Riker Ranch Project 21-Lot Subdivision
FIRE PROTECTION PLAN
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APN No. 398-390-67-00

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EXECUTIVE SUMMARY

The project site is an approximately 6.24 acre parcel and the project proposes a 21-lot residential subdivision with one street lot. (Tentative Map #5592) and a private roadway lot. The project is located at 9230 Adlai Road, just north of East Lakeview Road within the Lakeside Fire Protection District (LFPD). The project is an "infill" on an existing street. No dead-end roads are proposed within the proposed project. The proposed 21-residential lot project (with one street lot) lies within an area statutorily designated a Local Responsibility Area (LRA) "Very High Fire Hazard Severity Zone," by LFPD and California Department of Forestry and Fire Protection (CAL FIRE). The site is surrounded by privately owned, developed and undeveloped properties. The project is located on relatively flat ground with very gentle or no slopes.

The area, like all of San Diego County, is subject to seasonal weather conditions that can heighten the likelihood of fire ignition and spread; however, considering the site's mild terrain and sparse vegetation, would be expected to result in spotty, potentially fast moving and primarily low- intensity wildfire.

The project site is located within the jurisdiction of the LFPD. However, LFPD has contracted all fire prevention services with the San Diego County Fire Authority (SDCFA). The LFPD operates four fire stations that could respond to an incident on the site. Initial response to the site is provided from Fire Station 3 on 14008 Highway 8 Business loop. Emergency Response travel time to the proposed project is 2.4 minutes from fire station number three and meets the general plan requirements for the maximum allowable travel time, which is 5 minutes. In addition, automatic/mutual aid agreements are in place with neighboring fire agencies to augment response, especially at the fringe areas of each jurisdiction.

The project will be constructed to the ignition resistant code requirements of the 2013 California Fire and Building (Chapter 7A) Codes (or the most recent code update at time of construction) as amended by LFPD and local fire district ordinances. Construction shall include enhanced ignition resistant features, automatic interior sprinklers, appropriate fire flow and water capacity, roads, and supporting infrastructure, and fuel modification areas, as well as measures that exceed current Building/Fire code requirements.

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1 INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the proposed Riker Ranch 21- lot and one street lot Subdivision project in the unincorporated San Diego County, California. The purpose of the FPP is to assess the potential impacts resulting from wildland fire hazards and address the modification to the maximum allowable dead-end road length and identify the measures necessary to adequately mitigate those impacts and not lessen health, life and safety requirements for this project. As part of the assessment, this plan has considered the fire risk presented by the site including: property location and topography, geology (soils and slopes), combustible vegetation (fuel types), climatic conditions, fire history and the proposed land use and configuration. This FPP addresses water supply, primary access and secondary access, structural ignitability and ignition resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management. The plan identifies fuel modification/management zones and recommends the types and methods of treatment that will protect this project and its essential infrastructure. The FPP recommends measures that property owners will take to reduce the probability of structural ignition throughout the project.

This FPP is consistent and exceeds the LFPD Ordinance No. 13-001 and the 2014 San Diego County Consolidated Fire Code. The County's Consolidated Fire and Building Codes, as a package, have been certified by the State Board of Forestry as meeting the California Code of Regulations (CCR) Title 14 SRA Fire Safe Regulations requirements. Further, it is consistent with the CCR Titles 14 and 24, and State Fire and Building Codes (2013). The purpose of this plan is to generate and memorialize the fire safety requirements of the Fire Authority Having Jurisdiction (FAHJ), namely the LFPD. LFPD has contracted with SDFCA to provide all fire prevention services. Requirements specified in this FPP are based on site-specific characteristics and incorporate input from the fire district, project developer, project planners, engineers, and architects.

1.1 Project Summary

1.1.1 Location

The Riker Ranch project is located in the western, unincorporated portion of the County of San Diego in the Lakeside Community Planning Area. More specifically, the project site is situated at 9230 Adlai Road, just north of East Lakeview Road (Figure 1). Surrounding land uses include existing residential development to the north, east and southwest, and non-developed open space to the northwest. The Riker Ranch property adjoins two privately owned properties: Clegg and Keach parcel (APN: 398-390-66-00) and Dean parcel (APN: 398-390-19-00) to the west and

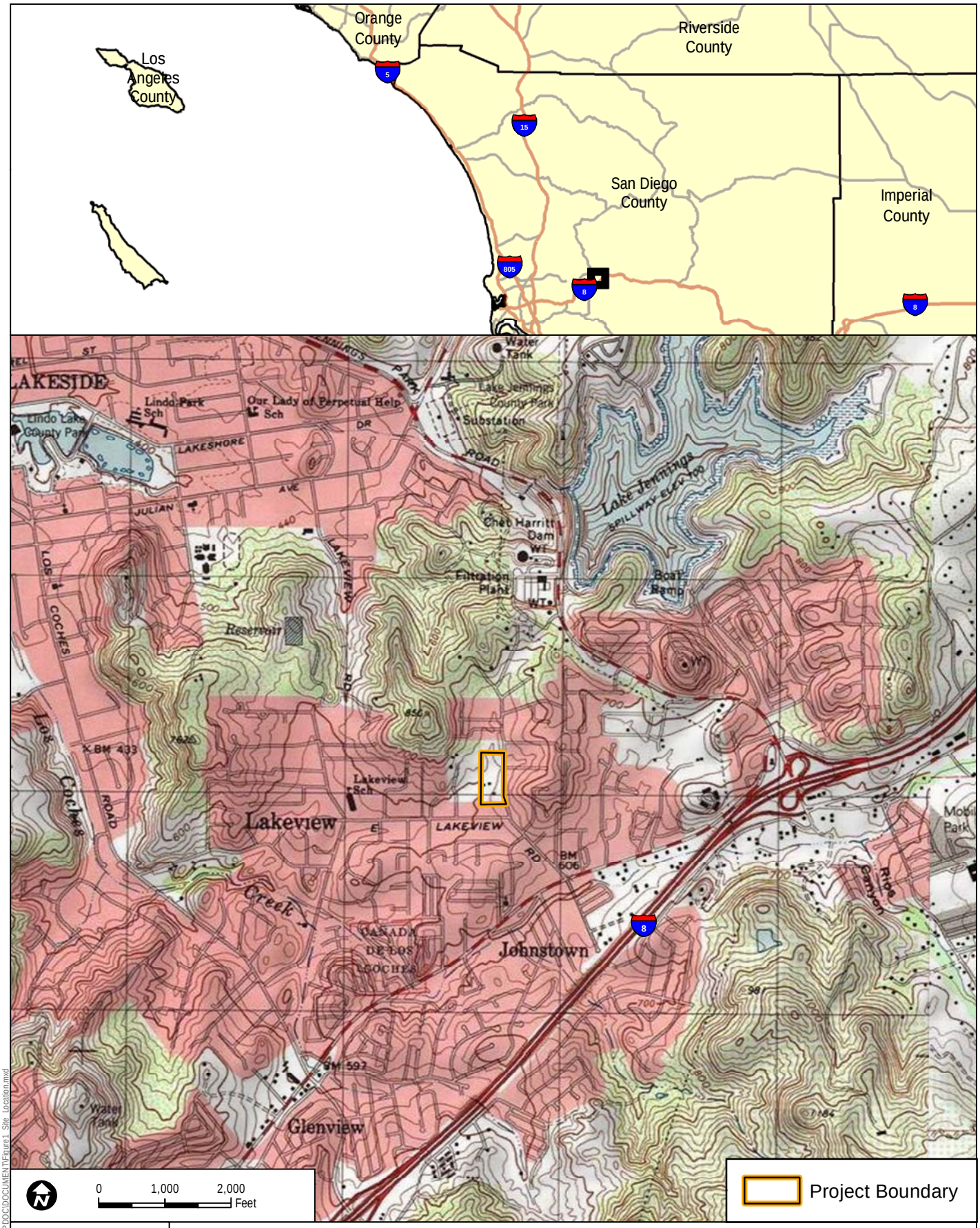
north, respectively (SanGIS 2014). The Riker Ranch project site is located on Assessor Parcel Number 398-390-67-00. The entirety of the Riker Ranch property lies within the local responsibility area Very High Fire Hazard Severity Zone, as statutorily designated by the LFPD and CAL FIRE.

1.1.2 Project Description

The Riker Ranch project proposes to subdivide a 6.24 acre parcel into 22 total residential lots (Figure 2). The project is an infill on an existing street. The project site is subject to General Plan Regional category "Village," Land Use Designation Village Residential (VR-4.3). Zoning for the site is RS; Residential Single Family. The single-family residential lots are at least 10,000 square feet in size. The project will also include appurtenant roads/streets, with the remainder of the site dedicated to fuel modification and landscaping. The majority of fuel modification zones (FMZ) will occur within the project site. For those portions of FMZ extending to the north and west of the project site onto adjacent, undeveloped properties (APNs: 393-390-19 and 398-390-66), the project applicant will obtain an FMZ agreement with the adjoining property owners. The FMZ agreement will be recorded on the adjacent parcels to allow a minimum of 100 feet of fuel modification for the Riker Ranch structures. Access would be provided by a private road that will be un-gated connecting to Adlai Road at two locations: northeast and southeast entrances to the project site. The entire roadway from the proposed project to the nearest "compliance point" is currently and will continue to provide fuel modification in the form of developed property. No dead-end roads are proposed within the proposed project. Adlai Road has an improved width of 24 feet with asphalt concrete pavement from the northernly intersection with the proposed on-site private street to East Lakeview Road. Potable water supply would be provided by the Helix Water District. Appendix A provides photographs of the site in its current, undeveloped condition.

1.1.3 Environmental Setting

Dudek conducted a field assessment of the project site, including on-site and off-site adjacent areas, on August 13, 2014, in order to document existing site conditions and determine potential actions for addressing the protection of proposed structures on the site.



DUDEK

SOURCE: USGS 7.5-Minute Series El Cajon Quadrangle.

FIGURE 1

Site Location

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RIKER RANCH PROJECT

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SOURCE: Bing 2015

FIGURE 2

Project Site Map

RIKER RANCH PROJECT

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Assessments of the area's topography, natural vegetation and fuel loading, fire history, and general susceptibility to wildfire formed the basis of the site risk assessment. The field assessment included:

- Topographic features documentation
- Vegetation/fuel documentation and measurements
- Existing infrastructure evaluations
- Documentation of the existing condition
- Surrounding land use confirmations
- Necessary fire behavior modeling data collection
- Photograph documentation.

