Fire Protection Plan

Baker Industrial Project

UPDATED NOVEMBER 2025

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AMSL	above mean sea level
APN	Assessor's Parcel Number
BTU	British Thermal Unit
CAL FIRE	California Department of Forestry and Fire Protection
CBC	California Building Code
CFC	California Fire Code
EVMWD	Elsinore Valley Municipal Water District
FAHJ	Fire Authority Having Jurisdiction
FHSZ	Fire Hazard Severity Zone
FMZ	Fuel Modification Zone
FPP	Fire Protection Plan
FRAP	Fire and Resource Assessment Program
IFC	International Fire Code
I-15	Interstate 15
LRA	Local Responsibility Area
ISO	Insurance Services Office
MPH	miles per hour
NFPA	National Fire Protection Association
PRC	Public Resources Code
Project	Baker Industrial Project
RCFD	Riverside County Fire Department
SRA	State Responsibility Area
VHFHSZ	Very High Fire Hazard Severity Zone
WUI	Wildland Urban Interface

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Executive Summary

This Fire Protection Plan (FPP) has been prepared for the Baker Industrial Project (Project) located southwest of the intersection of Baker Street and Pierce Street in the City of Lake Elsinore, Riverside County, California. The Project proposes the construction of two (2) new warehouse buildings and related onsite and offsite improvements on a site that encompasses 10 parcels totaling approximately 125.22 acres, including the on-site Development Area of 65.81 acres. The site is currently vacant and undeveloped with naturally occurring vegetation which consists of low-lying grasses and shrubs. The development of the Project will provide substantial improvements to Nichols Road, Baker Street, and Pierce Street. This FPP provides measures for fire protection that meet the applicable portions of Riverside County Fire Department (RCFD) Technical Policies and Fire Prevention Standards, applicable portions of the Lake Elsinore Municipal Code, Chapter 15.56 – Fire Code and the Riverside County Municipal Code, Ordinances No. 460 and No. 787-8 and Title 8, Chapter 8.32 – Fire Code, both of which have adopted the 2022 edition of the California Fire Code (CFC), including Chapter 49, California Code of Regulations, Title 24, Part 9, with amendments. Furthermore, the Project will be consistent with applicable portions of Title 15, Chapter 15.04 – Building Code, which adopts the 2022 edition of the California Building Code (CBC), including Chapter 7A based on the 2021 edition of the International Fire Code (IFC) as adopted and amended by RCFD. 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). 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. The purpose of this plan is to generate and memorialize the fire safety requirements and standards of the RCFD/California Department of Forestry and Fire Protection (CAL FIRE), along with Project-specific measures based on the site, its intended use, and its fire environment.

This FPP provides analysis of the 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. Tasks completed in preparation of this FPP include data review, code review, site fire risk analysis, land use plan review, fire behavior modeling, and site-specific recommendations. Requirements and recommendations herein are based on site-specific fire environment analysis and Project characteristics and incorporates area fire planning documents, site risk analysis, and standard principles of fire protection planning.

As determined during the analysis of this site and its fire environment, the Project site, 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 the north and/or east 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 building footprints, 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 this site, including Type 1 – Tilt-Up ignition resistant construction standards, water supply requirements, fire apparatus access, fuel modification and defensible space, interior commercial fire sprinkler systems, and fire response travel times were integrated into the most recent editions of the California Fire and Building code requirements and RCFD guidelines and code amendments based on the results of historical post-fire assessments throughout the State, 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) and Very High Fire Hazard Severity Zone areas that focus on preventing structure ignition from heat, flame, and burning embers. The WUI is a zone of transition between unoccupied land and human development. It is the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland and vegetative fuels[1].

The developed portions of the Project site are proposed for improvements that include the construction of two (2) new warehouse buildings totaling a combined 1,000,451 square feet (SF) of industrial development, along with a total of 466 vehicle parking stalls combined between the two proposed buildings, 31 trailer stalls, 391 trailer parking stalls, and associated onsite fuel modification and defensible space zones on the approximately 125.22-acre Project site, which includes the approximately 65.81-acre development portion of the Project site. The entire site has been designed with fire protection as a key objective. The site improvements are designed to facilitate emergency apparatus and personnel access throughout the site. Driveway and road improvements with fire engine turnouts and turnarounds provide access to within 150 feet of all sides of both buildings. 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 which the Project is recommended to follow per the "Ready, Set, Go!" approach for evacuation that is described below, will assist responding firefighters through prevention, protection and suppression capabilities.

Fire service would be provided by the RCFD, Battalion 2. As discussed further in Section 4 of this FPP, the Project's population and number of calculated emergency calls were evaluated for their potential to impact RCFD's response capabilities from its nearest existing stations. Based on the Project's Economic Benefit Analysis (EBA), the total number of direct, indirect, and induced number of employees is expected to be approximately 748, with the total number of direct employees expected to be approximately 483., however, the number on-site at any given time may likely be half the estimated total employee population of direct, indirect, and induced employees, due to staggered employee shifts and transient use. 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 projected to be 374 persons. Based on the estimated 374 persons, the addition of approximately 30 calls per year to Station 85's call volume is not considered a significant impact given Station 85's annual call volume of approximately 2,202 calls per year (approximately 6 calls per day). As indicated below in Tables 8 and 9 of Section 4 of this FPP, RCFD Stations 85 and 97 substantially conform to the RCFD response time standards, exceeding the 6-minute first-in response time goal for an area designated as suburban, with an estimated total response time to arrive in approximately 8.51 minutes the structures within the Project site. All response calculations are based on an average response speed of 35 mph, consistent with nationally recognized National Fire Protection Association (NFPA) 1710. **Although the closest responding stations exceed the six-minute response time standards for a suburban area, the Project shall provide various Project features and measures that support a finding that response time standards can be mitigated through additional funding that the City has planned and will be supported by this Project and other future projects in the vicinity of the proposed Project.** The Project design features and measures include structures that will be constructed using Type 1 (Fire Resistive) tilt-up construction, which are designed to be highly fire resistant using concrete and other non-combustible construction materials, and the installation of an NFPA 13 commercial interior fire sprinkler system is required based on occupancy type, area, and height, with specific requirements for

[1] U.S. Fire Administration: What is the WUI? https://www.usfa.fema.gov/wui/what-is-the-wui/

hazard classifications and concealed spaces, aiming to provide a high degree of fire protection (2022 CA Fire Code, Section 903 – Automatic Sprinkler Systems). Furthermore, the Project achieves a minimum of 100 feet of on-site and off-site equivalent fuel modification and the Project would enter into a Development agreement with the City and RCFD/CAL FIRE, which the Project would provide additional funding to the City which would go towards the funding of a future fire station closer to the Project site or other infrastructure. Based on the above calculations, the Project's calculated response time from the closest fire stations substantially conform with the response time goals and it's apparent that a new aerial ladder truck will be desirable at some point and would be funded on a fair share basis by all of the projects that occur in the area along with existing populations. **The Project applicant is proposing to pay its required Fire Facility DIF fees (approximately $159,072), fulfilling its requirement to fund its share of improvements and mitigate its impact. Additionally, the Project applicant will enter into a Development Agreement with the City where the applicant proposes to go above and beyond the DIF fee payment and contribute additional funds for fire funding to mitigate the Project's impacts and support local fire improvement efforts as outlined in the Project's Development Agreement**.

As detailed in this FPP, the Project's fire protection systems will include a redundant layering of protection methods that have been proven to reduce overall fire risk. The fire safety measures included herein, both required and recommended, are performance based and site–specific, considering the Project's unique characteristics rather than a prescriptive, one-size-fits-all approach. The fire protection systems are designed to increase building safety, as well as the safety of those occupying the building, 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 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 in the development.

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

Implementation Measures:

1. The proposed Project buildings will be constructed of Type 1, concrete ignition resistant[2] construction materials and include NFPA 13 consistent automatic commercial fire sprinkler systems based on the latest adopted Building and Fire Codes for occupancy types.
2. Fuel Modification will be provided around the perimeter of both structures, as required by RCFD and will be a minimum of 100 feet wide in all directions through onsite Fuel Modification Zones (FMZs) or a combination of on-site and off-site FMZ equivalent areas,
3. Landscape plantings will utilize plants recommended by the RCFD for use in Fuel Modification Zones (See Appendix D).
4. Aerial fire apparatus access roads (i.e., public and private streets) will be provided throughout the warehouse development and will vary in width and configuration, but will all provide at least the minimum required unobstructed travel lanes, lengths, turnouts, turnarounds, width and clearances required by applicable codes. Primary access and internal circulation will comply with the requirements of the RCFD.

[2] 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.

5. Water capacity and delivery will be provided by a reliable water source for operations and during emergencies requiring extended fire flow.
6. 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 implemented by the Project's property owner. Annual maintenance should occur before May 1st of each year and the finished maintenance shall be inspected by RCFD or an approved 3rd party.

1. Maintenance would occur before May 1st of each year (or more as needed), and the property owner shall annually hire a 3rd party, RCFD-approved, FMZ inspector to provide annual certification that the maintenance completed throughout the Project meets the requirements of this FPP.
2. The property owner and/or property management company shall provide informational brochures at time of occupancy to Project employees, which will include an outreach and educational role to ensure fire safety measures detailed in this FPP have been implemented and development-wide "Ready, Set, Go![3]" plans prepared.

Early evacuation for any type of wildfire emergency within the development is the preferred method of providing for occupant and business safety, consistent with the RCFD's current approach for evacuation. As such, the Project will formally adopt, practice, and implement a "Ready, Set, Go!" (Riverside County Fire Department 2023) approach to Project site evacuation. The "Ready, Set, Go!" concept is widely known and encouraged by the state of California and most fire agencies, and is a wildfire preparation plan that encourages proactive steps to stay safe during wildfires by preparing for evacuation, being ready to leave, and leaving early if necessary. The "Ready, Set, Go!" preparation plan includes pre-planning for emergencies, including wildfire emergencies, focusing 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.

This FPP provides a detailed analysis of the Project, the potential risk from wildfire, and potential impacts on the RCFD, as well as analysis on meeting or exceeding the requirements of Riverside County. Further, this FPP provides requirements, recommendations, and measures to reduce the risk and potential impacts to acceptable levels, as determined by the RCFD.

[3] https://www.readyforwildfire.org/ and https://www.rvcfire.org/services/safety-and-preparedness/neighborhood-safety-tips

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1 Introduction

This FPP has been prepared for the proposed Project in Lake Elsinore (City) of Riverside County (County), California (Figure 1, Project Location Map). This FPP evaluates the potential impacts resulting from wildland fire hazards associated with the Project's land uses and identifies measures necessary to adequately mitigate those impacts. Additionally, this plan generates and memorializes the fire safety requirements and standards of the Fire Authority Having Jurisdiction (FAHJ) or the entity responsible for enforcing fire regulations related to planning, construction, and development (2022 Edition of the CA Fire Code), which is the RCFD/CAL FIRE. Requirements, standards, and recommendations are based on Project-specific design features and incorporate input from the Project applicant and the RCFD.

As part of the assessment, this FPP has considered the property location, topography, surrounding combustible vegetation (fuel types), climatic conditions, and fire history for the Project site and the surrounding area. This FPP 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. This FPP 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 FPP:

- 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 areas, 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 Intent

The intent of this FPP is to provide fire planning guidance and requirements for reducing fire risk and demand for fire protection services associated with the Project. To that end, the fire protection "system" detailed in this FPP

includes redundant layering of measures, including pre-planning, fire prevention, fire protection, passive and active suppression, and related measures proven to reduce fire risk. The fire protection system planned for the Project has proven, through real-life wildfire encroachment examples throughout Southern California, to reduce the fire risk associated with this type of industrial development.

1.2 Applicable Codes/Existing Regulations

The FPP demonstrates that the development site would comply with applicable portions of RCFD Technical Policies and Fire Prevention Standards and applicable portions of the Riverside County Municipal Code, Ordinances No. 460 and No. 787-8 and Title 8, Chapter 8.32 – Fire Code, which adopts the 2022 edition of the CFC, including Chapter 49, California Code of Regulations, Title 24, Part 9, with amendments (or then current code at the time of construction). Furthermore, the Project will be consistent with applicable portions of Title 15, Chapter 15.04 – Building Regulations, which adopts the 2022 edition of the California Building Code (CBC), including Chapter 7A based on the 2021 edition of the IFC as adopted and amended by RCFD (or then current code at the time of construction). Additionally, RCFD references Fire Prevention Standards for informational purposes in clarifying and interpreting provisions of the CFC, NFPA and PRC.

Chapter 7A of the CBC addresses structural ignition resistance and reducing ember penetration into structures, a leading cause of structure loss from wildfires (California Building Standards Commission, 2023). Thus, code compliance is an important component of the requirements of the FPP, given the Project's wildland-urban interface (WUI) location and fire hazard severity zone designation. The entire Project site is located within an area considered to be a Local Responsibility Area (LRA) Very High Fire Hazard Severity Zone (VHFHSZ) as designated by the CAL FIRE – Office of the State Fire Marshal (CAL FIRE - OSFM, updated March 2025). The surrounding areas of the Project site are considered to be within a combination of moderate to very high fire hazard severity zone areas, including State Responsibility Area (SRA) high and very high fire hazard severity zones (farther north and east of the Project site), LRA VHFHSZ and non-VHFHSZ (to the south and east), and Federal Responsibility Area (FRA) VHFHSZ (farther north of the Project site), as designated by CAL FIRE and the RCFD (see Figure 3, Fire Hazard Severity Zone Map – updated March 2025). Fire hazard designations are based on topography, vegetation, and weather, among other factors with more hazardous sites, including steep terrain, unmaintained fuels/vegetation, and WUI locations. Projects situated in high and very high FHSZ areas require fire hazard analysis and the application of fire protection measures to create ignition-resistant structures and defensible communities within these WUI locations. VHFHSZ designations do not, in and of themselves, indicate that it is unsafe to build in these areas. It should be noted that CAL FIRE's recent updated LRA FHSZ map Rollout Maps allow the FAHJ – here, RCFD, 120 days to adopt the new maps. The updated maps reflect modern wildfire risks and directly and once fully adopted, new construction must meet the minimum defensible space requirements and WUI fire and building codes (i.e Chapter 7a of the CBC and Chapter 49 of the CFC). As described in this FPP, the Project site 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 CBC (Chapter 7A, Section 701A Scope, Purpose and Application).

1.3 Project Summary

1.3.1 Location

The proposed Project—two new warehouse buildings and related improvements—is located southwest of the intersection of Baker Street and Pierce Street in the City of Lake Elsinore. Regional access to the Project site is provided by Interstate 15 (I-15) located 0.40 miles east of the site. Local access to the site is provided from Baker Street and Pierce Street. The existing site and surrounding areas is shown in Figure 1, *Project Location Map*.

The Project site encompasses 10 parcels totaling approximately 125.22 acres with an approximately 65.81-acre development area. The site is identified by Assessor's Parcel Numbers 378-020-014, -015, -016, -028, -029, -030, -031, -036, -037, -048. The proposed Project would be accessible via five (5) new points of entry. Four (4) driveways will be constructed along Baker Street and one (1) driveway will be along Pierce Street. The Project site is situated within Sections 25, 26, and 36 of Township 5 South, and Range 5 West on the Lake Elsinore Quadrangle United States Geological Survey (USGS), 7.5-minute topographic map.

1.3.2 Existing and Surrounding Land Uses

The site is currently vacant and undeveloped with naturally occurring vegetation which consists of low-lying grassland areas. A single-family residential home was once constructed on the site, however, it was since demolished and only the concrete building pad remains along with a couple trees. Power lines are located along the site frontage along Baker Street. The site is not flat and contains a sloping topography associated with the hills south of the site. There are also several dirt trails located throughout the site that connect to and continue through the adjacent parcels.

The site has a General Plan Land Use designation of Limited Industrial and zoning designation of Limited Manufacturing (M-1) and General Manufacturing (M-2) which are both compatible with the land use. The surrounding land uses include Bake Street followed by vacant and undeveloped lands located to the northeast; a non-conforming residence and institutional facility located to the southeast; vacant and undeveloped lands are located to the southwest and two (2) single-family residential lots are located adjacent to the southwest most corner of the site; and Pierce Street followed by vacant and undeveloped lands are located to the northwest.

1.3.3 Project Description

The proposed Project will consist of two (2) new warehouse buildings totaling a combined 1,000,451 SF. Building 1 will be 212,028 SF, inclusive of 5,000 SF of ground floor office, 5,000 SF of mezzanine, and include 23 dock doors along the southwest side of the building. Building 2 will be 788,423 SF inclusive of 10,000 SF of ground floor office, 10,000 SF of mezzanine, and include 110 dock doors along the northeast side of the building. Building 1 will be located at the northwestern end of the site and Building 2 will be located at the southeastern end of the site (see Figure 2, Proposed Site Plan Map).

The proposed Project will be accessible via four new points of entry. Three driveways will be constructed along Baker Street and one driveway will be along Pierce Street. Building 1 will be accessible via the driveway along Pierce Street and one driveway along Baker Street. Truck access will be via the 53-foot-wide driveway along Baker Street. Building

2 will be accessible via two driveways along Baker Street. Trucks will utilize the northern and southern most 50-foot-wide driveways to access the site. In addition, the two buildings will be accessible via a reciprocal access agreement as the drive aisle behind the rear of Building 2 will extend to the Building 1 site for access to Pierce Street. The reciprocal access agreement is largely intended to provide a secondary point of emergency access for Building 2.

Circulation to and from the site will be from the section of Pierce Street northeast of the site that connects to Nichols Road. Except for by use of emergency vehicles, trips associated with the Project will not come from or leave the site on the section of Pierce Street southwest of the site.

The proposed Project includes a total of 466 vehicle parking stalls combined between the two proposed buildings, 31 trailer stalls, and 391 trailer parking stalls. Building 1's vehicle parking stalls shall be located along the northeastern, northwestern, and southwestern perimeters of the site. Building 1 will also have trailer stalls located opposite the dock doors at the southwestern end of the building. Building 2's vehicle parking stalls shall be located largely to the southwest of the building, and a few stalls will be located northeast of the building. Additionally, Building 2's trailer parking stalls be located to the northwest and northeast of the building. The Project also proposes a trailer parking lot at the southeast most part of the Project site which will allow for additional trailer parking stalls. Loading and unloading activity within the truck court of both buildings will be secured by a gate at all points of entry.

The Project is designed to screen loading and unloading activities away from adjacent residential land uses. Building 1 is designed for the truck court to be screened from the adjacent residences west of the building. Building 2 is designed for loading and unloading activity to be located northeast of the building in order to screen truck activities away from the residentially related land uses southwest of the building. The proposed Project will also include landscaping along Baker Street to screen the Project from the right-of-way. Building 1 will contain 26.45% landscape coverage and Building 2 would contain 27.18% landscape coverage. Additionally, the trailer parking lot would contain 52.34% landscape coverage for a total site landscape coverage of 31%.

The Project is designed to function as a high cube warehouse building. Typical operational characteristics include employees traveling to and from the site, delivery of materials and supplies to the site and truck loading and unloading. The Project is assumed to operate 24/7, however this may shift depending on tenant as hours of operation are unknown.

1.3.3.1 Offsite Improvements

Existing Baker Street is an unimproved dirt road with a 60-foot-wide right-of-way. The Project proposes to dedicate four feet on each side of Baker Street to the ultimate 68 feet right-of-way required by the City of Lake Elsinore's Collector roadway designation and as listed within the City's circulation element. The Project will also be realigning Baker Street for a direct connection and new intersection with Nichols Road, which is discussed below under "Additional Street Improvements". The Baker Street Collector section consists of a six-inch curb and gutter, a five-foot-wide sidewalk within a 10-foot parkway and 22 feet of pavement from centerline to lip of gutter on each side of the street. Baker Street is proposed to be elevated an average of five feet above its existing elevations to support drainage conveyance and flood protection of the public right-of-way. The northeast parkway of Baker Street will slope down from the proposed five-foot sidewalk to daylight within the northerly properties.

The Project proposes to elevate the road surface of Baker Street to support drainage protection and conveyance. Along the northern edge of Baker Street, a graded and landscaped slope will daylight to existing ground within the parcels north of existing Baker Street right-of-way. The proposed slope will provide areas to safely construct storm drain outlets that will convey historical storm flows to existing flow lines and environmentally sensitive areas identified within the Project studies of these properties. The storm outlets will include energy dissipation improvements to control the storm water outlet depth and velocity to mimic existing conditions.

As noted above, the Project proposes to elevate the road surface of Baker Street to support drainage protection and conveyance. Along the northern edge of Baker Street, a graded and landscaped slope will daylight to existing ground within the parcels north of existing Baker Street right-of-way. The proposed slope will provide areas to safely construct storm drain outlets that will convey historical storm flows to existing flow lines and environmentally sensitive areas identified within the Project studies of these properties. The storm outlets will include energy dissipation improvements to control the storm water outlet depth and velocity to mimic existing conditions.

A maintenance access road is proposed along the toe-of-slope for ongoing maintenance of the slope, the associated landscaping, any required fencing, and the outlet structures. Where sensitive environmental areas exist (vernal pools identified within the Project environmental studies), the improvements are proposed to be scaled back to minimize or eliminate impacts in and adjacent to the defined zones. Construction buffers will be implemented to reduce accidental disturbance, and the areas will be clearly delineated and recognizable to construction crews/personnel.

In addition to the Baker Street improvements described above, the Project will also improve Pierce Street and Nichols Road. The Project will realign Baker Street for a direct connection and new intersection with Nichols Road. The intersection design will likely consist of signal pole placement consistent with the ultimate build-out of Nichols Road (Urban Arterial Highway – 120' right-of-way). Nichols Road improvements will likely consist of an interim intersection with appropriate pavement tapering to the east and west leading away from the new intersection with Baker Street. Minor roadway resurfacing may be required along the existing Nichols Road segment between the Baker Street intersection and the Collier Avenue intersection. The Nichols and Collier intersection may also include minor surface improvements, revised lane striping and potential traffic control/signage improvements.

