Fire Protection Plan
Old Castle Road Project – Tract 5315
Valley Center, California
County of San Diego

ER 03-02-035 APN: 185-230-91

November 3, 2009 (Revised June 6, 2010)

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DEPARTMENT OF PLANNING AND LAND USE

Old Castle Road Project
Fire Protection Plan

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OLD CASTLE ROAD PROJECT
Fire Protection Plan
Valley Center Fire Protection District
County of San Diego
APN 185-230-91-00
TRACT 5315
Environmental Log: 03-02-035

CHAPTER 1. INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the Old Castle Road Project. The purpose of the FPP is to assess the potential impacts resulting from wildland fire hazards and to identify the measures necessary to adequately mitigate those impacts. As part of the assessment, the Plan has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire history. The Plan addresses water supply, access (including secondary/emergency access where applicable), structural ignitability and fire resistive building features, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management. The Plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure. The Plan recommends measures that the property owner will take to reduce the probability of ignition of structures throughout the Project site.

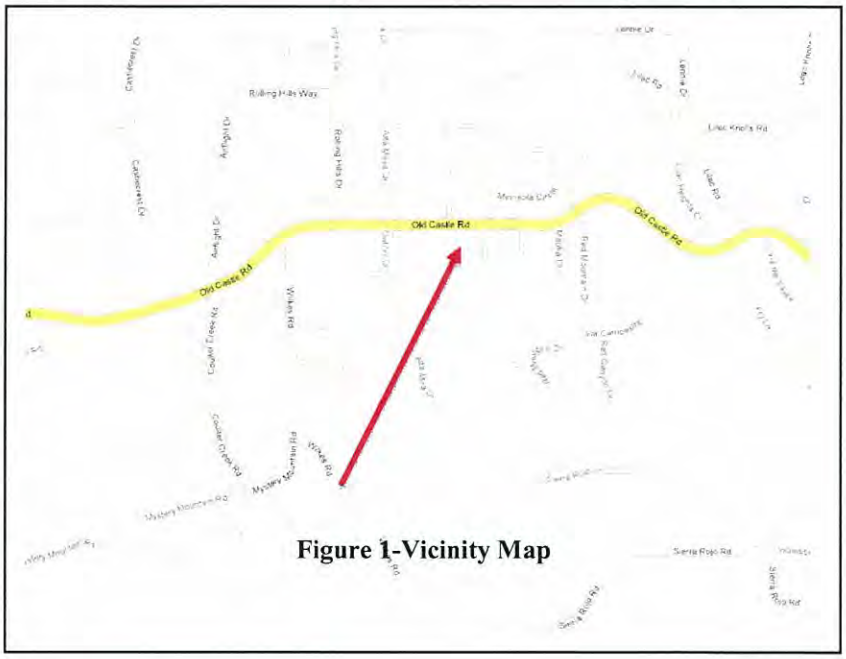

Figure 1-Vicinity Map

1.1 Project Location, Description and Environmental Setting

1.1.1 Project Location

The Old Castle Road Project, Parcel Map No. 5315, is located along the south side of Old Castle Road, approximately 1150 feet east of the intersection of Alta Mira Lane and Old Castle Road (Figure 1 - Vicinity Map) within a very high fire hazard severity zone in the community of Valley Center, San Diego County, California. The lead fire protection agency is the Valley Center Fire Protection District (VCFPD). Prior to any land development activity for this residential project, a Fire Protection Plan must be submitted to and approved by the VCFPD.

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Administrative Office & Fire Prevention Bureau
28234 Lilac Road
Valley Center, CA 92082

1.1.2 Project Description

This proposed Project is located on the south side of Old Castle Road at a point between where Alta Mira Lane and Minneola Circle intersect Old Castle Road (See Photo 1). Old Castle Road at this point is mostly flat, but to both the east and the west there are rugged, steep hillsides and deep canyon areas in the general vicinity of the project site. To the north of the project, across Old Castle Road and south of the Project, the land is moderately sloping, un-dissected citrus groves. The Project consists of a total of 8 lots. One parcel consists of a 40-foot wide road providing access to the 7 other parcels. 6 of the remaining parcels are between 2 and 3.5 acres in size, while the 7th remaining parcel is 7.8 acres in size. The maintenance of all landscaped areas will be the responsibility of the property owners. The Project site is currently undeveloped.

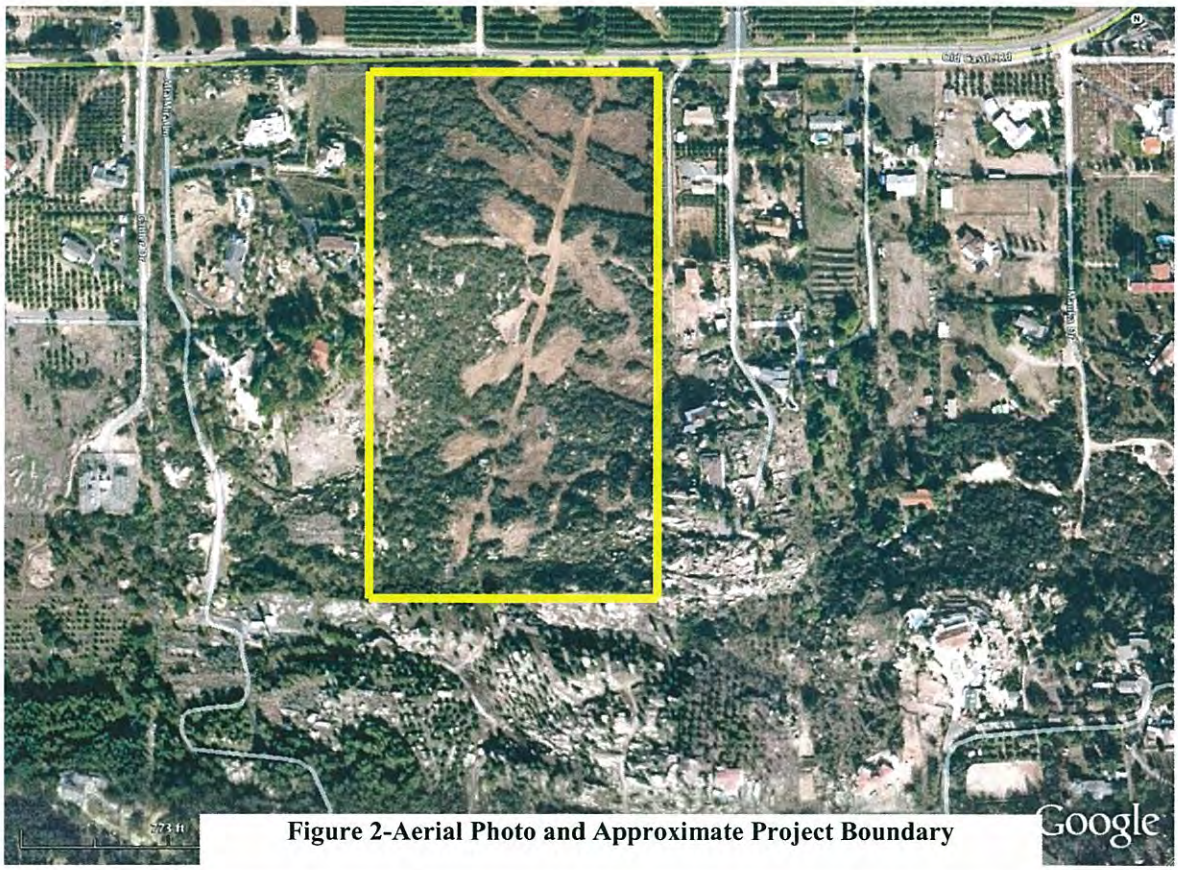


Figure 2-Aerial Photo and Approximate Project Boundary

1.1.3 Environmental Setting

The Old Castle Road Project is surrounded by rugged terrain. Most of the terrain in the Valley Center Fire Protection District is rugged, with steep hillsides and deep canyons. This is particularly the situation with regard to the rugged terrain that runs from the northeast to the southwest in the vicinity of the Project. Fuel Model 4 (Chaparral) dominates the foothill landscape (See Figure 3-Vicinity Aerial Photo).

