
HEAVY URBAN	>700 per square mile	Land use includes large commercial and industrial complexes, large business parks, high-rise and wide rise community centers and high-density residential dwelling units of 10 to 20 units per acre.	5:00 minutes, 90% of the time
URBAN	>500 per square mile	Land use includes large commercial and industrial complexes, large business parks, high-rise and wide rise community centers and high-density residential dwelling units of 8 to 20 units per acre.	6:30 minutes, 90% of the time
RURAL	100 to 500 per square mile	Light industrial zones, small community centers and residential dwelling unit density of 2 to 8 units per acre.	10:30 minutes, 90% of the time
OUTLYING	<100 per square mile	Areas of rural mountain and desert, agricultural uses, small scale commercial, industrial and manufacturing, service commercial, medium industrial and low density residential dwelling units; 1 dwelling unit per acre to 1 dwelling unit per 5 acres.	17:30 minutes, 90% of the time

**Source:** Riverside County Fire Department FY 17-18 Service Alternatives. March 7, 2017.

It is assumed that the Project will be classified as” Heavy Urban,” with a 5.0-minute first-in fire engine response time. As previously mentioned, response to the Project site from the closest existing Fire Station (Station 89) would achieve a 2.69-minute travel time to the entrance of the Project. The Project may not adversely impact the overall goal achievement due to the low number of calls (discussed below) that are projected.



According to the RCFD 2016 TriData Report<sup>3</sup>, units should travel to calls within the defined response time goal for the appropriate population density classification 80% of the time. As noted in the report, Station 89 was near compliance of meeting the defined response time 78% of the time and Station 20 was in compliance 83.9% of the time. Additionally, areas that have fewer units available or are farther from neighboring stations are more impacted than others by an increase in emergency calls. They have greater workload sensitivity– as the workload increases their ability to meet the demand decreases. Station 89 is considered to have a high sensitivity workload, and Station 20 is considered to have moderate sensitivity with the capacity for more workload.

## 4.2 Estimated Calls and Demand for Service from the Project

The following estimated annual emergency call volume generated by the Project (Commercial-Industrial products) is based upon per capita data for 2021 from RCFD calls within their jurisdiction<sup>4</sup>.

- Total population served by: 30,273 (as of 2021, US Census Bureau)
- Total annual calls: 5189. Per capita call generation: 0.17
- Total annual fire calls, including structure, vegetation, vehicle fires, and other fire calls (4.10% of total calls): 213. Per capita call generation: 0.007
- Total annual Emergency Medical Services (79% of total calls): 4,110. Per capita call generation: 0.135
- Total other calls (Rescue, Traffic Collisions, Hazardous Materials, Public Service, etc.; 16.7% of total calls): 866. Per capita call generation: 0.029

Using the data above, the estimated annual emergency call volume for the Project site was calculated (Table 5). In order to provide this conceptual estimate, Dudek made assumptions regarding industrial/mixed-use populations within First Hathaway Logistics Project. The Project’s Environmental Impact Report estimates the total number of permanent jobs to be 1380. The number on-site at any given time may vary by time of day due to employee shift work, estimated transient population and operating hours of individual businesses. Based on this information, the total maximum estimated total population (which includes employees and transient use) of the Project site at any given time, is conservatively projected to be 818 persons within approximately 555 vehicles (ride sharing and public transportation reduce vehicle load). Based on this population estimate, the calculated call volumes by type of call are provided in Table 4, Land Use Classification Information with Staffing/Time Response Standards.

**Table 5. Conceptual Calculated Call Volume**

Type of Call	Per Capita Call Generation Factor	Number of Estimated Annual Calls (818 persons)
Total Other Calls	0.029	24
Total Fires	0.007	6
Total EMS Calls	0.135	110
Total Calls	0.17	140

<sup>3</sup> Riverside County Fire Department, Operational, Standards of Cover, and Contract Fee Analysis, March 2016, TriData LLC

<sup>4</sup> 2021 Riverside County Fire Department Annual Report and City of Banning Incidents for fiscal year 2021, Page 67

As mentioned, the new industrial/commercial development will increase the call volume at a rate of a conservatively calculated up to 140 calls per year (2.7 calls per week or 11.7 calls per month). Fire Stations 89 and 20 combined emergency responses in 2021 totaled 5,189 calls per year, or 5 and 8 calls per day per station respectively. The level of service demand for the Project raises overall call volume but is not anticipated to impact the existing fire stations to a point that they cannot meet the demand. For perspective, five calls per day are typical in an urban or suburban area. A busy fire station company would be one with 10 to 15 or more calls per day. When the Project site is built out, Fire Station 89 could potentially respond to an additional 3 calls per week, although the number will likely be lower than that based on the conservative nature of the population and calls per capita data used in this estimate.

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# 5 Fire Safety Requirements- Infrastructure, Building Ignition Resistance, and Defensible Space

The RCFD Fire Code and 2022 CFC and 2022 CBC adopted by reference (with several modifications) governs the building, infrastructure, and defensible space requirements detailed in this FPP. The Project will meet applicable codes or will provide alternative materials and/or methods, if warranted. The following summaries highlight important fire protection features.

Prior to bringing combustible materials onto the Project site, utilities shall be in place, fire hydrants operational, an approved all-weather roadway, or an approved road surface alternative in place, and interim fuel modification zones established and approved.

A response map update, including roads and fire hydrant locations, in a format compatible with current RCFD mapping shall be provided to RCFD (CAL Fire)

## 5.1 Roads

### 5.1.1 Access

Project site access, including road widths and connectivity, will comply with the requirements of the Road Circulation and Design Guidelines as well as Riverside County Fire Technical Policy 22-002 and will include:

- Primary access to the Project site is currently provided by Hathaway St. At its southern terminus, Hathaway St. intersects Ramseys St which has freeway access to the I10E. To the west, Ramseys St. intersects Hargrave St which has access to onramps serving both directions of the I10.
- All roads comply with access road standards of not less than 24 feet, unobstructed width and are capable of supporting an imposed load of at least 75,000 pounds.
- Interior circulation streets and parking lot roadways that are considered roadways for traffic flow through the Project site will meet fire department access requirements when serving the proposed structures.
- Typical, interior Project roads, including collector and local roads, will be constructed to minimum 24-foot, unobstructed widths and shall be improved with aggregate cement or asphalt paving materials.
- Private or public streets that provide fire apparatus access to buildings three stories or more in height shall be improved to 30 feet unobstructed width.
- Private and public streets for each phase shall meet all Project approved fire code requirements, paving, and fuel management prior to combustible materials being brought to the Project site.
- Vertical clearance of vegetation (lowest-hanging tree limbs), along roadways will be maintained at clearances of 13 feet, 6 inches to allow fire apparatus passage.
- Cul-de-sacs and fire apparatus turnarounds will meet requirements and RCFD Fire Prevention Standards.
- Any roads that have traffic lights shall have approved traffic pre-emption devices (Opticom) compatible with devices on the Fire Apparatus.

- Roadways and/or driveways will provide fire department access to within 150 feet of all portions of the exterior walls of the first floor of each structure.
- Roadway design features (e.g., speed bumps, humps, speed control dips, planters, and fountains) that could interfere with emergency apparatus response speeds and required unobstructed access road widths will not be installed or allowed to remain on roadways.
- Access roads shall be usable by fire apparatus to the approval of RCFD prior to lumber drop onsite. Developer will provide information illustrating the new roads, in a format acceptable to the RCFD for updating of Fire Department response maps.