Existing Pierce Street varies in right-of-way width along the Project's frontage. The Project proposes to construct Pierce Street to its ultimate 60-foot width between Baker Street and Hoff Avenue. The ultimate street section will include a six-inch curb, standard gutter, five-foot-wide sidewalk within an overall 10-foot parkway and 18 feet of pavement from centerline to lip-of-gutter on each side of the street. Other Project-related street improvements beyond the Project frontage will be assessed with the traffic impact analysis.

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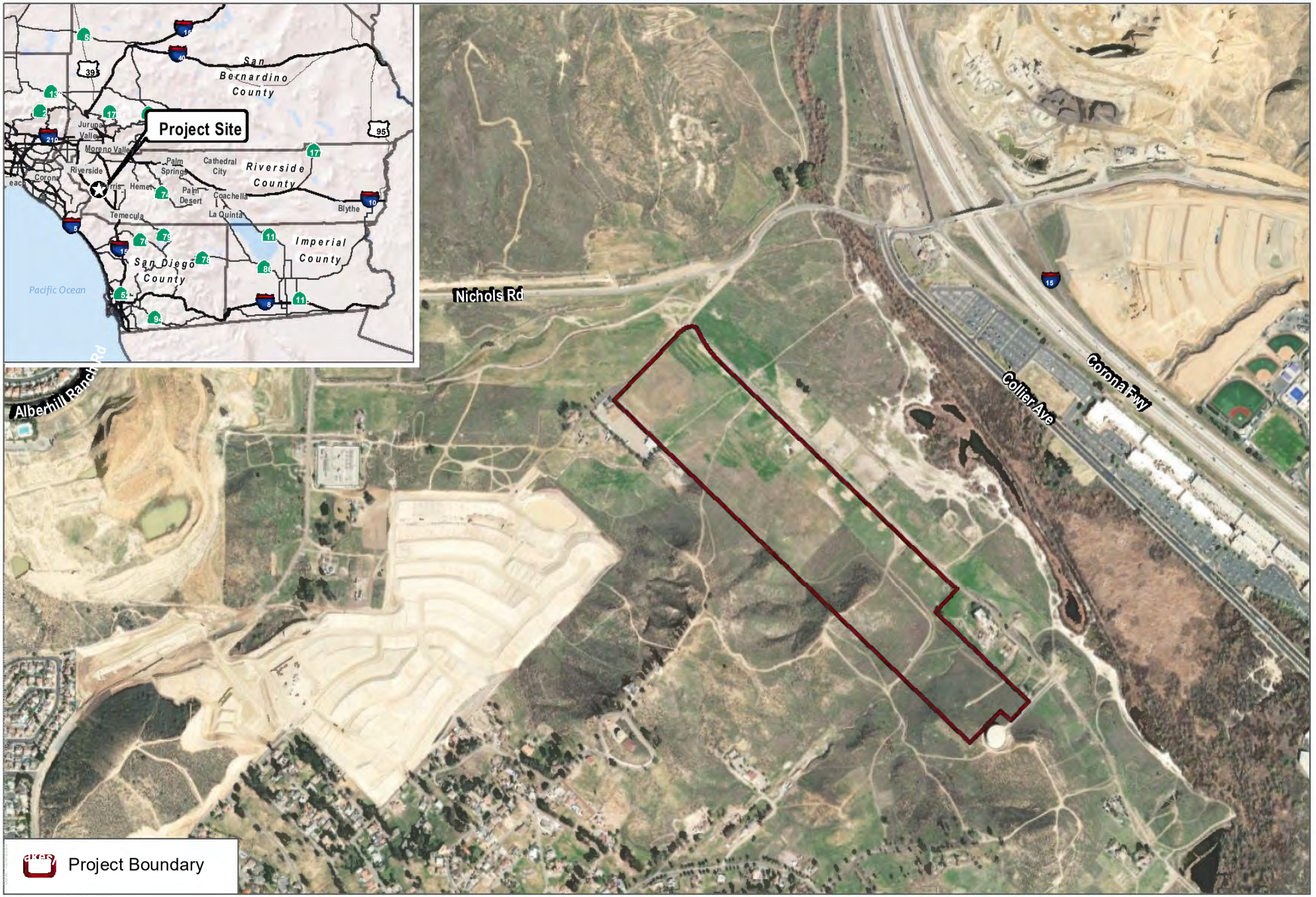

SOURCE: AERIAL-ESRI MAPPING SERVICE 2023

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0 500 1,000 Feet

FIGURE 1

Project Location Map

Baker Industrial Project Fire Protection Plan

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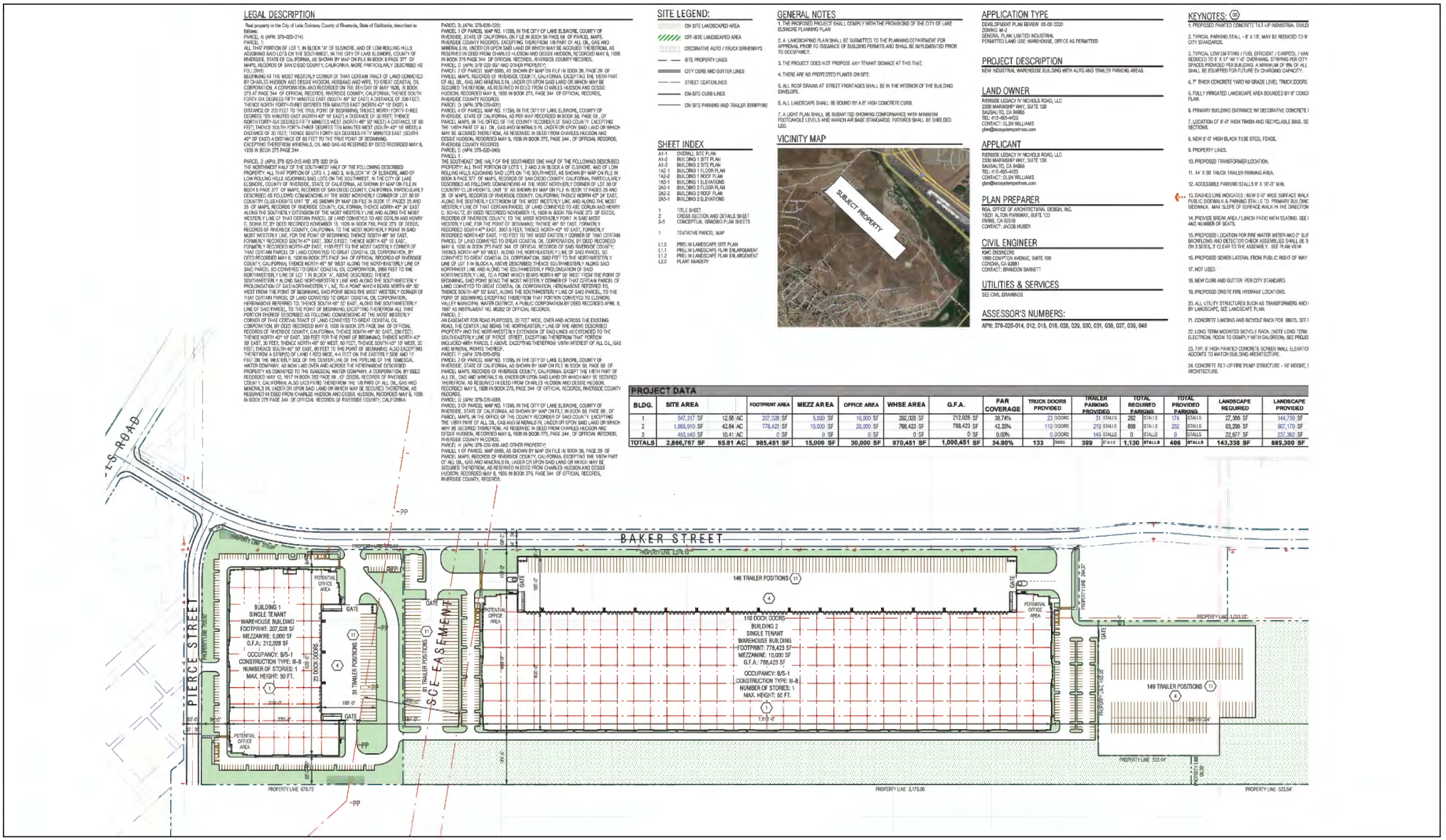

PROJECT DATA

BLDG.	SITE AREA		FOOTPRINT AREA	MEZZ AREA	OFFICE AREA	WHSE AREA	G.F.A.	FAR COVERAGE	TRUCK DOORS PROVIDED	TRAILER PARKING PROVIDED	TOTAL REQUIRED PARKING	TOTAL PROVIDED PARKING	LANDSCAPE REQUIRED	LANDSCAPE PROVIDED
1	547,317 SF	12.56 AC	207,028 SF	5,000 SF	10,000 SF	202,028 SF	212,028 SF	38.74%	23 DOORS	31 STALLS	262 STALLS	174 STALLS	27,366 SF	144,759 SF
2	1,865,910 SF	42.84 AC	778,423 SF	10,000 SF	20,000 SF	768,423 SF	788,423 SF	42.29%	110 DOORS	219 STALLS	868 STALLS	232 STALLS	93,296 SF	907,179 SF
3	453,540 SF	10.41 AC	0 SF	0 SF	0 SF	0 SF	0 SF	0.00%	0 DOORS	149 STALLS	0 STALLS	0 STALLS	22,677 SF	237,362 SF
TOTALS	2,866,767 SF	65.81 AC	985,451 SF	15,000 SF	30,000 SF	970,451 SF	1,000,451 SF	34.99%	133 DOORS	399 STALLS	1,130 STALLS	406 STALLS	143,338 SF	889,300 SF

SOURCE: RGA OFFICE OF ARCHTECTURAL DESIGN 2023

DUDEK

FIGURE 2
Proposed Site Plan
Baker Industrial Project Fire Protection Plan

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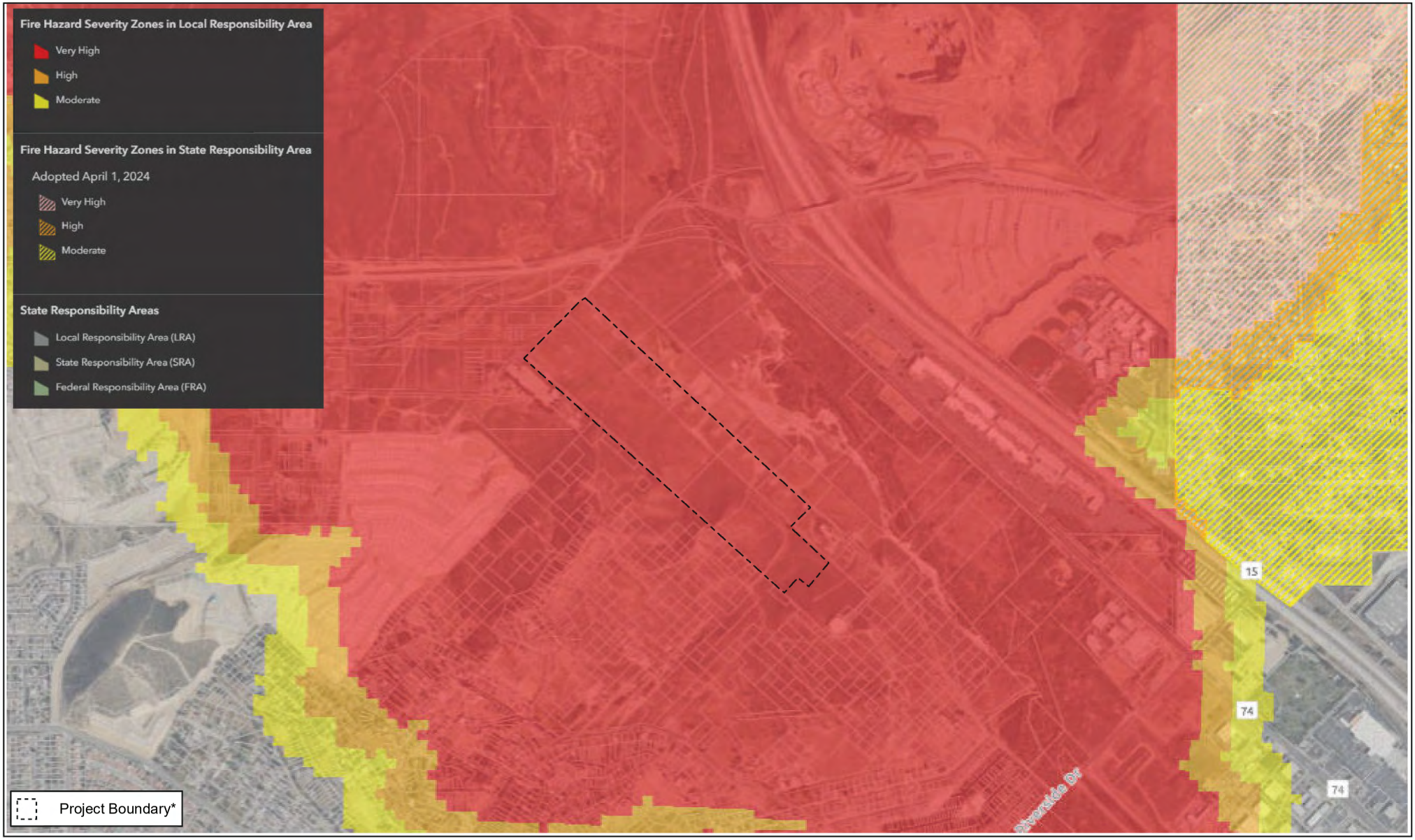

SOURCE:CAL FIRE - Office of the State Fire Marshal updated LRA FHSZ Viewer, Phase 4 rollout, March 2025
*Project Boundary not to scale and for illustrative purposes only.

DUDEK

0 500 1,000 Feet

FIGURE 3

Fire Hazard Severity Zones

Fire Protection Plan for the Baker Industrial Project

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2 Project Site Risk Analysis

2.1 Field Assessment

After review of available digital development area information, including topography, vegetation types, fire history, and the Project's development footprint, a Dudek Fire Protection Planner conducted a field assessment of the Baker Industrial Development site on September 22, 2023 in order to confirm/acquire Project site information, document existing conditions, and to determine potential actions for addressing the protection of the proposed structures. While onsite, 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.
- Off-site, adjacent property fuels and topography conditions.
- Surrounding land use confirmations.
- Necessary fire behavior modeling data collection.
- Ingress/egress documentation.
- Nearby Fire Station reconnaissance.

Project development area photographs were collected (refer to Appendix A, Representative Site Photographs), and fuel conditions were mapped using aerial images. Field observations were utilized to augment existing Project site data in generating the fire behavior models and formulating the recommendations detailed in this FPP report.

2.2 Project Site Characteristics and Fire Environment

Fire environments are dynamic systems and include many types of environmental factors and 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 structures, 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 perimeter of the Project site.

The following sections discuss the site characteristics, local climate, and fire history within and adjacent to the property at a regional scale. The Project site is similar concerning topography vegetation cover, and proximity to existing

residential areas, available access to and from the site, and planned uses. The intent of evaluating conditions at this macro-scale is providing 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 spread down-slope in the absence of wind. Terrain that forms a funneling effect, such as chimneys, chutes, or saddles on the landscape can result in especially intense fire behavior. Conversely, flat terrain tends to have little effect on fire spread, resulting in fires that are driven by vegetation and wind. The Project site is currently undeveloped with varying topography from slightly hilly to flat, sloping from southwest to northeast. The onsite portion of the Project site (industrial component) consist of several small hills and ridges sloping from the southwest down to the existing dirt road of Baker Street, with the site being flatter on the northern end near the Baker Street/Pierce Street intersection. On the other of Baker Street, the landscape is flat with a very gradual change in elevation to the northeast towards Alberhill Creek/Collier Marsh. Elevations at the Project site range from approximately 1,400 feet above mean sea level (AMSL) at the southwestern boundary of the development footprint to 1,250 feet AMSL at the northeastern limits of the proposed Regional Conservation Authority (RCA) Conserved Lands.

2.2.2 Climate

Throughout southern California, and specifically at the Project site, climate has a large influence on fire risk. The climate of Lake Elsinore in Riverside County is typical of a Mediterranean area, with warm, dry summers and cool, wet winters. Average high temperatures (average annuals) range from approximately 65°F and reach up to approximately 87°F, with temperatures rarely below 34°F or above 95°F. Precipitation has been averaging approximately 11 inches and typically occurs between November and March. The average hourly wind speed ranges between 5 mph and 7 mph. The prevailing wind direction is an on-shore flow from the west (Weather Spark, 2023).

From a regional perspective, the fire risk in southern California can be divided into three distinct “seasons” (Nichols et al. 2011, Baltar et al 2014). The first season, the most active season and covering the summer months, extends from late May to late September. This is followed by an intense fall season characterized by fewer but larger fires. This season begins in late September and continues until early November. The remaining months, November to late May cover the mostly dormant, winter season. Mensing et al. (1999) and Keeley and Zedler (2009) found that large fires in the region consistently occur at the end of wet periods and the beginning of droughts. Fires can be a significant issue during summer and fall, before the rainy period, especially during dry Santa Ana wind events. 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 through May) and summer (June through September) events. Santa Ana winds may gust up to 75 miles per hour (mph) or higher. This phenomenon would markedly increase 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.

The prevailing wind pattern is from the west (on-shore), but the presence of the Pacific Ocean causes a diurnal wind pattern known as the land/sea breeze system. During the day, winds are from the west–southwest (sea), and at night winds are from the northeast (land). The highest wind velocities are associated with downslope, canyon, and Santa Ana winds which are located further east of the Project site.

2.2.3 Vegetation

2.2.3.1 Fuels (Vegetation)

Nine distinct vegetation/land use types were mapped by Glenn Lukos Associates for the Project site, including Akali Grassland, Akali Playa, Disturbed/Developed, Open Water, Riversidean Sage Scrub, Semi-Natural Herbaceous Grassland, Disturbed Semi-Natural Herbaceous Grassland, Southern Willow Scrub and Vernal Pool (Biological Technical Report by Glenn Lukos Associates Inc., October 2023). Table 1 provides a summary of the vegetation types and their corresponding acreage. While the Project is only 65.81 acres of development area, the vegetation mapping included street improvements, a city maintenance area, and RCA conserved lands to the northeast, leading to a total area of approximately 124.60 acres.

Extensive vegetation type mapping is useful for fire planning because it enables each vegetation community to be assigned a fuel model, which is used in a software program to predict fire behavior characteristics, as discussed in Section 3.1, Fire Behavior Modeling. The area proposed for development and within the Project grading limits will be converted to ignition resistant landscapes, roads, structures, and landscaped vegetation following Project completion. Vegetative fuels within proposed fuel modification zones will be removed or structurally modified as a result of development, altering their current structure and species composition, irrigation and maintenance levels, and resulting in a perimeter wildfire buffer.

Table 1. Existing Fuel Model Characteristics

Vegetation/Land Use Type	Total (acres)
Alkali Grassland	4.06
Alkali Playa	0.73
Disturbed/Developed	18.34
Open Water	0.09
Riversidean Sage Scrub	3.01
Semi-Natural Herbaceous Grassland	69.71
Disturbed Semi-Natural Herbaceous Grassland	26.27
Southern Willow Riparian Scrub	1.14
Vernal Pool	1.25
Total	**124.60**

2.2.3.2 Vegetation Fuel 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. The corresponding fuel models for each of these

vegetation types are designed to capture these differences. Vegetation distribution throughout the Project site varies by location and topography. Areas where the development footprint is located are primarily low growing ruderal/grazed lands and non-native grassland vegetation.

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. In summary, 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 primarily be paved loading docks, parking stalls, and driveways. Vegetated areas in the FMZ will consist of irrigated and maintained landscapes, 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 low- to moderate-load non-native grassland fuels intermixed with sage scrub 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 spaces.

Fire history represented in this FPP uses the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program (FRAP) database. FRAP summarizes fire perimeter data dating to the early 1900s, but is incomplete due to the fact that it only includes fires over 10 acres in size and has incomplete perimeter data, especially before the mid-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.

According to available data from the CAL FIRE in the FRAP database, there have been 88 fires that have burned within 5 miles of the site since the beginning of the historical fire data record, including one fire on record that has burned on the site, with that being an unnamed fire in 1968 which burned approximately 233 onsite acres. Recorded wildfires within 5 miles range from approximately 10 acres up to approximately 31,447 acres (1980 Turner Fire) and the average fire size is approximately 2,672 acres. The 2019 Toro Fire (approximately 88 acres) is the most recent fire and the most recent significant fire was the 2018 Holy Fire (approximately 23,025 acres). RCFD may have data regarding smaller fires (other fires less than 10 acres) that have occurred on-site that have not been included herein. Fire history for the general vicinity of the Project site is illustrated in Appendix B, *Project Vicinity Fire History Map*.

Based on an analysis of the fire history data set, specifically, the years in which the fires burned, the average interval between wildfires within 5 miles of the site was calculated to be approximately every one to two years with intervals

ranging between 0 (multiple fires in the same year) to 15 years. It should be noted that the longer end of this interval is from the first half of the 20th century where the database is incomplete. Based on the analysis, it is expected that there will be wildland fires within 5 miles of the site at least every 15 years and on average, every one or two years, as observed in the fire history record. Based on fire history, wildfire risk for the site is associated primarily with a Santa Ana wind driven wildfire burning or spotting on-site from the east/northeast/southeast.

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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 6.0 (Andrews, Bevins, and Seli 2008) to analyze potential fire behavior around the perimeter of the Project development area, with assumptions made for the pre- and post-Project slope and fuel conditions. As is customary for this type of analysis, five scenarios were evaluated, including two summer, onshore weather condition (north/northwest and west of the Project site) and three extreme fall, offshore weather condition (north/northeast, east, and south of the Project site). Results are provided below and a more detailed presentation of the BehavePlus analysis, including fuel moisture and weather input variables, is provided in Appendix C, *Fire Behavior Modeling Summary Analysis*.