1.1.3.1 Topography

The Riker Ranch project site consists of flat to gently sloping terrain that trends from the north to the south and from east to west. Maximum slopes on site reach gradients of 5%. Much of the site is traversable on dirt roads or accessible from Adlai Road. A narrow, natural storm water course meanders through the northwest corner of the property. Elevations on site range from roughly 644 feet above mean seal level (amsl) in the northeast corner of the property to just over 600 feet amsl in the southwest corner of the project site. A small hill (elevation of 850 feet) is located outside of the property and to the northwest of the project area.

1.1.3.2 Fuels

Vegetative fuels on site are characteristic of the area and are primarily non-native annual grasses and forbs, ornamental trees, and a narrow strip of eucalyptus woodlands along the western portion of the site. Disturbed habitat and urban/developed land cover types are also present on site in greater amounts. A biological technical report for the project site is currently being prepared by REC Consultants and includes more details on the site's vegetation. The area proposed for development and within the project grading limits will be converted to roads, structures, and landscape vegetation following project completion. Vegetative fuels within proposed fuel modification zones consist primarily of eucalyptus trees and non-native grasses, although these fuels will be modified as a result of development, altering their current structure and species composition. Areas outside of proposed development and fuel modification zones can be classified primarily as mowed, non-native grasses in vacant lots with pockets of eucalyptus groves running along the western edge of the project site.

Vegetation communities of concern are those that are more likely to facilitate fire spread into the proposed development. Three off-site vegetation communities were identified as potentially facilitating fire spread toward project residences. They are as follows:

Eucalyptus Woodlands (off site)

Eucalyptus woodland is dominated by mature, Red Gum (*Eucalyptus camaldulensis*) with a few Mexican Fan Palms (*Washingtonia robusta*). Red Gum trees are primarily single-stemmed with trunk diameters at breast height (DBH)[1] ranging from 8 to 22 inches. Tree heights vary from 25 to 60 feet with their tree canopy extents ranging from 25 feet to nearly 45 feet. A loose, 4-inch-deep leaf layer with some dead branches occurs predominately underneath the dense canopies of the trees. Fires would typically spread through the surface litter. The eucalyptus woodlands occur along the western edge of the property.

Non-native Grassland (off site)

Non-native grassland areas occur on adjoining properties to the west and north of the Riker Ranch site. The flora of non-native grasslands includes a dense to sparse cover of introduced grasses and have been routinely mowed to a height of 12 inches or cleared for weed abatement. The grasslands also have a greater amount of exposed bare ground, breaking up the horizontal continuity of the grass fuel bed.

Ornamental Vegetation/Non-native Grasslands (off site)

Southern California's climate is capable of supporting many types of ornamental landscape plant material (evergreen and deciduous). There is diversity in terms of structure, height, and density of these plants. The ornamental landscape exists because of humans, and in most cases it is dependent upon humans to be irrigated and maintained. Ornamental landscapes often transition and may grow into native habitat. This vegetation type is usually planned and regularly maintained (pruned, watered, and removal of dead plants). However, not all ornamental landscapes are considered fire safe. For example, a landscape that is poorly maintained, or is planted too densely may be compromised, and therefore, become more flammable. This vegetation type occurs as front or back yards around the semi-rural homes in the north, east, and south of the project site. The majority of properties around the project site appear to be regularly watered and are well-maintained.

[1] Tree d.b.h. is outside bark diameter at breast height. Breast height is defined as 4.5 feet (1.37m) above the gorund on the uphill side of the tree.

1.1.3.3 Fuel Loads

The vegetation described above translates to fuel models used for fire behavior modeling, discussed in Chapter 3 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 (leaf size, branching patterns), and overall fuel loading. For example, the native shrub species that compose the sage scrub plant communities on site are considered to exhibit higher potential hazard based on such criteria.

The importance of vegetative cover on fire suppression efforts is its role in affecting fire behavior. For example, while fires burning in grasslands may exhibit lower flame lengths than those burning in chaparral fuels, fire spread rates in grasslands are often much more rapid than those in other vegetation types. Fuel loading in grassland areas is estimated to be less than 1.0 ton/acre, while the deadwood and leaf layer in the understory of the eucalyptus woodlands is estimated at 1.5 to 2.0 tons/acre.

1.1.3.4 Fire History

Fire history is an important component of a site-specific FPP. Fire History data provides valuable information regarding fire spread, fire frequency, ignition sources, and vegetation/fuel mosaics across a given landscape. One important use for this information is as a tool for pre-planning. It is advantageous to know which areas may have burned recently and therefore may provide a tactical defense position, what type of fire burned on the site, and how a fire may spread. According to available data from the California Department of Forestry and Fire Protection (FRAP 2014)[2], 28 fires have burned in the vicinity of the project site since the beginning of the historical fire data record. No recorded fires have burned on the project site. Recorded wildfires within three miles range from 33 acres to 270,686 (Cedar Fire) acres. The average fire size is 974 acres (not including the Cedar Fire and Laguna Fire or fires smaller than 10 acres). LFPD may have data regarding smaller fires (less than 10 acres) that have occurred on or near the site that have not been included herein. Table 1 summarizes the fire history for the area within three miles of the Riker Ranch site. Fire history for the general vicinity of the project site is illustrated in the map in Appendix B.

[2] Based on polygon GIS data from CAL FIRE's Fire and Resource Assessment Program (FRAP), which includes data from CAL FIRE, USDA Forest Service Region 5, BLM, NPS, Contract Counties and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater between 1878–2013.

Table 1
Fire History within Three Miles of the Riker Ranch Project Site

Fire Year*	Fire Name	Interval (years)	Total Area Burned (acres)
1926	Un-named	N/A	593
1940	Un-named (2 fires)	14	3,160 and 2,017
1942	Un-named (3 fires)	2	200, 626 and 2,532
1947	Un-named	5	3,186
1950	Valley View	3	2,445
1953	Tunnel Hill/ Hamlet/ Monte	3	1,299, 631 and 808
1958	Valley View #2	5	1,206
1965	Suncrest	7	1,434
1970	Un-named/ Laguna	5	86 and 174,162
1974	Un-named (2 fires)	4	33 and147
1976	Un-named	2	101
1978	Dunbar	2	212
1981	Morena Avenue	3	2,648
1983	Euclid	2	402
1986	Flinn 1/ Flinn 2	3	503 and 605
1987	Park #2/ Assist #105	1	106 and 47
1992	Willow	5	233
2003	Cedar	11	270,686
2013	Valley 2	10	59

[1] *FRAP 2014

Based on an analysis of this fire history data set, specifically the years in which the fires burned, the average interval between wildfires in the area was calculated to be 5 years with intervals ranging between 2 to 14 years. Based on this analysis, it is expected that wildland areas in the vicinity of the project site will be subject to wildfire at least every 5 years with the realistic possibility of shorter interval occurrences, as observed in the fire history record. Based on fire history, wildfire risk for the project site is associated primarily with a Santa Ana wind-driven wildfire burning or spotting onto the site from the north or east, although a fire approaching from the west during more typical on-shore weather patterns is possible.

1.1.3.5 Climate

Throughout Southern California and specifically at the project site, climate has a large influence on fire risk. The climate of this part of San Diego County is typical of a Mediterranean area, with warm, dry summers and wetter winters. The average high temperature for the project area is approximately 72°F, with average highs in the summer and early fall months (July–October) reaching 85°F. Precipitation (averaging 11 inches per year) typically occurs between December

and March. The prevailing wind is an on-shore flow with fall Santa Ana winds from the northeast that may gust to 50 miles per hour (mph) or higher. Drying vegetation (fuel moisture of less than 5% for 1-hour fuels is possible) during the summer months becomes fuel available to advancing flames should an ignition occur. Extreme conditions, winds of up to 50 mph during the fall, were used in fire behavior modeling for this site, Relative humidity of 12% or less is possible during fire season.

1.1.3.6 Current Land Use

The site is currently disturbed and consists of ornamental trees, eucalyptus woodlands, and abandoned pasturelands. The southern half of the property is occupied with two residences, a storage shed, a green house, and a connex box. A dirt access road runs through the southern portion of the site to the main residence and storage shed. Existing power lines run from south to north along the eastern edge of the property and along Adlai Road.

1.1.3.7 Proposed Land Use

The Riker Ranch project proposes to construct 22 single-family residential lots on 6.24-acre property. As indicated in Figure 2, public and private streets will provide access to the development in the northeastern and southeastern portions of the property at two entrances along Adlai Road. In addition to the 22 residential lots, the project will include lots dedicated to private streets, storm water retention basin, and wetlands. Additionally, fuel modification zones in common areas will be managed by the Homeowners Association (HOA).

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2 DETERMINATION OF PROJECT EFFECTS

FPPs provide an evaluation of the adverse environmental effects a proposed project may have from wildland fire. The FPP must provide mitigation for identified impacts to ensure that development projects do not unnecessarily expose people or structures to a significant loss, injury or death involving wildland fires. Significance is determined by answering the following guidelines:

Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where Wildland are adjacent to urbanized areas or where residences are intermixed with Wildland?

The wildland fire risk in the vicinity of the project site has been analyzed and it has been determined that wildfires may occur in wildland areas approximately .5 mile to the north and northeast of the project site, but would not be significantly increased in frequency, duration, or size with the construction of the Project. The Project would include conversion of fuels to maintained development with designated LFPD or SDCFA review of all landscaping and fuel modification areas and highly ignition resistant structures. As such, the site will be largely converted from readily ignited fuels to ignition resistant landscape and structures.

The types of potential ignition sources that currently exist in the area include overhead power lines, vehicle, roadway, and off-site residential neighborhoods. The project would introduce potential ignition sources, but would also include conversion of ignitable fuels to lower flammability landscape and include better access throughout the site, managed and maintained landscapes, more eyes and ears on the ground, and generally a reduction in the receptiveness of the areas landscape to ignition. Fires from off-site would not have continuous fuels across this site and would therefore be expected to burn around and/or over the site via spotting. However, these fuels can ignite and burn during extreme conditions. Burning vegetation embers may land on Project structures, but are not likely to result in ignition based on ember decay rates and the types of non-combustible and ignition resistant materials and venting that will be used on site.

The Project would comply and exceed the applicable fire and building codes and would include a layered fire protection system designed to current codes and inclusive of site-specific measures that will result in a Project that is less susceptible to wildfire than surrounding landscapes and that would facilitate fire fighter and medical aid response. With the modeling results, which closely mimic reported local Fire behavior, combined with the ignition resistance construction required, and offered above and beyond requirements, the risk of wildfire damage to the project site’s structures is considered low.