## 5.1.2 Maximum Dead-End Road (cul-de-sac) Length

Dead End roads will comply with the adopted Riverside County fire Code and Technical Policy 22-002, including:

- Dead end streets no longer than 150 feet shall be provided with a bulb turnaround at the terminus measuring 40 feet outside radius and 16 feet inside radius. Parallel parking along the perimeter of the bulb is allowed provided the outside turning radius is increased by 8 feet.
- Maximum Dead-End Road length for parcels zoned for 20 acres or larger is 5,280 feet.
- Turnarounds shall be provided at a maximum 1,320 foot intervals along the dead end
- Fire apparatus turnarounds to include turning radius of a minimum 50 feet, measured to inside edge of improved width (RCFD Fire Prevention Standard).

## 5.1.3 Gates

Gates on private roads are permitted, but subject to the adopted Riverside County Fire Code and Technical Policy 22-002, including:

- Gates shall be equipped with conforming sensors for detecting emergency vehicle “Opticom” strobe lights from any direction of approach, if required.
- All emergency gates will be fitted with RCFD-approved technology that enables remote (or on-site) gate control 24/7 such that it does not represent an obstructed roadway.
- All entrance gates will be equipped with a Knox key switch, which overrides all command functions and opens the gate.
- Gate activation devices will be equipped with a battery backup or manual mechanical disconnect in case of power failure.
- Further, gates will be:
  - Minimum 14 feet wide of clearance for one-way traffic when fully open at entrance.
  - Minimum of one foot wider than road width at exit up to a maximum of 24 feet unless greater width is required to clear turning apparatus.
  - Constructed from non-combustible or exterior fire-rated treated wood materials.
  - Inclusive of provisions for manual operation from both sides if power fails. Gates will have the capability of manual activation from the development side or a vehicle (including a vehicle detection loop).

## 5.1.4 Driveways

Any structure that is 150 feet or more from a common street in the development shall have a paved fire apparatus access road meeting the following specifications:

- Grades 16% or less, cross grade 2.5% or less, with surfacing and sub-base consistent with Riverside CFC.

## 5.1.5 Premises Identification

Identification of roads and structures will comply with RCFD Fire Prevention Standard 07-01, as follows:

- All commercial/industrial structures required to be identified by street address numbers at the structure. Numbers to be minimum eight inches high with one-inch stroke, visible from the street. Numbers will contrast with background and shall be electrically illuminated during the hours of darkness where building setbacks exceed 100 feet from the street or would otherwise be obstructed; numbers shall be displayed at the property entrance. Numbers will contrast with background.
- The approved building address will be placed plainly visible from the addressed street.
- Proposed private and public streets within the development will be named, with the proper signage installed at intersections to satisfaction of the Department of Public Works.
- Streets will have street names posted on non-combustible street signposts; letters/numbers will be per RCFD standards.
- Temporary street signs shall be installed on all street corners within the Project prior to the placing of combustible materials on-site. Permanent signs shall be installed prior to occupancy of buildings.

## 5.1.6 Ongoing Infrastructure Maintenance

Project Owner/Property Management Company shall be responsible for long term funding and maintenance of fuel modification zones, however this responsibility may be transferred to the tenant by an appropriate lease agreement.

## 5.1.7 Pre-Construction Requirements

Prior to bringing lumber or combustible materials onto the Project site, improvements within the active development area shall be in place, including utilities, operable fire hydrants, an approved, temporary roadway surface, and construction phase fuel modification zones established. These features will be approved by the fire department or their designee prior to combustibles being brought on-site.

A preconstruction meeting with the Riverside County Fire Prevention Unit assigned to Banning is advised, prior to start of underground installation.

## 5.2 Ignition Resistant Construction and Fire Protection Systems

The Project site will be constructed to Fire Code standards. Each of the proposed buildings will comply with the enhanced ignition-resistant construction standards of the 2022 CBC Chapter 7A. These requirements address roofs, eaves, exterior walls, vents, appendages, windows, and doors and result in hardened structures that have been proven to perform at high levels (resist ignition) during the typically short duration of exposure to burning vegetation from wildfires. Appendix D provides a summary of the requirements for ignition resistant construction.

While these standards will provide a high level of protection to structures in this development, there is no guarantee that compliance with these standards will prevent damage or destruction of structures by fire in all cases.

## 5.3 Fire Protection Systems

### 5.3.1 Water Supply

Water service for the First Hathaway Logistics Project site will be provided by the City of Banning municipal water service. The Project site is within the City of Banning and will be annexed into the City's water supply system boundary. The internal waterlines will supply sufficient fire flows and pressure to meet the demands for required on-site fire hydrants and interior fire sprinkler systems for all structures.

### 5.3.2 Hydrants

Fire Hydrants shall be located along fire access roadways and adjacent to each structure, as determined by the RCFD Fire Marshal and current fire code requirements to meet operational needs. Fire Hydrants will be consistent with applicable Design Standards.

### 5.3.3 Fire Sprinklers

All structures, of any occupancy type, will be protected by an automatic, internal fire sprinkler system. Fire sprinklers systems shall be in accordance with RCFD, and National Fire Protection Association (NFPA) Standard 13. Fire sprinkler plans for each structure will be submitted and reviewed by RCFD for compliance with the applicable fire and life safety regulations, codes, and ordinances as well as the RCFD Fire Prevention Standards for fire protection systems.

### 5.3.4 Emergency Access Key Box

An emergency access key box provides a secure central location for first responders to access keys to the building and all utility rooms by a uniform key specific to the city or county. Riverside County Fire Department uses the Knox Rapid Entry system; a Knox Box will be installed in accordance with Technical Policy 06-003.

## 5.4 Defensible Space and Vegetation Management

### 5.4.1 Defensible Space

WUI fire protection requires a systems approach, which includes the components of infrastructure and water, structural safeguards (addressed in the FPP), and adequate defensible space setbacks. This section provides defensible space details for the Project.

### 5.4.2 Fuel Maintenance Zone and Fuel Modification Area Requirements

A fuel modification zone (FMZ) is a strip of land where combustible vegetation has been removed and/or modified and partially or totally replaced with more appropriately spaced, drought-tolerant, fire resistant plants in order to provide a reasonable level of protection to structures from wildland fire. A typical landscape/fuel modification installation requires a 100-foot-wide fuel modification zone from the structure outwards towards undeveloped areas. This 100-foot-wide fuel modification zone is required to provide defensible space which is defined as managed and maintained areas adjacent to structures that enable fire suppression activities through the removal of flammable fuels and maintenance of landscapes that would not readily transmit wildfire. Defensible space enables firefighters to safely position themselves at the development edge and begin tactical protection efforts. For the Project, the first 100 feet around the structure is primarily paved, with only some landscaped areas. The paved areas provide total fuel modification as all fuels will be removed and replaced with noncombustible asphalt or concrete. The landscaped areas interspersed within the 100-foot strip will comply with FMZ requirements (refer to section 5.4.2.2). In many places, the pavement extends as far as 180 ft or event 220 feet from the structure, far exceeding the 100-foot requirement.