3.2 Fire Behavior Modeling Analysis

An analysis utilizing the BehavePlus software package was conducted to evaluate fire behavior variables and to objectively predict flame lengths, intensities, and spread rates for five modeling scenarios. These fire scenarios incorporated observed fuel types representing the dominant on-site and off-site vegetation on vacant, undeveloped land adjacent to the proposed development area, in addition to slope gradients, and wind and fuel moisture values derived from the closest Remote Automated Weather Station (RAWS) weather data sets (El Cariso Fire Station) for both the 50th percentile weather (summer, on-shore winds) and the 97th percentile weather (fall, off-shore winds). Modeling scenario locations were selected to better understand different fire behavior that may be experienced on or adjacent to the Project site.

To support the fire behavior modeling efforts conducted for this FPP, the different vegetation types observed within the Project areas and adjacent to the Project site were classified into the aforementioned numeric fuel models. As is customary for this type of analysis, the terrain and fuels within and adjacent to the Project area were used for determining flame lengths and fire spread. It is these fuels that would have the potential to affect the Project's structures from a radiant and convective heat perspective as well as from direct flame impingement. Fuel beds, including non-native grasslands with sparce areas of shrubs, are adjacent to the proposed Project development site. These fuel types can produce flying embers that may affect the Project, but defenses will have been built into the structures to prevent ember penetration. Table 2 provides a description of the five fuel models observed in the vicinity of the site that were subsequently used in the analysis for this Project. Modeled areas include low-load non-native grassland ground fuels (Fuel Model: Gr2) found throughout and adjacent to the Project site, as well as low-to- moderate-load shrubs intermixed with the non-native grasses (Fuel Models: Gs1 and Gs2). A small riparian area is located north and east of the Project site and is represented by Fuel Model Sh4. A total of five fire modeling scenarios were completed for the site. These sites were selected based on the possible likelihood of fire approaching from these directions during a Santa Ana wind-driven fire event (fire scenarios 2, 3, and 4) and an on-shore weather pattern (fire scenarios 1 and 5). Dudek also conducted modeling of the site for post-Fuel Modification Zones' (FMZ) recommendations for this Project (Refer to Table 2 for post-FMZ fuel model descriptions). Fuel modification includes establishment of irrigated/drought tolerant landscapes and hardscape areas on the periphery of the Industrial buildings as well as interior landscape requirements. For modeling the post-FMZ treatment

condition, fuel model assignments were re-classified as non-burnable for the non-combustible parking areas and Zone 0 areas, and for FMZ A (Fuel Model Gr1) as applicable.

Table 2. Fuel Models Used for Fire Behavior Modeling

Fuel Model	Description	Location of Fuel Models	Fuel Bed Depth (Feet)
Existing Conditions			
Gr2	Low-load, dry climate grasses	Represented throughout and in the adjacent areas surrounding the Project area.	<1.0 ft.
Gs1	Low-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the Project area.	<1.0 ft.
Gs2	Moderate-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the Project area.	<3.0 ft.
Sh2	Moderate-load dry climate shrub	Represents shrubs adjacent to Alberhill Creek east of the Project	<3.0 ft.
Sh4	Low-load, humid climate timber-shrub	Represents shrubs within and adjacent to Alberhill Creek.	<3.0 ft
Post-Development Conditions			
NB1	Non-burnable	Non-combustible parking lot areas and Zone 0	0 ft.
Gr1	Sparse, Sparse Load, Dry Climate Grass	Fuel Modification Zone A – Irrigated and drought tolerant landscape areas	>1.0 ft.

Note:

1. Listed fuel bed depths are a reflection of the fuel models that best depict the vegetation in and around the Project site and not an exact measure of local vegetation (Anderson 1982; Scott & Burgan 2005).

The results of fire behavior modeling analysis for pre- and post-Project conditions are presented in Table 2. Identification of modeling run (fire scenarios) locations is presented graphically in Figure 4, *BehavePlus Fire Behavior Analysis Map*.

3.3 Fire Behavior Modeling Efforts

As mentioned, the BehavePlus fire behavior modeling software package was utilized in evaluating anticipated fire behavior adjacent to the proposed Project site. Five focused analyses were completed for both the existing Project site conditions and the post Project conditions, each assuming worst-case fire weather conditions for a fire approaching the Project site from the northwest, north/northeast, east, southeast, and west/southwest. The results of the modeling effort included anticipated values for surface fires flame length (feet), rate of spread (mph), fireline intensity (Btu/ft/s), and spotting distance (miles). The aforementioned fire behavior variables are an important component in understanding fire risk and fire agency response capabilities. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames (Andrews, Bevins, and Seli 2008). Fireline intensity is a measure of heat output from the flaming front, which affects the potential for a surface fire to transition to a crown fire. Fire spread rate represents the speed at which the fire progresses through surface fuels and is another important variable in the success of initial attack and fire suppression efforts (Rothermel and Rinehart 1983). Spotting distance is the distance a firebrand or ember can travel down wind and ignite receptive fuel beds. Five fire modeling scenario locations were selected to better understand the different fire behavior that may be experienced on or adjacent to the site based on slope and fuel conditions; these five fire scenarios are explained in more detail below:

Fire Scenario Locations and Descriptions:

- **Scenario 1:** A summer, on-shore fire (50th percentile weather condition) burning in low-load grass dominated vegetation with sparce shrubs located north/northwest of the Project site. The terrain is flat (approximately 5% slope) with potential ignition sources from a car fire along Nichols Road or a wildland fire north/northwest of the property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low- to- moderate intensity before reaching the developed portion of the Project site.
- **Scenario 2:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs or through a riparian area located north/northeast of the Project site. The terrain is flat (approximately 2% slope) with potential ignition sources from a car fire originating along Interstate 15 or Nichols Road or wildland fire from the east/northeast of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low- to- moderate intensity before reaching the developed portion of the Project site.
- **Scenario 3:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs or through a riparian area located east of the Project site. The terrain is relatively flat (approximately 6% slope) with potential ignition sources from a structure fire originating in the commercial outlet development area or a car fire originating along Interstate 15 or parking lot area of the outlets east of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low- to- moderate intensity before reaching the developed portion of the Project site.
- **Scenario 4:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs south of the Project site. The terrain is moderately sloped (up to an approximately 13% slope) with potential ignition sources from a car fire or wildland fire from south of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low- to- moderate intensity before reaching the developed portion of the Project site.
- **Scenario 5:** A summer, on-shore fire (50th percentile weather condition) burning in low-load grass dominated vegetation with sparce shrubs located west of the Project site. The terrain is slightly sloped (ranging between approximately 5% and 15% slope) with potential ignition sources from a structure or car fire originating in the residential communities to the west or a wildland fire west/southwest of the property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low- to- moderate intensity before reaching the developed portion of the Project site.

3.4 Fire Behavior Modeling Results

The results presented in Tables 3 and 4 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. 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 will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

As presented in Table 3, wildfire behavior approaching the Project site is expected to be primarily of low to moderate intensity throughout the non-maintained surface grass dominated fuels around the perimeter areas. Worst-case fire behavior is expected in untreated, surface grass vegetation under peak weather conditions (represented by Fall Weather, Scenario 2). The fire is anticipated to be a wind-driven fire from the north/northeast during the fall. Under such conditions, expected surface flame length is expected to be significantly lower in the areas where fuel modification occurs, with flames lengths reaching approximately 18 feet with wind speeds of 50+ mph. Under this scenario, fireline intensities reach 3,037 BTU/feet/second with moderate spread rates of 6.2 mph and could have a spotting distance up to 1.3 miles away.

The wildfire behavior in adjacent non-maintained grasslands (Gr2 fuel models), being fanned by 15 mph sustained onshore winds burning from the west/northwest and pushed by ocean breezes typically exhibit less severe fire behavior due to lower wind speeds and higher humidity. Under typical onshore weather conditions, a low-load grass/grass-shrub vegetation fire could have flame lengths between approximately 4 feet and 6 feet in height and spread rates between 0.3 and 0.8 mph. Spotting distances, where airborne embers can ignite new fires downwind of the initial fire, range from 0.2 to 0.3 miles.

As depicted in Table 4, the FMZ areas experience a significant reduction in flame length and intensity. The 14.0- to 23.9-foot flame lengths predicted for non-maintained grassland habitats during pre-treatment modeling for fire scenarios 2, 3, and 4 are reduced to approximately 4 feet by the roads and inner portions of the FMZ (Zone A) are reached, with low fire intensity and spotting distances due to the higher live and dead fuel moisture contents. These reductions in flame lengths and intensities are expected to occur within the 100 feet of fuel modification that is integrated into the Project design.

Table 3: RAWS BehavePlus Fire Behavior Model Results – Existing Conditions

Fire Scenario	Flame Length[1] (feet)	Spread Rate[1] (mph[2])	Fireline Intensity[1] (Btu/ft./sec)	Spotting Distance[1] (Miles)
Scenario 1: 5% slope, Summer on-shore wind from the NW, 15 mph sustained winds (Current conditions)				
Low-load grasses (Gr2)	6.1'	0.8	289	0.3
Low-load grass-shrub (Gs1)	4.4'	0.3	144	0.2
Scenario 2: 2% slope, Fall, Off-shore wind from the N/NE, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.5' (18.0')[3]	1.9 (6.2)	944 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	416 (1,763)	0.3 (1.1)
Low-load, Riparian areas (Sh4)	12.5' (23.9')	1.0 (4.2)	1,382 (5,625)	0.5 (1.6)
Scenario 3: 6% slope, Fall, Off-shore wind from the E, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.5' (18.0')[3]	1.9 (6.2)	943 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	416 (1,763)	0.3 (1.1)
Moderate-load, shrub (Sh2)	8.4' (15.9')	0.2 (1.0)	586 (2,332)	0.4 (1.1)
Low-load, Riparian areas (Sh4)	12.5' (23.9')	1.0 (4.2)	1,381 (5,624)	0.5 (1.6)
Scenario 4: 13% slope, Fall, Off-shore wind from the S, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.4' (18.0')[3]	1.9 (6.2)	930 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	410 (1,763)	0.3 (1.1)
Scenario 5: 5% slope, Summer, On-shore wind from the W/SW, 12 mph sustained winds (Current conditions)				
Low-load grasses (Gr2)	6.1'	0.8	290	0.3
Low-load grass-shrub (Gs1)	4.4'	0.3	145	0.2

Table 4: RAWS BehavePlus Fire Behavior Model Results – Post Project Conditions

Fire Scenario	Flame Length[1] (feet)	Spread Rate[1] (mph[2])	Fireline Intensity[1] (Btu/ft./sec)	Spotting Distance[1] (Miles)
Scenario 1: 5% slope, Summer on-shore wind from the NW, 15 mph sustained winds (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	2.1'	0.2	27	0.1
Scenario 2: 2% slope, Fall, Off-shore wind from the N/NE, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')[3]	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 3: 6% slope, Fall, Off-shore wind from the E, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')[3]	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 4: 13% slope, Fall, Off-shore wind from the S, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')[3]	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 5: 5% slope, Summer, On-shore wind from the W/SW, 12 mph sustained winds (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	2.1'	0.2	27	0.1

Note:

1. Wind-driven surface fire.
2. MPH=miles per hour.
3. Flame length, spread rate, and spotting distance from a wind driven surface fire; it should be noted that the wind mph in parenthesis represent peak gusts of 50 mph.

It should be noted that the results presented in Tables 3 and 4 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. 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.

The following describes the fire behavior variables (Heisch and Andrews, December 2010) as presented in Tables 3 and 4:

Surface Fire:

- Flame Length (feet): The flame length of a spreading surface fire within the flaming front is measured from midway in the active flaming combustion zone to the average tip of the flames.
- Fireline Intensity (Btu/ft/s): Fireline intensity is the heat energy release per unit time from a one-foot wide section of the fuel bed extending from the front to the rear of the flaming zone. Fireline intensity is a function of rate of spread and heat per unit area, and is directly related to flame length. Fireline intensity and the flame length are related to the heat felt by a person standing next to the flames.
- Surface Rate of Spread (mph): Surface rate of spread is the "speed" the fire travels through the surface fuels. Surface fuels include the litter, grass, brush and other dead and live vegetation within about 6 feet off the ground.

The information in Table 5 presents an interpretation of the outputs for five fire behavior variables as related to fire suppression efforts. The results of fire behavior modeling efforts are presented in Tables 3 and 4. Identification of modeling run locations is presented graphically below in Figure 4.

Table 5: Fire Suppression Interpretation

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

3.5 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 intermixed with low-lying shrub vegetation, 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 western Riverside County WUI areas such as Lake Elsinore, and the region's 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 wind-driven fire from the north/northeast and/or east moving through the natural vegetation found on the adjacent lands.

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. The Project will implement the latest fire protection measures, including fuel modification extending from the structures to the perimeter edges of the development.

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Table 1. Existing Fuel Model Characteristics

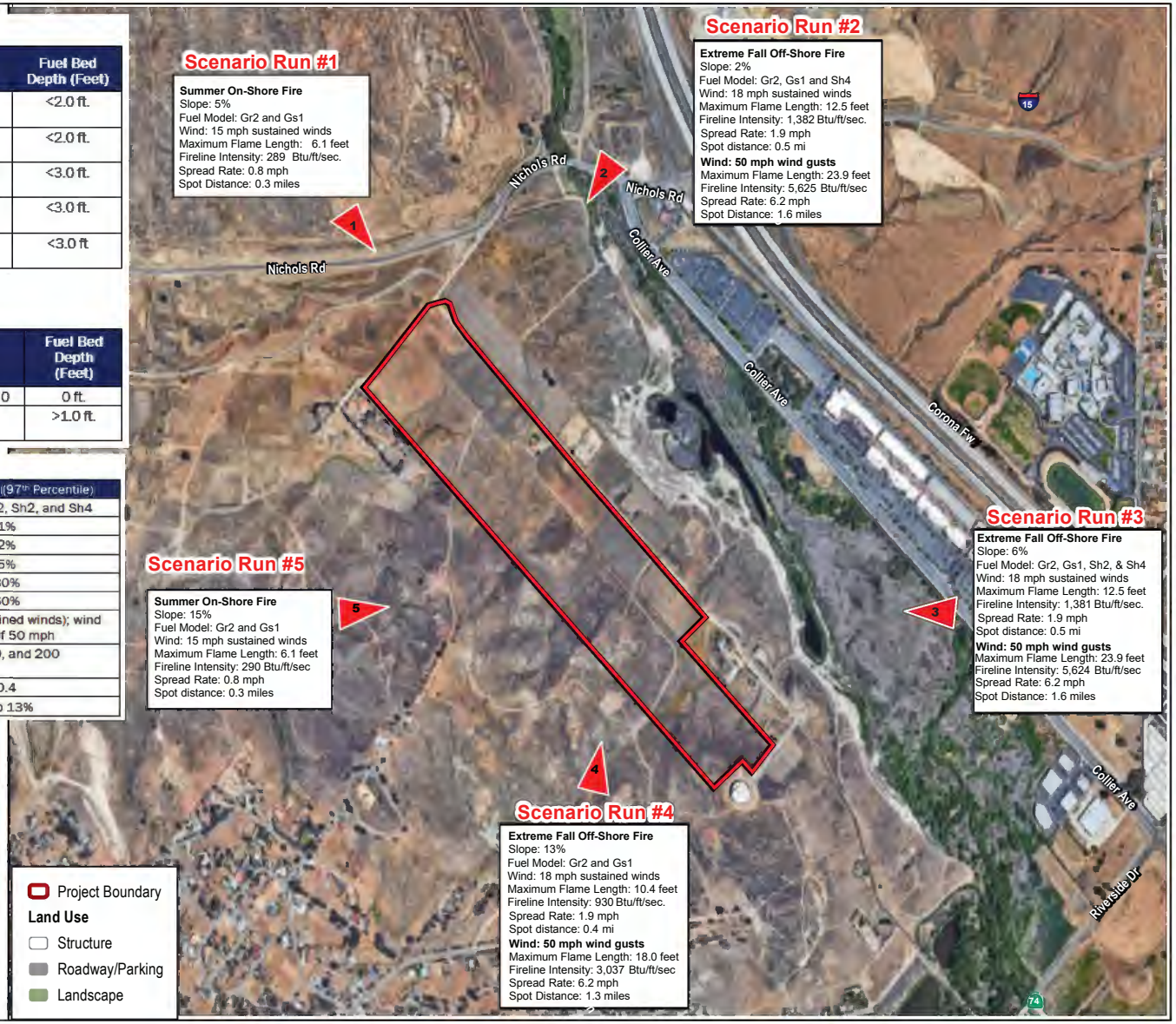
Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
Gr2	Low-load, dry climate grasses	Represented throughout and in the adjacent areas surrounding the project area.	<2.0 ft.
Gs1	Low-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the project area.	<2.0 ft.
Gs2	Moderate-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the project area.	<3.0 ft.
Sh2	Moderate-load dry climate shrub	Represents shrubs adjacent to Alberhill Creek east of the Project	<3.0 ft.
Sh4	Low-load, humid climate timber-shrub	Represents shrubs within and adjacent to Alberhill Creek.	<3.0 ft

Table 2. Post-development Fuel Model Characteristics

Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
NB1	Non-burnable	Non-combustible parking lot areas and Zone 0	0 ft.
Gr1	Sparse, Sparse Load, Dry Climate Grass	Fuel Modification Zone A – Irrigated and drought tolerant landscape areas	>1.0 ft.

Table 3: Variables Used for Fire Behavior Modeling

Model Variable	Summer Weather (50th Percentile)	Peak Weather (97th Percentile)
Fuel Models	Gr2, Gs1, and Gs2	Gr2, Gs1, Gs2, Sh2, and Sh4
1 h fuel moisture	5%	1%
10 h fuel moisture	6%	2%
100 h fuel moisture	9%	5%
Live herbaceous moisture	39%	30%
Live woody moisture	77%	60%
20 ft. wind speed	15 mph (sustained winds)	18 mph (sustained winds); wind gusts of 50 mph
Wind Directions from north (degrees)	280 and 310	45, 100, and 200
Wind adjustment factor	0.4	0.4
Slope (uphill)	5 to 15%	2 to 13%



SOURCE: AERIAL-ESRI IMAGERY SERVICE 2023

DUDEK 0 500 1,000 Feet

FIGURE 4

BehavePlus Analysis

Baker Industrial Project Fire Protection Plan

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4 Emergency Response and Service

The following sections analyze the Project in terms of current RCFD Fire Service capabilities and resources to provide Fire Protection and Emergency Services. The analysis that follows examines the ability of the existing nearby RCFD fire stations to adequately serve the proposed Project site. Response times were evaluated using Project build-out conditions. It was assumed that the shortest access route to the two industrial building structures would be utilized.

4.1 Emergency Response Fire Facilities

The Project is located within the City of Lake Elsinore and the RCFD jurisdictional response area. RCFD, in cooperation with CAL FIRE, provides Fire and Emergency Services to residents of unincorporated areas of Riverside County and to its Partner Cities, including Lake Elsinore. Regionally, RCFD provides fire, emergency medical, and rescue services from 93 stations (RCFD 2023 Statistics/Annual Report[4]). The Department serves over 2.5 million residents throughout 20 cities and all unincorporated portions of Riverside County (RCFD Service Area, 2025). Figure 5 illustrates the station locations and Table 6 provides a summary of the location, equipment, and staffing levels for the three closest existing RCFD Stations. The Project site lies within Battalion 2 response area. RCFD Fire Stations 85 and 97 are the two closest fire stations to the Project site with each being approximately 3.3 miles from the Project site, and each of these stations could provide the initial response to the Project site, with Station 97 housing the closest aerial ladder truck. That being said, initial responses are determined by Primary Responsibility Areas, response drive times, and the closest available equipment at the time of an incident, not by the closest aerial apparatus.

RCFD Station 97, which is located at 41725 Rosetta Canyon Dr, Lake Elsinore, California. Station 97 is approximately the same distance to the northeast entrance as RCFD Station 85 is to the northwest entrance. Station 97 is staffed 24/7 by a four-person Truck Company with a Captain, an Engineer, and two firefighter-paramedics, and is equipped with a Battalion vehicle (Battalion Chief 2), one quint aerial ladder truck, and a squad vehicle. Because Station 97 offers the closest aerial resources to the Project, Station 97 would likely provide the initial response to the Project site.

RCFD Station No. 85, located at 29405 Grand Ave, Lake Elsinore, is the next closest RCFD station to the northwest entrance to the development. Station 85 is approximately the same distance to the northwest entrance as RCFD Station 97 is to the northeast entrance. RCFD Station 85 is staffed 24/7 by a three-person Engine Company consisting of a Captain, an engineer, and a firefighter, and is equipped with a Type 1 Engine, as well as a utility vehicle.

The second closest station with an aerial fire apparatus is RCFD Station 76 which is located at 29950 Menifee Rd, Menifee, California. Station 76 is staffed 24/7 by a four-person Truck Company with a Captain, an Engineer, and two firefighter-paramedics and a three-person Engine Company with a Captain, an Engineer, and a firefighter-paramedic, and is equipped with an aerial ladder truck and a Type 1 engine.

[4] Riverside County Fire Department 2023 Statistics/Annual Report - https://www.rvcfire.org/pdf/annualreport/2023%20STATS.pdf?v=4828

Table 6. Closest RCFD/CAL FIRE Responding Stations Summary

Station	Location	Equipment	Staffing*
RCFD Station 85	29405 Grand Ave, Lake Elsinore, CA	(1) Type 1 Engine	3 on-duty personnel
RCFD Station 97	41725 Rosetta Canyon Dr, Lake Elsinore, CA	(1) Quint Aerial Truck	4 on-duty personnel
RCFD Station 76	29950 Menifee Rd, Menifee, CA	(1) Aerial Truck (1) Type 1 Engine (1) Squad (1) Urban Search & Rescue Vehicle	7 on-duty personnel (Staffing Type 1 Engine and Aerial Truck)

Source: * Staffing levels and equipment from Riverside County Fire Department, phone conversation with staff from Station 85, November 2023.

Within the area's emergency services system, fire and emergency medical services are also provided by other agencies. 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. There are also mutual aid agreements in place with neighboring fire agencies and typically include interdependencies that exist among the region's fire protection agencies for structural and medical responses but are primarily associated with the peripheral "edges" of each agency's boundary.