Would the project result in inadequate emergency access?

No, the proposed, internal new looped road (approximately 700 feet in length) will be 32 feet wide with parking on one side and provides residents the option to evacuate from two egress access points in two different directions from the project site. The entire roadway from the proposed project to the nearest "compliance point" is currently and will continue to provide fuel modification in the form of developed landscape. There are no dead-end roads proposed within the proposed project. The primary emergency access route via Adlai Road to East Lakeview Road is 24 to 28 feet wide and paved with an all-weather road surface. Additionally, the Riker Ranch site is provided with additional access to and from the project area via a private road network to the north. Residents and fire agencies can egress or ingress the project site to Lake Jennings Park Road, a major arterial road and dead-end road compliance point, via Cuesta del Sol to Deanly, Jack Oak Lane, and Jack Oak Road. Additional mitigation measures for emergency access are discussed in this FPP that meet or exceed the general plan goals and policies. Therefore, emergency access is considered adequate for this project.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance service ratios, response times or other performance objectives for fire protection?

The Project is projected to add an estimated fewer than 13 calls per year to the LFPD's existing call load. The primary response (first in) would be provided by LFPD's Station 3, which ran 4,358 Emergency Medical and Fire-Rescue calls in 2013. The addition of potentially 5.5 calls/year (just under 0.5calls per month or 0.02 calls per day) to a fire station that currently responds to approximately 363 calls per month (roughly 12 calls per day) is considered insignificant and will not require the construction of additional Fire Station facilities based on that increase alone. Further, the fire station can respond to the entire project within the San Diego County General Plan 5 minute travel time requirement. Therefore, no additional facilities would be needed for response coverage. A portion of the project's parcel tax revenue will be allocated to fire protection, which can be used to maintain or enhance current levels of protection without impacting existing citizens and helping to alleviate the LFPD's busy response levels from Station 3.

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The project will be served by Helix Water District (HWD) and sufficient water supplies will be available to serve the project from existing entitlements and resources. LFPD, SDCFA, and HWD require new development to meet a minimum 2500 gpm fire flow.

The measures described in the responses to these significance questions are provided more detail in the following sections.

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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 on this site given characteristic site features such as topography, vegetation, and weather. Results are provided below and a more detailed presentation of the modeling inputs and results is provided in Appendix C.

3.1.1 Fuel Model Output Results

The results from the BehavePlus fire behavior model are presented in Table 2 and Figure 3. As presented, wildfire behavior adjacent to the Riker Ranch site is expected to be primarily of low intensity throughout the grasslands dominated fuels to the north and west. Fire intensity is expected to be slightly higher in the ornamental landscapes and eucalyptus woodlands to the west, east, and south.

Table 2
BehavePlus Fire Behavior Modeling Results

Model Run	Fuel Model(s)	Flame Length (feet)	Fireline Intensity (Btu/ft/s)	Surface Rate of Spread (mph)
1	Gr1 and FM10	3.1 to 16.0	67 to 2,361	< 1.0
2	FM10	13.3 to 16.0	1,562 to 2,359	< 1.0
3	Gr2 and FM10	4.6 to 8.2	156 to 543	0.10 to 1.02

The majority of the adjacent vacant lots were modeled as a Fuel Model GR1 or Gr2 (short, sparse grasses). Fire behavior modeling outputs presented in this FPP were calculated for direct winds pushing fire movement downhill for Model Runs 1 and 2 and uphill for Model Run 3. Grassland fires for the project area are expected to be low intensity fires that would be expected to move rapidly but have a short duration, produce low heat, and result in less than 7-foot flame lengths under extreme weather conditions. Fires in ornamental landscaping or eucalyptus groves are expected to move slower than those in grasslands, but produce significantly higher intensities and flame lengths. Flame lengths in non-maintained eucalyptus groves and neighboring landscapes are expected to reach up to nearly 16 feet under extreme weather conditions, with spread rates less than 0.5 mph. The results presented in Table 2 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.

Based on the results of fire behavior modeling, a typical fire in the Riker Ranch project vicinity will be a grass or ornamental landscape-fueled fire that moves quickly, burning with low intensity. The fire is anticipated to be a wind-driven fire from the east or north during the fall. Flame lengths in the grasses will approach 7 feet with spread rates reaching approximately 1.0 mph due to flashy fuels, wind, and low fuel moisture. Flame lengths in the ornamental-eucalyptus fuels will reach 16 feet with spread rates reaching approximately 0.5 mph. A typical cause may be related to structure fires from older homes to the east, electrical line arching, or roadways (tossed cigarette, vehicle accidents, or car fire).

3.2 On-Site Fire Risk Assessment

Given the climatic, vegetative, topographic characteristics, and local fire history of the area, the project site, once developed, is determined to be subject to occasional off-site wildfires. Potential for off-site wildfire encroaching on, or showering embers on the site is considered moderate, but risk of ignition from such encroachments or ember showers is considered low based on the type of construction and fire protection features that will be provided for the structures.

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SOURCE: Bing Maps 2014

RIKER RANCH PROJECT

Figure 3

Fire Behave Plus Analysis Map

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4 ANALYSIS OF PROJECT EFFECTS

4.1 Adequate Emergency Services

4.1.1 Emergency Response

The project is located within the jurisdiction of the LFPD, and consequently, LFPD provides initial response. The LFPD operates four Fire Stations that could respond to an incident at the Riker Ranch site (Stations 1, 2, 3, and 26), although primary response would be from Station 3, with remainder of the Stations responding as necessary. Table 3 presents a summary of the location, equipment, staffing levels, maximum travel distance, and travel time for the four LFPD stations responding to the Riker Ranch site. Table 3 also provides data for surrounding fire agencies that could respond to an incident at the project site. Travel distances are derived from SANGIS Geographic Information System (GIS) road data while travel times are calculated using response speeds of 35 mph, consistent with nationally recognized NFPA 1710 and Insurance Services Office (ISO) Public Protection Classification Program's Response Time Standard and do not include turnout time.

Table 3
Lakeside Fire Protection District Responding Stations Summary

Station	Location	Equipment	Staffing*	Maximum Travel Distance*	Travel Time**
Station 1	9726 Riverview Avenue Lakeside, California 92040	Type 1 Engine Type 3 Brush Engine	9 firefighters	3.7 mi.	6.94 min.
Station 2	12216 Lakeside Avenue Lakeside, California 92040	Paramedic, Type 1 Engine Aerial Engine Water Tender Medic Unit Patrol Vehicle	15 firefighters	3.9 mi.	7.28 min
Station 3	14008 Highway 8 Business El Cajon, California 92021	Paramedic, Type 1 Engine Rescue Engine Medic Unit	15 firefighters	1.0 mi.	2.35 min.
Station 26	15245 Oak Creek Road El Cajon, California 92012	Paramedic, Type1 Engine OES Unit	9 firefighters	4.0 mi.	7.45 min.

Table 3
Lakeside Fire Protection District Responding Stations Summary

Station	Location	Equipment	Staffing*	Maximum Travel Distance*	Travel Time**
El Cajon Fire Station 8	1470 E. Madison Avenue El Cajon, California 92021	Paramedic, Type1 Engine Medic Unit	15 firefighters	4.2 mi.	7.79 min.
Cal Fire Flinn Springs Fire Station	9711 Flinn Springs Road El Cajon, California 92021	Type 3 Brush Engine	4 firefighters (2 permanent/ 2 seasonal)	3.1 mi.	5.92 min.

* Distance measured to most remote portion of Adlai Road Project
** Assumes travel to the primary project's farthest end, a 35 mph travel speed, and does not include donning turnout gear and fire dispatch time.

Based on the Riker Ranch site location in relation to existing LFPD stations, travel time to the site for the first responding engine from Station 3 is not expected to exceed 2.35 minutes to the project's southern entrance at Adlai Road. Travel within the development may reach up to 0.1 minute, based on the longest proposed road stretch of approximately 0.2 mile, resulting in response time of less than 2.45 minutes to the northern-most portion of the development. Secondary response (Stations 1 and/or 2) would arrive within 7.5 minutes. All response calculations are based on an average response speed of 35 mph, consistent with nationally recognized NFPA 1710. Based on these calculations, emergencies within the project can be responded to according to the San Diego County General Plan 5 minute response time goal for Village (VR-3) Development Area.

In addition, the Fire District is participating in the Heartland Mutual Aid Pact on first alarm or greater with all surrounding communities.

4.1.1.1 Emergency Service Level

The LFPD estimates approximately 12,621 total annual calls (LFPD 2014) and a Fire District population of approximately 65,000 (LFPD 2014). The per capita call volume is roughly 19.41 for the Fire District, or 190 calls per 1,000 persons per year. The San Diego County average is roughly 82 calls per 1,000 persons per year). The difference is likely related partially to the presence of the heavily used I-8 which generates vehicle related calls through the District. Based on the proposed development plans, the project's estimated 67 residents (assumes an average of 2.89 occupants per residence for this type of community (SANDAG 2014)) and using the County's 82 calls per 1,000 number that is more appropriate for this type of development, would generate roughly 5.5 calls per year (less than 0.5 calls per month), most of which are expected to be medical-related calls. Service level requirements are not expected to be significantly impacted with the increase of approximately 13 calls per year (0.02 calls per day). The requirements

described in this FPP are intended to aid firefighting personnel and minimize the demand placed on the existing emergency service system.

4.1.1.2 Cumulative Impacts on Fire Response

Cumulative impacts from multiple projects can cause fire response service decline and must be analyzed for each project. The Riker Ranch project and its proposed usage by up to 67 residents represents an increase in potential service demand of approximately 5.5 calls per year, well within the capacity of the existing Fire Stations that will service the project. However, this total adds to an existing busy service obligation for Station 3 and, when considered cumulatively, the impact is considered potentially significant, but mitigated to less than significant through the project's fire safety features and increased funding available to the LFPD through property taxes and other fees that can be used for providing resource enhancements.

4.2 Buildings, Infrastructure and Defensible Space

The County Consolidated Fire Code and Building Codes in addition to LFPD Ordinance 13-001 govern the building, infrastructure, and defensible space requirements detailed in this FPP. The project will meet or exceed applicable codes or will provide alternative materials and/or methods. The following summaries highlight important fire protection features. All underground utilities, hydrants, water mains, curbs, gutters, and sidewalks will be installed and the drive surface shall be approved prior to combustibles being brought on site.