In addition to a 100-foot Fuel Modification Zone (FMZ), the Project's conceptual plan indicates landscaping and paving from the 100-foot perimeter out to the property line. It is recommended that these landscaped areas also comply with the requirements of 5.4.2.2 in order to far exceed the minimum requirement (Figure 5).

As a wildfire burns into the paved and landscaped areas of the FMZ, fire behavior is affected substantially reducing flame lengths, spread rates and intensity, thus causing wildfires to become spotty. Fuel modification zones (FMZs) or "brush management" was initially made part of the Public Resources Code 4290 and 4291 to protect natural resources from fires originating in neighboring developed areas and have since become focused on protecting communities and structures. However, FMZs, or fuel maintenance zones, as will be used for the Project, continue to have the same benefit of buffering preserved open space areas from accidental ignitions within communities. Positioning the low plant density, irrigated zone directly adjacent to the structure provides a significant buffer between the structure and other landscape fire and native vegetation. The same way that fuel modification will setback a wildland fire from a structure, the fuel modification will setback a structure fire from the more burnable native plants. Embers can be generated by a structure fire and can be blown over the fuel modification into native fuels, but the inclusion of automatic sprinklers in every building combined with the presence of staffed fire stations with fast response significantly reduces the potential for a structure fire to reach a size that would produce significant impacts. The highest likelihood of vegetation ignitions would be related to roadways. Further, as depicted in the fire behavior modeling for existing and post-Project conditions, the Project at buildout would reduce the overall risk of wildfire spreading offsite with implementation of the fire safety requirements, defensible space, and vegetation management outlined in this FPP.

Cohen (1995) performed structure ignition fire research studies that suggest, as a rule-of-thumb, larger flame lengths and widths require wider fuel modification zones to reduce structure ignition. For example, valid Structure Ignition Assessment Modeling results indicate that a 20-foot-high flame has minimal radiant heat to ignite a structure (bare wood) beyond 33 feet (horizontal distance). Whereas a 70-foot-high flame requires about 130 feet of clearance to prevent structure ignitions from radiant heat (Cohen and Butler 1996). For this fire study example, bare wood was used, which is more combustible unlike the fire rated formed on site concrete exterior wall designs to be implemented on the project's building. For the Project, assuming 9.5-foot flame lengths, reduced fuel modification zones are justifiable for limited areas.

Based on the conceptual Project site plan, the building has more than adequate on-site defensible space which consists of asphalt and concrete roadways, parking stalls, loading zones, and irrigated landscaping.

**Industrial Building.** In the conceptual plan, the single industrial building is set back from the property line between approximately 213 and 325 feet; in between are asphalt roadways, parking stalls, loading zones, and irrigated landscaping. Along the entire southern, eastern and northern perimeter of the Project are the 78-foot wide Nicolet St, First Industrial Way, and Wilson St fire apparatus access roads respectively.

**Offsite Trailer Parking.** In the conceptual plan, the offsite trailer parking is across Nicolet St to the south from the warehouse, on the southwest corner of Nicolet St and First Industrial Way. On the east side, the lot is setback by 25 feet or landscaped area from First Industrial Way, which is a 78 foot roadway. On the southern perimeter, the parking lot is setback between 45 and 245 feet from the property line with landscaped areas in the interim space. On the western perimeter, the parking lot is setback 25 feet from the property line with a FMA in the interim space. On the other side of the western perimeter is a Caltrans Facility and not open space. While defensible space is a requirement for structures only, it is recommended that the landscaped areas around the offsite trailer parking comply with FMZ requirement up to the property line or 100 feet, whichever comes first. The expected flame length determined in Section 3 from advancing fire from the south or east towards the trailer parking would be 9.6 feet, which is far less than the minimum 25 foot landscaped area around the trailer parking.

The FMZ will be implemented according to the following requirements for the entire Project.

#### 5.4.2.1 Fuel Maintenance Zone - Irrigated/Paved Zone (100 feet wide)

The FMZ occurs around the perimeter of the Project's wildland exposure at Project build out (Figure 5). The FMZ will be 100 feet wide from the structure outward. All highly flammable native vegetation, especially found on the Prohibited Plant List (Appendix E) shall be removed except for species approved by the fire marshal. This area will largely be paved with some irrigated landscaping. The Project's plant palette will be approved by the fire department. A permanent, automatic irrigation system will be installed throughout the Project to maintain hydrated plants.

FMZ includes the following key components:

- All trees shall be planted and maintained at a minimum of 10 feet from the tree's drip line to any combustible structure.
- Tree spacing of a minimum 10 feet between canopies.
- Mature trees shall be limbed to eight feet or three times the height of understory plants to prevent ladder fuels, whichever is greater.



- No tree limb encroachment within 10 feet of a structure or chimney, including outside barbecues or fireplaces.
- Tree maintenance includes limbing-up (canopy raising) six feet or one-third the height of the tree.
- Maintenance including ongoing removal and/or thinning of undesirable combustible vegetation, replacement of dead/dying plantings, maintenance of the programming and functionality of the irrigation system, regular trimming to prevent ladder fuels.
- A minimum of 36 inches wide pathway with unobstructed vertical clearance around the exterior of each structure (360°) provided for firefighter access (2022 CFC, Section 503.1.1). Within this clearance area, landscape such as low ground covers and shrubs are permitted so long as their placement and mature height do not impede firefighter access, consistent with purpose of this guideline.
- Trees and tree form shrub species that naturally grow to heights that exceed two feet shall be vertically pruned to prevent ladder fuels.
- Grasses shall be cut to four inches in height. Native grasses can be cut after going to seed.
- Ground covers within first three feet from structure restricted to non-flammable materials, including stone, rock, concrete, bare soil, or other. Combustible ground covers, such as mulch or wood chips, are prohibited adjacent to structures with an exterior stucco wall and weep screed.
- Requires regular maintenance such as thinning or removal of plants focusing on removal of dead annual grasses.
- Fuel continuity should be interrupted so that groupings of shrubs are separated from adjacent groupings.
- Maintenance including ongoing removal and thinning of dead/dying planting, and regular trimming to prevent ladder fuels.
- Trees and tree-form shrub species that naturally grow to heights that exceed four feet shall be vertically pruned to prevent ladder fuels.
- No vegetation found on the Prohibited Plant List (Appendix E) shall remain in the fuel maintenance zone.

### 5.4.3 Vegetation Management Maintenance

Vegetation management, i.e., assessment of the fuel modification zone's condition and removal of dead and dying and undesirable species; as well as thinning as necessary to maintain specified plant spacing and fuel densities, shall be completed annually by May 1 of each year, and more often as needed for fire safety, as determined by the RCFD. The vegetation management will be funded by the Project and shall be conducted by their contractor(s). The Project shall be responsible for all vegetation management throughout the development, in compliance with the Project FPP that is consistent with requirements.

The permanent FMA and fuel maintenance zone required for the Project will be maintained by the applicant during construction and by the owner responsible for vegetation management once the Project is built out. The Owner or Property Manager will be responsible for streetscape and vegetation management in perpetuity.