4.1.1 Emergency Response Travel Time Coverage

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, recommended response time standards based on four Board Approved Land Use Classifications. These response time standards and Land Use Classifications were recently updated in 2022/2023 with the following response times based on four Board Approved Land Use Classifications as described in Table 7:

Table 7. Land Use Classification Information with Staffing/Time Response Standards

Land Classification	Population Density	Fire Staffing Characteristics	Code 3 Medical Emergency First Due Unit - Response Time	Code 2 Medical Emergency First Due Unit - Response Time
URBAN	>1,000 persons per square mile	Land use includes residential, commercial and industrial complexes.	4:00 minutes, 90% of the time	8:00 minutes, 90% of the time
SUBURBAN	500 TO 1,000 persons per square mile	Land use includes residential, light commercial, and light industrial.	6:00 minutes, 90% of the time	10:00 minutes, 90% of the time
RURAL	100 to 500 per square mile	Residential and agricultural land uses.	8:00 minutes, 90% of the time	12:00 minutes, 90% of the time
OUTLYING	<100 per square mile	Residential and open space land uses.	15:00 minutes, 90% of the time	20:00 minutes, 90% of the time

Source: Riverside County Fire Department FY 17-18 (updated in 22-23) Service Alternatives per conversation with Fire Safety Specialist Steven Gonzalez, February 26, 2024.

According to the RCFD 2016 TriData Report[5], units should travel to calls within the defined response time goal for the appropriate population density classification 80 percent of the time. Additionally, areas that have fewer units available or are farther from neighboring stations are more impacted than other stations by an increase in emergency calls. These stations with fewer units have greater workload sensitivity– as the workload increases their ability to meet the demand decreases. Station 85 is considered to have a moderate sensitivity workload with the capacity for more workload, and Station 97 is considered to have moderate sensitivity with the capacity for more workload. In an effort to understand fire department response capabilities, Dudek conducted an analysis of the travel-time response coverage from the closest responding RCFD Fire Stations (Fire Stations 85 and 97 being the two closest stations that can respond in approximately the same time). The response time analysis was conducted using travel distances that were derived from Google road data and Project development plan data. Travel times were calculated applying the distance at Speed Limit Formula (T=(D/S) * 60, where T=time, D=distance in miles, and S=speed in MPH) as well as 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) for comparison. The Speed Limit Formula establishes the relationship between speed, distance, and time, where in order to determine travel and response times, we divided the distance by the speed rate of travel and multiplied by 60[6]. The ISO response travel time formula discounts speed for intersections, vehicle deceleration, and acceleration, and does not include turnout time. Tables 8 and 9 present tabular results of the emergency response time analysis using the distance at speed formula and the ISO formula, respectively.

[5] Riverside County Fire Department – Operational, Standards of Coverage, and Contract Fee Analysis (March 2016) https://www.rvcfire.org/pdf/strategic-planning/Standards%20of%20Cover.pdf?v=420

[6] Speed Distance Time Calculator

Table 8. Project Emergency Response Analysis using Speed Limit Formula

Station	Travel Distance to Project Entrance	Travel Time to Project Entrance[1]	Maximum Travel Distance[2]	Maximum Travel Time	Total Response Time[3]
RCFD Station 85	3.3 miles	5.65 minutes	3.8 miles	6.51 minutes	8.51 minutes
RCFD Station 97	3.3 miles	5.65 minutes	3.8 miles	6.51 minutes	8.51 minutes

Notes:

1. Assumes travel distance and time to the closest entrance into the development for the respective fire station. Also assumes application of the distance at speed limit formula (T=(D/S) * 60, where T=time, D=distance in miles, and S=speed in MPH), a 35 mph travel speed, and does not include turnout time.
2. Assumes travel distance and time to the furthest point within the Project development from the respective fire station, and application of the distance at speed limit formula (T=(D/S) * 60, where T=time, D=distance in miles, and S=speed in MPH), a 35 mph travel speed, and does not include turnout time.
3. Emergency response time target thresholds include travel time to furthest point within the Project development from fire station, and application of the distance at speed limit formula (T=(D/S) * 60, where T=time, D=distance in miles, and S=speed in MPH) a 35 mph travel speed along with dispatch and turnout time, which can add an additional two minutes to travel time.

Table 9. Project Emergency Response Analysis using ISO Formula

Station	Travel Distance to Project Entrance	Travel Time to Project Entrance[1]	Maximum Travel Distance[2]	Maximum Travel Time	Total Response Time[3]
RCFD Station 85	3.3 miles	6.26 minutes	3.8 miles	7.11 minutes	9.11 minutes
RCFD Station 97	3.3 miles	6.26 minutes	3.8 miles	7.11 minutes	9.11 minutes

Notes:

1. Assumes travel distance and time to the closest entrance into the development for the respective fire. Also assumes application of the ISO formula, T=0.65+1.7(Distance), a 35 mph travel speed, and does not include turnout time.
2. Assumes travel distance and time to the furthest point within the Project development from the respective fire station, and application of the ISO formula, T=0.65+1.7(Distance), a 35 mph travel speed, and does not include turnout time.
3. Emergency response time target thresholds include travel time to furthest point within the Project development from fire station, and application of the ISO formula, T=0.65+1.7(Distance), a 35 mph travel speed along with dispatch and turnout time, which can add an additional two minutes to travel time.

RCFD Station No. 85 is approximately 3.3 miles from the most northwestern entrance along Baker Street and approximately 3.8 miles from the farthest portions of the Project site. Station 85 could respond to the nearest entrance within approximately 5.65 minutes travel time and to an incident within the farthest portion of the Project site approximately 6.51 minutes travel time.

RCFD Station 97 is approximately the same distance to the Project site as is Station 85 and would likely provide the initial response to the Project site as it serves as the nearest fire station possessing an aerial firefighting apparatus. Station 97 is located approximately 3.3 miles from the most southeasterly driveway along Baker Street and approximately 3.8 miles from the farthest portions of the Project site. Station 97 could respond to the nearest

entrance within approximately 5.65 minutes travel time and to an incident within the farthest portions of the Project site within approximately 6.51 minutes travel time.

RCFD Station 76 is the second closest station possessing an aerial firefighting apparatus. Station 76 is located approximately 14.1 miles from the most southeasterly driveway along Baker Street and approximately 14.7 miles from the farthest portions of the Project site. Station 76 could respond to the nearest entrance within approximately 24.17 minutes travel time and to an incident within the farthest portions of the Project site within approximately 25.2 minutes travel time.

Finally, RCFD Station 90 is the third closest station possessing an aerial firefighting apparatus. Station 90 is located approximately 15.3 miles from the most southeasterly driveway along Baker Street and approximately 15.9 miles from the farthest portions of the Project site. Station 90 could respond to the nearest entrance within approximately 26.22 minutes travel time and to an incident within the farthest portions of the Project site within approximately 27.25 minutes travel time.

Emergency response time target thresholds include travel time along with dispatch and turnout time, which can add approximately two minutes to travel time. RCFD Fire Stations 85 or 97 would provide an initial response as they are the closest existing RCFD fire stations to the Project site and provide similar travel times to the Project site. As indicated in Table 8 and Table 9, RCFD Stations 85 and 97 exceed the 6-minute first-in response time goal for an area designated as suburban, which in Riverside County, a suburban area is typically defined as a community located outside the central city, offering a mix of residential areas with a lower population density compared to the urban core[7], and would have an estimated total response time to arrive in approximately 8.51 minutes the structures within the Project site. All response calculations are based on an average response speed of 35 mph, consistent with nationally recognized NFPA 1710.

Although the closest responding stations exceed the six-minute response time standards for suburban land use areas, the Project shall provide various Project features and measures that support a finding that response time standards can be mitigated through additional funding that the City has planned and will be supported by this Project and other future projects in the vicinity of the proposed Project. The Project design features and measures include structures that will be constructed using Type 1 (Fire Resistive) tilt-up construction, which are designed to be highly fire resistant using concrete and other non-combustible construction materials, and the installation of an NFPA 13 commercial interior fire sprinkler system is required based on occupancy type, area, and height, with specific requirements for hazard classifications and concealed spaces, aiming to provide a high degree of fire protection. Furthermore, the Project achieves a minimum of 100 feet of on-site and off-site equivalent fuel modification and the Project would enter into a Development agreement with the City and RCFD/CAL FIRE, which the Project would provide additional funding to the City which would go towards the funding of a future fire station or other infrastructure closer to the Project site. Based on the above calculations, the Project's calculated response time from the closest fire stations substantially conform with the response time goals and it's apparent that a new aerial ladder truck will be desirable at some point and would be funded on a fair share basis by all of the projects that occur in the area along with existing populations. **The Project applicant is proposing to pay its required Fire Facility DIF fees (approximately $159,072), fulfilling its requirement to fund its share of improvements and mitigate its impact. Additionally, the Project applicant will enter into a Development Agreement with the City where the applicant proposes to go above and beyond the DIF fee payment and contribute additional funds for fire funding to**

[7] https://www.crowntoyota.com/blogs/5040/riverside-ca-city-life-or-suburban-solitude

mitigate the Project's impacts and support local fire improvement efforts as outlined in the Project's development agreement.

4.2 Estimated Calls and Demand for Service from the Project

Determining the potential impact associated with the Project's estimated population increase is required in order to compare how many additional calls may be realized and determine what effects they may have on the available response resources. The estimated incident call volume of the Project is based on a conservatively calculated estimate from the maximum potential number of additional persons that would be expected on site.

Emergency call volumes related to typical projects, such as new industrial developments, can be reliably estimated based on the historical per-capita call volume from a particular fire jurisdiction. According to the RCFD 2023 Annual Report[8], RCFD documented 11,350 total incident responses in Battalion 2's area, with Lake Elsinore responding to 6,791 incidents in 2023 generated by a city population of approximately 73,028 persons (U.S. Census Bureau, 2023). The County's per capita annual call volume is approximately 79 calls per 1,000 persons. The resulting per capita call volume is 0.079.

Using the data above, the estimated annual emergency call volume for the Project site was calculated. The conceptual estimate is based off of the square footage of the warehouse associated with the Project and per-square-footage job production for light industrial land usage per Appendix E of the Riverside County General Plan. According to the Project's Economic Benefit Analysis (EBA), the total number of direct, indirect, and induced number of employees is expected to be approximately 748, with the total number of direct employees expected to be approximately 483. The number on-site at any given time may likely be half the estimated total employee population of direct, indirect, and induced employees, due to staggered employee shifts and transient use. 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 projected to be 374 persons. Using the RCFD's estimated call volume, the Project's estimated working population at any given time is calculated to generate up to 30 calls per year (approximately one call every other week). Most of the calls from the Project are expected to be medical-related calls; consistent with typical emergency call statistics. The estimated incident call volume at buildout from the Project is based on a conservative estimate of the maximum potential number of persons on site at any given time (considered a "worst case" scenario).

Table 10. Calculated Call Volume Associated with the Project

Emergency Calls per 1,000 Persons (County Data)	Estimated Working Population	Avg. No. Calls per Year (374\1,000) x 79	Avg. No. Calls per Day (30/365)
79	+/-374	30	0.08

[8] RCFD 2023 Annual Report - https://www.rvcfire.org/pdf/annualreport/2023%20STATS.pdf?v=4828

4.2.1 Response Capability Impact Assessment

The available firefighting and emergency medical resources in the vicinity of the Project site include an assortment of fire apparatus and equipment considered fully capable of responding to the type of fires and emergency medical calls potentially occurring within the Project site. In 2022 Station 85, the primary responding station for the Project, responded to over approximately 2,300 incidents with an approximate call volume of 6 calls a day (RCFD Annual Report, 2022[9]).

As noted above, according to the Project's EBA, the total number of direct, indirect, and induced number of employees is expected to be approximately 748, with the total number of direct employees expected to be approximately 483, thus it's expected that there may be 374 people present at any point in time. The level of service demand for the Project site will not substantially raise the overall call volume with a conservatively projected addition of up to 30 calls per year (approximately one call every other week), which would be mostly medical and within Station 85's first-in response jurisdiction. The addition of approximately 30 calls per year is not a substantial impact given Station 85's annual call volume of 2,300 calls per year. A busy suburban fire station would run 10 or more calls per day. An average station runs about 5 calls per day. Station 85 would respond to an additional approximately 30 calls per year, 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.

9 https://www.rvcfire.org/pdf/annualreport/2022%20Annual%20Report.pdf?v=3315

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SOURCE: BASEMAP - GOOGLE MAPPING SERVICES

DUDEK

0 3,550 7,100 Feet

FIGURE 5

Closet Fire Stations to Project Site

Fire Protection Plan for Baker Industrial Project

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

This FPP demonstrates that the Project development would comply with applicable portions of RCFD Guidelines, Policies, and Standards and applicable portions of the Riverside County Municipal Code, Ordinances No. 460 and No. 787-8 and Title 8, Chapter 8.32 – Fire Code, which adopts the 2022 edition of the CFC, including Chapter 49, California Code of Regulations, Title 24, Part 9, with amendments. Furthermore, the Project will be consistent with applicable portions of Title 15, Chapter 15.04 – Building Regulations, which adopts the 2022 edition of the CBC, including Chapter 7A based on the 2021 edition of the IFC as adopted and amended by RCFD, which governs the building, infrastructure, and defensible space requirements detailed in this FPP. The Project would also be subject to the provisions of section 4291 of the PRC regarding brush clearance standards around structures, the RCFD Defensible Space guidelines, and RCFD guidelines for Fuel Modification Plans. The Project will meet or exceed applicable codes or will provide alternative materials and/or methods. While these standards will provide a high level of protection to structures within the development, there are no guarantees that compliance with these standards will prevent damage or destruction of structures by fire in all cases. The following summaries highlight important fire protection features.

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

5.1 Fire Apparatus Access

5.1.1 Access Roads

The proposed Project will be accessible via four new points of entry. Three driveways will be constructed along Baker Street and one driveway will be along Pierce Street. Building 1 will be accessible via the driveway along Pierce Street and one driveway along Baker Street. Truck access will be via the 53-foot driveway along Baker Street. Building 2 will be accessible via two driveways along Baker Street. Trucks will utilize the northern and southernmost 50-foot driveways to access the site. In addition, the two buildings will be accessible via a reciprocal access agreement as the drive aisle behind the rear of Building 2 will extend to the Building 1 site for access to Pierce Street. The reciprocal access agreement is largely intended to provide a secondary point of emergency access for Building 2. These road improvements are a circulation improvement Project-required to accommodate planned future growth within the Project site by providing additional travel lanes and improving safety through modification of the roadway's horizontal alignment and vertical profile. Each warehouse will have approved access roadways around the perimeter of each warehouse with minimum widths of 24 feet. Roadways will provide access to within 150 feet

of all portions of the structures served 2022 CFC, Section 503.1.1; RCFD Guideline OFM-01A – Fire Department Access for Commercial and Residential Development).

Project site access, including road widths and connectivity, will be consistent with the RCFD Guideline OFM-01A – Fire Department Access for Commercial and Residential Development[10], County of Riverside – County Road Standards & County Standard Specifications (Ordinance No. 461)[11], and the 2022 CFC, Section 503, as adopted by the Lake Elsinore Fire Code, Chapter 15.56 (including amendments to Section 503.2.1). Additionally, an adequate water supply and approved paved access roadways shall be installed prior to any combustibles being brought onsite and will include:

- Interior circulation driveways and parking lot areas that are considered roadways for traffic flow through the Project site will meet fire department access requirements when serving the proposed structures.
- The minimum clear width of a fire apparatus access road is 24 feet. Where a center median is installed, the required access road width of 24 feet shall be provided on at least one side of the median. The opposing access road width shall not be less than 16' for the single directional exit. The design and placement of a raised median shall consider turning radius requirements for emergency response vehicles.
- All access roads serving commercial or residential development shall be designed, constructed, and maintained to support the imposed loads of RVS fire apparatus with a total weight of 80,000 pounds. Apparatus weight is distributed as 55,000 pounds on tandem rear axles and 25,000 pounds on the front axle.
- The surface shall be designed, constructed, and maintained to provide all-weather driving capabilities. A letter or statement, wet-stamped and signed by a registered engineer, shall be provided on the plans certifying that any new road meets this 80,000, all-weather requirement. Road base without an appropriate topping or binding material does not satisfy the all-weather requirement.
- Roadways and/or driveways will provide fire department access to within 150 feet of all portions of all portions of the structures served (CFC 503.1.1).
- Further, there must be a walkway approved by the RCFD leading from fire apparatus access roads to exterior openings (CFC 504.1).
- 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 without approval of an RCFD official (CFC 503.4).
- Given the Project is required by CFC D104.1-D104.2 to have at least two access points, those access points shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses (D104.3).
- Vertical clearance of vegetation (lowest-hanging tree limbs), along all roadways will be maintained at clearances of 13 feet, 6 inches to allow fire apparatus passage.
- Access roads shall be completed and paved prior to issuance of building permits and prior to the occurrence of combustible construction.

10 https://www.rvcfire.org/pdf/fire-marshal/guideline-ofm/FD%20Access%20%202023%20Guideline%20OFM-01A%20%20FINAL%201-31-2024.pdf?v=5440

11 https://trans.rctlma.org/sites/g/files/aldnop401/files/migrated/Portals-7-documents-ord461-2023-ORD-461-11-County-Road-Standards-and-Specs-PRINT.pdf

5.1.2 Surface and Grade

Fire access roads must be able to support fully loaded fire engines and be of a subtle enough grade to facilitate their travel. The surface and grade of all fire apparatus access roads associated with the Project comply with the following:

- Fire apparatus access roads serving commercial and residential development shall be designed, constructed, and maintained to support the imposed loads of RVC fire apparatus with a total weight of 80,000 pounds. Apparatus weight is distributed as 55,000 pounds on tandem rear axles and 25,000 pounds on the front axle. (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).
- The surface shall be designed, constructed, and maintained to provide all-weather driving capabilities. A letter or statement, wet-stamped and signed by a registered engineer, shall be provided on the plans certifying that any new road meets this 80,000, all-weather requirement. Road base without an appropriate topping or binding material does not satisfy the all-weather requirement (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).
- Fire Apparatus Access Road Grade - The grade for access roads shall not exceed 14% (8 degrees). Cross-slope shall not be greater than 2.5% (1.43 degrees) for paved access roads (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).
- The angles of approach and departure for fire apparatus access roads shall be a maximum of 6 percent grade change for 25 feet of approach or departure (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

  Inside and Outside Turning Radii - The minimum inside turning radius for an access road shall be 24 feet. The minimum outside turning radius shall be 45 feet. As fire apparatus are unable to negotiate tight “S” curves, a 60-foot straight leg must be provided between these types of compound-turns or the radii and/or road width must be increased accordingly (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

5.1.3 Road Width and Clearance

Fire apparatus access roads must be of an appropriate width and clearance to facilitate the ingress and egress of engines. The width and clearance of fire access roads associated with the Project comply with the following requirements:

- Fire apparatus access roads shall have an unobstructed width of not less than 24 feet, exclusive of shoulders, and an unobstructed vertical clearance of not less than 13 feet 6 inches. If a center median is present, the required unobstructed width of not less than 24 feet shall be provided on one or both sides of the median. If provided on one side of the median then the opposite side shall have an unobstructed width of not less than 16 feet. At development entrances where there is a Guard Booth separating an entry and an exit access, each access lane may be a minimum of 14 feet wide for the length of the Guard Booth as approved by the OFM (CFC 503.2.1, Ord. 787.10, and RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).
- Parking Restrictions/Obstructions - No parking or other obstruction (e.g.: trash receptacles) are permitted on roads that are narrower than 32 feet in width. Parking on one side is permitted on a road that is at least

32 feet but less than 40 feet in width. Parking on two sides is permitted on a road 40 feet or more in width. Parallel parking is permitted on both sides of a required fire apparatus access road when the clear width (face of curb to face of curb) is a minimum of 40 feet. Parallel parking is permitted on one side of a required fire apparatus access road when the clear width is a minimum of 32 feet (face of curb to face of curb) (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

While the Code calls for an additional 8 feet of road width be added to fire apparatus access roads that are utilized for loading and unloading or passenger pickup and drop-off, the loading and unloading areas of the warehouses are set to the side of the fire access road and therefore the additional provision is not necessary (Ordinance 787.10).

5.1.4 Aerial Fire Apparatus Access Roads

Aerial fire apparatus access roads meeting the requirements below exist around the perimeter of both warehouse buildings.

- Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet, approved aerial fire apparatus access roads shall be provided (CFC Section D105.1).
  - Exceptions to this requirement include buildings of Type IA, Type IB or Type IIA construction equipped throughout with an automatic sprinkler system in accordance with CFC Section 903.3.1.1 and having fire fighter access through an enclosed stairway with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces, but must be approved by an RCFD official.
- Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof (CFC Section D105.2).
- Multi-Story & Other Tall Buildings (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024):
  - a) Buildings ≥ 30 Feet in Height - To protect fire apparatus, personnel, and equipment from damage and injury from falling debris, the edge of fire apparatus access roads shall be located no closer than 10 to 30 feet from the building, the actual distance being a function of overall building height with consideration given to building construction, presence of openings, and other potential hazards.
  - b) Buildings ≥ 40 Feet in Height - The edge of fire apparatus access roads shall be located between 20 and 40 feet from the building. (NOTE: Distances > 40 feet inhibit the use of vehicle-mounted ladders, while distances < 20 feet do not allow for a proper laddering angle). These distances are measured from the face of the building to the top edge of the curb face or rolled curb flow line nearest the structure.
  - Fire Truck Deployment Areas - To ensure that fire apparatus mobility on properties with buildings ≥ 30 feet in height is maintained at all times, Fire Truck Deployment Areas shall be provided along the road to permit fire apparatus to pass Fire trucks that have outriggers extended. Consideration shall be given to the length of the road, roof and building design, obstructions to laddering, and other operational factors in determining the number, location, and configuration of Fire Truck Deployment Areas. Fire Truck Deployment Areas are typically required on at least two sides of the building. Road widths adjacent to Fire Truck Deployment Area shall be a minimum of 34 feet.

- One or more of the required aerial fire apparatus access routes shall be located not less than 10 feet and not greater than 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial fire apparatus access road is positioned shall be approved by the designated fire code official for the FAHJ (CFC Section D105.3). Overhead utility and power lines shall not be located over the aerial fire apparatus access road or between the aerial fire apparatus road and the building. Other obstructions shall be permitted to be placed with the approval of the designated fire code official (CFC Section D105.4).