4.2.1 Fire Access

4.2.1.1 Primary

The primary project access will be via a newly constructed private street that connects with the existing Adlai Road at northern and southern entrances for the proposed development. The Adlai Road is a minimum 24 feet wide, paved with an all-weather road surface. The proposed private street has a minimum 40-foot easement and will be paved to a width of 32 feet with parking on one side of the street. Additionally, the private road will have a minimum 42 feet improved radius for the cul-de-sac at the north end. This will allow for parking within the cul-de-sac.

To ensure that the roadways continue to meet the requirements, road maintenance within the private portions of Riker Ranch development will be provided by the HOA or similar funded entity. It will assess maintenance dues monthly, provide a reserve fund, and maintain the site's roads.

4.2.1.2 Secondary/Emergency

The project as currently designed exceeds the maximum allowable dead-end road length for Primary access road length as defined in section 503.1.3 of the County Consolidated Fire Code. Although there is a second option for egressing the area, it crosses private roadways and therefore, cannot be relied upon for project secondary access. Per Code, roads serving parcels of varying sizes shall apply the shortest allowable length. Since the lots are less than 1 acre in size, the maximum dead end length for this development is 800 feet. The road length for maximum dead-end distance is from the intersection that begins the compliance point (intersection of E. Lakeview and Adlai Road) to the northern cul-de-sac in the proposed development. This road length distance as currently designed is approximately 1,030 feet.

The proposed, internal new looped road (approximately 700 feet in length) provides residents the option to evacuate from two egress access points in two different directions from the project site. The primary emergency access route via Adlai Road to East Lakeview Road is 24 to 28 feet wide and paved with an all-weather road surface. The Riker Ranch site is provided with additional access to and from the project area via a private road network to the north. Residents and fire agencies can egress or ingress the project site to Lake Jennings Park Road, a major arterial road and dead-end road compliance point, via Cuesta del Sol (20 feet width) to Deanly (40 feet width), Jack Oak Lane (40 feet width), and Jack Oak Road (40 feet width). This private road alternative is not being relied upon for the Riker Ranch project since it could be gated by existing residents and then be unavailable to future residents. This FPP provides justifications for findings that the dead-end road length issue is mitigated by several factors.

The entire roadway from the proposed project to the nearest “compliance point” is currently and will continue to provide fuel modification in the form of developed landscape. There are no dead-end roads proposed within the proposed project. Section 104.8 of the CCFC allows the fire code official to grant modifications for individual cases, provided that the fire code official shall first find that special individual reason makes the strict letter of the code impracticable, the modification is in compliance with the intent and purpose of the code, and that such modification does not lessen health, life and fire safety requirements. This FPP proposes in Section 4.3.1. modifications to Section 503.1.3: Dead-end Roads, which address findings and mitigation measures for secondary road access that meet or exceed the general plan goals and policies.

4.2.1.3 Entrances

No gates or speed bumps or humps would be requested or allowed in this project. This would allow traffic flow (ingress and/or egress) to move more rapidly in the case of emergency.

4.2.1.4 Dead Ends

The new roadway (name to be determined) would be paved to 32 feet wide to allow parking on one side of the street and would be looped back to Adlai Road, approximately 800 feet from East Lakeview Road. The Private Road Standard is 24 feet wide.

4.2.1.5 Width and Turning Radius

All proposed private streets will have a minimum paved width of 40 feet. Vehicles are allowed to park on both sides of the street. Turning radius for fire apparatus access roads will be 28 feet as measured on the inside edge of the improved width.

4.2.1.6 Grade

The maximum grade for new roads and driveways on the Riker Ranch Project will be well-within the 15% allowed by code. The angle of departure or approach for each entrance for the driveway N onto East Mission Road will not exceed 12%.

4.2.1.7 Surface

All fire access and vehicle roadways will be of asphaltic concrete and designed and maintained to support the imposed loads of fire apparatus (not less than 75,000 pounds) that may respond, including Type I engines, Type III engines, and ambulances. Access roads shall be completed and paved prior to issuance of building permits and prior to combustible construction occurring.

4.2.1.8 Vertical Clearance

Minimum unobstructed vertical clearance of 13 feet 6 inches will be maintained for the entire required width for all streets, including driveways that require emergency vehicle access.

4.2.1.9 Identification

Identification of roads and structures will comply with LFPD Fire Code, Section 505.1, as follows:

- All structures shall have a permanently posted address, which shall be legible from the street. If it is not legible from the street, an address shall also be posted at street entrance to driveway and shall be visible from both directions of travel.
- Numbers shall be 4 inches high with 0.5-inch stroke. Numbers will contrast with background.

No parking signs will be provided per code on one side of the development's street.

4.2.2 Water

Water service for the Riker Ranch Project will be provided by Helix Water District and will be consistent with LFPD requirements (Section 507.2/507.3). The water system is public and metered. Water utilities will be connected to an existing 10-inch water main in Adlai Road. The minimum fire flow requirements for the project will be 2,500 gallons per minute at 20 psi, compliant with the requirements of the County and Fire District.

4.2.2.1 Hydrants

There will be two new fire hydrants installed along the proposed on-site roadway at the following locations:

1. Southeast corner of Parcel 2
2. Southwest corner of Parcel 19

Hydrants will be consistent with LFPD Design Standards (one 4-inch port and two 2.5-inch ports).
A three-foot clear space (free of ornamental landscaping and retaining walls) shall be maintained around the circumference of all fire hydrants. Hydrants will be in place and serviceable prior to delivery of combustible materials to the site.

4.2.2.2 Fire Sprinklers

All structures will be provided with fire sprinklers including attached garages, per LFPD and County Fire Code requirements. Automatic, internal fire sprinklers shall be in accordance with NFPA 13-D Automatic Fire Sprinkler System requirements.

Structures located on lots that exceed the 800 feet allowed by the Fire Code will be fitted to protect additional areas as mitigation for the dead-end road length issue. The following areas will be protected:

- Garages;
- Covered patios, walkways, etc. that exceed 10 feet or more from the exterior wall surface (wall to edge of eave);
- Attics, basements, etc. that are designed for or will be used for storage;
- All Forced Air Units (FAUs);
- Any scuttle or attic opening shall be protected with at least one head above opening; and
- All areas beneath stairways which allow access or storage.

4.2.3 Pre-Construction Requirements

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

4.3 Ignition Resistant Construction and Fire Protection Systems

All new structures will be constructed to LFPD and County Fire Code standards. Each of the proposed buildings will comply with the enhanced ignition-resistant construction standards of the 2013 California Building Code (Chapter 7A). These requirements address roofs, eaves, exterior walls, vents, appendages, windows, and doors and result in hardened structures that have been proven to perform at high levels (resist ignition) during the typically short duration of exposure to burning vegetation from wildfires.

There are two primary concerns for structure ignition: 1) radiant and/or convective heat and 2) burning embers (NFPA 1144 2008, Ventura County Fire Protection District 2011, 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 the project are required by LFPD, County of San Diego, and state codes but are worth listing because they have been proven effective for minimizing structural vulnerability to wildfire and, with the inclusion of required interior sprinklers (required in the 2013 Building/Fire Code update), of 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. The following project features are required for new development in WUI areas and form the basis of the system of protection necessary to minimize structural ignitions as well as providing adequate access by emergency responders:

1. Application of Chapter 7A, ignition resistant building requirements
2. Minimum 1-hour rated exterior walls and doors
3. Multi- pane glazing with a minimum of one tempered pane, fire-resistance rating of not less than 20 when tested according to NFPA 257 (such as SaftiFirst, SuperLite 20-minute

rated glass product), or be tested to meet the performance requirements of State Fire Marshal Standard 12-7A-2.

4. Ember resistant vents (recommend BrandGuard, O'Hagin or similar vents) All ventilation for the structures for the development would require ember-resistant vents in addition to 1/8 screening. *This exceeds current Building Code requirements.*
5. Automatic, Interior Fire Sprinkler System will be installed for all habitable dwellings and garages.
6. Modern infrastructure, access roads, and water delivery system.

4.3.1 Additional Mitigation Measures for the Riker Ranch Project

1. The proposed, internal new looped road (approximately 700 feet in length) provides residents the option to evacuate from two egress access points in two different directions from the project site. Both routes provide residents safe travel to arterial roads that provide an opportunity to evacuate in two remote directions and away from the approaching wildfire. It is not anticipated that the private road network to Lake Jennings Park Road that will provide secondary ingress/egress will be unavailable to the project's residents, but this FPP treats it as though it could be if private residents decided to gate that roadway at any point.
2. Structures on lots exceeding the allowable 800 feet will be fitted with additional sprinkler coverage as specified in Section 4.2.2.2.- Fire Sprinklers.
3. All trash enclosures would be located at least 10 feet from any structures. Any combustible attachments to the structures (i.e., fences, gates, patio covers, and awnings) shall be located a minimum of 5 feet away from the structure. Trash enclosures are not addressed in the Building Code.
4. There would be a 1- to 3-foot landscape-free area adjacent to stucco building structures' foundations. This would prevent flame impingement under the stucco along the weep screed and help prevent ember penetration into the structure stucco walls. Not addressed in the Building Code.
5. A Fire, Disaster, and Emergency Preparedness Working Guide that is consistent with "Ready, Set, Go!" shall be developed for the project covering the following subjects:
    i. Preparing your home – landscaping and home.
    ii. Preparing your communications – 911, contact information, telephone usage, email, radio stations, and useful links using the internet.
    iii. Preparing yourself and family – emergency routes out.

iv. Preparing for imminent evacuation.

v. Preparing your pets and animals.

vi. Maps showing exit routes.

vii. Main evacuation routes and public safe zones.

6. A formal landscaping plan would be required for the project and its 22 new residential lots. Landscaping would be maintained on an ongoing basis according to Fuel Modification Standards and this FPP.

4.4 Defensible Space and Vegetation Management

4.4.1 Fuel Modification

A fuel modification zone (FMZ) is an important component of a fire protection system for the project site. Fuel modification zones are designed to 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.