On-going/as-needed fuel modification maintenance during the interim period while the Project is built out will include necessary measures for consistency with the FPP, including:

- Removal or thinning of undesirable combustible vegetation and replacement of dead or dying landscaping.
- Maintaining ground cover at a height not to exceed 18 inches. Annual grasses and weeds shall be maintained at a height not to exceed four inches.

- Removing accumulated plant litter and dead wood. Debris and trimmings produced by thinning and pruning should be removed from the Project site or chipped and evenly dispersed in the same area to a maximum depth of four-inches.
- Maintaining manual and automatic irrigation systems for operational integrity and programming. Effectiveness should be regularly evaluated to avoid over or under-watering.
- Complying with these FPP requirements on a year-round basis. Annual inspections are conducted following the natural drying of grasses and fine fuels, between the months of May and June, depending on precipitation during the winter and spring months.

#### 5.4.4 Environmentally Sensitive Areas/Open Space

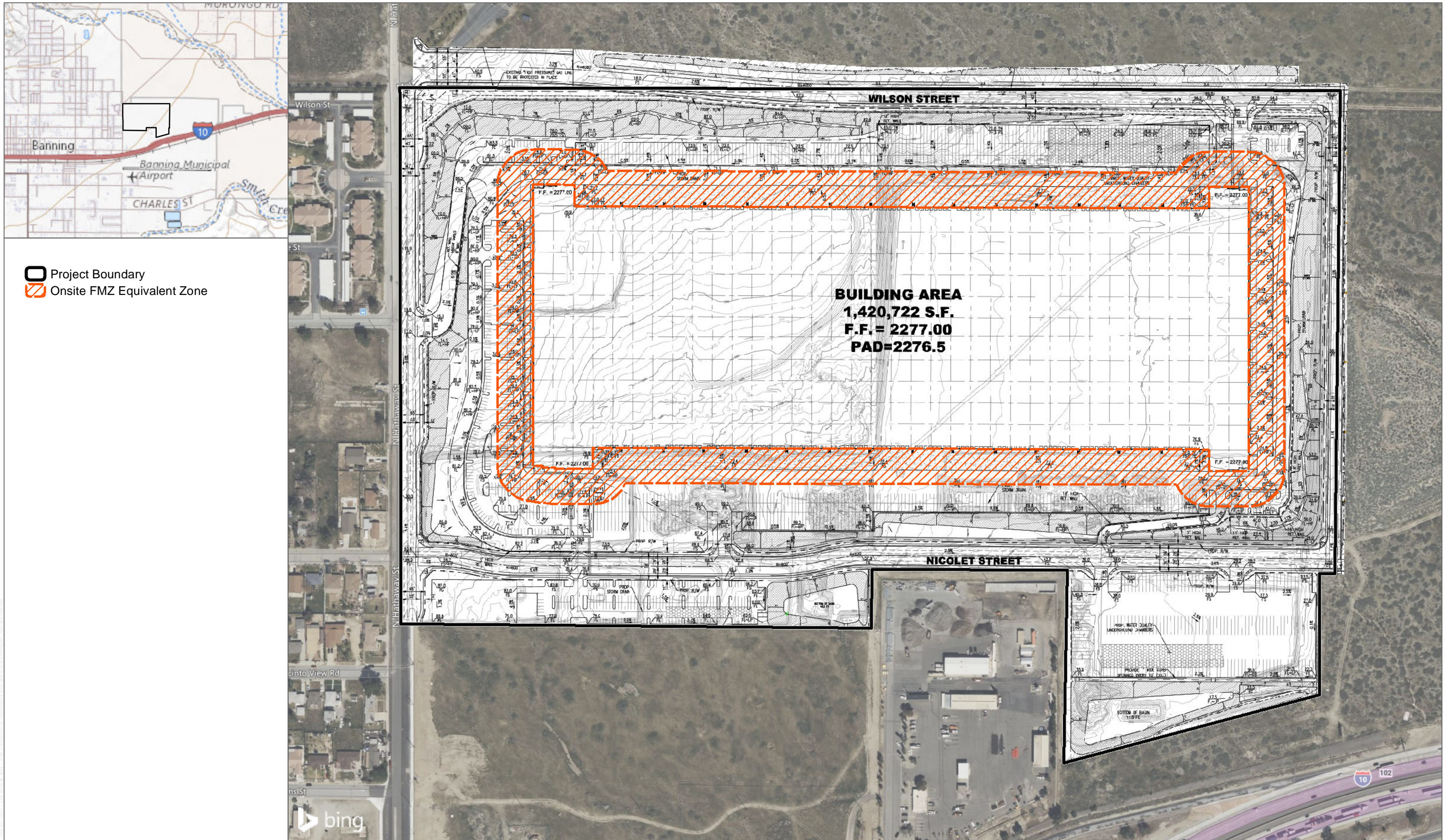
There should not be a need to modify the fuel maintenance zone as it is planned to meet the fuel management needs of the Project site and comply with the fire code. However, if unforeseen circumstances were to arise that require hazard reduction within an area considered environmentally sensitive, it may require approval from the County and the appropriate resource agencies (California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers) prior to any vegetation management activities occurring within those areas.

#### 5.4.5 Prohibited Plants

Certain plants are considered prohibited in the landscape due to characteristics that make them highly flammable. These characteristics can be physical (structure promotes ignition or combustion) or chemical (volatile chemicals increase flammability or combustion characteristics). The plants included in the Prohibited Plant List (Appendix E) are unacceptable from a fire safety standpoint and will not be planted on the Project site or allowed to establish opportunistically within fuel modification zones or landscaped areas.

#### 5.4.6 Construction Phase Vegetation Management

Vegetation management requirements shall be implemented at Project commencement and throughout the construction phase for each planning area. Vegetation management shall be performed pursuant to the FAHJ on all building locations prior to the start of work and prior to any import of combustible construction materials. Adequate fuel breaks shall be created around all grading, site work, and other construction activities in areas where there is flammable vegetation.



SOURCE: AERIAL-BING MAPPING SERVICE 2022; SCANTEC 2023

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## 6 Wildfire Education Program

It is recommended that the business owners of the First Hathaway Logistics Project be provided a proactive educational component disclosing the potential wildfire risk and this report's requirements. This educational information must include maintaining the landscape and structural components according to the appropriate standards and embracing a "Ready, Set, Go!" stance on evacuation. Additionally, management of on-site entities occupying the site's structures will be required to register for emergency alerts via the Alert RivCo messaging system (Register | Registration Portal ([genasys.com](https://genasys.com))). Personnel and employees will be strongly encouraged to also register to receive emergency alerts.

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## 7 Evacuation Analysis

An evacuation analysis was prepared by CR Associates with technical input provided by Dudek (May 2023). Please refer to that separate technical report for details regarding evacuation planning, timing available and needed to evacuate the site, and discussion of other available contingency options that may be employed by emergency managers.

In summary, the evacuation analysis results indicate that depending on the wildfire scenario, which includes various locations and weather conditions, the site can be evacuated within a reasonable timeframe and enables emergency managers with contingency options by providing two evacuation routes and the ability to temporarily refuge the entire, or a portion of the anticipated on-site population within the hardened buildings and ignition resistant landscape/hardscape throughout the site.