5.1.5 Fire Lane Marking

Where necessary, fire lane signs shall be posted on both sides of fire apparatus access roads that are 20 to 26 feet wide (D103.6.1). Fire lane signs shall be posted on one side of fire apparatus access roads more than 26 feet wide and less than 32 feet wide (D103.6.2). For vehicle access gates located across required fire apparatus access roadways, signs may be required on both sides of the vehicle access gate(s). Under circumstances where parking is not permitted along a fire access road, the no parking area will be identified with appropriate signage or painting of the curb (RCFD Technical Policies & Standards: Commercial Access). These no parking identifiers will be in compliance with the following requirements:

Painted Curb

- Where approved by OFM, curbing shall be painted OSHA safety red and shall also be provided with "FIRE LANE - NO PARKING – CVC 22500.1" painted on top of the curb in minimum 3" white lettering at a spacing of 30 feet on center or portion thereof. Where no curb exists, minimum 8-inch OSHA safety red painted striping at the edge of the fire apparatus access road with "FIRE LANE - NO PARKING – CVC 22500.1" in white lettering centered within the stripe at a spacing of 30 feet on center is acceptable (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

Signs

- All signs shall state, "FIRE LANE - NO PARKING – CVC 22500.1, CVC 22658(a)" and have a minimum dimension of 12 inches wide by 18 inches high and have red lettering on a white retroreflective background. Signs shall be made of durable material, installed on a sturdy metal pole and have no less than a 7-foot clearance from the bottom of the sign to finish grade (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

- Signs are required within 3' of the end of each designated fire lane and spaced a maximum of 75' along the entire designated lane. At least one sign is required for each island adjacent to the fire lane. Consideration for curved roads and obstructions may require reduced spacing intervals. Signs shall be installed to ensure a clear view of the signs (RCFD Guideline OFM-01A – Fire Department Access for Commercial & Residential Development, revised 1/2024).

5.1.6 Gates

Multiple gates are proposed within the Project. Access gates will comply with County Fire Code (Section 503.6) and RCFD Guideline OFM-01A – Fire Department Access Requirements for Commercial & Residential Development.

Public roads shall not be gated, per the County Fire Code. Gates on private roads, such as those on the warehouse access ways, shall comply with County standards for security gates, namely:

- Clear Width – Gated Entries located for egress and ingress of vehicles shall not be less than 24 feet clear width on not less than one side of a center median. The vertical clearance shall not be less than 13 feet 6 inches, including landscaping and/or trees or other obstructions. Roads leading up to and beyond the guard house or gate shall meet standard fire lane width requirements. Additional vehicle access gates located elsewhere on commercial property shall be a minimum of 24 feet in width (RCFD Guideline – Fire Department Access Requirements for Commercial & Residential Development Guideline OFM-01A).

- Turning Radii - The minimum inside turning radius is 24 feet with an outside radius of 45 feet for both the exterior and the interior approach to the gate (Guideline, Section 2.A.10).

- Setbacks from the Street - Gates and barriers shall be located a minimum of 46 feet from any major street. A private driveway serving only one single-family residence is exempt from this requirement. If existing conditions prevent installation of the minimum setback, documentation supporting an acceptable alternative shall be provided. The alternative solution must facilitate emergency ingress without endangering emergency response personnel, emergency apparatus, and the general public. The alternative shall be subject to review and approval (Guideline, Section 5.C).

- Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot type. The construction of gates shall be of materials that allow manual operation by one person. (CFC Section D103.5).

- Manually Operated Gate and Other Barrier Designs - Typical gate designs may include sliding gates, swinging gates or arms, or guard posts with a chain traversing the opening.

    - Permanent or removable bollards are generally not permitted. CFC 503.4

    - For gates and barriers that are not used on a frequent basis or those that are located such that they have a reasonable likelihood of being blocked by vehicles, vegetation, furniture, or other obstructions (e.g., secondary fire department vehicle ingress/egress points, gates accessed from plazas), permanent signage constructed of 18-gauge steel or equivalent shall be attached on each face of the gate or barrier that reads “FIRE LANE—NO PARKING.” See Attachment 16 of the RCFD Guideline OFM-01A for an example of a barrier sign.

    - Manually operated gates and barriers shall have Knox padlocks, or weather-resistant Knox key boxes. The key box shall be placed four to five feet above the road surface at the right side of the access gate in a conspicuous location that is readily visible and accessible. The key box must be clearly labeled “FIRE DEPT.” CFC 506 (RCFD Guideline – Fire Department Access Requirements for Commercial & Residential Development Guideline OFM-01A).

- The operator of the building shall immediately notify the fire code official and provide the new key where a lock is changed or rekeyed. The key to such lock shall be secured in the key box (CFC Section 506.2).

Electrically Operated Gates and Barriers

- Electric gate openers shall comply with UL 325. In the event of loss of normal power to the gate operating mechanism, it shall be automatically transferred to a fail-safe mode allowing the gate to be pushed open by a single firefighter without any other actions, knowledge, or manipulation of the operating mechanism being necessary and without the use of battery back-up power; this shall be noted on the plan. The manufacturer's specification sheet demonstrating compliance with this method of operation during power loss shall be provided or scanned directly onto the plan. Should the gate be too large or heavy for a single firefighter to open manually, a secondary source of power by means of an emergency generator or a capacitor with enough reserve to automatically and immediately open the gate upon loss of primary power shall be provided.
- The gate control for electronic gates shall be operable by a Knox emergency override key switch (with dust cover). The key switch shall be placed between 42" and 48" above the road surface at the right side of the access gate within two feet of the edge of the road. The key switch shall be readily visible and unobstructed from the fire lane leading to the gate. The key switch shall be clearly labeled "FIRE DEPT."
- Upon activation of the key switch, the gate shall open and remain open until returned to normal operation by means of the key switch. Where a gate consists of two leaves, the key switch shall open both simultaneously if operation of a single leaf on the ingress side does not provide for the width, turning radii, or setbacks necessary for fire apparatus to navigate the vehicle entry point. Note this requirement on the Fire Department Access Plan.
- The key switch shall be labeled with a permanent red sign with not less than ½" contrasting letters reading "FIRE DEPT" or with a "Knox" decal. Note this requirement on the Fire Department Access Plan.
- New motorized gates shall also be equipped with optical receivers to allow emergency response personnel to remotely open the gate when the emergency vehicle approaches the gate. The receiver shall be located to maximize signal reception from an approaching RVC apparatus. Devices shall be compatible with RVC preemption devices. A functional test of the automatic opening equipment, witnessed by RVC-OFM is required prior to final acceptance.

Gate and Barrier Locks - Gate or barrier locks shall be reviewed and approved prior to their installation on any new and/or existing access gate or barrier.

5.1.7 Driveways

Any new structure that is 150 feet or more from a common road shall have a paved driveway meeting the following specifications:

- Grades shall be less than 15% without providing Portland cement base with heavy broom finish and in no case, greater than 20%
- Approved provisions for turning around fire apparatus.
- Driveways serving two or fewer structures shall be 16 feet wide unobstructed and have a fire apparatus turnaround. Driveways serving more than two structures shall be 24 feet unobstructed.

5.1.8 Vertical Clearance

Fire apparatus access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. If trees are located adjacent to the fire access road, place a note on the plans stating that all vegetation overhanging the

fire access road shall be maintained to provide a clear height of 13 feet, 6 inches (RCFD Guideline – Fire Department Access Requirements for Commercial & Residential Development Guideline OFM-01A).

5.1.9 Premises Identification

Premise identification requirements are applicable to both new and existing buildings and facilities. RVC – OFM may require compliance with these requirements when necessary to facilitate emergency response (RCFD Guideline OFM-01A – Fire Department Access Requirements for Commercial & Residential Development).

Three possible configurations of buildings or units within a building may exist and are identified as follows: freestanding buildings, multi-unit buildings, or multi-building clusters. Common to all configurations are the following requirements:

- Approved numbers or addresses shall be placed on the front elevation of all new or existing buildings in such a position that is plainly visible and legible from the street or road on which the property is addressed. Addresses shall not be located where they have the potential of being obstructed by signs, awnings, vegetation, or other building/site elements. An address monument at the vehicle entrance or other location clearly visible and legible from the public road may be provided in lieu of an address on the structure where only a single building with a single street address is present and no other structures are accessible from the fire apparatus access road serving that structure. CBC 501.2, CFC 505.1

- The numbers/ letters shall contrast with their background.

    - One & Two Family Residential - The numbers/ letters shall be a minimum of 4” in height with a ½” stroke.

    - Commercial and Multi-Family - The numbers/ letters shall be a minimum of 12” for structures up to 25 ft. in height. Address numbers must be a minimum of 24” when the building exceeds 25 ft., The numbers shall have a minimum 1/2-inch stroke. When a building contains multiple addresses, an address range may be posted on the structure.

      (NOTE: Buildings that are set back from the primary roads more than 150 feet or otherwise not visible from the public road, shall have a monument provided as approved by RVC-OFM).

- Numbers for new buildings shall be internally or externally illuminated, to be visible at night. This requirement also applies to monuments. NOTE: Reflective type numbers may be acceptable for a single lot residential development project, when specifically approved by RVC–OFM.

- Where it is unclear as to which street a building is addressed to (e.g., a building is accessed only from a street other than the one it is addressed to; multiple main entrances to the site or building itself front different streets), the name of the street shall also be identified as part of the posted address.

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5.1.10 Ongoing Infrastructure Maintenance

The Project property owner/property management company shall be responsible for long term funding and maintenance of internal private roads, fire protection systems (including fire sprinklers), and fuel modification areas.

5.2 Ignition Resistant Construction and Fire Protection Systems

All new structures within the Project site will be constructed to Fire Code standards. Each of the proposed buildings will comply with the construction requirements of the Fire Code, Section 4905, as well as the enhanced ignition-resistant construction standards of the County Building Codes (Chapter 7A). While these standards will provide a high level of protection to structures in this development and should reduce or eliminate the need to order evacuations, there are no guarantees that compliance with these standards will prevent damage or destruction of structures by fire in all cases.

There are three primary concerns for structure ignition: 1) radiant and/or convective heat, 2) burning embers, and 3) direct flame contact (NFPA 1144 2008, IBHS 2008, and others). Burning embers have been a focus of building code updates for at least the last decade, and new structures in the WUI built to these codes have proven to be very ignition resistant. Likewise, radiant and convective heat impacts on structures have been minimized through the Chapter 7A exterior fire ratings for walls, windows and doors. Additionally, provisions for modified fuel areas separating wildland fuels from structures have reduced the number of fuel-related structure losses. As such, most of the primary components of the layered fire protection system provided for the Project are required by the RCFD but are worth listing because they have been proven effective for minimizing structural vulnerability to wildfire and, with the inclusion of required interior fire sprinklers for extinguishing interior fires, should embers succeed in entering a structure. Even though these measures are now required by the latest Building and Fire Codes, at one time, they were used as mitigation measures for buildings in WUI areas, because they were known to reduce structure vulnerability to wildfire. These measures performed so well, they were adopted into the code. All new structures will be constructed to County standards. Each of the proposed buildings will comply with the enhanced ignition-resistant construction standards that address the requirements for 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.

5.2.1 Water Supply

For water service, an Elsinore Valley Municipal Water District (EVMWD) 36-inch 1434 Zone CIP line is proposed to be installed in Nichols Road from Terra Cotta Road to Baker Street and in Baker Street to the existing 20-inch line that supplies the Baker Reservoir. The Project proposes to receive water service by making two connections to the proposed transmission line in Baker Street and constructing a looped piping system onsite between the two connections. EVMWD does not allow fire hydrants to be served off private systems, so the onsite loop will need to be public. The onsite line will be located in an easement and be located in accordance with EVMWD requirements which includes not locating the line beneath landscaped medians or parking stalls. The 1434 Zone has a large surplus of reservoir storage capacity and additional storage is not required to provide service to the Project. The 1434 Zone has a large surplus of reservoir storage capacity and additional storage is not required to provide service to the Project.

The Project will be consistent with County requirements for fire flow and fire hydrant requirements within a VHFHSZ. All water storage and hydrant locations, mains, and water pressures would be designed to fully comply with Riverside County Fire Code Fire Flow Requirements. As detailed in the County Fire Code Section 8.32.050 and California Fire Code Section 903.2, all structures within the development are required to have an NFPA 13 consistent automatic fire sprinkler systems based on the latest adopted Building and Fire Codes for occupancy types. An RCFD official will be notified prior to a water supply test or provided with approved documentation before approval of the water supply system (CFC Section 507.4).

5.2.2 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 codes and Fire Department Water Supply and Fire Hydrant Requirements for Commercial and Residential Development (Guideline OFM-01B)[12]. More specifically:

- Hydrant type and locations shall be subject to RCFD approval and shall be located on the normal fire apparatus response side of the road.
- Hydrants shall have one 4-inch outlet and two 2.5-inch outlets. Prior to issuance of building permits, the appropriate number of fire hydrants and their specific locations, approved by the County Fire Marshal, will be identified and they will be constructed accordingly.
- Prior to the issuance of building permits, the applicant shall submit to the County plans demonstrating a water system capable of handling the fire flow requirements.
- Fire service laterals, valves, and meters will be installed on site as required by the County Fire Marshal.
- Reflective blue dot hydrant markers shall be installed in the street to indicate location of the hydrant.
- Crash posts will be provided where needed in on-site areas where vehicles could strike fire hydrants, fire department connections, etc.
- A three-foot clear space (free of ornamental landscaping and retaining walls) shall be maintained around the circumference of all fire hydrants.
- On site hydrants will be in place and serviceable early in the construction process.

5.2.3 Automatic Fire Sprinklers System

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 NFPA Standard 13 (Per CFC Section 903.2). 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 Technical Policies and Standards for fire protection systems. Actual system design is subject to final building design and the occupancy types in the structure.

[12] https://www.rvcfire.org/pdf/fire-marshal/guideline-ofm/FD%20Water%20Supply%20and%20Fire%20Hydrant%202023%20Guideline%20OFM-01B%20FINAL%201-30-2024%202024.pdf?v=778

5.3 Defensible Space and Vegetation Management

5.3.1 Defensible Space and Fuel Modification Zone (FMZ) Requirements

WUI fire protection requires a systems approach, which includes the components of infrastructure and water, structural safeguards (which are addressed in Sections 5.1 and 5.2 of this FPP), and adequate defensible space setbacks. This section provides defensible space details for the Project.

An important component of a fire protection system for this Project is the provision for ignition-resistant landscapes. 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 adequately spaced, drought-tolerant, fire resistant plants in order to provide a reasonable level of protection to structures from wildland fire. FMZs are designed to provide vegetation buffers that gradually reduce fire intensity and flame lengths from advancing fire by strategically placing thinning zones, restricted vegetation zones, and irrigated zones adjacent to each other on the perimeter of the WUI exposed structures. Therefore, the fuel modification area is an important part of the fire protection system designed for this site. A typical landscape/fuel modification installation requires a 100-foot-wide FMZ from the exposed sides of a structure extending outwards towards the Project boundary/undeveloped areas. Based on the Project's site and grading plans, the entire Project site achieves 100 feet of FMZ. The Baker Industrial's Conceptual Fuel Modification Plan (Figure 6) conceptually illustrates the up to 100-foot-wide FMZ Plan proposed for the Project site which consists of one zone; a 100-foot-wide Zone 1 (including a 5-foot Ember-Resistant Zone 0) that includes a combination of fully-irrigated landscape with RCFD approved plant species and non-combustible roadways/driveways and hardscape areas. Within Zone 1 is an Ember-Resistant Zone extending from the exterior wall surface of the buildings to 5 feet on a horizontal plane around the entire perimeter of the structure. Within this zone, all combustible material shall be removed. Landscape within the remaining portion of the Zone 1 FMZ area of the Development Footprint will minimally meet Zone 1 standards and will include areas that will be maintained by the Project's property manager and by the private property owners, as detailed below. The Project will also include a minimum 20-foot-wide roadside FMZ for portions of the Project's roadways that are adjacent to naturally vegetated areas.

Cohen's Structure ignition assessment model (1995) performed structure ignition fire research studies that suggest, as a rule-of-thumb, larger flame lengths and widths require wider FMZs 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 ignition-resistant construction of the Project. For the Project, assuming 24-foot flame lengths (modeled under a Santa Ana wind event), the 100 feet of fuel modification is more than sufficient.

Based on the modeled extreme weather flame lengths for the Project site once developed and once the FMZs are in place, wildfire flame lengths are projected to be approximately between 2 to 4 feet high in the areas of the Project footprint that are not paved. The adjacent non-native grass dominated vegetation areas that surround the development footprint would remain unaltered and retain the fire behavior of existing conditions. This can be altered when neighboring property owners perform weed abatement. The fire behavior modeling system used to predict these flame lengths was not intended to determine sufficient FMZ widths, but it does provide the average predicted

length of the flames, which is a key element for determining "defensible space" distances for providing firefighters with room to work and minimizing structure ignition. For the Project's current configuration, the FMZ widths between the exterior of the structure and the naturally vegetated open space areas beyond the property boundary achieves a code-complying 100 feet of onsite on the majority of the buildings' perimeters. Areas that do not achieve the required of 100 feet of defensible space onsite such as the northwestern and northeastern sides of the warehouse building 1 will be immediately bordered by paved roadways and an existing residential lot that provide offsite equivalent FMZs; it should be noted that the areas that do not achieve a full 100 feet of onsite fuel modification achieve approximately 95 feet of onsite fuel modification. Therefore, the prescribed 100-foot-wide FMZ is adequate in providing enough set-back from volatile fuels so that radiant heat and direct flame impingement is minimized or eliminated, providing firefighters "defensible" space in which they can work. Both structures will include 100 feet of FMZ or FMZ equivalent (i.e. pavement, rock, and/or maintained landscape).

Although FMZs are very important for setting back structures from adjacent unmaintained fuels, the highest concern is considered to be from firebrands or embers as a principal ignition factor. To that end, the Project site, based on its location and ember potential, is required to include the latest ignition and ember resistant construction materials and methods for roof assemblies, walls, vents, windows, and appendages, as mandated by the RCFD and County's Fire and Building Codes (e.g., Chapter 7A of the CBC).

5.3.2 Riverside County/Cal Fire Defensible Space/Fuel Modification Zone Standards

Defensible space, coupled with property hardening, is essential to improve a building's chance of surviving a wildfire. Defensible space is the buffer created between a building and the grass, trees, shrubs, or any wildland area that surround it. This space is needed to slow or stop the spread of wildfire and it helps protect buildings from catching fire—either from embers, direct flame contact or radiant heat. Proper defensible space also provides firefighters a safe area to work in, to defend the building. The purpose of this section is to document RCFD's standards and make them available for reference. RCFD's Fire Code is consistent with the 2022 California Fire Code (Section 4907 — Defensible Space), Government Code 51175 – 51189, and Public Resources Code 4291, which require that fuel modification zones be provided around every building that is designed primarily for human habitation or use within a SRA or a LRA VHFHSZ.

As mentioned above, typical fuel modification installation requires a 100-foot-wide FMZ consisting of a 5-foot-wide ignition resistant Zone 0, a 25-foot-wide irrigated Zone 1 and a 70-foot-wide thinning Zone 2 measured from the exterior of the building extending outwards towards undeveloped areas. Based on modeling and analysis of the Project area to assess its unique fire risk and fire behavior, it was determined that the Riverside County and CAL FIRE standard of a minimum 100-foot-wide FMZs would help considerably to set the Project's structures back from off-site fuels, however, this Project proposes to convert all of the land within the Project boundary to an FMZ Zone 1 equivalent condition consisting of irrigated and maintained landscape, as well as non-combustible pavement and hardscape areas. The 100-foot-wide FMZ, when properly maintained, along with other fire hazard reducing features, will effectively minimize the potential for structure ignition from direct flame impingement or radiant heat within the Project area. Assembly Bill 3074, passed into law in 2020, requires a third zone for defensible space. This law requires the Board of Forestry and Fire Protection to develop the regulation for a new ember-resistant zone (Zone 0) within 0 to 5 feet of a structure by January 1, 2023. The intensity of wildfire fuel management for a traditional FMZ varies within the 100-foot perimeter of the structure, with more intense fuels' reduction occurring closer to the structure. A Fuel Modification Plan shall be reviewed and approved by a RCFD Fire Safety Specialist for consistency

with defensible space and fire safety guidelines. The Project's Conceptual Fuel Modification Plan (Figure 6) conceptually displays a non-combustible/fully-irrigated FMZ area for the Project site.

To ensure long-term identification and maintenance, a fuel modification area shall be identified by a permanent zone marker meeting the approval of RCFD. All markers will be located along the perimeter of the fuel modification area at a minimum of 500 feet apart or at any direction change of the FMZ boundary. This applies only to the on-site FMZ areas and would not be provided off-site on roadways and similar landscapes that are providing FMZ equivalent. FMZs will be maintained on at least an annual basis or more often as needed to maintain the fuel modification buffer function.

5.3.3 Project-Specific Fuel Modification Zones

The fuel modification planned as part of the Project will be code-compliant in its widths and characteristics. The entire property from the exterior of the building to the property lines will be either irrigated landscaping or non-combustible paved surfaces in the form of roads, walkways, parking areas, and loading and unloading areas. These paved surfaces will vary in their distance from the site, but meet the requirements for Zones 0 and 1. Given that the paved areas will be code compliant, the landscaping requirements for each zone are described below.

Ember-Resistant Zone – Non-combustible (from exterior structure wall to 5 feet)

The ember-resistant zone is applicable site-wide and is measured from the exterior wall of the structures outward to 5 feet (horizontal). The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread the fire to the structure. This zone shall be constructed of continuous hardscape or non-combustible materials acceptable to the FAHJ. The Project's property owner is responsible for removal of combustible materials surrounding the exterior wall area and maintaining area free of combustible materials. The use of mulch and other combustible materials shall be prohibited.