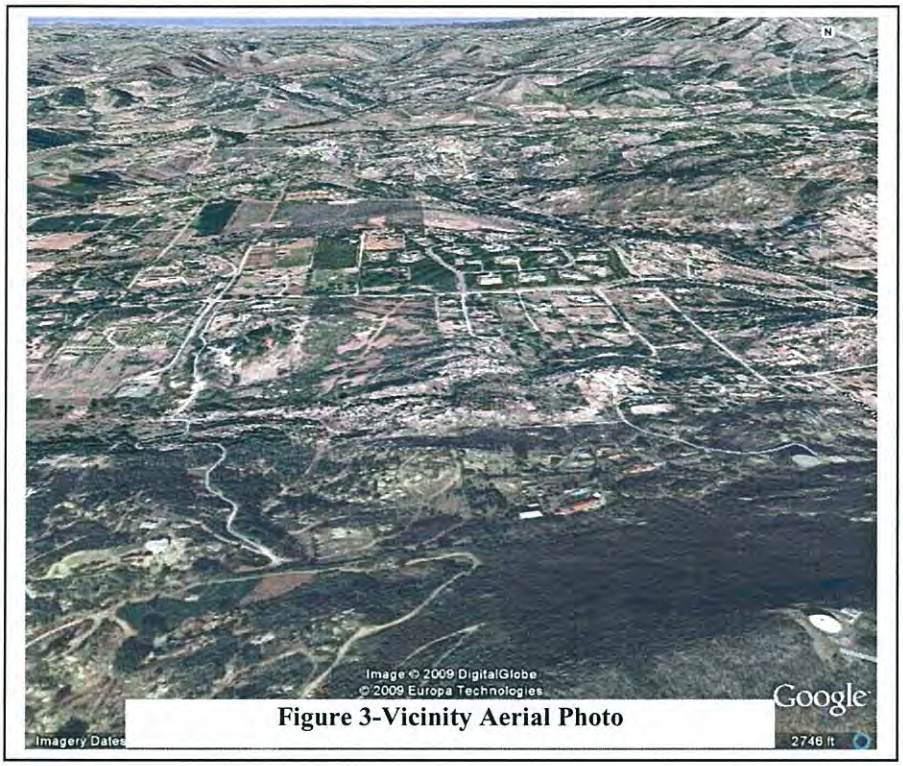


Figure 3-Vicinity Aerial Photo

This FPP assesses the overall (on-site and off-site) wildland fire hazards and risks that may threaten life and property associated with the proposed development. In addition, the FPP establishes both the short and long-term fuel modification actions to minimize any projected fire hazard and risk and assigns annual maintenance responsibilities for each of the recommended fuel modification actions interior to the project.

CHAPTER 2. GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

This FPP evaluates the adverse environmental effects that a proposed Project may have from wildland fire and properly mitigate those impacts to ensure that development projects do not unnecessarily expose people or structures to a significant risk of loss, injury or death involving wildland fires. This section of the FPP includes the following Guidelines for the Determination of Significance:

2.1 Risk or Loss

Would the Project expose people or structures to a significant risk or loss?

The Old Castle Road Project is located within an area classified by the Valley Center Fire Protection District as an Extreme Fire Hazard Area. The major threat of a wildland fire is from the northeast of the project. This threat comes from adjacent open space brush land fuels and a history of severe fire weather. To the Project's benefit, the northern and southern boundaries abut a major roadway and a very large, irrigated citrus orchard, and portions of the eastern and western boundaries abut existing landscaped and maintained residential parcels.

2.2 Emergency Access

Would the Project result in inadequate emergency access?

The primary access to the Old Castle Road development will be via Old Castle and Lilac Roads (public roadways). Access within the development will be via a newly constructed cul de sac accessed from Old Castle Road.

2.2.1 Access Road Widths. All interior roadways shall comply with the Valley Center Fire Protection District standards. A standard specific to this development includes:

- Minimum unobstructed paved width of interior "fire lanes" shall be 24 feet.

2.2.2 Specific interior roadways shall be designated "fire access roadways" or "fire lanes".

2.2.3 Emergency vehicle turnarounds shall be provided on "fire lanes" exceeding 150 feet in length.

2.2.4 All roads shall be provided with an approved paved driving surface prior to construction and/or bringing combustible building products onto each parcel.

2.2.5 Fire access roadways shall be within a 150 feet hose line pull from all portions of exterior walls of every building on the development.

2.2.6 All roads shall be provided with an approved paved driving surface prior to construction and/or bringing combustible building products onto each parcel.

2.2.7 Any gate or barrier across a fire access roadway shall have specific plans reviewed and approved prior to installation.

2.2.8 Road and Street Grades. The road and street grade standard for the VDFPD states that roadways will not exceed 20 percent and that any roadway over 15 percent shall be a concrete surface and have a deep broom finish perpendicular to the direction of travel to enhance traction.

2.2.9 Secondary Access. The entrance driveway in combination with designated and marked "fire lanes" will provide adequate secondary access. The threshold for maximum dead-end distance is not exceeded and therefore, secondary access is not required.

2.2.10 Road Surface. All roadways within the development shall be all-weather paved streets capable of supporting fire apparatus weighing up to 75,000 pounds.

2.3 Emergency Services

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 government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance service ratios or objectives for fire protection?

The Old Castle Road Project is not expected to cause adverse physical impacts or the need for new or physically altered government facilities. There is an on-going study by the Valley Center Fire Protection District to evaluate and provide a gap assessment to assess the need for additional fire protection coverage for the future. It is not anticipated that this development would be the cause for additional protection coverage itself; however, property-owners will be required to participate in the Community Facility District in perpetuity.

2.4 Water Supply

Would the Project have sufficient water supplies available to serve the project form existing entitlements and resources, or are new or expanded entitlements needed? The Valley Center Water District has agreed to serve the water needs for this residential project.

CHAPTER 3. ANTICIPATED FIRE BEHAVIOR IN THE VICINITY

The Project site is located in Climate Zone 21. Climate is characterized by generally mild (8-10 inches precipitation per year) winters, with the bulk of the annual precipitation falling between January and March, frequent periods of extended drought, and long dry and hot spring, summer and fall seasons, which dry out the native vegetation making the project's native vegetation species very flammable.

The following chart represents the typical summer, Santa Ana and Peak fire weather (climate conditions) elements for this Fire Protection Plan:

Transitional Zone	Period	**Temperature**	**Relative Humidity**	**Sustained Wind Speed**	**Burning Index (99%)**
	Summer	90-109 F	10-14%	18 mph	119
	Santa Ana	90-109 F	5-9%	24 mph	730
	Peak	90-109 F	5-9%	56 mph	730

It is reasonable to expect downslope Santa Ana winds in the range of 40-60 MPH within this portion of San Diego County. A fire burning under this wind condition and in the presently existing fuels along the undeveloped areas to the northeast of the Project would burn uphill and create extreme wildland fire conditions.

The available data suggests that in the second half of the 20th Century the frequency of small fires increased in southern California while their average size decreased. In San Diego County, this has resulted in an increased rate of burning in low elevation coastal scrubland, especially the coastal sage scrub formation near the urban development areas. History also indicates over 600 fires in the foothills and mountains from 1910 - 1999 with the recent Witch Creek and Poomacha Fires as a reminder of the destructive nature of wildfires in San Diego County's history.

Structure ignitions from wildland fire fuels basically come from two sources of heat: convective firebrands (flying embers) and radiant heat. Convective firebrands, transferred during periods of high fire intensity and strong dry winds, have the capability of being transported over long (several hundred feet and up to several miles) distances.

Convective heat will be mitigated to acceptable levels for the Old Castle Road Project, as landscaping will be irrigated *"firewise"* landscaping and all buildings will be constructed with non-combustible roofing and non-combustible or standard fire-resistive building materials, as per the Valley Center Fire Protection District requirements. Due to this fact, the convective embers issue needs will be identified as the key issue in this FPP.

"Firewise" landscape management is the act of converting native vegetative fuels from a highly flammable and high fire intensity state to a more fire resistant and low fire intensity condition. *"Firewise"* landscaping has been proven to be the most effective treatment for minimizing structure losses due to wildland fire radiant heat.

A USDA-Forest Service research study called "Structure Ignition Assessment Model (SIAM)" by Jack D. Cohen, Intermountain Fire Science Laboratory, Missoula, Montana, has helped to validate how much distance is required to keep structures from igniting due to wildfire radiant heat.

The SIAM Ignition Study indications and the professional experience of ***FIREWISE 2000,* Inc.** helped establish the fuel modification recommendations found in Section 4.0 – Analysis of Project Effects.

Comparing the expected wildland fire behavior projections of untreated vegetation (as depicted in Tables 4.6-1 and 4.6-2) against the proposed fire resistant irrigated landscape vegetation within the development required 100-foot wide fuel thinning zone (as depicted in Tables 4.6-3 and 4.6-4) demonstrates substantial reductions in the expected flame length and fireline intensity.