4.4.1.1 Fuel Modification Zone Requirements

The LFPD Ordinance 13-001 (Section 4907.2 - Fuel Modification) requires that fuel modification zones be provided around every building that is designed primarily for human habitation. Decks, sheds, gazebos, freestanding open-sided shade covers and similar accessory structures less than 250 square feet and 30 feet or more from a dwelling, and fences more than 5 feet from a dwelling, are not considered structures for the establishment of a fuel modification zone. Fuel modification zones on the project site as illustrated on Appendix D, shall comply with the following:

4.4.1.2 Residence Fuel Modification Zone Guidelines

1. The area from the building or structure to the property line for lots on the northern and western portions of the project site shall be cleared of vegetation that is not fire resistant and re-planted with fire-resistant plants per Zone A requirements. Weeds and annual grasses are to be mowed to a height of 4–6 inches. Any chipping that is done on site should be spread not to exceed 6 inches in height. Trees may remain in both areas provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures is not less than 10 feet.

2. The majority of Zone A for lots along the southern border will be within the property borders or the lot abuts adjacent property owner with a maintained sideyard or backyard.

For those portions of FMZ extending to the north and west of the project site (i.e., lots located on the northern and western borders) onto adjacent, undeveloped properties (APNs: 393-390-19 and 398-390-66), the project applicant will obtain an agreement with the adjoining property owners to maintain these undeveloped parcels to the LFPD's weed abatement standards.

3. The Off-site FMZ agreements will be recorded on the parcels to the north and west of the project so that structures on the proposed project may be provided with the minimum 100 feet of fuel modification.
4. The County and LFPD may provide lists of prohibited and recommended plants. This FPP includes a proposed list of prohibited plants (Appendix E).
5. When the subject property contains an area designated to protect biological or other sensitive habitat or resource, no building or other structure requiring a fuel modification zone shall be located so as to extend the fuel modification zone into a protected area.

5 PROJECT SITE SPECIFIC FUEL MODIFICATION ZONES

5.1 Roadway Fuel Modification Zones

Roadway fuel modification is addressed by the LFPD Ordinance 13-001 (Section 4907.2.1 - Fuel Modification of Combustible Vegetation from Sides of Roadways). LFPD and SDCFA's Fire Marshal may require a property owner to modify combustible vegetation in the area within 20 feet from each side of the driveway or a public or private road adjacent to their property to establish a fuel modification zone.

5.2 Special Fuel Management Issues

Trees may be planted within FMZs as long as they conform to the LFPD's Ordinance 13-001 (Section 4907.3.1 Trees). On the Project site, tree planting in the fuel modification zones and along roadways is acceptable, as long as they meet the following restrictions as described below and in the Vegetation Management Section:

- For streetscape plantings, fire resistive trees can be planted 10 feet from edge of curb to center of tree trunk. Care should be given to the type of tree selected, that it will not encroach into the roadway, or produce a closed canopy effect.
- Crowns of trees located within defensible space shall maintain a minimum horizontal clearance of 10 feet for fire resistant trees. Mature trees shall be pruned to remove limbs one-third the height or 6 feet, whichever is less, above the ground surface adjacent to the trees.
- Dead wood and litter shall be regularly removed from trees.
- Ornamental trees shall be limited to groupings of 2–3 trees with canopies for each grouping separated horizontally as described in Table 4 (Table 4907.3.1 from LFPD Ordinance 13-001).

Table 4
Distance between Tree Canopies by Percent Slope

Percent of Slope	Required Distances Between Edge of Mature Tree Canopies ([1])
0–20	10 feet
21–40	20 feet
41+	30 feet

[1] Determined from canopy dimensions as described in Sunset Western Garden Book (Current Edition)

5.3 Specific Landscaping Requirements

Plants used in the fuel modification areas or landscapes will include drought-tolerant, fire resistive trees, shrubs, and groundcovers. The plantings will be consistent with Appendix F: County's Suggested Plant List for Defensible Space. The intent of the list is to provide examples of plants that are less prone to ignite or spread flames to other vegetation and combustible structures during a wildfire. Additional Plants can be added to the landscape plant material palette with the approval from LFPD and the County of San Diego.

Landscape plans shall be in accordance with the following criteria:

1. All fire resistive tree species shall be planted and maintained at a minimum of 10 feet from the tree's drip line to any combustible structure. Non-fire resistive trees, including conifers, cypress, eucalyptus and most palms, are not allowed within the development.
2. Limit planting of large unbroken masses especially trees and large shrubs. Groups should be 2–3 trees maximum, with mature foliage of any group separated horizontally by at least 10 feet, if planted on less than 20% slope, and 20 feet, if planted on greater than 20% slope. If shrubs are located underneath a tree's drip line, the lowest branch should be at least three times as high as the understory shrubs or 10 feet, whichever is greater.
3. All tree branches shall be removed within 10 feet of a fireplace chimney or outdoor barbecue.
4. Non-combustible surface (pavement, concrete, decomposed granite, etc.) for pathways around structures for fire fighter access to side yards and backyards.
5. Combustible mulches and wood chips must be 1 to 2 foot away from any side of a combustible structure with weep screeds.
6. Irrigated wet zone (water conserving irrigation systems with efficient drip emitters and "smart" controllers and use of California Friendly landscape concepts)
7. No tree limb encroachment within 10 feet of a structure or chimney, including outdoor fireplaces.
8. Tree maintenance includes limbing-up (canopy raising) 6 feet or one-third the height of the tree, whichever is greater, and removal of dead foliage and branches.

5.4 Pre-Construction Requirements

- Perimeter fuel modification areas must be implemented prior to commencement of construction utilizing combustible materials.

- Existing flammable vegetation shall be reduced by 60% on vacant lots upon commencement of construction.
- Dead fuel, ladder fuel (fuel which can spread fire from ground to trees), and downed fuel shall be removed and trees/shrubs shall be properly limbed, pruned, and spaced per this plan.
- The remainder of the FMZs required for the particular lot shall be installed and maintained prior to combustible materials being brought onto any lot under construction.

5.5 Environmentally Sensitive Areas/Riparian Areas

Fuel modification in environmentally sensitive areas, if any are encountered, will require approval from the County and the appropriate resource agencies (California Department of Fish and Game and U.S. Fish and Wildlife Service) prior to any vegetation management activities occurring within those areas.

5.6 Prohibited Plants

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. The plants included in the Prohibited Plant List (Appendix E) are unacceptable from a fire safety standpoint, and shall not be planted on the site unless otherwise approved by the LFPD or SDCFA.

5.7 Vegetation Management Compliance Schedule

All fuel modification area vegetation management shall be completed annually by June of each year and more often as needed for fire safety, as determined by the LFPD and SDCFA. The project HOA shall be responsible for all vegetation management throughout the common areas of the project site, in compliance with the requirements detailed herein and LFPD and SDCFA requirements. The HOA hall be responsible for ensuring long-term funding and ongoing compliance with all provisions of this FPP, including vegetation planting, fuel modification, vegetation management, and maintenance requirements throughout the private portions of the Riker Ranch Project site. The HOA will provide notice to LFPD/SDCFA annually that off-site fuel modification work has been completed and provide proof of this work. Once adjoining properties are developed, this obligation will cease.

5.8 Zone A – Irrigated Zone (Structure to Property Boundary)

Zone A is measured on a horizontal plane from the structure outward to property boundary. Planting used in the fuel modification areas will include drought-tolerant, fire resistive trees,

shrubs, and groundcovers. The plantings will be consistent with the County's Suggested Plant List (Appendix F).

These landscape plans will be modified to include restrictions specified herein that will include fuel modification zone wide irrigation and species less prone to ignite or spread flames to other vegetation and combustible structures during a wildfire. Additional plants can be added to the landscape plant material palette with the approval from LFPD and the County of San Diego. Other specific requirements in addition to the standard FMZ requirements for both Lots are as follows:

1. Single specimens of trees, ignition-resistive shrubs, or cultivated ground cover, such as green grass, succulents, or similar plants used as ground covers, may be used, provided they do not form a means of readily transmitting fire. Plant material will be selected from approved lists mentioned above.
2. No tree crowns within 10 feet of structures (at maturity) if the trees are considered fire resistive per LFPD and SDCFA standards. Non-fire resistive trees, such as pines, eucalyptus, most palms, and cypress, are not allowed in the front yards, backyards, or side yards for all lots.

6 CUMULATIVE IMPACT ANALYSIS

Cumulative impacts from multiple projects can cause fire response service decline and must be analyzed for each project. The Riker Ranch Project and its proposed 22 lots and approximately 67 residents represent minimal anticipated increases in fire and emergency medical response needs. However, when considered cumulatively with other projects planned in the LFPD's jurisdictional area, the cumulative impact is considered potentially significant.

Despite the generally very low increase in number of calls per year from the Riker Ranch Project site, the project contributes to the cumulative impact on fire services, when considered with other anticipated projects within the LFPD's primary response area. Without additional resources over time, the cumulative impact may result in a situation where the LFPD response capabilities erode and service levels decline. The project's contributions to fire resources through building fees and ongoing property tax allocations, along with state fire fees, combined with the same contributions from future development in the area are expected to result in funding that can be used for enhancing LFPD's response capabilities and at least maintaining the current standards for firefighting and emergency response. Over the long term, it is anticipated that LFPD will be able to perform its mission into the future at levels consistent with the County Consolidated Fire Code and the San Diego County General Plan.

The requirements described in this FPP, including ignition-resistive construction, additional fire protection systems, and fuel modification/vegetation management, are designed to aid firefighting personnel such that Riker Ranch Project people and structures are protected and impacts to the LFPD are minimal. Based on the type of wildfire anticipated/modeled for this area and the corresponding fire protection project features, including conformance with building and fire codes, ongoing maintenance of roads, infrastructure, vegetation management and defensible space results in a potentially significant, but mitigated cumulative impact.

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7 CONCLUSION

This FPP is submitted in support of an application for project entitlement of the development project. It is submitted in compliance with requirements of the County's and LFPD's condition for FPP content. The requirements in this document meet fire safety, building design elements, fuel management/modification, and landscaping recommendations of the LFPD. Where the project does not strictly comply with the Code, such as with some fuel modification zone widths and maximum dead-end road distances, alternative materials and methods have been proposed that provide functional equivalency as the code intent.

Fire and Building Codes and other local, county, and state regulations in effect at the time of each building permit application supersede these recommendations unless the FPP recommendation is more restrictive.

The recommendations provided in this FPP have been designed specifically for the proposed construction of structures adjacent the WUI zone at the Riker Ranch Project site. The project site's fire protection system includes a redundant layering of protection methods that have been shown through post-fire damage assessments to reduce risk of structural ignition and compensate for fuel modification area reductions. Modern infrastructure will be provided along with implementation of the latest ignition resistant construction methods and materials. Further, all structures are required to include interior, automatic fire sprinklers consistent with LFPD Ordinance No. 13-001. Fuel modification will occur on exposed edges and adjacent biological preserve areas of the project site. The fuel modification zone will be maintained and inspected annually by the homeowners and LFPD.