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## 8 Conclusion

This FPP for the First Hathaway Logistics Project provides guidance for vegetation maintenance for the proposed FMA, fuel maintenance zone and landscaped areas on the Project site. As described, vegetation maintenance measures will be provided on all sides of the proposed development. The requirements and recommendations provided in this FPP have been designed specifically for the Project. This analysis and its fire protection justifications are supported by fire science research, results from previous wildfire incidents, and fire agencies that have approved these concepts. The Project design features, asphalt roads and parking stalls, and a fully irrigated landscape, would provide a level of safety greater than a 100-foot wide FMZ. The Project is considered to represent a low wildfire risk to its occupants based on its ability to provide for evacuations and contingency on-site shelter in place.

Ultimately, it is the intent of this FPP to guide the fire protection efforts for the Project in a comprehensive manner. Implementation of the measures detailed in this FPP will reduce the risk of wildfire spreading from the Project site into surrounding areas and will improve the ability of firefighters to fight fires on the protect property and neighboring properties and resources, irrespective of the cause or location of ignition.

It must be noted that during extreme fire conditions, there are no guarantees that a given structure will not be exposed to wildfire or embers. Precautions and minimizing actions identified in this report are designed to reduce the likelihood that fire will impinge upon the Project's assets or threaten its visitors. Additionally, there are no guarantees that fire will not occur in the area or that fire will not damage property or cause harm to persons or their property. Implementation of the required enhanced construction features provided by the applicable codes and the fuel modification requirements provided in this FPP will reduce the Project site's vulnerability to wildfire and help to limit the spread of fire from the Project site to surrounding areas. It will also help accomplish the goal of this FPP to assist firefighters in their efforts to defend structures.

It is recommended that the First Hathaway Logistics Plan maintain a conservative approach to fire safety. This approach must include maintaining the landscape and structural components according to the appropriate standards and embracing a "Ready, Set, Go!" stance on evacuation. The Project is not to be considered a shelter-in-place development. However, the fire agencies and/or law enforcement officials may, during an emergency, as they would for any new development providing the layers of fire protection as the Project, determine that it is safer to temporarily refuge employees or visitors on the Project site. When an evacuation is ordered, it will occur according to pre-established evacuation decision points or as soon as notice to evacuate is received, which may vary depending on many environmental and other factors. Fire is a dynamic and somewhat unpredictable occurrence and it is important for anyone living at the WUI to educate themselves on practices that will improve safety.

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# 9 List of Preparers

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## Fire Behavior Modeling

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# 10 References

(including references from Appendices)

- Anderson, Hal E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, Utah.
- Andrews, P.L. 1980. Testing the fire behavior model. In Proceedings 6th conference on fire and forest meteorology. April 22–24, 1980. Seattle, WA: Society of American Foresters. Pp. 70–77.
- Andrews, Patricia L., Collin D. Bevins, and Robert C. Seli. 2008. BehavePlus fire modeling system, version 3.0: User's Guide. Gen. Tech. Rep. RMRS-GTR-106 Ogden, UT: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 132p.
- Braun, K. 2002. Bushfire Threat to Homeowners. *Community Perspectives about Fire*, 2, 64-71.
- Braziunas, K. H., Seidl, R., Rammer, W., & Turner, M. G. (2021). Can we manage a future with more fire? Effectiveness of defensible space treatment depends on housing amount and configuration. *Landscape Ecology*, 36(2), 309–330. <https://doi.org/10.1007/s10980-020-01162-x>
- Bushey, C.L. 1985. Comparison of observed and predicted fire behavior in the sagebrush/ bunchgrass vegetation-type. In J.N. Long (ed.), *Fire management: The challenge of protection and use: Proceedings of a symposium*. Society of American Foresters. Logan, UT. April 17–19, 1985. Pp. 187–201.
- California Fire Alliance (CFA). 2004. *California Fire Siege, 2003, The Story*.
- CAL FIRE. 2019. Scott McLean interview AP news. Wildfire Acreage Way Down in California. Web site: Wildfire acreage way down in California this year \_ so far | AP News
- CAL FIRE. 2019. Strategic Plan 2019. California Department of Forestry and Fire Protection. <https://www.fire.ca.gov/media/5504/strategicplan2019-final.pdf>
- Cochrane, M. A., Moran, C. J., Wimberly, M. C., Baer, A. D., Finney B, M. A., Beckendorf, K. L., Eidenshink, J., & Zhu, Z. 2012. Estimation of wildfire size and risk changes due to fuels treatments. *International Journal of Wildland Fire*, 21, 357–367. <https://doi.org/10.1071/WF11079>
- Elia, M., Giannico, V., Laforteza, R., & Sanesi, G. 2019. Modeling fire ignition patterns in Mediterranean urban interfaces. *Stochastic Environmental Research and Risk Assessment*, 33(1), 169–181. <https://doi.org/10.1007/s00477-018-1558-5>
- FireFamily Plus 2008. <http://www.firelab.org/project/firefamilyplus>.
- Fox, D. M., Carrega, P., Ren, Y., Caillouet, P., Bouillon, C., & Robert, S. 2018. How wildfire risk is related to urban planning and Fire Weather Index in SE France (1990–2013). *Science of the Total Environment*, 621, 120–129. <https://doi.org/10.1016/j.scitotenv.2017.11.174>

- FRAP (Fire and Resource Assessment Program). 2008. California Department of Forestry and Fire Protection. Website Accessed October 2019, at: <http://frap.cdf.ca.gov/>.
- Gordon, Hazel and T. C. White. 1994. Ecological Guide to Southern California Chaparral Plant Series for Tranverse and Penninsular Ranges: Angeles, Cleveland, and Riverside National Forests. USDA Forest Service Pacifica Southwest Region. R5-ECOL-TP-005. 162 p.
- Gorte, R. W. 2011. Wildfire protection in the Wildland-Urban interface. In *Wildfires and Wildfire Management*.
- Hall, John R. 2013. US Experience with Sprinklers. National Fire Protection Association Report. 91 pp.
- Huntzinger, R. (2010). *Determining the Necessary Components of an Evacuation/ Shelter in Place*. Emmitsburg: National Fire Academy.
- Keeley, J.E. and S.C. Keeley. 1984. Postfire recovery of California coastal sage scrub. *The American Midland Naturalist* 111:105-117.
- Keeley, J.E. and C.J. Fotheringham. 2003. "Impact of Past, Present, and Future Fire Regimes on North American Mediterranean Shrublands." In *Fire and Climatic Change in Temperate Ecosystems of the Western Americas*, edited by T.T. Veblem, W.L. Baker, G. Montenegro, and T.W. Swetnam, 218–262. New York, New York: Springer-Verlag.
- Keeley, J.E. 2004. "Invasive Plants and Fire Management in California Mediterranean-Climate Ecosystems." Edited by M. Arianoutsou. In *10th MEDECOS-International Conference on Ecology, Conservation Management*. Rhodes, Greece.
- Keeley, J. E., & Syphard, A. D. 2018. Historical patterns of wildfire ignition sources in California ecosystems. *International Journal of Wildland Fire*, 27(12), 781–799. <https://doi.org/10.1071/WF18026>
- Linn, R. 2003. "Using Computer Simulations to Study Complex Fire Behavior." Los Alamos National Laboratory, MS D401. Los Alamos, NM.
- Mockrin, M. H., Fishler, H. K., & Stewart, S. I. 2020. After the fire: Perceptions of land use planning to reduce wildfire risk in eight communities across the United States. *International Journal of Disaster Risk Reduction*, 45(January), 101444. <https://doi.org/10.1016/j.ijdr.2019.101444>
- Newman, S. M., Carroll, M. S., Jakes, P. J., & Paveglio, T. B. 2013. Land development patterns and adaptive capacity for wildfire: Three examples from Florida. *Journal of Forestry*, 111(3), 167–174. <https://doi.org/10.5849/jof.12-066>
- National Fire Protection Association. 2021. Myths vs Facts About Home Sprinklers. NFPA Web site at: NFPA's Fire Sprinkler Initiative-Myths and facts about home fire sprinklers
- Quarles, S.L. and F.C. Beall. 2002. Testing protocols and fire tests in support of the performance-based codes. In 'Proceedings of the California 2001Wildfire Conference: 10Years after the 1991 East Bay Hills Fire', 10-12 October 2001, Oakland, California. University of California, Forest Products Laboratory, Technical Report 35.01.462, pp. 64–73. Richmond, California.