By requiring all structures to be constructed of non-combustible roofing and building materials, the implementation of a defensible space around all structures adjacent to the Fuel Model SCAL 18 fuels provides the most effective treatment for minimizing structure losses due to the projected flame lengths and associated radiant heat intensities.

Fire intensity in Fuel Model 4 has expected flame lengths of **96.4 feet** for a 60-MPH upslope northeast wind (Refer to Table 4.6-1). In contrast, flame lengths in treated fuels will approach **13.5 feet** during an 60-MPH northeast wind (Table 4.6-3). Therefore, fuel modifications and the planting of "*firewise*" landscaping around all structures adjacent to a Fuel Model 4 will be more than adequate, particularly along the northeastern, north, and northwestern boundaries of the development. Fire intensity in Fuel Model 4 has expected flame lengths of **61.7 feet** for a 30-MPH "*rare event*" southwest wind condition (Refer to Table 3.8.4-2). In contrast, flame lengths

in treated fuels will approach **12.7 feet** in length during a 30-MPH southwest wind (Table 4.6-4). Again, fuel modifications and "*firewise*" landscaping around all structures would provide adequate protection for structures during extreme wildfire conditions in the area.

CHAPTER 4. ANALYSIS OF PROJECT EFFECTS AND MITIGATION MEASURES

4.1 Adequate Emergency Services

This residential development is located within the Valley Center Fire Protection District jurisdiction. The FPD provides fire protection and emergency medical services for 84.5 square miles and serves a population of over 23,000 residents.

The VCFPD has indicated in the Project Facility Availability Forms that the Project is in the VCFPD and eligible for service. The primary fire station that will serve the proposed Project is Fire Station 72 located at 28234 Lilac Road, Valley Center, California.

The Project site is approximately 4.2 miles from Station 72. The emergency response time (a 2-minute departure time from Station 72 plus travel time) to the proposed Project is approximately ten (10) minutes. VCFPD personnel confirmed that the response time meets the required standard. The development is in an "Extreme Fire Severity Zone" and time required will be mitigated with extensive fuel modification standards, infrastructure construction standards (roads, water supply, etc.), and "enhanced" building standards.

4.2 Fire Access

The primary access to the Old Castle Road Project will be via Old Castle Road from the west and Lilac Road from the east (public roadways). Access within the residential development will be via seven driveways leading to each of the proposed residences.

4.2.1 Access Road. All interior access roadways will comply with the Valley Center Fire Protection District standards. Specific standards for this development includes:

4.2.1.1 Specific interior roadways will be designated "fire access roadways" or "fire lanes".

4.2.1.2 Interior roadways will be marked "fire lane".

4.2.1.3 Minimum unobstructed paved width of interior "fire lanes" will be 24 feet.

4.2.1.4 Emergency vehicle turnarounds (hammerhead or other approved design) will be provided on "fire lanes" exceeding 150 feet in length.

4.2.1.5 Fire access roadways will be within a 150 foot hose line pull from all portions of exterior walls of every building on the development.

4.2.1.6 All roads will be provided with an approved paved driving surface prior to construction and/or bringing combustible building products onto each parcel.

4.2.1.7 Any gate or barrier across a fire access roadway will have specific plans reviewed and approved prior to installation.

4.2.2 **Road and Street Grades.** The road and street grade standard for the Valley Center Fire Protection District states that roadways will not exceed 20 percent and that any roadway over 15 percent shall be a concrete surface and have a deep broom finish perpendicular to the direction of travel to enhance traction.

4.2.3 **Secondary Access.** The entrance driveways in combination with designated and marked "fire lanes" will provide adequate secondary access.

4.2.4 **Road Surface.** All roadways within the development will be all-weather paved streets capable of supporting fire apparatus weighing up to 75,000 pounds.

4.3 Water Supply

As previously stated on page 4, The Valley Center Water District has agreed to serve the water needs for this residential project. Water supply will meet the water supply requirements of the FPD and the County of San Diego for a commercial/business development. Specific requirements will include:

4.3.1 Hydrants, mains and water pressures will be designed to comply with Valley Center Fire Protection District code requirements.

4.3.2 An approved fire hydrant/water supply system will be capable of supplying 2500 gallons per minute fire flow for 2 hours (California Fire Code). Waterlines for fire control must be capable of supplying this required demand through the hydrants, plus the largest fire sprinkler demand, plus any domestic use supplied from that line.

4.3.3 When an on-site waterline serves more than two hydrants, the line must be looped, providing two hydraulically remote points of connection with the water district lines. The interior loop must have isolation valving, such that not more than two hydrants and/or sprinkler systems are between isolation points.

4.3.4 Hydrants will be located along "fire lanes" and will not be further than 150 feet from each structure or as approved by the Valley Center Fire Protection District Fire Chief.

4.3.5 Each hydrant will have the number and size of outlets as follow:

One 4-inch and one 2-1/2 inch outlet (4", 2-1/2")

4.3.6 VCFPD approval will be required for on-site hydrant and fire service waterline based on the number of residences served.

4.3.7 Fire hydrants will be located with blue reflective raised pavement markers at approved locations for each hydrant.

4.3.8 All structures greater than 250 square feet will be fully protected with automatic fire sprinkler systems meeting California Fire Code (CFC) and VCFPD policy.

4.4 Ignition Resistant Construction and Fire Protection Systems

Building exterior construction including roofs, eaves, exterior walls, doors, windows, decks and other attachments must meet the County Building Code Chapter 7A "Exterior Ignition-Resistance" ordinance in effect at the time of building permit application.
All stuctures within the Old Castle Road Project will be built with a Class A roof assembly, including a Class A roof covering and attic/foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening. These openings will be covered with 1/4-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection. Attic ventilation will also comply with the requirements of the California Fire Code. Ventilation louvers and openings may be incorporated as part of access assemblies. Any chimney, flue or stovepipe will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12-gauge minimum thickness, or other material found satisfactory by the Valley Center Fire Protection District Fire Marshal, and having ½ inch perforations for arresting burning carbon or sparks and installed to be visible for the purposes of inspection and maintenance. These 'fire-resistive building features' will reduce the threat of flying embers entering a structure, landing on a receptive fuel and starting a new fire.

In addition to the above described features, 'fire-resistive building features' will be applied to all structures located in this extreme wildland wildfire area. In addition to the Irrigated Fuel Modification Zone 1, Fuel Modification Zone 2, and Fuel Modification Zone 3 the 'fire-resistive building features' listed below are designed to further mitigate wildfire concerns for this development:

4.4.1 All exterior walls on all sides of the buildings will be constructed with one-hour fire resistant building materials and protected with two-inch nominal solid blocking between rafters at all roof overhangs and under the exterior wall covering.

4.4.2 All eaves of roof overhangs will be enclosed (boxed eaves) on all sides with non combustible materials or constructed with heavy timber such as 2x starter board and 3x6 rafter tails.

4.4.3 Structure openings: Louvers, ventilators, or openings in walls, roofs, attics, and under-floor areas having headroom less than four (4) feet in height which are not fitted with sash or doors will be covered with wire screen. The screen covering such openings shall be of corrosion-resistant metal or other approved material that offers equivalent protection and shall have a maximum mesh of one-eighth (1/8) inch. Eave-type attic ventilators and roof-mounted turbine vents are prohibited. No attic vent shall be placed facing the foothills/wildland.

4.4.4 All projections (exterior balconies, stairs, covers, unenclosed roofs and floors, and similar architectural appendages and projections) will be of non-combustible construction, one-hour fire resistive construction on the underside, or heavy timber construction. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the fire-resistive integrity of the wall. For examples of building products suitable for Zone A, see APPENDIX 'D'.

4.4.5 All glass or other transparent, translucent or opaque glazing materials, including skylights, will be constructed of tempered glass or a dual glazed windows with minimally with one pane of tempered glass. No skylights will be allowed on the roof assembly facing hazardous vegetation.

4.4.6 Fences and other structures less than five (5) feet from a building will be non-combustible construction, heavy timber or fire retardant pressure treated wood.

4.4.7 All rain gutters, down spouts and gutter hardware will be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies.

4.4.8 Gutters will be designed to reduce the accumulation of leaf litter and debris that contribute to roof edge ignition.

4.4.9 Decorative trim around windows and doors and window shutters may incorporate foam products when at least one of the two following situations is met:

- Stucco is applied to wire mesh or similar non-combustible materials and is ½ inch in thickness or more over the entire foam surface.