Ultimately, it is the intent of this FPP to guide, through code and other project specific requirements, the construction of structures that are defensible from wildfire and, in turn, do not represent significant threat of ignition source for the adjacent native habitat. It must be noted that during extreme fire conditions, there are no guarantees that a given structure will not burn. Precautions and mitigating actions identified in this report are designed to reduce the likelihood that fire would impinge upon the proposed structures. There are no guarantees that fire will not occur in the area or that fire will not damage property or cause harm to persons or their property. Implementation of the required enhanced construction features provided by the applicable codes and the mitigating fuel modification requirements provided in this FPP will accomplish the goal of this FPP to assist firefighters in their efforts to defend these structures and reduce the risk associated with this project's WUI location. For maximum benefit, the developer, contractors, engineers, and architects are responsible for proper implementation of the concepts and requirements set forth in this report. Homeowners are responsible to maintain their structures and lots as required by this report, the applicable Fire Code, and LFPD.

Since the proposed development does not occur within a shelter-in-place community, it is recommended that the homeowners or other occupants who may reside within the Riker Ranch Project neighborhood adopt 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[3]" stance on evacuation. Accordingly, occupants should evacuate the residence and the area as soon as they receive notice to evacuate, or sooner, if they feel threatened by wildfire or structure fire in a nearby residence. Fire is a dynamic and somewhat unpredictable occurrence and it is important for residents to educate themselves on practices that will improve their home survivability and their personal safety.

[3] International Fire Chiefs Association "Ready, Set, Go" website link: http://wildlandfirersg.org/

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APPENDIX A

Photograph Log

Photograph log

Photograph 1. View looking north along Adlai Road. Note Power line runs south to north on east edge of property.

Photograph 2. View looking opposite direction from photograph #1. Majority of property is disturbed with non-native grasses that are routinely mowed.

Photograph 3. Photograph taken from vacant property to the north of the project site. Barbed wire fence is the boundary between two properties.

Photograph 4. Property to the north of project site has been cleared of vegetation except for eucalyptus woodlands. Note homes beyond northern border of adjacent property.

Photograph 5. View of central portion of property. Old farm house is in background and east of eucalyptus woodlands.

Photograph 6. Photograph depicts off-site fuels (grasslands) west of the project site on adjacent property.

Photograph 7. Eucalyptus woodland fuelbed primarily consists of leaf litter and down deadwood or tree limbs with an occasional Mexican fan palm.

Photograph 8. View of disturbed land at the southern portion of the property. The homes in the middle of the picture are on adjacent properties.

Photograph 9. View of main residence on the property.

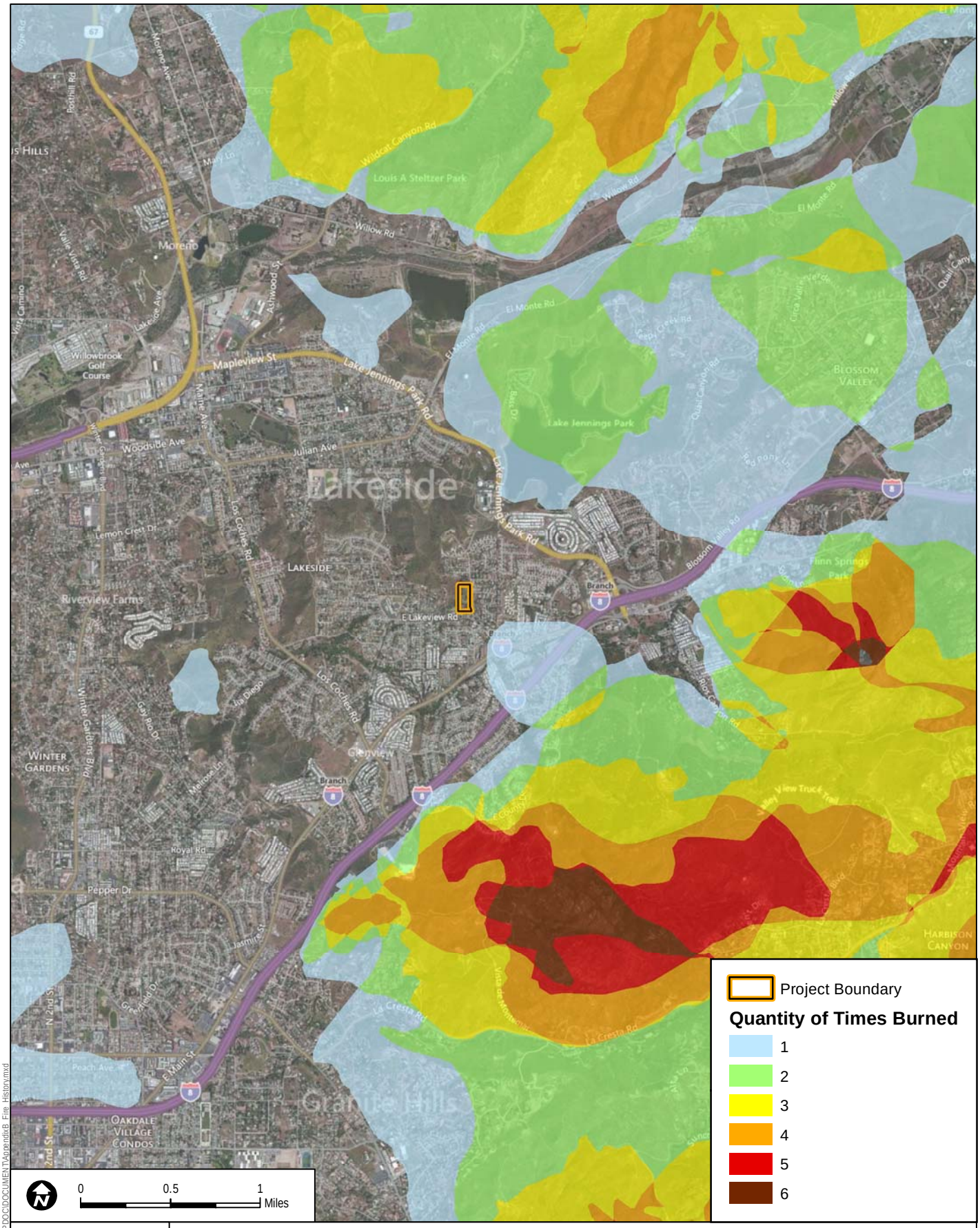
Photograph 10. Photograph of storage shed located on site.

Photograph 11. Photograph of second residence on site which is located in southern portion of property.

Photograph 12. Another view of storage shed as well as the connex box. Existing trees are Chinese elms, Italian cypress, and California peppers.

APPENDIX B

Fire History Exhibit



DUDEK

SOURCE: BING 2014, CDF 2013

Appendix B

Fire History

8347

RIKER RANCH PROJECT

Path: Z:\Projects\8347\01\MAP\DOC\DOCUMENT\Appendix B Fire History.mxd

APPENDIX C

BehavePlus Fire Behavior Analysis

BEHAVEPLUS FIRE BEHAVIOR MODELING

Fire behavior modeling includes a high level of analysis and information detail to arrive at reasonably accurate representations of how wildfire would move through available fuels on a given site. Fire behavior calculations are based on site-specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. To objectively predict flame lengths, spread rates, and fireline intensities, the BehavePlus 5.0.5 fire behavior modeling system was applied using predominant fuel characteristics, slope percentages, and extreme weather variables for the site.

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 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 (Anderson 1982) and the more recent custom fuel models developed for southern California (Weise and Regelbrugge 1997). 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 (Scott and Burgan 2005) 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:

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

BEHAVEPLUS FIRE BEHAVIOR MODELING INPUTS

Vegetation/Fuels

To support the fire behavior modeling efforts conducted for this Fire Protection Plan (FPP), the different vegetation types observed on site were classified into the aforementioned numeric fuel models. The site and off site vegetation is dominated primarily by grasses (short, sparse, and low load) and ornamental-eucalyptus woodland. Modeled areas include the grasslands to the west and north; ornamental vegetation to the east, south, and southwest; and eucalyptus woodlands along the western boundary of the Riker Ranch project site, totaling three model runs. These sites were selected based on the strong likelihood of fire approaching from these directions during an on-shore weather pattern (Model Run 3) and during a Santa Ana wind-driven fire event (Model Runs 1 and 2). Table 1 provides a description of the fuel models used in BehavePlus analysis for this project.

Table 1
BehavePlus Fuel Models

Vegetation Type	Fuel Model
Short, Sparse Dry Climate Grass	Gr1
Low Load, Dry Climate Grass	Gr2
Eucalyptus Woodlands	FM10
Ornamental Vegetation	FM10

Weather

Fire behavior modeling conducted in support of this FPP utilized the guidelines and standards presented by the County of San Diego, Department of Planning and Land Use[1]. These guidelines identify acceptable fire weather inputs for extreme fire conditions during summer months and Santa Ana fire weather patterns. The County analyzed and processed fire weather from Remote Automated Weather Stations between April 15 to December 31 in order to represent the general limits of the fire season. Data provided by the County's analysis included temperature, relative humidity, and sustained wind speed and is categorized by weather zone, including Maritime, Coastal, Transitional, Interior, and Desert.

The prevailing wind pattern is from the west, but the presence of the Pacific Ocean causes a diurnal wind pattern known as the land/sea breeze system. During the day, winds are typically from the west–southwest (sea), and, at night, winds are from the northeast (land). During the

[1] County of San Diego Report Format and Content Requirements – Wildland Fire and Fire Protection (August 31, 2010). On-line at http://www.sdcounty.ca.gov/dplu/docs/Fire-Report-Format.pdf

summer season, the diurnal winds can be slightly stronger than the winds during the winter season due to greater pressure gradient forces. Surface winds can also be influenced locally by topography and slope variations. The highest wind velocities are typically associated with downslope, canyon, and Santa Ana winds.

In southern California the fire season typically starts in June as vegetation begins to dry out after winter and spring rains and typically ends in October, although fire weather may be present year round (Schroeder and Buck 1970). The highest fire danger for this area coincides with the Santa Ana winds. Santa Ana wind conditions are a reversal of the prevailing southwesterly winds that usually occur on a region-wide basis during late summer and early fall. They are dry, warm winds that flow from the higher desert elevations in the north through the mountain passes and canyons. As they converge through the canyons, their velocities increase. Consequently, peak velocities are highest at the mouths of canyons and dissipate as they spread across valley floors.