The Ember-Resistant Zone includes the following key components:

- The use of hardscaping like gravel, pavers, concrete, and other non-combustible materials. No combustible bark or mulch.
- Remove all dead and dying weeds, grass, plants, shrubs, trees, branches, and vegetative debris (leaves, needles, cones, bark, etc.);
- Remove and/or maintain all tree branches within 10 feet of the roof or side of the building.
- Limit plants in this area to low growing, nonwoody, properly watered and maintained plants.
- Relocate pallets, firewood and lumber to be a minimum 30 feet or more from the structure.
- Replace combustible fencing, gates, and other structures within this zone to non-combustible materials.
- Vegetation shall be limited to heights not exceeding 18 inches.
- Vegetation shall be irrigated.
- Relocate garbage and recycling containers outside this zone when possible.
- Relocate vehicles outside this zone when possible.

Zone 1: Lean, Clean and Green Zone – Fully irrigated zone extending from Zone 0 outward to the property line and/or up to 100 feet from exterior of structure

Zone 1 extends up to 100 feet from the two industrial buildings and/or up to the property line, whichever is closer. Zone 1 shall consist of a combination of planting low growth, drought tolerant and fire resistive plant species and paved/non-combustible surfaces and hardscapes. Zone 1 includes the following key components:

- Irrigated by the automatic or manual system to maintain healthy, high moisture content, fire-resistant vegetation.
- Remove all dead plants, grass, and weeds.
- Maintain the removal dead or dry leaves and pine needles from around the structure, roof, and gutters, as applicable.
- Remove branches that hang over the structure's roofs.
- Trim trees regularly to keep branches a minimum of 10 feet from other trees.
- Relocate pallets, firewood and lumber to be a minimum 30 feet or more from the structure unless completely covered in a fire-resistant material.
- Create separation between trees, shrubs, and items that could catch fire such as outdoor furniture and wood piles.
- Landscaping and vegetation in this zone shall consist primarily of grass areas, ground covers (not exceeding 4 inches in height), and spaced shrubs and trees. No shrubs shall exceed 6 feet in height.
- Plants in Zone 1 shall be inherently highly fire-resistant and spaced appropriately. Plants shall be on the approved fuel modification plant list (Appendix D) or given special approval by an RCFD official.
- New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet from any combustible structure.
- Create horizontal space between shrubs and trees. Horizontal spacing depends on the slope of the land and the heigh of the shrubs or trees. Given that the Project will generally be less than 20% slopes, horizontal spacing should be 2x's the height of shrubs and trees should be separated so that their drip lines at maturity are a minimum of 10 feet apart.
- Create vertical spacing between grass, shrubs and trees. Vertical spacing includes removing all branches at least 6 feet from the ground and/or at least maintaining at least 3x the height of a shrubs separation from the lowest tree branch or 10 feet, whichever is greater. Lack of vertical space can allow a fire to move from the ground to the brush to the treetops like a ladder, leading to more intense fire closer to the structure.

- Prohibited plant species (Appendix D) shall not be planted within any FMZ for the Project.
- Vines and climbing plants shall not be allowed on any structure.

5.3.4 Ongoing Infrastructure/FMZ Maintenance

Vegetation management, i.e., assessment of fuel modification zone 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. The interim period vegetation

management will be funded by the Project developer and shall be conducted by their contractor. The Project developer shall be responsible for all vegetation management throughout the development, in compliance with the Project FPP that is consistent with requirements. The Project's developer or property manager would annually hire a third-party, RCFD-approved, FMZ inspector to provide annual certification that it meets the requirements of this FPP.

The permanent FMZ required for the Project will be maintained by the developer who will be responsible for FMZ vegetation management once the Project is built out and the adjacent areas are developed. The Project owner or property manager will be responsible for streetscape and public area vegetation management in perpetuity.

On-going/as-needed fuel modification zone maintenance during the interim period while the Project is built out and adjacent parcels are developed, which may be one or more years, 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 site or chipped and evenly dispersed in the same area to a maximum depth of three 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.

5.3.5 Environmentally Sensitive Areas/Open Space

Once the FMZs are in place, there will not be a need to expand them as they have been planned to meet the fire code. However, if unforeseen circumstances were to arise that required hazard reduction within an area considered environmentally sensitive (i.e. subject to MSHCP or certain habitat designations, etc.), 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.

5.3.6 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 Undesirable Plant List (Appendix D) are unacceptable from a fire safety standpoint and will not be planted on the site or allowed to establish opportunistically within fuel modification zones or landscaped areas.

5.3.7 Construction Phase Vegetation Management

Vegetation management requirements shall be implemented at commencement and throughout the construction phase. 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.

5.4 Pre-Construction Requirements

Per RCFD and CAL FIRE, a fuel modification plan (refer to Figure 6) shall be submitted and have preliminary approval prior to any development of land; or, have final approval prior to the issuance of a permit for any permanent structure used for habitation; or, where, such structure is located within areas designated as a Fire Hazard Severity Zone within a State Responsibility Area or Very High Fire Hazard Severity Zone within the Local Responsibility areas. An on-site inspection must be conducted by the RCFD and final approval of the fuel modification plan issued prior to a certificate of occupancy being granted by the City's building code official assigned to the Project.

As an additional consultant recommendation, 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 fuel modification zones established.

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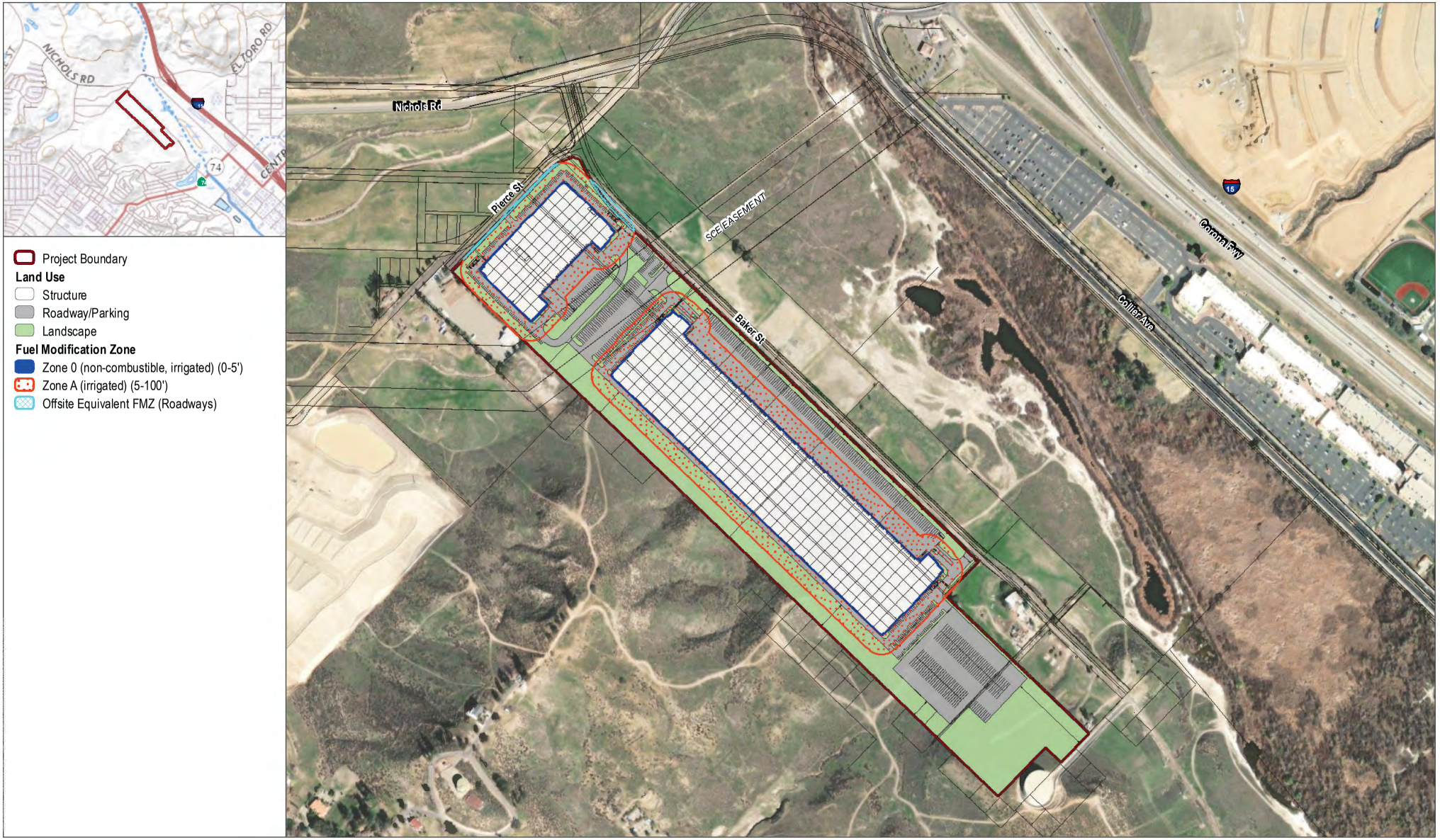

SOURCE: AERIAL- ESRI IMAGERY SERVICE 2022; DEVELOPMENT - CIVIL SENSE 2023

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FIGURE 6

Fuel Modification Plan

Baker Industrial Project

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6 Wildfire Education Program

Early evacuation for any type of wildfire emergency at the Project site is the preferred method of providing for employee safety, consistent with the RCFD's current approach within Riverside County. As such, the business owner(s) of the Baker Industrial Project would formally adopt, practice, and implement a "Ready, Set, Go!" approach to evacuation and will 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[13]. The "Ready, Set, Go!" concept is widely known and encouraged by the State of California and most fire agencies. Pre-planning for emergencies, including wildfire emergencies, focuses on being prepared, having a well-defined plan, minimizing the 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 area activities during periods of fire weather extremes. 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[14]). Personnel and employees will be strongly encouraged to also register to receive emergency alerts.

Although the Project is not to be considered a shelter-in-place development, 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.

13 https://www.readyforwildfire.org/
14 https://rivco.org/services/public-safety/emergency-services/alert-rivco

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7 Conclusion

This FPP has been prepared for the Baker Industrial Project and provides guidance for vegetation maintenance for the landscaped areas on the Project site. As described, vegetation maintenance measures will be provided on all sides of the proposed development and within all landscaped areas of the proposed Project. 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, along with the combination of paved roads and parking stalls, retaining walls, and a fully irrigated landscape, would provide a minimum of 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.

Furthermore, emergency response time from the closest existing RCFD fire stations were analyzed, with target thresholds include travel time along with dispatch and turnout time, which can add two minutes to travel time. As noted in Section 4, RCFD Fire Stations 85 or 97 would provide an initial response as they are the closest existing RCFD fire stations to the Project site and provide similar travel times to the Project site. That being said, it's likely that RCFD Station 97 would provide the initial response as this station is the closest station that houses an aerial ladder truck. As indicated in Table 8 and Table 9, RCFD Stations 85 and 97 do not fully conform to the RCFD response time standards, exceeding the 6-minute first-in response time goal for an area designated as suburban, with an estimated total response time to arrive in approximately 8.51 minutes the structures within the Project site. **Although the closest responding stations exceed the six-minute response time standards, the Project applicant shall provide various Project features and measures that support the finding that response time standards can be mitigated through additional funding that the City has planned and will be supported by this Project and other future projects in the vicinity of the proposed Project.** The Project design features and measures include structures that will be constructed using Type 1 (Fire Resistive) tilt-up construction, which are designed to be highly fire resistant using concrete and other non-combustible construction materials, and the installation of an NFPA 13 commercial interior fire sprinkler system is required based on occupancy type, area, and height, with specific requirements for hazard classifications and concealed spaces, aiming to provide a high degree of fire protection. Furthermore, the Project achieves a minimum of 100 feet of on-site and off-site equivalent fuel modification, and the Project would enter into a Development agreement with the City and RCFD/CAL FIRE, which the Project would provide additional funding to the City which would go towards the funding of a future fire station closer to the Project site or other infrastructure. Based on the above calculations, the Project's calculated response time from the closest fire stations substantially conform with the response time goals and it's apparent that a new aerial ladder truck will be desirable at some point and would be funded on a fair share basis by all of the projects that occur in the area along with existing populations. **The Project applicant is proposing to pay its required Fire Facility DIF fees (approximately $159,072), fulfilling its requirement to fund its share of improvements and mitigate its impact. Additionally, the Project applicant will enter into a Development Agreement with the City where the applicant proposes to go above and beyond the DIF fee payment and contribute additional funds for fire funding to mitigate the Project's impacts and support local fire improvement efforts as outlined in the Project's development agreement.**

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 a wildfire extending onto this site and/or an onsite fire spreading from the development footprint into surrounding areas. Furthermore, implementation of

the measures detailed in this FPP will improve the ability of firefighters to fight fires on the property as well as those within the adjacent naturally-vegetated areas, 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 person. 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 Project 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. 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.

In summary, the mitigating measures implemented within the Project, listed below, accomplish two complimentary primary objectives. These measures simultaneously protect the structures from incoming wildfire while reducing the present wildfire risk to the existing communities observed today by removing a large quantity of fuels and reducing potential ignition points that are existing at the Project's location, meaning the Project does not substantially contribute to greater risk to the existing community. Implementation of the FPP's detailed wildfire mitigation measures will result in a less than significant impact with regards to fire hazards. Among the mitigation measure are:

- Project buildings will be constructed of Type 1 concrete, ignition resistant construction materials and include the installation of NFPA 13 automatic commercial fire sprinkler systems based on the latest adopted Building and Fire Codes for occupancy types.
- Fuel Modification will be provided as needed around the proposed structures, as required by RCFD and will be a minimum 100 feet wide.
- Landscape plantings will not utilize prohibited plants that have been found to be highly flammable and more prone to ignition.
- Maintenance would occur as needed, and the property owner would annually hire a third party, RCFD-approved, FMZ inspector to provide annual certification that it meets the requirements of this FPP.
- Fire apparatus access roads (i.e., public and private streets/driveways) will be provided throughout the 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.
- Buildings will be equipped with automatic commercial fire sprinkler systems meeting RCFD requirements.
- Water capacity and delivery provide for a reliable water source for operations and during emergencies requiring extended fire flow.
- The property owner or property management company will provide 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 development-wide "Ready, Set, Go!" plans prepared.

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Appendix A

Representative Project Photograph Log

Photograph 1: Overview photograph of the northwestern portion of the area northeast of the Project. Photo taken from Pierce Street approximately 50 feet northeast of Baker Street looking southeast.

Photograph 2: Overview photograph of the are north of the Project between Pierce Street and Nichols Road. . Photo taken from Pierce Street approximately 50 feet northeast of Baker Street looking west.

Photograph 3: Overview photograph of the hills north of the Project. Photo taken just south of the Nichols Road and Pierce Street intersection looking north.

Photograph 4: Overview photograph of the hills north of the Project. Photo taken just south of the Nichols Road and Pierce Street intersection looking northwest.

Photograph 5: Overview photograph of the hill south of the Project. Photo taken from Pierce Street approximately 50 feet northeast of Baker Street looking south.

Photograph 6: Overview photograph of the northern side of Baker Street and the powerlines running along the side. Photo taken from Pierce Street approximately 50 feet northeast of Baker Street looking southeast.

Photograph 7: Overview photograph of the progressive change in vegetation north of the Project as it approaches Alberhill Creek. Photo taken from Pierce Street approximately 50 feet northeast of Baker Street looking east.

Photograph 8: Overview photograph of the northwestern boundary of the Project along Pierce Street. Photo taken from just south of the Pierce Street and Baker Street intersections looking southwest.

Photograph 9: Overview photograph of northwestern portion of the project. Photo taken from just south of the Pierce Street and Baker Street intersections looking south.

Photograph 10: Overview photograph of vegetation northwest of the Project. Photo taken from just south of the Pierce Street and Baker Street intersections looking northwest.

Photograph 11: Overview photograph of the northeastern portion of the project. Photograph taken at approximately halfway of the northeastern Project boundary along Baker Street looking southwest.

Photograph 12: Overview photograph of Baker Street. Photograph taken on the street near the southeastern end of the Project facing northwest.

Photograph 13: Overview photograph of typical fuels for the Project. Photograph taken at approximately halfway of the northeastern Project boundary along Baker Street looking southwest.

Photograph 14: Overview photograph of the central portion of the Project and the property with privacy trees southwest of the northwestern portion of the Project.

Photograph 15: Overview photograph of Nichols Road. Photo taken from the intersection of Pierce Street and Nichols Road looking west.

Photograph 16: Overview photograph of Nichols Road. Photo taken from the intersection of Pierce Street and Nichols Road looking northeast.

Photograph 17: Photograph of the Nichols Road and the surrounding vegetation as it passes over Alberhill Creek. Photograph taken facing east.

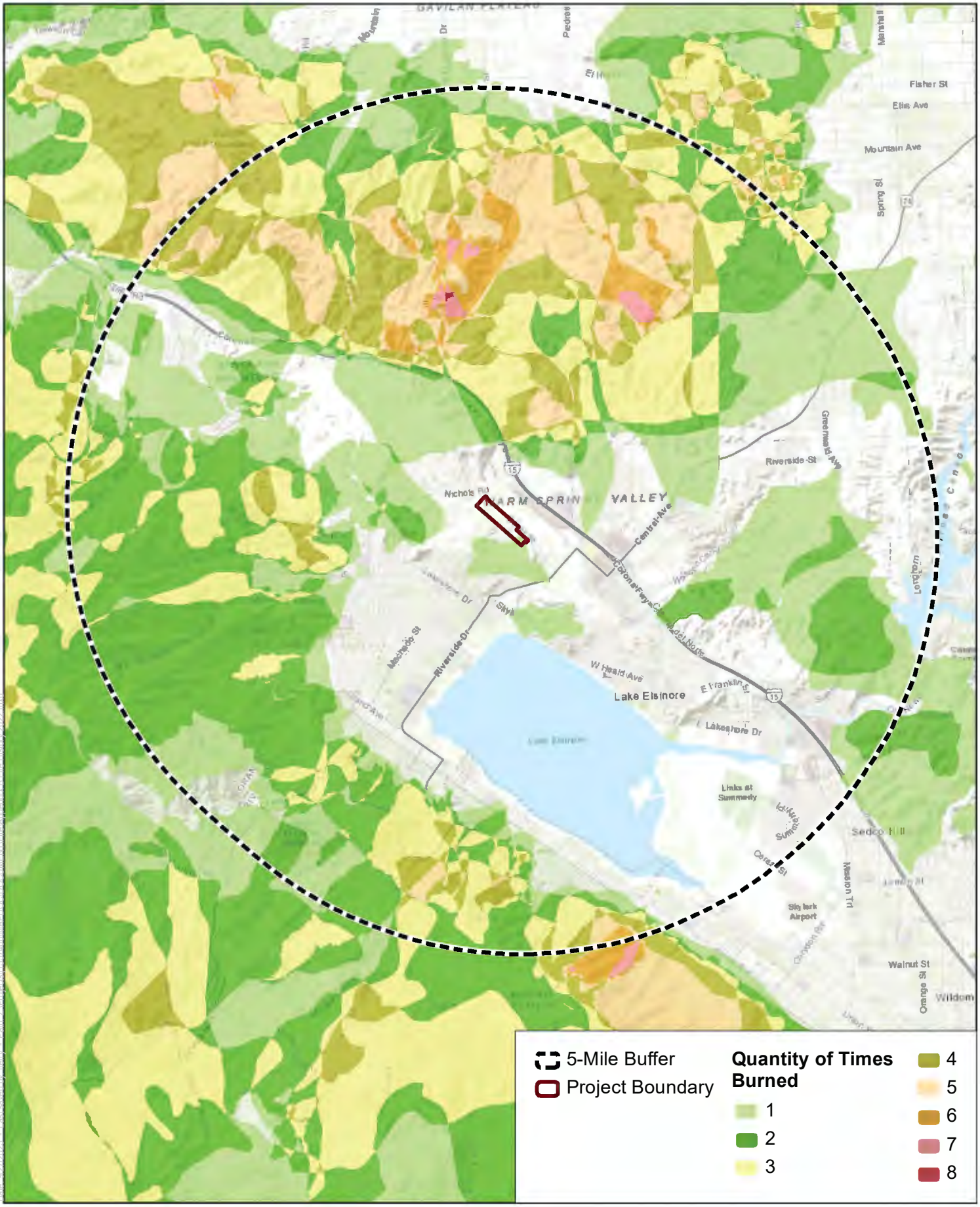
Photograph 18: Photograph of the area between Alberhill Creek and I-15. Photograph taken from Nichols Road just east of the creek facing north.

Photograph 19: Photograph of the area west of the I-15, north of the Project. Photograph taken from the on-ramp to the I-15 north from Nichols Road facing northwest.

Photograph 20: Photograph of the roadside fuels along the on-ramp to the I-15 north from Nichols Road.

Appendix B

Fire History Map



SOURCE: BASE MAP- ESRI MAPPING SERVICE; FIRE DATA-CALFIRE 2022

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Appendix B

Fire History Map

Baker Industrial Project Fire Protection Plan

Appendix C

BehavePlus Fire Behavior Analysis Summary

FIRE BEHAVIOR MODELING SUMMARY
BAKER INDUSTRIAL DEVELOPMENT PROJECT, LAKE ELSINORE, RIVERSIDE COUNTY, CALIFORNIA

1 BehavePlus Fire Behavior Modeling History

Fire behavior modeling has been used by researchers for approximately 50+ years to predict how a fire will move through a given landscape (Linn 2003). The models have had varied complexities and applications throughout the years. One model has become the most widely used as the industry standard for predicting fire behavior on a given landscape. That model, known as "BEHAVE", was developed by the U. S. Government (USDA Forest Service, Rocky Mountain Research Station) and has been in use since 1984. Since that time, it has undergone continued research, improvements, and refinement. The current version, BehavePlus 6.0, includes the latest updates incorporating years of research and testing. Numerous studies have been completed testing the validity of the fire behavior models' ability to predict fire behavior given site specific inputs. One of the most successful ways the model has been improved has been through post-wildfire modeling (Brown 1972, Lawson 1972, Sneeuwjagt and Frandsen 1977, Andrews 1980, Brown 1982, Rothermel and Rinehart 1983, Bushey 1985, McAlpine and Xanthopoulos 1989, Grabner, et. al. 1994, Marsden-Smedley and Catchpole 1995, Grabner 1996, Alexander 1998, Grabner et al. 2001, Arca et al. 2005). In this type of study, Behave is used to model fire behavior based on pre-fire conditions in an area that recently burned. Real-world fire behavior, documented during the wildfire, can then be compared to the prediction results of Behave and refinements to the fuel models incorporated, retested, and so on.