- The foam contains a fire inhibitor that restricts flame spread and has received a Class 1 fire rating and the foam it is applied over stucco that is ½ inch or more in thickness. The product complies with HUD/FHA "Use of Materials Bulletin No. 71" as well as Building Officials and Code Administrators (BOCA), Independent Community Bankers of America (ICBA) and the Southern Building Code Congress (SBCC).

4.4.10 Exterior door assemblies will conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved noncombustible construction, or solid core wood having stiles and rails not less than 1-3/8 inches thick with interior field panel thickness no less than 1-1/4 inches thick, or shall have a fire-resistance rating of not less than 20 minutes when tested according to ASTME 2074.

4.4.11 Metal screens are required on all window assemblies.

4.5 Fire Fuel Assessment

The Old Castle Road Project is currently vacant land, generally within a sloping rugged topography that runs from the northeast to the southwest. On-site topography ranges from nearly level to 20 percent slopes with native and non-native vegetation.

There are interspersed homes, ranches, and agricultural lands throughout this area, including the more rugged areas to the northeast and southwest of the project site. These homes are expected to annually complete required fuel modification through brush thinning and maintenance. This ongoing maintenance does lower the fire threat and risk to the proposed residences. The fuels in the open space to the northeast (developable in the future) are lighter fuels, but do align with the proposed development. There is an existing plant nursery business with very good landscaping that abuts the southeast boundary of the proposed development.

However, if this Project site were left undeveloped and without any fire hazard abatement, the off-site and on-site vegetation would increase in fuel loading and become what would be classified as a Fuel Model 4. An extreme fire threat would occur during unusually hot dry conditions, with Santa Ana wind conditions, and/or with any winds out of the northeast potentially gusting up to 60 MPH. In this fuel model scenario, the wildland fire behavior would be expected to produce ***96.4 foot flame lengths*** and a rate-of-spread of ***2028 feet per minute.***

The Poomacha Fire of 2007 is a very recent wildfire that illustrated the disaster a fire can produce with extreme weather and wind conditions. Photos 1 and 2 illustrate this landscape and existing vegetation.

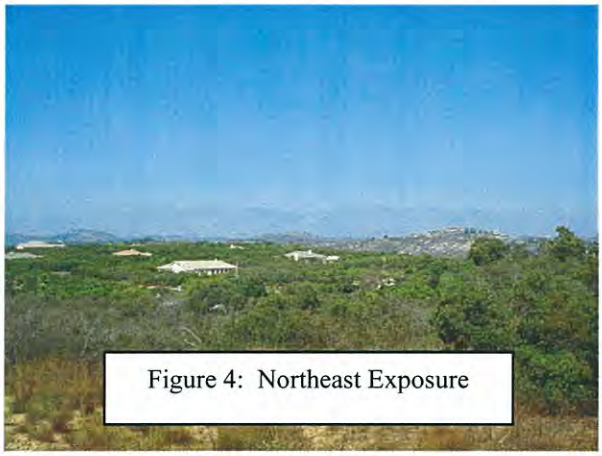


Figure 4: Northeast Exposure

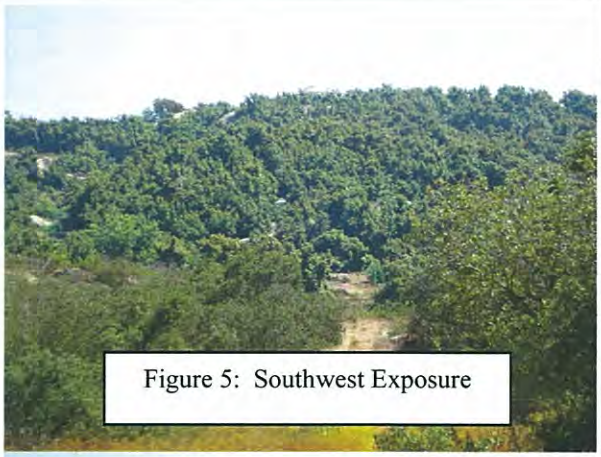


Figure 5: Southwest Exposure

When placing a residential development interspersed with highly flammable native and exotic vegetative fuels, the goal of this FPP is to minimize any potential loss of life, homes or personal property due to a wildland fire. Structure loss will and can be minimized by applying the following ***FIREWISE* 2000, Inc.** concepts of:

- Requiring a Class 'A' roof covering assembly, which includes a Class 'A' roof covering on all portions of the structures.
- Placing fire resistant (1-hour) building materials on all wall surfaces that are less than 100 feet from and face highly flammable vegetation.
- Working with the developer/designer to incorporate 'fire-resistive building features', in each structure and the placement of each structure within the development to minimize any threat from wildland fire.
- Planting and maintaining landscape plantings based on the San Diego County and VCFPD approved plant list (See APPENDIX 'A').
- Implementing and maintaining an irrigated 100-foot wide Irrigated Zone 1 (low fuel volume/defensible space) around all structures. Additionally, ensure that dead and dying vegetation are removed and/or pruned to defensible criteria. Pruned and mowed vegetation can be either cut and removed or chipped and spread evenly on the ground to reduce weed

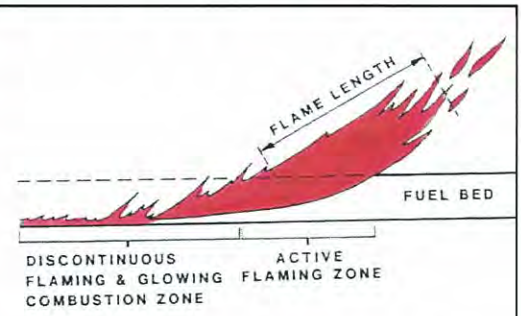
growth, conserve water and protect the soil from erosion. The depth of the spread chips shall not exceed four (4) inches.

- Installing fire sprinkler systems on all residences and structures larger than 250 square feet.

4.6 Fire Behavior Modeling

The minute-by-minute movement of a wildland fire is never totally predictable, and is certainly not predictable from weather conditions forecast many hours before the fire. Nevertheless, practice and experienced judgment in assessing the fire environment, coupled with a systematic method of calculating fire behavior, yields suprisingly good results (Rothermel, 1983).

The primary driving force in the fire behavior calculations is the dead fuel, less than one-fourth inch in diameter; these are the fine fuels that carry the fire. Fuels larger than 1/4-inch contribute to fire intensity, but not necessarily to fire spread. The BEHAVE PLUS 3.0.2 fire model describes a wildfire spreading through surface fuels, which are the burnable materials within six (6) feet of the ground and contiguous to the ground. Regardless of the limitations expressed, experienced wildland fire managers can use the BEHAVE PLUS 3.0.2 modeling system to project the expected fire intensity (expressed as Btu/ft/sec), rate-of-spread (feet/minute) and flame lengths (feet) with a reasonable degree of certainty for use in fire protection planning purposes. Of these three fire behavior projections, flame length is the most critical in determining structure protection requirements.



↑ **Figure 1: Description of Flame Length (Expressed in Feet)**

The BEHAVE PLUS 3.0.2 Fire Behavior Prediction and Fuel Modeling System by Patricia L. Andrews and Collin D. Bevins, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE PLUS 3.0.2 fire behavior computer modeling system was developed by USDA–Forest Service research scientists at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is utilized by wildland fire experts nationwide. "Because the model was designed to predict the spread of a fire, the fire model describes the fire behavior only within the flaming front".

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels on the undeveloped sites adjacent to, immediately bordering and within the proposed Old Castle Road Project. These projections were based on the following above-average Valley Center area fire weather condition assumptions:

Scenario #1 & 2: North, Northeast and East Wind Condition Fuel Moisture Assumptions. (60-MPH Santa Ana Wind Condition). ***This type event often occurs two or three times a year***.

- 1-Hour Fine Fuel Moisture of 2%
- 10-Hour Fuel Moisture of.....3%
- 100-Hour Fuel Moisture of.....5%
- Live Herbaceous Fuel Moisture of.....30%
- Live Fuel Moisture of.....50%

Scenario #3 & 4: Southwest and West Wind Condition Fuel Moisture Assumptions. Late fire season strong non-typical (30-MPH) southwest wind pattern. ***This is a rare event, causing the following fuel moisture conditions; occurs only one or two times in a ten year period frequency cycle***.

- 1-Hour Fine Fuel Moisture of 2%
- 10-Hour Fuel Moisture of.....3%
- 100-Hour Fuel Moisture of.....5%
- Live Herbaceous Fuel Moisture of.....30%
- Live Fuel Moisture of.....50%

Behavior Summary. The following Tables summarize the expected wildland fire behavior for the key National Standard Fuel Models found within and adjacent to the proposed business/commercial development under the worst case scenarios.