Riverside County Fire Department. 2020. Ready, Set, Go! program. Website:

Romero-Calcerrada R, Novillo CJ, Millington JDA, Gomez-Jimenez I (2008) GIS analysis of spatial patterns of human-caused wildfire ignition risk in the SW of Madrid (Central Spain). *Landscape Ecology* 23, 341-354. doi:10.1007/S10980-008-9190-2

Rothermel, Richard C. 1983. How to predict the spread and intensity of forest and range fires. GTR INT-143. Ogden, Utah: USDA Forest Service Intermountain Research Station.161 Rothermel, R.C., and G.C. Rinehart. 1983. "Field procedures for verification and adjustment of fire behavior predictions." Res. Pap. INT-142. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 25 p.

Rothermel, R.C., and G.C. Rinehart. 1983. "Field procedures for verification and adjustment of fire behavior predictions." Res. Pap. INT-142. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 25 p.

Safford, H. D., Schmidt, D. A., & Carlson, C. H. (2009). Effects of fuel treatments on fire severity in an area of wildland-urban interface, Angora Fire, Lake Tahoe Basin, California. *Forest Ecology and Management*, 258, 773–787. <https://doi.org/10.1016/j.foreco.2009.05.024>

Santa Barbara County Fire Department. 2019. Mission to Control 90% of Wildfires to 10 acres or less: Web Site: Media Guide - SBC Fire Department

Scott, J. H. and Robert E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

Scott, J. H., Thompson, M. P., & Gilbertson-Day, J. W. 2016. Examining alternative fuel management strategies and the relative contribution of National Forest System land to wildfire risk to adjacent homes - A pilot assessment on the Sierra National Forest, California, USA. *Forest Ecology and Management*, 362, 29–37. <https://doi.org/10.1016/j.foreco.2015.11.038>

Sneeuwjagt, R.J., and W.H. Frandsen. 1977. "Behavior of experimental grass fires vs. predictions based on Rothermel's fire model." *Canadian Journal of Forest Resources*. 7:357–367.

Steffey, E., Budruk, M., & Vogt, C. 2020. The Mitigated Neighborhood: Exploring Homeowner Associations' Role in Resident Wildfire-Mitigation Actions. *Journal of Forestry*, 118(6), 613–624. <https://doi.org/10.1093/jofore/fvaa019>

Syphard, A. D., Clayton, M. K., Hawbaker, T. J., Hammer, R. B., Radeloff, V. C., Keeley, J. E., & Stewart, S. I. 2007. Human Influence on California Fire Regimes. *Ecological Applications*, 17.(5), 1388–1402. <https://doi.org/10.1890/06-1128.1>

Syphard AD, Bar Massada A, Butsic V, Keeley JE (2013) Land use planning and wildfire:development policies influence future probability of housing loss. *PLoS ONE* 8(8), e71708. doi:10.1371/JOURNAL.PONE.0071708 Syphard AD, Keeley JE. 2016. Historical reconstructions of California wildfires vary by data source. *International Journal of Wildland Fire* 25, 1221–1227. doi:10.1071/WF16050

- Syphard, A. D., & Keeley, J. E. 2015. Location, timing and extent of wildfire vary by cause of ignition. *International Journal of Wildland Fire*, 24(1), 37–47. <https://doi.org/10.1071/WF14024>
- Syphard A.D., and J.E. Keeley. 2016. “Historical Reconstructions of California Wildfires Vary by Data Source.” *International Journal of Wildland Fire* 25(12):1221–1227. <https://doi.org/10.1071/WF16050>.
- USDA-Forest Service. 2016. Blue Cut Fire- San Bernardino National Forest, Front Country Ranger District Burned Area Report ( FSH 2509.13). September 6, 2016. 39 p.
- Warziniack, T., Champ, P., Meldrum, J., Brenkert-Smith, H., Barth, C. M., & Falk, L. C. 2019. Responding to Risky Neighbors: Testing for Spatial Spillover Effects for Defensible Space in a Fire-Prone WUI Community. *Environmental and Resource Economics*, 73(4), 1023–1047. <https://doi.org/10.1007/s10640-018-0286-0>
- Weise, D.R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.
- Zhou, A. 2013. Performance evaluation of ignition-resistant materials for structure fire protection in the WUI. *Fire and Materials 2013 - 13th International Conference and Exhibition, Conference Proceedings, January 2013*, 355–366.