Fire behavior modeling conducted on this site includes a relatively high-level of detail and analysis which results in reasonably accurate representations of how wildfire may move through available fuels on and adjacent the property. Fire behavior calculations are based on site-specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. To objectively predict flame lengths, spread rates, and fireline intensities, this analysis incorporated predominant fuel characteristics, slope percentages, and representative fuel models observed on site. The BehavePlus fire behavior modeling system was used to analyze anticipated fire behavior within and adjacent to key areas just outside of the proposed lots. Predicting wildland fire behavior is not an exact science. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting. Nevertheless, practiced and experienced judgment, coupled with a validated fire behavior modeling system, results in useful and accurate fire prevention planning information. To be used effectively, the basic assumptions and limitations of BehavePlus must be understood.

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is dead fuels less than one-quarter inch in diameter. These are the fine fuels that carry fire. Fuels greater than one inch have little effect while fuels greater than three inches have no effect on fire behavior.
- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within six feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.

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

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

The seven fuel characteristics help define the 13 standard fire behavior fuel models[1] and the five custom fuel models developed for Southern California[2]. According to the model classifications, fuel models used in BehavePlus have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface to volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in BehavePlus. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models and the custom Southern California fuel models:

- Grasses Fuel Models 1 through 3
- Brush Fuel Models 4 through 7, SCAL 14 through 18
- Timber Fuel Models 8 through 10
- Logging Slash Fuel Models 11 through 13

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 new fire behavior fuel models[3] developed for use in BehavePlus modeling efforts. These new models attempt to improve the accuracy of the standard 13 fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the new 40 fuel models:

- Grass Models GR1 through GR9
- Grass-shrub Models GS1 through GS4
- Shrub Models SH1 through SH9

1 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, UT.

2 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.

3 Scott, Joe 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.

- Timber-understory Models TU1 through TU5
- Timber litter Models TL1 through TL9
- Slash blowdown Models SB1 through SB4

BehavePlus software was used in the development of the Baker Industrial Development Project's (Proposed Project) Fuel Modification Zone Memo Letter Report in order to evaluate potential fire behavior for the Project site. Existing site conditions were evaluated, and local weather data was incorporated into the BehavePlus modeling runs.

2 Fuel Models

Dudek utilized the BehavePlus software package to analyze fire behavior potential for the Proposed Project site in the City of Lake Elsinore, Riverside County, California. As is customary for this type of analysis, five scenarios were evaluated, including two summer, onshore weather condition (north/northwest and west of the project site) and three extreme fall, offshore weather condition (north/northeast, east, and south of the project site). The project site is surrounded by to the north is a mountain range supporting low-load grasses and scattered shrubs; to the northwest is an existing single-family residential development; to the west is and existing parcel with a building, open space areas supporting low-load non-native grasses and scattered shrubs, and farther to the west, existing single-family residential parcels; to the south is existing rural residential parcels and Lake Elsinore farther to the south; and to the east is existing commercial developments, Interstate 15, Temescal Valley High school, and single-family residential parcels. With that said, fuels and terrain within and adjacent to the project development area would represent a potential wildfire hazard, but would not represent a significant fire threat due to the nature of grass fuels, i.e., fast burning, lower intensity, and lower density ember production with terrain that favors fire spread away from the Project, and defenses will have been built into the structures to prevent ember penetration and to extinguish fires that may result from ember penetration. It is the fuels directly adjacent to and within fuel modification zones that would have the potential to affect the project's structures from a radiant and convective heat perspective as well as from direct flame impingement, however, the development will include up to 100 feet of fuel modification and non-combustible parking areas. BehavePlus software requires site-specific variables for surface fire spread analysis, including fuel type, fuel moisture, wind speed, and slope data. The output variables used in this analysis include flame length (feet), rate of spread (feet/minute), fireline intensity (BTU/feet/second), and spotting distance (miles). The following provides a description of the input variables used in processing the BehavePlus models for the Proposed Project site. In addition, data sources are cited and any assumptions made during the modeling process are described.

2.1 Vegetation (Fuels)

To support the fire behavior modeling efforts conducted for this FPP, the different vegetation types observed within the project areas and adjacent to the project site were classified into the aforementioned numeric fuel models. As is customary for this type of analysis, the terrain and fuels within and adjacent to the project area were used for determining flame lengths and fire spread. It is these fuels that would have the potential to affect the project's structures from a radiant and convective heat perspective as well as from direct flame impingement. Fuel beds, including non-native grasslands with sparce areas of shrubs, are adjacent to the proposed project development site. These fuel types can produce flying embers that may affect the project, but defenses will have been built into the structures to prevent ember penetration. Table 1 provides a description of the three fuel models observed in

the vicinity of the site that were subsequently used in the analysis for this project. Modeled areas include low-load non-native grassland ground fuels (Fuel Model: Gr2) found throughout and adjacent to the project site, as well as low- to- moderate-load shrubs intermixed with the non-native grasses (Fuel Models: Gs1 and Gs2). A small riparian area is located north and east of the project site and is represented by Fuel Model Sh4. A total of five fire modeling scenarios were completed for the site. These sites were selected based on the possible likelihood of fire approaching from these directions during a Santa Ana wind-driven fire event (fire scenarios 2, 3, and 4) and an on-shore weather pattern (fire scenarios 1 and 5). Dudek also conducted modeling of the site for post-Fuel Modification Zones' (FMZ) recommendations for this project (Refer to Table 2 for post-FMZ fuel model descriptions). Fuel modification includes establishment of irrigated/drought tolerant landscapes and hardscape areas on the periphery of the Industrial buildings as well as interior landscape requirements. For modeling the post-FMZ treatment condition, fuel model assignments were re-classified as non-burnable for the non-combustible parking areas and Zone 0 areas, and for FMZ A (Fuel Model Gr1) as applicable.

Table 1. Existing Fuel Model Characteristics

Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
Gr2	Low-load, dry climate grasses	Represented throughout and in the adjacent areas surrounding the project area.	<2.0 ft.
Gs1	Low-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the project area.	<2.0 ft.
Gs2	Moderate-load, dry climate grass-shrub	Represented throughout and in the adjacent areas surrounding the project area.	<3.0 ft.
Sh2	Moderate-load dry climate shrub	Represents shrubs adjacent to Alberhill Creek east of the Project	<3.0 ft.
Sh4	Low-load, humid climate timber-shrub	Represents shrubs within and adjacent to Alberhill Creek.	<3.0 ft

Table 2. Post-development Fuel Model Characteristics

Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
NB1	Non-burnable	Non-combustible parking lot areas and Zone 0	0 ft.
Gr1	Sparse, Sparse Load, Dry Climate Grass	Fuel Modification Zone A – Irrigated and drought tolerant landscape areas	>1.0 ft.

2.2 Topography

Slope is a measure of angle in degrees from horizontal and can be presented in units of degrees or percent. Slope is important in fire behavior analysis as it affects the exposure of fuel beds. Additionally, fire burning uphill spreads faster than those burning on flat terrain or downhill as uphill vegetation is pre-heated and dried in advance of the flaming front, resulting in faster ignition rates. Natural slope values ranging from 2% to 16% were measured around the perimeter of the Project site from U.S. Geological Survey (USGS) topographic maps. Slope gradients for landscape areas are assumed to be flat (3%) as presented on the project's site plan.

2.3 Weather Analysis

Historical weather data for the Lake Elsinore region was utilized in determining appropriate fire behavior modeling inputs for the Project area. 50th and 97th percentile moisture values were derived from Remote Automated Weather Station (RAWS) and utilized in the fire behavior modeling efforts conducted in support of this report. Weather data sets from the El Cariso Fire Station RAWS (ID number 045619)[4] were utilized in the fire modeling runs.

RAWS fuel moisture and wind speed data were processed utilizing the Fire Family Plus software package to determine atypical (97th percentile) and typical (50th percentile) weather conditions. Data from the RAWS was evaluated from August 1 through November 30 for each year between 1986 and 2020 (extent of available data record) for 97th percentile weather conditions and from June 1 through September 30 for each year between 1986 and 2020 for 50th percentile weather conditions.

Following analysis in Fire Family Plus, fuel moisture information was incorporated into the Initial Fuel Moisture file used as an input in BehavePlus. Wind speed data resulting from the Fire Family Plus analysis was also determined. Initial wind direction and wind speed values for the five BehavePlus runs were manually entered during the data input phase. The input wind speed and direction is roughly an average surface wind at 20 feet above the vegetation over the analysis area. Table 3 summarizes the wind and weather input variables used in the Fire BehavePlus modeling efforts.

Table 3: Variables Used for Fire Behavior Modeling

Model Variable	Summer Weather (50th Percentile)	Peak Weather (97th Percentile)
Fuel Models	Gr2, Gs1, and Gs2	Gr2, Gs1, Gs2, Sh2, and Sh4
1 h fuel moisture	5%	1%
10 h fuel moisture	6%	2%
100 h fuel moisture	9%	5%
Live herbaceous moisture	39%	30%
Live woody moisture	77%	60%
20 ft. wind speed	15 mph (sustained winds)	18 mph (sustained winds); wind gusts of 50 mph
Wind Directions from north (degrees)	280 and 310	45, 100, and 200
Wind adjustment factor	0.4	0.4
Slope (uphill)	5 to 15%	2 to 13%

3 Fire Behavior Modeling Efforts

As mentioned, the BehavePlus fire behavior modeling software package was utilized in evaluating anticipated fire behavior adjacent to the Proposed Project site. Five focused analyses were completed for both the existing project site conditions and the post project conditions, each assuming worst-case fire weather conditions for a fire approaching the project site from the northwest, north/northeast, east, southeast, and west/southwest. The results

[4] El Cariso Fire Station RAWS Station Latitude and Longitude: 33.648005, -117.411830

of the modeling effort included anticipated values for surface fires flame length (feet), rate of spread (mph), fireline intensity (Btu/ft/s), and spotting distance (miles). The aforementioned fire behavior variables are an important component in understanding fire risk and fire agency response capabilities. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames (Andrews, Bevins, and Seli 2008). Fireline intensity is a measure of heat output from the flaming front, and also affects the potential for a surface fire to transition to a crown fire. Fire spread rate represents the speed at which the fire progresses through surface fuels and is another important variable in initial attack and fire suppression efforts (Rothermel and Rinehart 1983). Spotting distance is the distance a firebrand or ember can travel down wind and ignite receptive fuel beds. Five fire modeling scenario locations were selected to better understand the different fire behavior that may be experienced on or adjacent the site based on slope and fuel conditions; these five fire scenarios are explained in more detail below:

Fire Scenario Locations and Descriptions:

- **Scenario 1:** A summer, on-shore fire (50th percentile weather condition) burning in low-load grass dominated vegetation with sparce shrubs located north/northwest of the project site. The terrain is flat (approximately 5% slope) with potential ignition sources from a car fire along Nichols Road or a wildland fire north/northwest of the property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low intensity before reaching the developed portion of the project site.
- **Scenario 2:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs or through a riparian area located north/northeast of the project site. The terrain is flat (approximately 2% slope) with potential ignition sources from a car fire originating along Interstate 15 or Nichols Road or wildland fire from the east/northeast of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low intensity before reaching the developed portion of the project site.
- **Scenario 3:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs or through a riparian area located east of the project site. The terrain is relatively flat (approximately 6% slope) with potential ignition sources from a structure fire originating in the commercial outlet development area or a car fire originating along Interstate 15 or parking lot area of the outlets east of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low intensity before reaching the developed portion of the project site.
- **Scenario 4:** A fall, off-shore fire (97th percentile weather condition) burning in low-load grass dominated vegetation intermixed with sparce shrubs south of the project site. The terrain is moderately sloped (up to an approximately 13% slope) with potential ignition sources from a car fire or wildland fire from south of the proposed property. This type of fire would typically spread moderately fast through the grass dominated vegetation with low intensity before reaching the developed portion of the project site.
- **Scenario 5:** A summer, on-shore fire (50th percentile weather condition) burning in low-load grass dominated vegetation with sparce shrubs located west of the project site. The terrain is slightly sloped (ranging between approximately 5% and 15% slope) with potential ignition sources from a structure or car fire originating in the residential communities to the west or a wildland fire west/southwest of the property.

This type of fire would typically spread moderately fast through the grass dominated vegetation with low intensity before reaching the developed portion of the project site.

4 Fire Behavior Modeling Results

The results presented in Tables 4 and 5 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. 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 will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

As presented in Table 4, wildfire behavior approaching the Project site is expected to be primarily of low to moderate intensity throughout the non-maintained surface grass dominated fuels around the perimeter areas. Worst-case fire behavior is expected in untreated, surface grass vegetation under peak weather conditions (represented by Fall Weather, Scenario 2). The fire is anticipated to be a wind-driven fire from the north/northeast during the fall. Under such conditions, expected surface flame length is expected to be significantly lower in the areas where fuel modification occurs, with flames lengths reaching approximately 18 feet with wind speeds of 50+ mph. Under this scenario, fireline intensities reach 3,037 BTU/feet/second with moderate spread rates of 6.2 mph and could have a spotting distance up to 1.3 miles away.

Wildfire behavior in non-maintained grasslands, modeled as a Gr2 Fuel Model, being fanned by 15 mph sustained, on-shore winds Fires burning from the west/northwest and pushed by ocean breezes typically exhibit less severe fire behavior due to lower wind speeds and higher humidity. Under typical onshore weather conditions, a low-load grass/grass-shrub vegetation fire could have flame lengths between approximately 4 feet and 6 feet in height and spread rates between 0.3 and 0.8 mph. Spotting distances, where airborne embers can ignite new fires downwind of the initial fire, range from 0.2 to 0.3 miles.

As depicted in Table 5, the FMZ areas experience a significant reduction in flame length and intensity. The 14.0- to 23.9-foot flame lengths predicted for non-maintained grassland habitats during pre-treatment modeling for fire scenarios 2, 3, and 4 are reduced to approximately 4 feet by the roads and inner portions of the FMZ (Zone A) are reached, with low fire intensity and spotting distances due to the higher live and dead fuel moisture contents. These reduction of flame lengths and intensities are assumed to occur within the 100 feet of fuel modification that is achieved throughout the development site.

Table 4: RAWS BehavePlus Fire Behavior Model Results – Existing Conditions

Fire Scenario	Flame Length (feet)	Spread Rate (mph)[5]	Fireline Intensity (Btu/ft./sec)	Spot Fire (Miles)[6]
Scenario 1: 5% slope, Summer on-shore wind from the NW, 15 mph sustained winds (Current conditions)				
Low-load grasses (Gr2)	6.1'	0.8	289	0.3
Low-load grass-shrub (Gs1)	4.4'	0.3	144	0.2
Scenario 2: 2% slope, Fall, Off-shore wind from the N/NE, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.5' (18.0')	1.9 (6.2)	944 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	416 (1,763)	0.3 (1.1)
Low-load, Riparian areas (Sh4)	12.5' (23.9')	1.0 (4.2)	1,382 (5,625)	0.5 (1.6)
Scenario 3: 6% slope, Fall, Off-shore wind from the E, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.5' (18.0')	1.9 (6.2)	943 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	416 (1,763)	0.3 (1.1)
Moderate-load, shrub (Sh2)	8.4' (15.9')	0.2 (1.0)	586 (2,332)	0.4 (1.1)
Low-load, Riparian areas (Sh4)	12.5' (23.9')	1.0 (4.2)	1,381 (5,624)	0.5 (1.6)
Scenario 4: 13% slope, Fall, Off-shore wind from the S, 18 mph sustained winds with 50 mph wind gusts				
Low-load grasses (Gr2)	10.4' (18.0')	1.9 (6.2)	930 (3,037)	0.4 (1.3)
Low-load grass-shrub (Gs1)	7.2' (14.0')	0.7 (3.0)	410 (1,763)	0.3 (1.1)
Scenario 5: 5% slope, Summer, On-shore wind from the W/SW, 12 mph sustained winds (Current conditions)				
Low-load grasses (Gr2)	6.1'	0.8	290	0.3
Low-load grass-shrub (Gs1)	4.4'	0.3	145	0.2

Table 5: RAWS BehavePlus Fire Behavior Model Results – Post Project Conditions

Fire Scenario	Flame Length (feet)	Spread Rate (mph)[5]	Fireline Intensity (Btu/ft./sec)	Spot Fire (Miles)[6]
Scenario 1: 5% slope, Summer on-shore wind from the NW, 15 mph sustained winds (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	2.1'	0.2	27	0.1
Scenario 2: 2% slope, Fall, Off-shore wind from the N/NE, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 3: 6% slope, Fall, Off-shore wind from the E, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 4: 13% slope, Fall, Off-shore wind from the S, 18 mph sustained winds with 50 mph wind gusts (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	4.0' (4.0')	0.7 (0.7)	115 (115)	0.2 (0.5)
Scenario 5: 5% slope, Summer, On-shore wind from the W/SW, 12 mph sustained winds (Post)				
Non-combustible (NB1)	0	0	0	0
FMZ Zone (Gr1)	2.1'	0.2	27	0.1

[5] mph = miles per hour
[6] Spotting distance from a wind driven surface fire; it should be noted that the wind mph in parenthesis represent peak gusts of 50 mph.

The following describes the fire behavior variables (Heisch and Andrews 2010) as presented in Tables 4 and 5:

Surface Fire:

- Flame Length (feet): The flame length of a spreading surface fire within the flaming front is measured from midway in the active flaming combustion zone to the average tip of the flames.
- Fireline Intensity (Btu/ft/s): Fireline intensity is the heat energy release per unit time from a one-foot wide section of the fuel bed extending from the front to the rear of the flaming zone. Fireline intensity is a function of rate of spread and heat per unit area, and is directly related to flame length. Fireline intensity and the flame length are related to the heat felt by a person standing next to the flames.
- Surface Rate of Spread (mph): Surface rate of spread is the "speed" the fire travels through the surface fuels. Surface fuels include the litter, grass, brush and other dead and live vegetation within about 6 feet of the ground.

The information in Table 6 presents an interpretation of the outputs for five fire behavior variables as related to fire suppression efforts. The results of fire behavior modeling efforts are presented in Tables 4 and 5. Identification of modeling run locations is presented graphically as Figure 4 within the Project's FPP.

Table 6: Fire Suppression Interpretation

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

Appendix D

County of Riverside California Approved and Prohbitied Plant List

Undesirable Plant List
For Fuel Modification Projects in San Diego, Riverside, and Orange Counties

	Botanical Name	Common Name	Plant Form
1.	Acacia species •	Acacia	Shrub/Tree
2.	Adenostoma fasciculatum	Chamise	Shrub
3.	Adenostoma sparsifolium	Red Shank	Shrub/Tree
4.	Artemisia californica	California Sagebrush	Shrub
5.	Bamboos	Bamboo	Shrub
6.	Cedrus species	Cedar	Tree
7.	Cupressus species	Cypress	Tree
8.	Eriogonum fasciculatum	Common Buckwheat	Shrub
9.	Eucalyptus species	Eucalyptus	Shrub/Tree
10.	Juniperus species	Junipers	Succulent
11.	Pennisetum	Fountain Grass	Ground cover
12.	Pinus species	Pines	Tree
13.	Rosmarinus species	Rosemary	Shrub
14.	Salvia species • •	Sage	Shrub

- • Except:
  Acacia redolens desert carpet (Desert Carpet ground cover)
- • • Except:
  Salvia colubariae (chia)
  Salvia sonomensis (Creeping Sage)

Recommended Plant List
For Fuel Modification Projects in San Diego, Riverside, and Orange Counties

	Code	Botanical Name	Common Name	Plant Form
1.	**W**	Abelia x grandiflora	Glossy Abelia	Shrub
2.	□	Acacia redolens desert carpet	Desert Carpet	Shrub
3.	□	Acer macrophyllum	Big Leaf Maple	Tree
4.	**X**	Achillea millefolium	Common Yarrow	Low shrub
5.	**W**	Achillea tomentosa	Wooly Yarrow	Low shrub
6.	**X**	Aeonium decorum	Aeonium	Ground cover
7.	**X**	Aeonium simsii	ncn	Ground cover
8.	**W**	Agave attenuata	Century Plant	Succulent
9.	**W**	Agave shawii	Shaw's Century Plant	Succulent
10.	**N**	Agave victoriae-reginae	ncn	Ground cover
11.	**X**	Ajuga reptans	Carpet Bugle	Ground cover
12.	**W**	Alnus cordata	Italian Alder	Tree
13.	□	Alnus rhombifolia	White Alder	Tree
14.	**N**	Aloe aborescens	Tree Aloe	Shrub
15.	**N**	Aloe aristata	ncn	Ground cover
16.	**N**	Aloe brevifolia	ncn	Ground cover
17.	**W**	Aloe vera	Medicinal Aloe	Succulent
18.	**W**	Alyogyne huegelii	Blue Hibiscus	Shrub
19.	□	Ambrosia chamissonis	Beach Bur-Sage	Perennial
20.	□	Amorpha fruticosa	Western False Indigobush	Shrub
21.	**W**	Anigozanthus flavidus	Kangaroo Paw	Perennial accent
22.	□	Antirrhinum nuttalianum ssp. nuttalianum	ncn	Subshrub
23.	**X**	Aptenia cordifolia x 'Red Apple'	Red Apple Aptenia	Ground cover
24.	**W**	Arbutus unedo	Strawberry Tree	Tree
25.	**W**	Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	Ground cover
26.	**W**	Arctostaphylos edmundsii	Little Sur Manzanita	Ground cover
27.	□	Arctostaphylos glandulosa ssp.glandulosa	Eastwood Manzanita	Shrub
28.	**W**	Arctostaphylos hookeri 'Monterey Carpet'	Monterey Carpet Manzanita	Low shrub

X = Plant species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable on all other fuel modification locations and zones.

W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification locations and zones.

= Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification locations and zones.

• If seed collected from local seed source.

•• Not native plant species but can be used in all fuel modification zones.

= Plant species acceptable on a limited use basis. Refer to qualification requirements starting on page 14.