Tables 4.6-1 through Table 4.6-4 display the expected Rate of Fire Spread (expressed in feet per minute), Fireline Intensity (Btu/ft/sec) and Flame length (feet) for four different BEHAVEPLUS - Fire Behavior Prediction and Fuel Modeling System fuel model computer calculations. All of these calculations are based on forecast vegetation conditions of a typical Fuel Model 4 (Chaparral). Variables were slope, projected wind speed, and the anticipated weather.

Table 4.6-1 (Scenario #1 Weather Conditions) **Expected Fire Behavior along the north and northeast with 60-MPH Gusting Northeast Wind (Santa Ana) in a Fuel Model 4.**		
Rate of Spread	**2028**	**feet/minute**
Fireline Intensity	**116646**	**BTU's/foot/second**
Flame Length	**96.4**	**feet in length**
Additional Fire Behavior Calculation Input: • **20 percent uphill slope** • **60 mph 20-foot wind speed (30 mph mid-flame wind speed)** • **0° direction of wind vector to North slope**		

Treated - Table 4.6-2 (Scenario #2 Weather Conditions) Expected Fire Behavior with an 60-MPH Northeast Santa Ana Wind Along the Northern and Northeastern Perimeter. The Fuel Model After Treatment would Closely Resemble Fire Behavior of a Fuel Model 1 (80%) – Grass and Fuel Model 9 (20%) – hardwood w/litter.		
Rate of Spread	626	feet/minute
Fireline Intensity	1636	BTU's/foot/second
Flame Length	13.5	feet in length
Additional Fire Behavior Calculation Input: • 20 percent uphill slope • 60 mph 20-foot wind speed (24 mph mid-flame wind speed) • 0° direction of wind vector to North		
Comments: Expected fire intensity and flame length will be considerably less than the above calculations due to the annual weed abatement of cured grasses and removal of dead material.		

Table 4.6-3 (Scenario #3 Weather Conditions) Expected Fire Behavior Along the Southwestern Perimeter in a "*Rare Event*" 30 MPH Southwest Wind in Fuel Model 4 in the Summer or Early Fall.		
Rate of Spread	770	feet/minute
Fireline Intensity	44294	BTU's/foot/second
Flame Length	61.7	feet in length
Additional Fire Behavior Calculation Input: • 20 percent downhill slope • 30 mph 20-foot wind speed (15 mph mid-flame wind speed) • 0° direction of wind vector to South slope		

Treated - Table 4.6-4 (Scenario #4 Weather Conditions)	
Expected Fire Behavior for a Wildland Fire Burning During a 30-MPH South or Southwest Wind. Fire Behavior (Once Implemented and Maintained) Would Closely Resemble the Fire Behavior of a Fuel Model 1 (80%)- Grass and Fuel Model 9 (20%) – hardwood w/litter.	
Rate of Spread	**598 feet/minute**
Fireline Intensity	**1415 BTU's/foot/second**
Flame Length	**12.7 feet in length**
Additional Fire Behavior Calculation Input: • **20 percent uphill slope** • **30 mph 20-foot wind speed (12 mph mid-flame wind speed)** • **0° direction of wind vector to North**	
Comments: Expected fire intensity and flame length will be considerably less than the above calculations due to the annual weed abatement of cured grasses and removal of dead material.	

SUMMARY FIRE BEHAVIOR TABLE

TABLE 4.6-1 – 60-mph Northeast Wind

Prior to Fuel Treatment	VS.
Rate of Spread	2028 Ft/min
Fireline Intensity	116646 BTU/ft/sec
Flame Length	96.4 Feet

TABLE 4.6-2 - 60-mph Northeast Wind

After Fuel Treatment	
Rate of Spread	626 Ft/min
Fireline Intensity	1636 BTU/ft/sec
Flame Length	13.5 Feet

TABLE 4.6-3 – 30-mph Southwest Wind

Prior to Fuel Treatment	VS.
Rate of Spread	770 Ft/min
Fireline Intensity	44294 BTU/ft/sec
Flame Length	61.7 Feet

TABLE 4.6-4 – 30-mph Southwest Wind

After Fuel Treatment	
Rate of Spread	598 Ft/min
Fireline Intensity	1415 BTU/ft/sec
Flame Length	12.7 Feet

4.7 Defensible Space and Vegetation Management

The VCFPD has classified the entire Valley Center area as an "Extreme Fire Hazard" area. The major threat of a wildland fire for the Old Castle Road Project is from the north and northeast. Fuel Model 4 (Chaparral) dominates this transition zone landscape. The northern boundary of the development abuts Old Castle Road. The area directly across Old Castle Road consists of irrigated citrus groves. Both the western and eastern boundaries consist of existing residences with irrigated and thinned landscaping. The southern boundary abuts irrigated citrus groves. The fuel loads in southwestern corner of the development are lighter fuels with surrounding agricultural areas, but the Project is in line with the extreme northeast (Santa Ana) winds.

Fuel Model 4 would include hard woody shrubs such as Scrub Oak (*Quercus berberidifolia*), Chamise (*Adenostoma fasciculatum*), Manzanita, and Cupleaf Ceanothus (*Deanothus greggii* ssp. *perplexans*). Also present are various soft-woody shrubs including California Sagebrush (*Artemisia californica*), Laurel Sumac (*Malosma laurina*), and Mountain Mahogany (*Cercocarpus ledifolius).* The disturbed and barren areas often contain Telegraph Plant (Codariocalyx motorius), Perennial Mustard (*Brassica geniculata*) and others.

Structure ignitions from wildland fire fuels basically come from two sources of heat: convective firebrands (flying embers) and radiant heat. Convective firebrands, transferred during periods of high fire intensity and strong dry winds, have the capability of being transported over long (several hundred feet and up to several miles) distances.

"Firewise" landscape management is the act of converting native vegetative fuels from a highly flammable and high fire intensity state to a more fire resistant and low fire intensity condition. *"Firewise"* landscaping has been proven to be the most effective treatment for minimizing structure losses due to wildland fire radiant heat.

There are three principal factors responsible for structure ignitions:

- Flame radiation
- Flame impingement – convection
- Firebrands (convective embers)

Radiation and convection – These involve the transfer of heat directly from the flame. Unlike radiation heat transfer, convection requires that the flames contact the structure. Firebrands involve the aerial transport of burning materials to a combustible fuel receptacle (structure, roofing, open vents, etc.) from vegetation or other burning materials. Ignitions from radiation (given an exposed flammable surface) from radiation heat transfer depends on two aspects of the flame: 1) the radiant heat flux to a combustible surface, and the duration (length of time) of the radiant flux. The radiant heat flux depends on the flame zone size, flame-structure distance, and how much the combustible material of the structure is exposed to the flame.
Fire agencies consider vegetation management as a principal approach to wildland fire hazard reduction. Whenever the flame length, one-to-two minutes in duration or more, is equal to or more than the separation of combustible vegetation column, ignition of the vegetation column may occur. However, the temperature of the column's gasses are generally not as hot or long enough in duration to sustain the ignition of the structure.

Firebrands – Firebrands are pieces of burning materials that detach from a burning fuel due to the strong convection drafts in the burning zone. Firebrands can be carried a long distance (one mile or more) by fire drafts or strong winds. Severe wildland/urban interface fires can produce heavy showers of firebrands. The chance of firebrands igniting a structure will depend on the size of the firebrand, how long it burns after contact, and the type of building materials, building design, and construction sources for structure ignition. They can also enter a structure through unscreened vents, decks and chimneys, non-metal skylights and other overhangs. Even with non-combustible roofing, firebrands landing on leaves, needles, and other combustibles located on a roof (due to lack of maintenance) can cause structure ignition. Any open windows, doors or other type of unscreened openings are sources for embers to enter a structure during a wildland fire.

A key concern for the Old Castle Road development is convective embers from a wildfire burning in extreme conditions in the off-site fuels to the northeast of the development. This is the reason that the use of irrigated "*firewise*" landscaping and the use of ignition resistive construction materials, fire protection systems and fire protection equipment will be prescribed for this development.

Defensible Space - Below are the descriptions of the required fuel modification treatments for structures within this residential Project. To further mitigate wildfire impacts, the owner(s) shall prune any trees and shrubs free of all deadwood, remove the tree canopy that overtops any portion of a structure and thin the canopy to maintain the vegetation to ANSI A300-1995 – Standard for Tree Care Operations, Tree, Shrub, and Other Woody Plant Maintenance. By maintaining the vegetation to this standard, improved health and vigor will be obtained while enhancing fire resistance. Sidewalks, concrete patios, decorative rock, natural boulders on-site, and similar landscape features may be included as features will not support fire.