To evaluate potential fire behavior for the project site, Dudek utilized the BehavePlus (v. 5.0.5) fire behavior modeling software package to determine fuel moisture values and expected fire behavior for the site. The temperature, relative humidity, and wind speed data for the Transitional[2] weather zone were utilized for this FPP based on the project location. Reference fuel moistures were calculated in BehavePlus and were based on site-specific topographic data inputs. Fire behavior modeling input values are presented below in Table 2.

Topography

The topography of the Riker Ranch site is discussed in greater detail in the FPP. 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 down hill as uphill vegetation is pre-heated and dried in advance of the flaming front, resulting in faster ignition rates. Slope values for the Riker Ranch site were measured from site topographic maps and are presented in units of percent.

The fire behavior modeling input variables for the Riker Ranch site are presented in Table 2. Locations for each modeling run are presented graphically in Figure 3 of the FPP.

[2] http://mappingsandiego.com/viewMap.html

Table 2
BehavePlus Fire Behavior Modeling Inputs

Input Name	Summer Weather (Onshore Flow)	Peak Weather (offshore/Santa Ana Condition)
1h Moisture	3%	2%
10h Moisture	5%	3%
100h Moisture	7%	5%
Live Herbaceous Moisture	60%	30%
Live Woody Moisture	90%	50%
20-foot Wind Speed (mph)	10-20	30-40 (gusts at 50 mph)
Wind Adjustment Factor	.4	.4
Slope Steepness	5-10%	5-15%

BEHAVEPLUS FIRE BEHAVIOR MODELING RESULTS

Fire behavior for the site was calculated in three different locations using worst-case fuels and topography (steepest slopes). Two of the modeling scenarios analyzed potential fire behavior along the eastern and northern edges of the proposed development (Model Runs 1 and 2) during peak fire weather conditions. The other modeling scenario (Model Run 3) analyzed potential fire behavior along the western edge of the proposed development during summer weather conditions.

Three fire behavior variables were selected as outputs from the BehavePlus analysis conducted for the Riker Ranch site, and include flame length (feet), rate of spread (mph), and fireline intensity (BTU/feet/second). 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 2004). It is a somewhat subjective and non-scientific measure of fire behavior, but is extremely important to fireline personnel in evaluating fireline intensity and is worth considering as an important fire variable (Rothermel 1983). 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. The information in Table 3 presents an interpretation of these fire behavior variables as related to fire suppression efforts. The results of fire behavior modeling efforts are presented in Table 4, as well as in Table 2 of the FPP. Additionally, identification of modeling run locations is presented graphically in Figure 3 of the FPP.

Table 3
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.

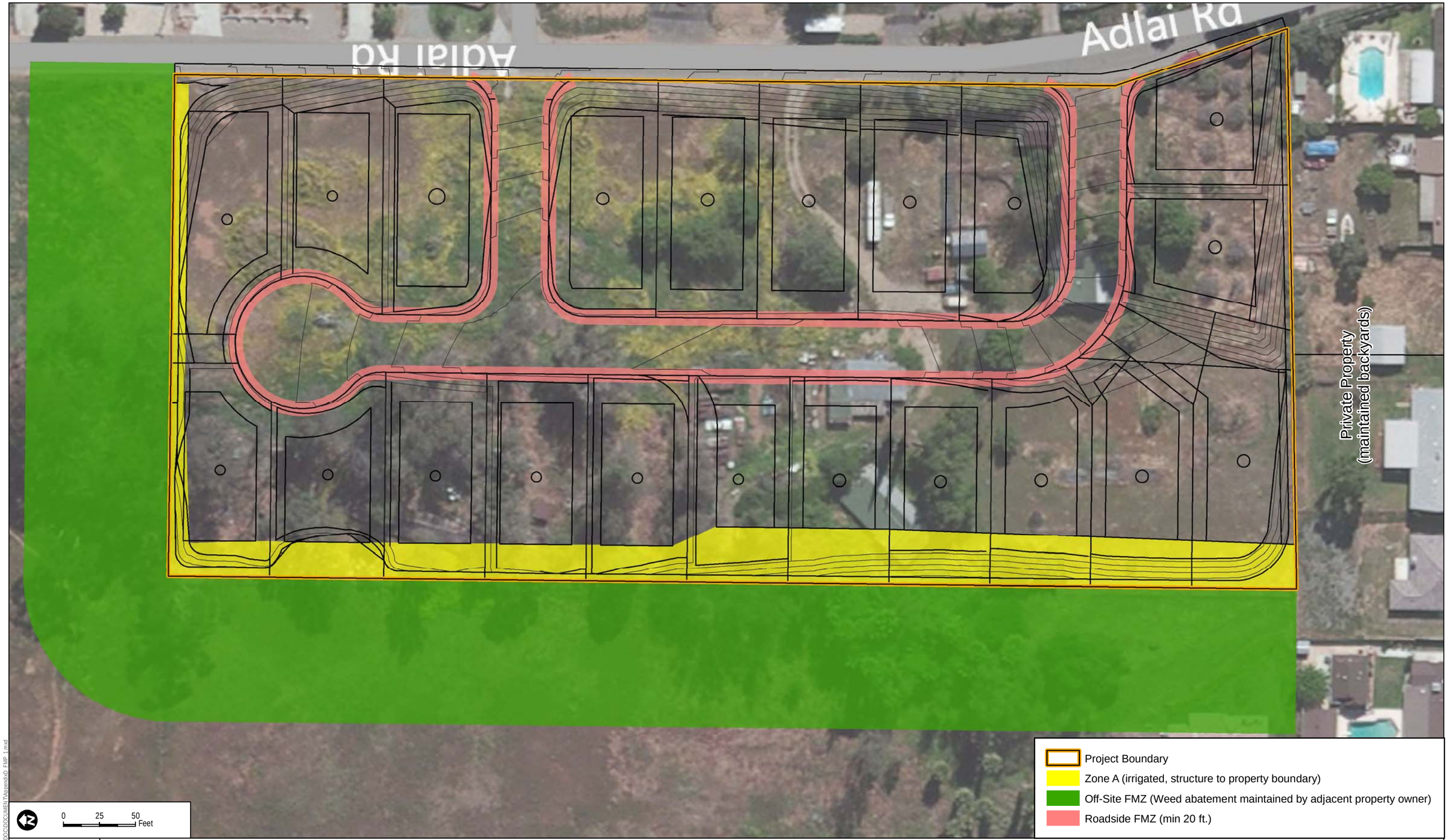
Source: BehavePlus 5.0.5 fire behavior modeling program (Andrews, Bevins, and Seli 2004)

Table 4
BehavePlus Fire Behavior Modeling Results

Model Run	Fuel Model(s)	Flame Length (feet)	Fireline Intensity (Btu/ft/s)	Surface Rate of Spread (mph)
1	Gr1, FM10	3.1 to 16.0	67 to 2,361	< 1.0
2	FM 10	13.3 to 16.0	1,562 to 2,359	, 1.0
3	Gr2, FM10	4.6 to 8.2	156 to 543	0.10 to 1.02

APPENDIX D

Fuel Modification Plan



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SOURCE: Bing 2015

APPENDIX D

Fuel Modification Plan

RIKER RANCH PROJECT

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APPENDIX E

Prohibited Plant List

UNDESIRABLE PLANT LIST

The following species are highly flammable and should be avoided when planting within the first 50 feet adjacent to a structure. The plants listed below are more susceptible to burning, due to rough or peeling bark, production of large amounts of litter, vegetation that contains oils, resin, wax, or pitch, large amounts of dead material in the plant, or plantings with a high dead to live fuel ratio. Many of these species, if existing on the property and adequately maintained (pruning, thinning, irrigation, litter removal, and weeding), may remain as long as the potential for spreading a fire has been reduced or eliminated.

BOTANICAL NAME	COMMON NAME
Abies species	Fir Trees
Acacia species	Acacia (trees, shrubs, groundcovers)
*Adenostoma sparsifolium***	Red Shanks
*Adenostoma fasciculatum***	Chamise
Agonis juniperina	Juniper Myrtle
Araucaria species	Monkey Puzzle, Norfolk Island Pine
*Artemesia californica***	California Sagebrush
Bambusa species	Bamboo
Cedrus species	Cedar
Chamaecyparis species	False Cypress
Coprosma pumila	Prostrate Coprosma
Cryptomeria japonica	Japanese Cryptomeria
Cupressocyparis leylandii	Leylandii Cypress
*Cupressus forbesii***	Tecate Cypress
Cupressus glabra	Arizona Cypress
Cupressus sempervirens	Italian Cypress
Dodonea viscosa	Hopseed Bush
*Eriogonum fasciculatum***	Common Buckwheat
Eucalyptus species	Eucalyptus
*Heterotheca grandiflora***	Telegraph Plant
Juniperus species	Junipers
Larix species	Larch
Lonicera japonica	Japanese Honeysuckle
Miscanthus species	Eulalia Grass
*Muehlenbergia species***	Deer Grass
Palmae species	Palms
Picea species	Spruce Trees
*Pickeringia Montana***	Chaparral Pea
Pinus species	Pines
Podocarpus species	Fern Pine
Pseudotsuga menziesii	Douglas Fir
Rosmarinus species	Rosemary
*Salvia mellifera***	Black Sage
Taxodium species	Cypress
Taxus species	Yew
Thuja species	Arborvitae
Tsuga species	Hemlock
*Urtica urens***	Burning Nettle

** San Diego County native species

References: Gordon, H. White, T.C. 1994. Ecological Guide to Southern California Chaparral Plant Series. Cleveland National Forest.

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County of Los Angeles Fire Department. 1998. Fuel Modification Plan Guidelines. Appendix I, Undesirable Plant List, and Appendix II, Undesirable Plant List.