	Code	Botanical Name	Common Name	Plant Form
29.	**N**	Arctostaphylos pungens	ncn	Shrub
30.	**N**	Arctostaphylos refugioensis	Refugio Manzanita	Shrub
31.	**W**	Arctostaphylos uva-ursi	Bearberry	Ground cover
32.	**W**	Arctostaphylos x 'Greensphere'	Greensphere Manzanita	Shrub
33.	**N**	Artemisia caucasica	Caucasian Artemisia	Ground cover
34.	**X**	Artemisia pycnocephaia	Beach Sagewort	Perennial
35.	**X**	Atriplex canescens	Four-Wing Saltbush	Shrub
36.	**X**	Atriplex lentiformis ssp. Breweri	Brewer Saltbush	Shrub
37.	□	Baccharis emoryi	Emory Baccharis	Shrub
38.	**W** □	Baccharis pilularis ssp. Consanguinea	Chaparral Bloom	Shrub
39.	**X**	Baccharis pilularis var. pilularis "Twin Peaks #2'	Twin Peaks	Ground cover
40.	□	Baccharis salicifolia	Mulefat	Shrub
41.	**N**	Baileya multiradiata	Desert Marigold	Ground cover
42.	**W**	Beaucarnea recurvata	Bottle Palm	Shrub/Small tree
43.	**N** □	Bougainvillea spectabilis	Bougainvillea	Shrub
44.	**N** □	Brahea armata	Mexican Blue Palm, Blue Hesper Palm	Palm
45.	**N** □	Brahea brandegeei	San Jose Hesper Palm	Palm
46.	**N** □	Brahea edulis	Guadalupe Palm	Palm
47.	□	Brickellia californica	ncn	Subshrub
48.	**W** □	Bromus carinatus	California Brome	Grass
49.	□	Camissonia cheiranthifolia	Beach Evening Primrose	Perennial subshrub
50.	**N**	Carissa macrocarpa	Green Carpet Natal Plum	Ground cover/Shrub
51.	**X**	Carpobrotus chilensis	Sea Fig Ice Plant	Ground cover
52.	**W**	Ceanothus gloriosus 'Point Reyes'	Point Reyes Ceanothus	Shrub

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53.	**W**	Ceanothus griseus "Louis Edmunds'	Louis Edmunds Ceanothus	Shrub
54.	**W**	Ceanothus griseus horizontalis	Yankee Point	Ground Cover
55.	**W**	Ceanothus griseus var. horizontalis	Carmel Creeper Ceanothus	Shrub
56.	**W**	Ceanothus griseus var. horizontalis "Yankee Point"	Yankee Point Ceanothus	Shrub
57.	□	Ceanothus megacarpus	Big Pod Ceanothus	Shrub
58.	**W**	Ceanothus prostratus	Squaw carpet ceanothus	Shrub
59.	□	Ceanothus spinosus	Green bark ceanothus	Shrub
60.	**W**	Ceanothus verrucosus	Wart-Stem Ceanothus	Shrub
61.	**W**	Cerastium tomentosum	Snow-in-summer	Ground cover/shrub
62.	**W**	Ceratonia siliqua	Carob	Tree
63.	**W**	Cercis occidentalis	Western Redbud	Tree/shrub
64.	**X**	Chrysanthemum leucanthemum	Oxeye Daisy	Groundcover
65.	**W**	Cistus crispus	ncn	Shrub
66.	**W**	Cistus hybridus	White Rockrose	Shrub
67.	**W**	Cistus incanus	ncn	Shrub
68.	**W**	Cistus incanus ssp. corsicus	ncn	Shrub
69.	**W**	Cistus salviifolis	Sageleaf Rockrose	Shrub
70.	**W**	Cistus x purpureus	Orchid Rockrose	Shrub
71.	**W**	Citrus species	Citrus	Tree
72.	□	Clarkia bottae	Showy Fairwell to Spring	Annual
73.	□	Cneoridium dumosum	Bushrue	Shrub
74.	□	Collinsia heterophylla	Chinese Houses	Annual
75.	**W** □	Comarostaphylis diversifolia	Summer Holly	Shrub
76.	**N**	Convolvulus cneorum	Bush Morning Glory	Shrub

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77.	**W**	Coprosma kirkii	Creeping Coprosma	Ground cover/Shrub
78.	**W**	Coprosma pumila	Prostrate Coprosma	Low Shrub
79.	□	Coreopsis californica	California Coreopsis	Annual
80.	**W**	Coreopsis lanceolata	Coreopsis	Ground cover
81.	**N**	Correa pulchella	Australian Fuchsia	Ground cover
82.	**W**	Cotoneaster buxifolius	ncn	Shrub
83.	**W**	Cotoneaster congestus 'Likiang'	Likiang Cotoneaster	Ground cover/Vine
84.	**W**	Cotoneaster parneyi	ncn	Shrub
85.	**X**	Crassula lactea	ncn	Ground cover
86.	**X**	Crassula multicava	ncn	Ground cover
87.	**X**	Crassula ovata	Jade Tree	Shrub
88.	**X**	Crassula tetragona	ncn	Ground cover
89.	**W** □	Croton californicus	California Croton	Ground cover
90.	**X**	Delosperma 'alba'	White Trailing Ice Plant	Ground cover
91.	□	Dendromecon rigida	Bush Poppy	Shrub
92.	□	Dichelostemma capitatum	Blue Dicks	Herb
93.	**N**	Distictis buccinatoria	Blood-Red Trumpet Vine	Vine/Climbing vine
94.	**N**	Dodonaea viscosa	Hopseed Bush	Shrub
95.	**X**	Drosanthemum floribundum	Rosea Ice Plant	Ground cover
96.	**X**	Drosanthemum hispidum	ncn	Ground cover
97.	**X**	Drosanthemum speciosum	Dewflower	Ground cover
98.	□	Dudleya lanceolata	Lance-leaved Dudleya	Succulent
99.	□	Dudleya pulverulenta	Chalk Dudleya	Succulent
100.	**W**	Elaeagnus pungens	Silverberry	Shrub
101	□	Encelia californica	California Encelia	Small shrub

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102.	□ ●	Epilobium canum [Zauschneria californica]	Hoary California Fuchsia	Shrub
103.	□	Eriastrum sapphirinum	Mojave Wooly Star	Annual
104.	**N**	Eriobotrya japonica	Loquat	Tree
105.	□	Eriodictycon crassifolium	Thick-Leaf Yerba Santa	Shrub
106.	□	Eriodictycon trichocalyx	Yerba Santa	Shrub
107.	**W** □	Eriophyllum confertiflorum	ncn	Shrub
108.	**W**	Erythrina species	Coral Tree	Tree
109.	**N**	Escallonia species	Several varieties	Shrub
110.	**W** □	Eschscholzia californica	California Poppy	Flower
111.	**X**	Eschscholzia mexicana	Mexican Poppy	Herb
112.	**N**	Euonymus fortunei	Winter Creeper Euonymus	Ground cover
113.	**N**	Feijoa sellowiana	Pineapple Guava	Shrub/Tree
114.	**N**	Fragaria chiloensis	Wild Strawberry/ Sand Strawberry	Ground cover
115.	□	Frankenia salina	Alkali Heath	Ground cover
116.	**W**	Fremontodendron californicum	California Flannelbush	Shrub
117.	**X**	Gaillardia x grandiflora	Blanketflower	Ground cover
118.	**W**	Galvezia speciosa	Bush Snapdragon	Shrub
119	**W**	Garrya ellipta	Silktassel	Shrub
120.	**X**	Gazania hybrids	South African Daisy	Ground cover
121.	**X**	Gazania rigens leucolaena	Trailing Gazania	Ground cover
122.	□	Gilia capitata	Globe Gilia	Perennial
123.	**W**	Gilia lepthantha	Showy Gilia	Perennial
124.	**W**	Gilia tricolor	Bird's Eyes	Perennial
125.	**W**	Ginkgo biloba	Maidenhair Tree	Tree
126.	□	Gnaphalium californicum	California Everlasting	Annual
127.	**W**	Grewia occidentalis	Starflower	Shrub
128.	□	Grindelia stricta	Gum Plant	Ground cover

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129.	**N □**	Hakea suaveolens	Sweet Hakea	Shrub
130.	**W**	Hardenbergia comptoniana	Lilac Vine	Shrub
131.	**N**	Helianthemum mutabile	Sunrose	Ground cover/Shrub
132.	□	Helianthemum scoparium	Rush Rose	Shrub
133.	□	Heliotropium curassavicum	Salt Heliotrope	Ground cover
134.	**X**	Helix canariensis	English Ivy	Ground cover
135.	**W**	Hesperaloe parviflora	Red Yucca	Perennial
136.	□ □	Heteromeles arbutifolia	Toyon	Shrub
137.	**X**	Hypericum calycinum	Aaron's-Beard	Shrub
138.	**N**	Iberis sempervirens	Edging Caandytuft	Ground cover
139.	**N**	Iberis umbellatum	Globe Candytuft	Ground cover
140.	□	Isocoma menziesii	Coastal Goldenbush	Small shrub
141.	□	Isomeris arborea	Bladderpod	Shrub
142.	**W**	Iva hayesiana	Poverty Weed	Ground cover
143.	**N**	Juglans californica	California Black Walnut	Tree
144.	□	Juncus acutus	Spiny Rush	Perennial
145.	□	Keckiella antirrhinoides	Yellow Bush Penstemon	Subshrub
146.	□	Keckiella cordifolia	Heart Leaved Penstemon	Subshrub
147.	□	Keckiella ternata	Blue Stemmed Bush Penstemon	Subshrub
148.	**W**	Kniphofia uvaria	Red Hot Poker	Perennial
149.	**W**	Lagerstroemia indica	Crape Myrtel	Tree
150.	**W**	Lagunaria patersonii	Primrose Tree	Tree
151.	**X**	Lampranthus aurantiacus	Bush Ice Plant	Ground cover
152.	**X**	Lampranthus filicaulis	Redondo Creeper	Ground cover
153.	**X**	Lampranthus spectabilis	Trailing Ice Plant	Ground cover
154.	**W**	Lantana camara cultivars	Yellow Sage	Shrub
155.	**W**	Lantana montevidensis	Trailing Lantana	Shrub
156.	□	Lasthenia californica	Dwarf Goldfields	Annual

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157.	**W**	Lavandula dentata	French Lavendar	Shrub
158.	**W**	Leptospermum laevigatum	Australian Tea Tree	Shrub
159.	**W**	Leucophyllum frutescens	Texas Ranger	Shrub
160.	□	Leymus condensatus	Giant Wild Rye	Large grass
161.	**N**	Ligustrum japonicum	Texas Privet	Shrub
162.	**X**	Limonium pectinatum	ncn	Ground cover
163.	**X**	Limonium perezii	Sea Lavender	Shrub
164.	**W** □	Liquidambar styraciflua	American Sweet Gum	Tree
165.	**W**	Liriodendron tulipifera	Tulip Tree	Tree
166.	**X**	Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining shrub
167.	□	Lonicera subspicata	Wild Honeysuckle	Vining shrub
168.	**X**	Lotus corniculatus	Bird's Foot Trefoil	Ground cover
169.	□	Lotus heermannii	Northern Woolly Lotus	Perennial
170.	□	Lotus scoparius	Deerweed	Shrub
171.	**W**	Lupinus arizonicus	Desert Lupine	Annual
172.	**W**	Lupinus benthamii	Spider Lupine	Annual
173.	□	Lupinus bicolor	Sky Lupine	Flowering annual
174.	□	Lupinus sparsiflorus	Loosely Flowered Annual Lupini/Coulter's Lupine	Annual
175.	**W**	Lyonothamnus floribundus ssp. asplenifolius	Fernleaf Ironwood	Tree
176.	**W**	Macadamia Integrifolia	Macadamia Nut	Tree
177.	**W**	Mahonia aquifolium 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub

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178.	**W**	Mahonia nevinii	Nevin Mahonia	Shrub
179.	□	Malacothamnus fasciculatus	Chaparral Mallow	Shrub
180.	**X**	Malephora luteola	Trailing Ice Plant	Ground cover
181.	**W**	Maytenus boaria	Mayten Tree	Tree
182.	**W**	Melaleuca nesophila	Pink Melaleuca	Shrub
183.	**N**	Metrosideros excelsus	New Zealand Christmas Tree	Tree
184.	□ ●	Mimulus species	Monkeyflower	Flower
185.	□	Mirabilis californica	Wishbone Bush	Perennial
186.	**N**	Myoporum debile	ncn	Shrub
187.	**N**	Myoporum insulare	Boobyalla	Shrub
188.	**W**	Myoporum parvifolium	ncn	Ground cover
189.	**W**	Myoporum 'Pacificum'	ncn	Shrub
190.	□	Nassella [stipa] lepida	Foothill needlegrass	Ground cover
191.	□	Nassella [stipa] pulchra	Purple needlegrass	Ground cover
192.	□	Nemophila menziesii	Baby Blue Eyes	Annual
193.	**X**	Nerium oleander	Oleander	Shrub
197.	□	Oenothera hookeri	California Evening Primrose	Flower
198.	**W**	Oenothera speciosa	Showy Evening Primrose	Perennial
199.	**X**	Ophiopogon japonicus	Mondo Grass	Ground cover
200.	□ ●	Opuntia littoralis	Prickly Pear	Cactus
201.	□ ●	Opuntia oricola	Oracle Cactus	Cactus
202.	□ ●	Opuntia prolifera	Coast Cholla	Cactus
203.	**W**	Osmanthus fragrans	Sweet Olive	Shrub
204.	**X**	Osteospermum fruticosum	Trailing African Daisy	Ground cover
205.	**X**	Parkinsonia aculeata	Mexican Palo Verde	Tree
206.	**W**	Pelargonium peltatum	Ivy Geranium	Ground cover

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207.	**X**	Penstemon species	Beard Tongue	Shrub
208.	**W**	Photinia fraseri	ncn	Shrub
209.	**W**	Pistacia chinensis	Chinese Pistache	Tree
210.	**X**	Pittosporum undulatum	Victorian Box	Tree
211.	□	Plantago erecta	California Plantain	Annual
212.	● ●	Plantago insularis	Woolly Plantain	Annual
213.	**X**	Plantago sempervirens	Evergreen Plaintain	Ground cover
214.	**W**	Platanus racemosa	California Sycamore	Tree
215.	**W**	Plumbago auriculata	Plumbago Cape	Shrub
216.	□	Populus fremontii	Western Cottonwood	Tree
217.	**X**	Portulacaria afra	Elephant's Food	Shrub
218.	□	Potentilla glandulosa	Sticky Cinquefoil	Subshrub
219.	**X**	Potentilla tabernaemontanii	Spring Cinquefoil	Ground cover
220.	**X**	Prunus caroliniana	Carolina Cherry Laurel	Shrub/Tree
221.	□	Prunus ilicifolia ssp. ilicifolia	Holly Leaved Cherry	Shrub
222.	**X**	Prunus lyonii	Catalina Cherry	Shrub/Tree
223.	**N**	Punica granatum	Pomegranate	Shrub/Tree
224.	**W**	Puya species	Puya	Succulent/shrub
225.	**W**	Pyracantha species	Firethorn	Shrub
226.	□	Quercus agrifolia	Coast Live Oak	Shrub
227.	□ □ ●	Quercus berberdifolia	California Scrub Oak	Shrub
228.	□ □ ●	Quercus dumosa	Coastal Scrub Oak	Shrub
229.	**X**	Quercus engelmannii	Engelmann Oak	Tree

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230.	**X**	Quercus suber	Cork Oak	Tree
231.	**X**	Rhamnus alaternus	Italian Buckthorn	Shrub
232.	□	Rhamnus californica	California Coffee Berry	Shrub
233.	□	Rhamnus crocea	Redberry	Shrub
234.	□	Rhamnus crocea ssp. ilicifolia	Hollyleaf Redberry	Shrub
235.	**N**	Rhaphiolepis species	Indian Hawthorn	Shrub
236.	□	Rhus integrifolia	Lemonade Berry	Shrub
237.	**N**	Rhus lancea	African Sumac	Tree
238.	□ □	Rhus ovata	Sugarbush	Shrub
239.	□	Ribes aureum	Golden Currant	Shrub
240.	□	Ribes indecorum	White Flowering Currant	Shrub
241.	□	Ribes speciosum	Fuchsia Flowering Gooseberry	Shrub
242.	**W**	Ribes viburnifolium	Evergreen Currant	Shrub
243.	□ ●	Romneya coulteri	Matilija Poppy	Shrub
244.	**X**	Romneya coulteri 'White Cloud'	White Cloud Matilija Poppy	Shrub
245.	**W** □	Rosmarinus officinalis	Rosemary	Shrub
246.	**W** □	Salvia greggii	Autumn Sage	Shrub
247.	**W** □	Salvia sonomensis	Creeping Sage	Ground cover
248.	□	Sambucus mexicana	Mexican Elderberry	Tree
249.	**W**	Santolina chamaecyparissus	Lavender Cotton	Ground cover
250.	**W**	Santolina virens	Green Lavender Cotton	Shrub
251.	□	Satureja chandleri	San Miguel Savory	Perennial
252.	□	Scirpus acutus	Hard-Stem Bulrush	Perennial
253.	□	Scirpus californicus	California Bulrush	Perennial

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254.	**X**	Sedum acre	Goldmoss Sedum	Ground cover
255.	**X**	Sedum album	Green Stonecrop	Ground cover
256.	**X**	Sedum confusum	ncn	Ground cover
257.	**X**	Sedum llineare	ncn	Ground cover
258.	**X**	Sedum x rubrotinctum	Pork and Beans	Ground cover
259.	**X**	Senecio serpens	ncn	Ground cover
260.	□	Sisyrinchium bellum	Blue-Eyed Grass	Ground cover
261.	□	Solanum douglasii	Douglas Nightshade	Shrub
262.	□	Solanum xantii	Purple Nightshade	Perennial
263.	**W**	Stenocarpus sinuatus	Firewheel Tree	Tree
264.	**W**	Strelitzia nicolai	Giant Bird of Paradise	Perennial
265.	**W**	Strelitzia reginae	Bird of Paradise	Perennial
266.	□	Symphoricarpos mollis	Creeping Snowberry	Shrub
267.	**W**	Tecoma stans [Stenolobium stans]	Yellow Bells	Shrub/Small tree
268.	**X**	Tecomaria capensis	Cape Honeysuckle	Ground cover
269.	**N**	Teucrium chamaedrys	Germander	Ground cover
270.	**N**	Thymus serpyllum	Lemon Thyme	Ground cover
271.	**N**	Trachelospermum jasminoides	Star Jasmine	Shrub
272.	□	Trichostema lanatum	Woolly Blue-Curls	Shrub
273.	**X**	Trifolium hirtum 'Hyron'	Hyron Rose Clover	Ground cover
274.	**X**	Trifolium fragiferum 'O'Connor's'	O'Connor's Legume	Ground cover
275.	□	Umbellularia californica	California Laurel	Tree
276.	□	Verbena lasiostachys	Western Vervain	Perennial

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W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification locations and zones.

= Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification locations and zones.

● If seed collected from local seed source.

●● Not native plant species but can be used in all fuel modification zones.

= Plant species acceptable on a limited use basis. Refer to qualification requirements starting on page 14.

	Code	Botanical Name	Common Name	Plant Form
277.	**N**	Verbena peruviana	ncn	Ground cover
278.	**X**	Verbena species	Verbena	Ground cover
279.	**X**	Vinca minor	Dwarf Periwinkle	Ground cover
280.	□	Vitis girdiana	Desert Wild Grape	Vine
281.	**X**	Vulpia myuros 'Zorro'	Zorro Annual Fescue	Grass
282.	**W**	Westringia fruticosa	ncn	Shrub
283.	**W**	Xanthorrhoea species	Grass Tree	Perennial accent/ Shrub
284.	**W**	Xylosma congestum	Shiny Xylosma	Shrub
285.	**X**	Yucca species	Yucca	Shrub
286.	□	Yucca whipplei	Yucca	Shrub

X = Plant species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable on all other fuel modification locations and zones.

W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification locations and zones.

= Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification locations and zones.

• If seed collected from local seed source.

•• Not native plant species but can be used in all fuel modification zones.

= Plant species acceptable on a limited use basis. Refer to qualification requirements starting on page 14.

QUALIFICATION STATEMENTS FOR SELECT PLANT SPECIES

□ **= Plant species acceptable on a limited use basis:**

2. Acacia redolens desert carpet

May be used in the upper 1/2 of fuel modification zone 2 (30 to 70 feet). The plants may be planted at 8 feet on center minimum spacing in meandering zones not to exceed a mature width of 24 feet or a mature height of 24 feet.

43. Bougainvillea spectabilis [procumbent varities]

Procumbent to mounding varieties may be used in the mid fuel modification zone 2 (30 to 70 feet). The plants may be planted in clusters at 6 feet once center spacing not to exceed 8 plants per cluster. Mature spacing between individual plants or clusters shall be 30 feet minimum.

44. Brahea armata
45. Brahea brandegeei
46. Brahea edulis

May be used in the upper and mid fuel modification zone 2 (30 to 70 feet). The plants shall be used as single specimens with mature spacing between palms of 30 feet minimum.

129. Hakea suaveolens

May be used in the mid fuel modification zone 2 (30-70 feet). The plants shall be used as single specimens with mature spacing between plants of 30 feet minimum.

136. Heteromeles arbutifolia

May be used in the mid to lower fuel modification zone 2 (30 to 70 feet). The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or cluster shall be 30 feet minimum.

164. Liquidambar styraciflua

May be used in the mid to lower fuel modification zone 2 (30 to 70 feet). The plant shall be used as single specimens with mature spacing between trees at 30 feet minimum.

227. Quercus berberdifolia

228. Quercus dumosa

May be used in the mid to lower fuel modification zone 2 (30 to 70 feet). The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30 feet minimum.

238. Rhus ovata

May be used in the mid to lower fuel modification zone 3 (30 to 70 feet) within inland areas only. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30 feet minimum.

245. Romarinus officinalis
246. Salvia greggii
247. Salvia sonomensis

May be used in the mid to upper fuel modification zone 2 (30 to 70 feet). The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 15 feet minimum.