The California Fire Code (CFC) requires that a minimum of 100 feet of fuel modification be constructed and maintained around all structures in a development such as the Old Castle Road development. For this Project, this will be implemented by defining two Zones within this 100 feet, and to also provide an additional thinning zone to provide a total of 200 feet of fuel modification around all structures. Zone 1 will be defined as the immediate perimeter of the proposed residences. Zone 1 will be planted and maintained with "*firewise*" landscaping (see Fire Protection Plan Map). Zone 1 is often called the "defensible space" around structures.

Zone 2 is the area 50 feet beyond Zone 1 where the fuel volume of native vegetation will be thinned by 50 percent or removed and re-planted with the same canopy coverage (50 percent) with fire resistive "*firewise*" landscaping. See APPENDIX 'A' - Customized Acceptable Plant List for listing of desirable plant materials for a "*firewise*" landscape. It will also include the removal of undesirable species (See APPENDIX 'B'). There will be permanent markers on the ground delineating the perimeter of the 100 feet of fuel modification for this Project.

Zone 3 is the area 100 feet beyond Zone 2 where the fuel volume of native vegetation will be thinned by 30 percent or removed and re-planted with the same canopy coverage (30 percent) with fire resistive "*firewise*" landscaping. APPENDICES 'A' and 'B' will also be utilized for listing of both desirable and undesirable plant materials for a "*firewise*" landscape. As in Zone 2, there will be permanent markers on the ground delineating the perimeter of the 200 feet of fuel modification for this Project.

Following are the three fuel modification zones defined in this Fire Protection Plan:

4.7.1 Fuel Modification Zone 1 - Irrigated.

- This Zone will be irrigated (micro-irrigation acceptable when overhead irrigation may cause erosion). It will include any manufactured slope on the property as shown on the grading plan. Landscaping material from the approved plant list (see APPENDIX 'A') required or as approved by the Valley Center Fire Protection District Fire Marshal.

- All undesirable non-native vegetation will be removed (See APPENDIX 'B'). Re-planting will be with drought tolerant, fire resistive "*firewise*" landscaping.

- Vegetation may include single or cluster of trimmed fire resistant native and ornamental plants (oaks, sumac or toyon (See APPENDIX 'A' for examples).

- Dense plant masses adjacent to the structures and at bases of trees and tree clusters will not be placed in this Zone. Provide low growing, fire resistive, deep rooted, drought tolerant planting to maintain erosion control and soil stability, especially on manufactured slopes.

- Native or ornamental trees retained within fuel modification zones will be pruned to maintain a vertical separation of approximately ten (10) feet above underlying shrubs or groundcover. Pruning of the shrubs will minimize the impact of the tree pruning.

- Trees and large shrubs over 15 feet in height (oaks, sumac, toyon, etc.) pruned to provide clearance between plants of three (3) times the height of understory plants, or 10 feet, whichever is greater.

- Large continuous masses of shrubs and understory less than 15 feet in height will be thinned to remove fuel and provide at least ten (10) feet between shrubs masses, or individual shrubs. Thinning will reduce the overall canopy coverage of the area a minimum of fifty (50) percent.

- If shrubs are located underneath a tree's drip line, the lowest branch shall be at least three times as high as the under-story shrubs or 10 feet, whichever is greater.

- Trees may be planted and/or maintained as individual specimens, or clustered with no more than three (3) trees in a single cluster with a minimum distance between mature canopies of 20 feet. Avoid planting trees directly uphill of one another.

- Tree canopies will not be allowed to overhang the roof of any structure. The outer edge of the canopies of mature trees will be a minimum of ten (10) feet from the building eaves and free of all dead or dying parts. All the dead material must be pruned out of all vegetation on an as needed basis.

- Mature heights of new shrub plantings will be a maximum of 36 inches.

- Mulches, chips and other small multi-cuttings (cut to less than two (2) inches in diameter and four (4) inches in length) shall be evenly spread over the area no more than four (4) inches deep at least 50 feet from structures. This can be used to maintain soil moisture

and prevent grass and weed encroachments within the treated areas. Regular maintenance, vegetation pruning, and continued irrigation are most important in this Zone.

- Firewood or other combustible materials will not be stored in unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs. Storage may occur in the defensible space located a minimum of 20 feet from structures and separated from the crown of trees by a minimum of 10 feet, measured horizontally.

- Certain ornamental plants shall not be planted or allowed to become established within the Zone unless otherwise noted in the Recommended Plant List in APPENDIX 'A' or as approved by the Valley Center Fire Protection District Fire Marshal.

- As the native vegetation cover in Zone 1 is reduced, there is a very high probability that the openings will be dominated with non-native weed or grass species. Therefore, all grasses and weeds are to be mowed or weed-whipped to a four (4) inch stubble height by June 1st of each year or when the fuels become cured, whichever occurs first. Any vegetation biomass (debris and trimmings) produced by thinning and pruning shall be removed from the site or converted to mulch by chipping and evenly distributed to a maximum depth of four (4) inches.

- Plants in this Zone will not include any pyrophytes that are high in oils and resins, such as pines, eucalyptus, cedar, and juniper species. Trees must be planted so that when they reach maturity their branches are at least ten (10) feet away from any structure. Refer to APPENDIX 'B' for a list of undesirable plantings.

- Thick, succulent or leathery leafed plant species are the most fire resistant, while paper-thin leaves and small twiggy branches are the least fire resistant.

- If water for irrigation is limited, use more of the available water in Zone 1 than in Zone 2. Plants with high moisture content are less likely to burn. Non-flammable patios, walkways, rock, driveways and gravel can be used to break up fuel continuity within this zone.

4.7.2 Fuel Modification Zone 2 –Non-Irrigated. Zone 2 is the area 50 to 100 feet (or more) away from any structure. Off site fuel modification treatments for Lots 1 and 6 will not be necessary. Existing and future off site vegetation conditions and annual weed abatement compliance would provide for acceptable levels of fire protection. It is irrigated, but only if needed to establish and maintain "*firewise*" landscaping. Trimmed material can be cut or chipped and scattered as mulch to reduce the threat of erosion and restrict the growth of herbaceous and grass vegetation. "*Firewise*" landscaping criteria are important in this zone.

- Zone 2 is the area 50 to 100 feet from structures where the fuel volume will be removed or thinned by 50 percent, including the removal of undesirable species (See APPENDIX 'B').

- Zone 2 may include single or small clusters of trimmed fire resistant ornamental and/or native plants up to 48 inches in height and trimmed ornamental and native trees limbed up to 6 feet from the ground.

- If less than 100 feet is available for combined Fuel Modification Zones1 and 2 between a structure and the Project boundary, see Section 4.2 Ignition Resistant Construction and Fire Systems.

- This Zone shall only include single or small clusters of trimmed fire resistant native and ornamental plants, up to 48 inches in height, and trimmed native or ornamental trees limbed up six feet from the ground (or 1/3 the height of the tree), whichever is greatest.

- Selected *"firewise"* plant clusters must be separated by at least 1 ½ times the fully developed height of the retained plants.

- All of the dead material must be pruned out on an as needed basis, but at least annually each spring.

- As the native vegetation in Zone 2 removed or reduced, there is a high probability that the openings will be dominated with non-native weed or grass species. Therefore, all grasses and weeds will be mowed or weed-whipped to a four (4) inch stubble height by June 15th of each year or when the fuels become cured, whichever occurs first. Any vegetative biomass (debris and trimmings) produced by thinning and pruning shall be removed from the site or converted to mulch by chipping and evenly distributed to a maximum depth of four (4) inches. This mulching concept helps to maintain soil moisture for the designated plants, reduces the growth of annual grass and minimizes soil erosion.

4.7.3 <u>Fuel Modification Zone 3 –Non-Irrigated</u>. Zone 3 is the area 100 to 200 feet away from any structure. Off site fuel modification treatments for Lots 1 and 6 will not be necessary. Existing and future off site vegetation conditions and annual weed abatement compliance would provide for acceptable levels of fire protection. It can be irrigated, but only if needed to establish and maintain "*firewise"* landscaping. Trimmed material can be cut or chipped and scattered as mulch to reduce the threat of erosion and restrict the growth of herbaceous and grass vegetation. "*Firewise"* landscaping criteria are important in this zone.