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# **Appendix A**

## Representative Project Site Photographs





**Picture 1.** Overlooking project site from Hathaway St.



**Picture 2.** Fuel Types on project site.



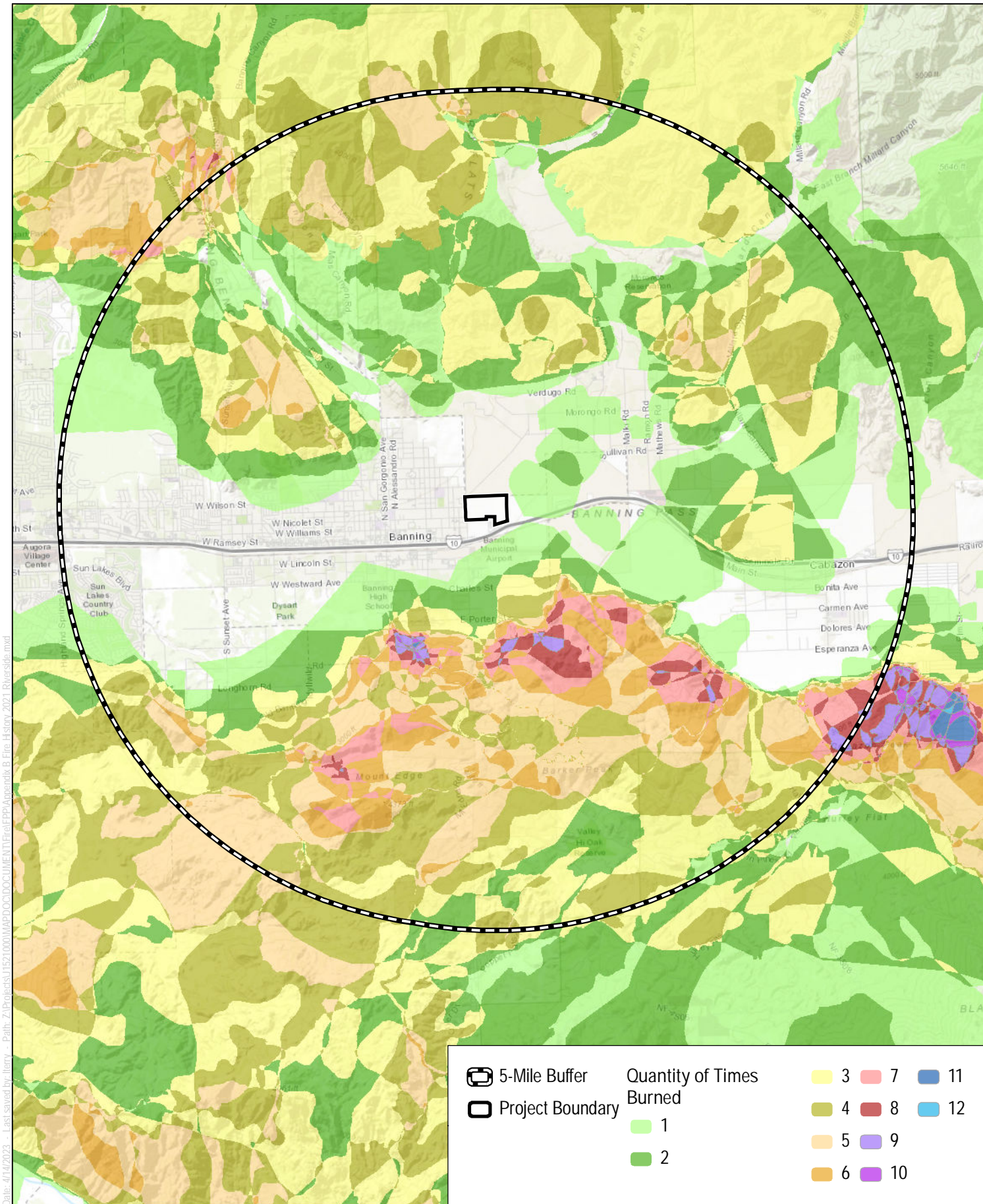
**Picture 3.** Fuel Types south of project site.

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## **Appendix B**

### First Hathaway Logistics Project Vicinity Fire History Map





Path: Z:\Projects\15210001\MAPDOC\CALIFIRE\FireHistory\_2021\_Riverside.mxd

SOURCE: BASE MAP- ESRI MAPPING SERVICE; FIRE DATA-CALFIRE 2021



## APPENDIX B Fire History Map





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# Appendix C

## Ignition Resistant Construction Requirements



As of the date of this fire protection plan, the following are the requirements for ignition resistant construction for The Proposed Project, including requirements under Chapter 7A of the California Building Code (CBC). In addition, exterior building construction including roofs, eaves, exterior walls, doors, windows, decks, and other attachments must meet the most current CBC Chapter 7A ignition resistance requirements at the time of building permit application.

1. All structures will be built with a Class A roof assembly, including a Class A roof covering. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.
2. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be fire stopped with approved materials or have one layer of minimum 72 pound mineral-surfaced non-perforated cap sheet complying with ASTM D 3909 installed over the combustible decking. However, openings on barrel tiles or similar roof coverings, must be fire stopped (bird stopped) with approved materials to prevent the accumulation of debris, bird nests, etc. between the tiles and decking material.
3. When provided, exposed valley flashings shall be not less than 0.019-inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of minimum 72 pound mineral-surfaced non-perforated cap sheet complying with ASTM D 3909 running the full length of the valley.
4. All rain gutters, down spouts and gutter hardware shall be constructed from metal or other non-combustible material to prevent wildfire ignition along eave assemblies.
5. All chimney, flue or stovepipe openings attached to a fireplace, stove, or other solid or liquid fuel burning equipment or device shall be equipped with an approved spark arrester. An approved spark arrester is defined as a device intended to prevent sparks from escaping into the atmosphere and constructed of nonflammable materials, having a 12-gauge minimum thicknesses with openings no greater than ½ inch, or other alternative material the Fontana Fire Protection District determines to provide equal or better protection. It shall be installed to be visible for the purposes of inspection and maintenance.
6. The exterior surface materials shall be non-combustible, including hard or ignition resistant, such as stucco. In all construction, exterior walls shall extend from the top of the foundation to the roof and terminate at 2-inch nominal solid blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.
7. All eaves, fascias, and soffits will be enclosed (boxed) with non-combustible materials. This shall apply to the entire perimeter of each structure. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section, heavy timber construction shall consist of a minimum of 4"x 6" rafter tails.
8. Paper-faced insulation shall be prohibited in attics or ventilated spaces.
9. Automatic interior fire sprinklers for commercial buildings shall be installed according to the National Fire Protection Association (NFPA) 13 requirements.
10. Roof vents, dormer vents, gable vents, foundation ventilation openings, ventilation openings in vertical walls, or other similar ventilation openings shall be louvered and covered with 1/16-inch, noncombustible, corrosion-resistant metal mesh or other approved material that offers equivalent protection.
11. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening and shall be covered with 1/16" inch mesh corrosion-resistant metal screen or other approved material that offers equivalent protection. Ventilation louvers and openings may be incorporated as part of access assemblies.

12. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.
13. All fences and gate assemblies (fences, gates, and fence posts) attached or within five feet of a structure shall be of non-combustible material or pressure-treated exterior fire-retardant wood.
14. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction, pressure-treated exterior fire-retardant wood or ignition resistant construction. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain same fire-resistant standards as the exterior walls of the structure.
15. Accessory structures attached to buildings with habitable spaces and projections shall be in accordance with Chapter 7A of the CBC.
16. Detached accessory structures located less than 50 feet from a building containing habitable space shall be constructed in accordance with Chapter 7A of the CBC.
  - **Exception:** Accessory structures less than 120 square feet in floor area located at least 30 feet from a building containing a habitable space.
17. Exterior doors shall be approved non-combustible construction, solid core wood and shall conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved noncombustible construction, or solid core wood having stiles and rails not less than 1<sup>3</sup>/<sub>8</sub> inches thick with interior field panel thickness no less than 1<sup>1</sup>/<sub>4</sub> inches thick, or shall have a fire-resistance rating of not less than 20 minutes when tested according to National Fire Protection Association (NFPA) 252.
18. All glass or other transparent, translucent or opaque glazing materials, that is used in exterior windows, including skylights, or exterior glazed door assemblies shall be constructed of multipane glazing with one tempered pane meeting the requirements of Section 2406 (2016 CBC) Safety Glazing.
19. Vinyl window assemblies are deemed acceptable if the windows have the following characteristics:
  - Frame and sash are comprised of vinyl material with welded corners
  - Metal reinforcements in the interlock area
  - Glazed with insulating glass, annealed or tempered (one layer of which must be tempered glass).
  - Frame and sash profiles are certified in AAMA Lineal Certification Program.
  - Certified and labeled to ANSI/AAMA/NWDA 101/LS2-97 for Structural Requirements.