APPENDIX F

Suggested Plant List for Defensible Space

SUGGESTED PLANT LIST FOR A DEFENSIBLE SPACE

BOTANICAL NAME	COMMON NAME	Climate Zone
TREES		
Acer		
platanoides	Norway Maple	M
rubrum	Red Maple	M
saccharinum	Silver Maple	M
saccarum	Sugar Maple	M
macrophyllum	Big Leaf Maple	C/ (R)
Alnus rhombifolia	White Alder	C/I/M (R)
Arbutus		
unedo	Strawberry Tree	All zones
Archontophoenix		
cunninghamiana	King Palm	C
Arctostaphylos spp.**	Manzanita	C/I/D
Brahea		
armata	Blue Hesper Palm	C/D
edulis	Guadalupe Palm	C/D
Ceratonia siliqua	Carob	C/I/D
Cerdidium floridum	Blue Palo Verde	D
Cercis occidentalis**	Western Redbud	C/I/M
Cornus		
nuttallii	Mountain Dogwood	I/M
stolonifera	Redtwig Dogwood	I/M
Eriobotrya		C/I/D
japonica	Loquat	C
Erythrina caffra	Kaffirboom Coral Tree	I/M
Gingko biloba "Fairmount"	Fairmount Maidenhair Tree	I/D/M
Gleditisia triacanthos	Honey Locust	
Juglans		I
californica	California Walnut	C/I
hindsii	California Black Walnut	I/D/M
Lagerstroemia indica	Crape Myrtle	I
Ligustrum lucidum	Glossy Privet	C/I/M
Liquidambar styraciflua	Sweet Gum	I
Liriodendron tulipifera	Tulip Tree	
Lyonothamnus floribundus		C
ssp. Asplenifolius	Fernleaf Catalina Ironwood	C/I/D
Melaleuca spp.	Melaleuca	C/I
Parkinsonia aculeate	Mexican Palo Verde	
Pistacia	Chinese Pistache	
chinensis	Pistachio Nut	C/I/D

vera	Pistachio Nut	I
Pittosporum		
phillyraeoides	Willow Pittosporum	C/I/D
viridiflorum	Cape Pittosporum	C/I
Platanus		
acerifolia	London Plane Tree	All zones
racemosa**	California Sycamore	C/I/M
Populus		
alba	White Poplar	D/M
fremontii**	Western Cottonwood	I
trichocarpa	Black Cottonwood	I/M
Prunus		
xblireiana	Flowering Plum	M
caroliniana	Carolina Laurel Cherry	C
ilicifolia**	Hollyleaf Cherry	C
lyonii**	Catalina Cherry	C
serrulata ‘Kwanzan’	Flowering Cherry	M
yedoensis ‘Akebono’	Akebono Flowering Cherry	M
Quercus		
agrifolia**	Coast Live Oak	C/I
engelmannii	Engelmann Oak	I
** suber	Cork Oak	C/I/D
Rhus		
lancea**	African Sumac	C/I/D
Salix spp.**	Willow	All zones (R)
Tristania conferta	Brisbane Box	C/I
Ulmus		
parvifolia	Chinese Elm	I/D
pumila	Siberian Elm	C/M
Umbellularia californica**	California Bay Laurel	C/I

SHRUBS		
Agave	Century Plant	D
americana	Century Plant	D
deserti	Shawis Century Plant	D
shawi**		
Amorpha fruticosa**	False Indigobush	I
Arbutus		
menziesii**	Madrone	C/I
Arctostaphylos spp.**	Manzanita	C/I/D
Atriplex**		
canescens	Hoary Saltbush	I
lentiformis	Quail Saltbush	D
Baccharis**		
glutinosa	Mule Fat	C/I
pilularis	Coyote Bush	C/I/D
Carissa grandiflora	Natal Plum	C/I
Ceanothus spp.**	California Lilac	C/I/M
Cistus spp.	Rockrose	C/I/D
Cneoridium dumosum**	Bushrue	C
Comarostaphylis**		
diversifolia	Summer Holly	C
Convolvulus cneorum	Bush Morning Glory	C/I/M
Dalea		
orcuttii	Orcutt's Delea	D
spinosa**	Smoke Tree	I/D
Elaeagnus		
pungens	Silverberry	C/I/M
Encelia**		
californica	Coast Sunflower	C/I
farinose	White Brittlebush	D/I
Eriobotrya		
deflexa	Bronze Loquat	C/I
Eriophyllum		
confertiflorum**	Golden Yarrow	C/I
staechadifolium	Lizard Tail	C
Escallonia spp.	Escallonia	C/I
Feijoa sellowiana	Pineapple Guava	C/I/D
Fouqueria splendens	Ocotillo	D
Fremontodendron**		
californicum	Flannelbush	I/M
mexicanum	Southern Flannelbush	I
Galvezia		
juncea	Baja Bush-Snapdragon	C
speciosa	Island Bush-Snapdragon	C
Garrya		
elliptica	Coast Silktassel	C/I
flavescens**	Ashy Silktassel	I/M

Heteromeles arbutifolia**	Ashy Silktassel	I/M
Lantana spp.	Toyon	C/I/M
Lotus scoparius	Lantana	C/I/D
Mahonia spp.	Deerweed	C/I
	Barberry	C/I/M
Malacothamnus		
clementinus		
	San Clemente Island Bush Mallow	C
fasciculatus**		
	Mesa Bushmallow	C/I
Melaleuca spp.		
Mimulus spp.**	Melaleuca	C/I/D
Nolina	Monkeyflower	C/I (R)
parryi		
parryi ssp. wolfii	Parry's Nolina	I
Photinia spp.	Wolf's Bear Grass	D
Pittosporum	Photinia	All Zones
crassifolium		
rhombifolium		CI/I
tobira 'Wheeleri'	Queensland Pittosporum	C/I
undulatum	Wheeler's Dwarf	C/I/D
viridiflorum	Victorian Box	C/I
Plumbago auriculata	Cape Pittosporum	C/I
Prunus	Cape Plumbago	C/I/D
caroliniana		
ilicifolia**	Carolina Laurel Cherry	C
lyonii**	Hollyleaf Cherry	C
Puncia granatum	Catalina Cherry	C
Pyracantha spp.	Pomegranate	C/I/D
Quercus	Firethorn	All Zones
dumosa**		
Rhamus	Scrub Oak	C/I
alaternus		
californica**	Italian Blackthorn	C/I
Rhaphiolepis spp.	Coffeeberry	C/I/M
Rhus	Rhaphiolepis	C/I/D
integrifolia**		
laurina	Lemonade Berry	C/I
lentii	Laurel Sumac	C/I
ovata**	Pink-Flowering Sumac	C/D
trilobata**	Sugarbush	I/M
Ribes	squawbush	I
viburnifolium		
speciosum**	Evergreen Currant	C/I
Romneya coulteri	Fuschia-Flowering Gooseberry	C/I/D
Rosa	Matilija Poppy	I
californica**		
minutifolia		

Salvia spp.**	California Wild Rose	C/I
Sambucus spp.**	Baja California Wild Rose	C/I
Symphoricarpos mollis**	Sage	All Zones
Syringa vulgaris	Elderberry	C/I/M
Tecomaria capensis	Creeping Snowberry	C/I
Teucrium fruticans	Lilac	M
Toxicodendron**	Cape Honeysuckle	C/I/D
diversilobum	Bush Germander	C/I
Verbena		
lilacina	Poison Oak	I/M
Xylosma congestum		
Yucca**	Lilac Verbena	C
schidigera	Shiny Xylosma	C/I
whipplei		
	Mojave Yucca	D
	Foothill Yucca	I

GROUNDCOVERS		
Achillea**	Yarrow	All Zones
Aptenia cordifolia	Apteria	C
Arctostaphylos spp.**	Manzanita	C/I/D
Baccharis**		
pilularis	Coyote Bush	C/I/D
Ceanothus spp.**	California Lilac	C/I/M
Cerastium tomentosum	Snow-in-Summer	All Zones
Coprosma kirkii	Creeping Coprosma	C/I/D
Cotoneaster spp.	Redberry	All Zones
Drosanthemum hispidum	Rosea Ice Plant	C/I
Dudleya		
brittonii	Brittonis Chalk Dudleya	C
pulverulenta**	Chalk Dudleya	C/I
virens	Island Live Fore-ever	C
Eschscholzia californica**	California Poppy	All Zones
Euonymus fortunei		
‘Carrierei’	Glossy Winter Creeper	M
‘Coloratus’	Purple-Leaf Winter Creeper	M
Ferocactus viridescens**	Coast Barrel Cactus	C
Gaillardia grandiflora	Blanket Flower	All Zones
Gazania spp.	Gazania	C/I
Helianthemum spp.**	Sunrose	All Zones
Lantana spp.	Lantana	C/I/D
Lasthenia		
californica**	Common Goldfields	I
glabrata	Coastal Goldfields	C
Lupinus spp.**	Lupine	C/I/M
Myoporum spp.	Myoporum	C/I
Pyracantha spp.	Firethorn	All zones
Rosmarinus officinalis	Rosemary	C/I/D
Santolina		
chamaecyparissus	Lavender Cotton	All Zones
virens	Santolina	All Zones
Trifolium frageriferum	O’Connor’s Legume	C/I
Verbena		
rigida	Verbena	All Zones
Viguiera laciniata**	San Diego Sunflower	C/I
Vinca		
minor	Dwarf Periwinkle	M

VINES		
Antigonon leptopus	San Miguel Coral Vine	C/I
Distictis buccinatoria	Blood-Red Trumpet Vine	C/I/D
Keckiella cordifolia**	Heart-Leaved Penstemon	C/I
Lonicera		
japonica 'Halliana'	Hall's Honeysuckle	All Zones
subspicata**	Chaparral Honeysuckle	C/I
Solanum		
jasminoides	Potato Vine	C/I/D

PERENNIALS		
Coreopsis		
gigantean	Giant Coreopsis	C
grandiflora	Coreopsis	All Zones
maritime	Sea Dahlia	C
verticillata	Coreopsis	C/I
Heuchera maxima	Island Coral Bells	C/I
Iris douglasiana**	Douglas Iris	C/M
Iva hayesiana**	Poverty Weed	C/I
Kniphofia uvaria	Red-Hot Poker	C/M
Lavandula spp.	Lavender	All Zones
Limonium californicum		
var. mexicanum	Coastal Statice	C
perezii	Sea Lavender	C/I
Oenothera spp.	Primrose	C/I/M
Penstemon spp.**	Penstemon	C/I/D
Satureja douglasii	Yerba Buena	C/I
Sisyrinchium		
bellum	Blue-Eyed Grass	C/I
californicum	Golden-Eyed Grass	C
Solanum		
xantii	Purple Nightshade	C/I
Zauschneria**		
californica	California Fuschia	C/I
cana	Hoary California Fuschia	C/I
'Catalina'	Catalina Fuschia	C/I

ANNUALS		
Lupinus spp.**	Lupine	C/I/M