- Zone 3 is the area 100 to 200 feet from structures where the fuel volume will be removed or thinned by 30 percent, including the removal of undesirable species (See APPENDIX 'B').

- Zone 3 may include single or small clusters of trimmed fire resistant ornamental and/or native plants up to 48 inches in height and trimmed ornamental and native trees limbed up to 6 feet from the ground.

- Zone 3 shall only include single or small clusters of trimmed fire resistant native and ornamental plants, up to 48 inches in height, and trimmed native or ornamental trees limbed up six feet from the ground (or 1/3 the height of the tree), whichever is greatest.

- Selected "*firewise"* plant clusters must be separated by at least 1 ½ times the fully developed height of the retained plants.

- All dead material must be pruned out on an as needed basis, but at least annually each spring.

- As the native vegetation in Zone 3 is removed or reduced, there is a high probability that the openings will be dominated with non-native weed or grass species. Therefore, all grasses and weeds will be mowed or weed-whipped to a four (4) inch stubble height by June 15th of each year or when the fuels become cured, whichever occurs first. Any vegetative biomass (debris and trimmings) produced by thinning and pruning shall be removed from the site or converted to mulch by chipping and evenly distributed to a maximum depth of four (4) inches. This mulching concept helps to maintain soil moisture for the designated plants, reduces the growth of annual grass and minimizes soil erosion.

Fire Behavior Summary. ***FIREWISE* 2000, Inc**. used the computer based BEHAVE Fire Behavior Prediction Model 3.01 to make four (4) fire behavior assessments for this development. Two of these were for potential natural fuel conditions and two for the recommended fuel treatments. The above referenced Tables 4.5-1 through 4.5-4 summarize the results of the Fire Fuel Assessment (Fire Model) expected wildland fire behavior for the key National Standard Fuel Models found within and adjacent to the proposed development under the worst case scenarios.

4.8 Cumulative Impact Analysis

The combination of San Diego County's weather, fuel, and terrain has often contributed to intense, uncontrolled wildland fires. This was clearly evident in the devastating Cedar, Paradise and Otay fires of October 2003, and the Witch Creek and Poomacha Fires of 2007 which were devastating in the local Valley Center area. The areas of greatest concern are adjacent to urbanized areas or where residences are intermixed with wildlands.

The following identifies how this residential development would contribute to the impact of this site and this general area. It is key that the following mitigation measures for this development proposal (e.g., Project compliance with codes/standards) are enforced.

4.8.1 With the additional residences and increased population and traffic, it could impact emergency services. It is not anticipated, however, that significant impact will occur with the implementation and maintenance of the emergency access mitigation measures that are outlined in the Plan.

4.8.2 Due to the slight increase in population and traffic, this residential development could slightly increase the risk of property loss, injury or death within the interface with wildland. With the defensible space provided around all structures with fuels modification, ignition resistant construction, and fire protection systems, the impact will not be significant.

4.8.3 Typically, the areas of greatest concern are adjacent to urbanized areas or where residences are intermixed with wildlands. As the population of San Diego County increases and the Wildland Urban Interface (WUI) expands, fire hazards and risks will continue to be encountered. The approval of this proposal and future developments' proposals will increase the concern of wildland wildfire as the area becomes more urbanized. At present, the density of development on this property in San Diego County is low and includes properties compliant with the fuel modification and weed abatement requirements of the County of San Diego and the VCFPD.

Due to the severity of impacts from the improper management of wildland areas, the existing laws are stringent and regulate all aspects of wildland fire including building standards, fuel modification, water availability/flow, and access. This Fire Protection Plan prepared for the Old Castle Road Project demonstrates compliance with the applicable regulations. It will ensure adequate compliance with codes/regulations and significance standards, including required fuel modifications and construction with fire resistive materials. In addition, it will be done by incorporating this Fire Protection Plan by reference into the final project Conditions of Approval.

CHAPTER 5. FIRE PROTECTION MAP

CHAPTER 6. LIST OF PREPARERS, PERSONS AND ORGANIZATIONS CONTACTED

6.1 List of Preparers

The principal author and preparer of this North County Fire Protection Plan is David M. Bacon, Wildland Fire Associate of ***FIREWISE* 2000, Inc.** and certified by David C. Bacon, President of ***FIREWISE* 2000, Inc.** and a San Diego County DPLU certified wildland fire consultant.

6.2 List of Persons Contacted During the Course of This Project

1. Jerry Gaugan, Project Manager-Stone Summit, LLC
2. Gary Lipska, Engineer-Aguaterra Engineering
3. Vincent N. Scheidt, Biological Consultant
4. George Lucia, Fire Marshal-Valley Center Fire Protection District

CHAPTER 7. LITERATURE CITED

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11. *County of San Diego. Fire, Defensible Space and You. August 1998*
12. *County of San Diego. Plant List and Acceptable Plants for a Defensible Space in Fire Prone Areas. Department of Planning and Land Use, December, 1998.*
13. *The Valley Center Fire Protection District's Standard Conditions.*

TECHNICAL APPENDICES:

APPENDIX 'A' – RECOMMENDED PLANT LIST
APPENDIX 'B' – LIST OF PROHIBITED AND INVASIVE PLANT LISTS
APPENDIX 'C' – BEHAVEPLUS VERSION FIRE BEHAVIOR CALCULATIONS
APPENDIX 'D' – NON-COMBUSTIBLE & IGNITION RESISTANT BUILDING MATERIALS
APPENDIX 'E' – CONSTRUCTION REQUIREMENTS
APPENDIX 'F' – PROJECT AVAILABILITY FACILITY FORMS (FIRE AND WATER)
APPENDIX 'G' – ADDITIONAL PHOTOS OF PROPOSED PROJECT SITE

APPENDIX 'A'

COUNTY OF SAN DIEGO
ACCEPTABLE PLANTS FOR DEFENSIBLE SPACE IN FIRE PRONE AREAS

ALL NATIVE PLANTS ON THE FOLLOWING LIST are considered to be drought-tolerant in the particular climate zone they are found. Those that grow best in riparian areas, as indicated by the "R", are generally the least drought-tolerant plants on the list.

SPECIAL NOTE: When planting, it is necessary to water deeply to encourage the plant roots to seek natural moisture in the soil. This watering should continue for at least three years to allow the plants to naturalize. More water should be provided in summer and less (if any) in the winter. These plants should be weaned off the supplemental irrigation and become less dependent on it over the establishment period.

No plant is totally fire resistant. The plants listed were chosen to due to their high water content, minimum amount of flammable resins and/or low fuel volume.

Definitions:

Defensible Space: The area around a structure, where material capable of causing fire has been cleared, reduced or changed, to act as a barrier between an advancing fire and the structure.

Drought-Tolerant Plant Materials: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth and reproduction with only natural moisture. Occasional supplemental irrigation is necessary only in extreme drought situations.

Establishment Period: The time it takes for a plant to become drought-resistant. This is usually a period of three years and is the time when supplemental irrigation is necessary.

Native or Naturalizing Plant Species: Plant species native to the region or introduced which, once established, are capable of sustaining growth and reproduction under local climatic conditions without supplemental irrigation.

***FIRE WISE* 2000, Inc. Note:** The plant list which follows was developed using the plants found on the San Diego County approved plant list. This list was then compared to those plants which are suitable for the climatic zone in which the project is located. Only those plants suitable for the project area listed below. The list is therefore shorter than that provided by the County. By providing this custom list, plants that are likely to be killed or seriously damaged by frost or will not perform in hot dry conditions have been eliminated. ***FIRE WISE* 2000, Inc.** believes that the planting of species suited to the site is essential to fire management goals and is a environmentally sound practice.