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# **Appendix D**

## Prohibited Plant List



Botanical Name	Common Name	Comment*
<b>Trees</b>		
<i>Abies</i> species	Fir	F
<i>Agonis juniperina</i>	Juniper Myrtle	F
<i>Casuarina cunninghamiana</i>	River She-Oak	F
<i>Chamaecyparis</i> species (numerous)	False Cypress	F
<i>Cryptomeria japonica</i>	Japanese Cryptomeria	F
<i>Cupressocyparis leylandii</i>	Leyland Cypress	F
<i>Cupressus</i> species ( <i>C. fobesii</i> , <i>C. glabra</i> , <i>C. sempervirens</i> ,)	Cypress (Tecate, Arizona, Italian, others)	F
<i>Eucalyptus</i> species (numerous)	Eucalyptus	F, I
<i>Juniperus</i> species (numerous)	Juniper	F
<i>Lithocarpus densiflorus</i>	Tan Oak	F
<i>Melaleuca</i> species ( <i>M. linariifolia</i> , <i>M. nesophila</i> , <i>M. quinquenervia</i> )	Melaleuca (Flaxleaf, Pink, Cajeput Tree)	F, I
<i>Picea</i> (numerous)	Spruce	F
<i>Palm</i> species (numerous)	Palm	F, I
<i>Pinus</i> species ( <i>P. brutia</i> , <i>P. canariensis</i> , <i>P. b. eldarica</i> , <i>P. halepensis</i> , <i>P. pinea</i> , <i>P. radiata</i> , numerous others)	Pine (Calabrian, Canary Island, Mondell, Aleppo, Italian Stone, Monterey)	F
<i>Platyclusus orientalis</i>	Oriental arborvitae	F
<i>Pseudotsuga menziesii</i>	Douglas Fir	F
<i>Tamarix</i> species ( <i>T. africana</i> , <i>T. aphylla</i> , <i>T. chinensis</i> , <i>T. parviflora</i> )	Tamarix (Tamarisk, Athel Tree, Salt Cedar, Tamarisk)	F, I
<i>Taxodium</i> species ( <i>T. ascendens</i> , <i>T. distichum</i> , <i>T. mucronatum</i> )	Cypress (Pond, Bald, Monarch, Montezuma)	F
<i>Taxus</i> species ( <i>T. baccata</i> , <i>T. brevifolia</i> , <i>T. cuspidata</i> )	Yew (English, Western, Japanese)	F
<i>Thuja</i> species ( <i>T. occidentalis</i> , <i>T. plicata</i> )	Arborvitae/Red Cedar	F
<b>Groundcovers, Shrubs &amp; Vines</b>		
<i>Acacia</i> species	Acacia	F, I
<i>Adenostoma fasciculatum</i>	Chamise	F
<i>Adenostoma sparsifolium</i>	Red Shanks	F
<i>Agropyron repens</i>	Quackgrass	F, I
<i>Anthemis cotula</i>	Mayweed	F, I
<i>Arctostaphylos</i> species	Manzanita	F
<i>Arundo donax</i>	Giant Reed	F, I
<i>Artemisia</i> species ( <i>A. abrotanum</i> , <i>A. absinthium</i> , <i>A. californica</i> , <i>A. caucasica</i> , <i>A. dracunculus</i> , <i>A. tridentata</i> , <i>A. pycnocephala</i> )	Sagebrush (Southernwood, Wormwood, California, Silver, True tarragon, Big, Sandhill)	F
<i>Atriplex</i> species (numerous)	Saltbush	F, I
<i>Avena fatua</i>	Wild Oat	F
<i>Baccharis pilularis</i>	Coyote Bush	F
<i>Bambusa</i> species	Bamboo	F, I
<i>Bougainvillea</i> species	Bougainvillea	F, I
<i>Brassica</i> species ( <i>B. campestris</i> , <i>B. nigra</i> , <i>B. rapa</i> )	Mustard (Field, Black, Yellow)	F, I

Botanical Name	Common Name	Comment*
<i>Bromus rubens</i>	Foxtail, Red brome	F, I
<i>Castanopsis chrysophylla</i>	Giant Chinquapin	F
<i>Cardaria draba</i>	Hoary Cress	I
<i>Cirsium vulgare</i>	Wild Artichoke	F, I
<i>Conyza bonariensis</i>	Horseweed	F
<i>Coprosma pumila</i>	Prostrate Coprosma	F
<i>Cortaderia selloana</i>	Pampas Grass	F, I
<i>Cytisus scoparius</i>	Scotch Broom	F, I
<i>Eriogonum</i> species ( <i>E. fasciculatum</i> )	Buckwheat (California)	F
<i>Fremontodendron</i> species	Flannel Bush	F
<i>Heterotheca grandiflora</i>	Telegraph Plant	F
<i>Hordeum leporinum</i>	Wild barley	F, I
<i>Juniperus</i> species	Juniper	F
<i>Lactuca serriola</i>	Prickly Lettuce	I
<i>Larrea tridentata</i>	Creosote bush	F
<i>Lolium multiflorum</i>	Ryegrass	F, I
<i>Lonicera japonica</i>	Japanese Honeysuckle	F
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	F
<i>Miscanthus</i> species	Eulalie Grass	F
<i>Muhlenbergia</i> species	Deer Grass	F
<i>Nicotiana</i> species ( <i>N. bigelovii</i> , <i>N. glauca</i> )	Tobacco (Indian, Tree)	F, I
<i>Pennisetum setaceum</i>	Fountain Grass	F, I
<i>Perovskia atroplicifolia</i>	Russian Sage	F
<i>Phoradendron</i> species	Mistletoe	F
<i>Pickeringia montana</i>	Chaparral Pea	F
<i>Rhus</i> ( <i>R. diversiloba</i> , <i>R. laurina</i> , <i>R. lentii</i> )	Sumac (Poison oak, Laurel, Pink Flowering)	F
<i>Ricinus communis</i>	Castor Bean	F, I
<i>Rhus Lentii</i>	Pink Flowering Sumac	F
<i>Salvia</i> species (numerous)	Sage	F, I
<i>Salsola australis</i>	Russian Thistle	F, I
<i>Solanum Xantii</i>	Purple Nightshade (toxic)	I
<i>Silybum marianum</i>	Milk Thistle	F, I
<i>Thuja</i> species	Arborvitae	F
<i>Urtica urens</i>	Burning Nettle	F

\* F = flammable, I = Invasive

**Notes:**

- Plants on this list that are considered invasive are a partial list of commonly found plants. There are many other plants considered invasive that should not be planted in a fuel modification zone and they can be found on The California Invasive Plant Council's Website [www.cal-ipc.org/ip/inventory/index.php](http://www.cal-ipc.org/ip/inventory/index.php). Other plants not considered invasive at this time may be determined to be invasive after further study.
- For the purpose of using this list as a guide in selecting plant material, it is stipulated that all plant material will burn under various conditions.
- The absence of a particular plant, shrub, groundcover, or tree, from this list does not necessarily mean it is fire resistant.
- All vegetation used in Fuel Modification Zones and elsewhere in this development shall be subject to approval of the Fire Code Official.
- Landscape architects may submit proposals for use of certain vegetation on a project specific basis. They shall also submit justifications as to the fire resistivity of the proposed vegetation.