San Diego County
Customized Acceptable Plant List
For Old Castle Road Project

No.	Type	Genus	Species	Common Name
1	Annual	Lupinus spp.	nanus	Lupine
2	Groundcover	Achillea	millefolium	Yarrow
3	Groundcover	Arctostaphylos spp.		Manzanita
4	Groundcover	Cerastium	tomentosum	Snow-in-Summer
5	Groundcover	Coprosma	kirkii	Creeping Coprosma
6	Groundcover	Cotoneaster spp.		Redberry
7	Groundcover	Drosanthemum	hispidum	Rosea Ice Plant
8	Groundcover	Dudleya	pulverulenta	Chalk Dudleya
9	Groundcover	Dudleya	virens	Island Live-Forever
10	Groundcover	Eschscholzia	californica	California Poppy
11	Groundcover	Ferocactus	viridescens	Coast Barrel Cactus
12	Groundcover	Gaillardia	grandiflora	Blanket Flower
13	Groundcover	Gazania spp.		Gazania
14	Groundcover	Helianthemum spp.		Sunrose
15	Groundcover	Lantana spp.		Lantana
16	Groundcover	Lasthenia	californica	Common Goldfields
17	Groundcover	Lasthenia	glabrata	Coastal Goldfields
18	Groundcover	Lupinus spp.		Lupine
19	Groundcover	Myoporum spp.		Myoporum
20	Groundcover	Pyracantha spp.		Firethorn
21	Groundcover	Rosmarinus	officinalis	Rosemary
22	Groundcover	Santolina	chamaecyparissus	Lavender Cotton
23	Groundcover	Trifolium	frageriferum	O'Connor's Legume
24	Groundcover	Verbena	rigida	Verbena
25	Groundcover	Viguiera	laciniata	San Diego Sunflower
26	Groundcover	Vinca	major	Periwinkle
27	Groundcover	Vinca	minor	Dwarf Periwinkle
28	Perennial	Coreopsis	gigantea	Giant Coreopsis
29	Perennial	Coreopsis	grandiflora	Coreopsis
30	Perennial	Coreopsis	maritima	Sea Dahlia
31	Perennial	Coreopsis	verticillata	Coreopsis
32	Perennial	Heuchera	maxima	Island Coral Bells
33	Perennial	Iris	douglasiana	Douglas Iris
34	Perennial	Kniphofia	uvaria	Red-Hot Poker
35	Perennial	Lavandula spp.		Lavender
36	Perennial	Penstemon spp.		Penstemon
37	Perennial	Satureja	douglasii	Yerba Buena
38	Perennial	Sisyrinchium	bellum	Blue-Eyed Grass
39	Perennial	Sisyrinchium	californicum	Golden-Eyed Grass
40	Perennial	Solanum	xantii	Purple Nightshade
41	Perennial	Zauschneria	'Catalina' ?	Catalina Fuschia
42	Perennial	Zauschneria	californica	California Fuschia
43	Perennial	Zauschneria	cana	Hoary California Fuschia
44	Shrub	Agave	americana	Desert Century Plant
45	Shrub	Agave	Amorpha fruticosa	False Indigobush
46	Shrub	Agave	deserti	Shaw's Century Plant
47	Shrub	Agave	shawii	NCN

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No.	Type	Genus	Species	Common Name
48	Shrub	Agave		Century Plant
49	Shrub	Arbutus	menziesii	Madrone
50	Shrub	Arctostaphylos spp.		Manzanita
51	Shrub	Atriplex	canescens	Hoary Saltbush
52	Shrub	Atriplex	lentiformis	Quail Saltbush
53	Shrub	Baccharis	pilularis	Coyote Bush
54	Shrub	Baccharis	salicifolia	Mule Fat "R"
55	Shrub	Carissa	macrocarpa	Natal Plum
56	Shrub	Ceanothus spp.		California Lilac
57	Shrub	Cistus spp.		Rockrose
58	Shrub	Cneoridium	dumosum	Bush rue
59	Shrub	Comarostaphylis	diversifolia	Summer Holly
60	Shrub	Convolvulus	cneorum	Bush Morning Glory
61	Shrub	Dalea	attenuata v orcuttii	Orcutt's Delea
62	Shrub	Elaeagnus	pungens	Silverberry
63	Shrub	Encelia	californica	Coast Sunflower
64	Shrub	Encelia	farinosa	White Brittlebush
65	Shrub	Eriobotrya	deflexa	Bronze Loquat
66	Shrub	Eriophyllum	confertiflorum	Golden Yarrow
67	Shrub	Escallonia spp.		Escallonia
68	Shrub	Feijoa	sellowiana	Pineapple Guava
69	Shrub	Fouqueria	splendens	Ocotillo
70	Shrub	Fremontodendron	californicum	Flannelbush
71	Shrub	Fremontodendron	mexicanum	Southern Flannelbush
72	Shrub	Galvezia	juncea	Baja Bush-Snapdragon
73	Shrub	Galvezia	speciosa	Island Bush-Snapdragon
74	Shrub	Garrya	elliptica	Coast Silktassel
75	Shrub	Garrya	flavescens	Ashy Silktassel
76	Shrub	Heteromeles	arbutifolia	Toyon
77	Shrub	Lantana spp.		Lantana
78	Shrub	Lotus	scoparius	Deerweed
79	Shrub	Mahonia spp.		Barberry
80	Shrub	Malacothamnus	clementinus	San Clemente Island Bush Mallow
81	Shrub	Malacothamnus	fasciculatus	Mesa Bushmallow
82	Shrub	Melaleuca spp.		Melaleuca
83	Shrub	Mimulus spp.		Monkeyflower
84	Shrub	Nolina	parryi	Parry's Nolina
85	Shrub	Photinia spp.		Photinia
86	Shrub	Pittosporum	crassifolium	NCN
87	Shrub	Pittosporum	rhombifolium	Queensland Pittosporum
88	Shrub	Pittosporum	tobira 'Wheeleri'	Wheeler's Dwarf
89	Shrub	Plumbago	auriculata	Cape Plumbago
90	Shrub	Prunus	caroliniana	Carolina Laurel Cherry
91	Shrub	Prunus	ilicifolia	Hollyleaf Cherry
92	Shrub	Prunus	lyonii	Catalina Cherry
93	Shrub	Puncia	granatum	Pomegranate
94	Shrub	Pyracantha spp.		Firethorn
95	Shrub	Rhamus	alaternus	Italian Buckthorn
96	Shrub	Rhamus	californica	Coffeeberry
97	Shrub	Rhaphiolepis spp.		Rhaphiolepis
98	Shrub	Rhus	continus	Smoke Tree
99	Shrub	Rhus	integrifolia	Lemonade Berry
100	Shrub	Rhus	laurina	Laurel Sumac

No.	Type	Genus	Species	Common Name
101	Shrub	Rhus	ovata	Sugarbush
102	Shrub	Rhus	trilobata	Squawbush
103	Shrub	Romneya	coulteri	Matilija Poppy
104	Shrub	Rosa	californica	California Wild Rose
105	Shrub	Rosa	minutifolia	Baja California Wild Rose
106	Shrub	Salvia spp.		Sage
107	Shrub	Sambucus spp.		Elderberry
108	Shrub	Symphoricarpos	mollis	Creeping Snowberry
109	Shrub	Syringa	vulgaris	Lilac
110	Shrub	Teucrium	fruticans	Bush Germander
111	Shrub	Verbena	lilacina	Lilac Verbena
112	Shrub	Xylosma	congestum	Shiny Xylosma
113	Shrub	Yucca	schidigera	Mojave Yucca
114	Shrub	Yucca	whipplei	Foothill Yucca
115	Tree	Acer	macrophyllum	Big Leaf Maple
116	Tree	Acer	saccarum	Sugar Maple
117	Tree	Acer	saccharinum	Silver Maple
118	Tree	Alnus	rhombifolia	White Alder "R"
119	Tree	Arbutus	unedo	Strawberry Tree
120	Tree	Brahea	armata	Blue Mexican Palm
121	Tree	Brahea	edulis	Guadalupe Palm
122	Tree	Ceratonia	siliqua	Carob
123	Tree	Cercis	occidentalis	Western Redbud
124	Tree	Cerdidium	floridum	Blue Palo Verde
125	Tree	Cornus	nuttallii	Mountain Dogwood
126	Tree	Cornus	stolonifera	Redtwig Dogwood
127	Tree	Elaeagnus	angustifolia	Russian Olive
128	Tree	Eriobotrya	japonica	Loquat
129	Tree	Gingko	biloba "Fairmount"	Fairmount Maidenhair Tree
130	Tree	Gleditisia	triacanthos	Honey Locust
131	Tree	Juglans	californica	California Walnut
132	Tree	Juglans	hindsii	California Black Walnut
133	Tree	Lagerstroemia	indica	Crape Myrtle
134	Tree	Ligustrum	lucidum	Glossy Privet
135	Tree	Liquidambar	styraciflua	Sweet Gum
136	Tree	Liriodendron	tulipifera	Tulip Tree
137	Tree	Lyonothamnus	floribundus ssp. Asplenifolius	Fernleaf Catalina Ironwood
138	Tree	Melaleuca spp.		Melaleuca
139	Tree	Myoporum spp.		Myoporum
140	Tree	Nerium	oleander	Oleander
141	Tree	Parkinsonia	aculeata	Mexican Palo Verde
142	Tree	Pistacia	chinensis	Chinese Pistache
143	Tree	Pistacia	vera	Pistachio Nut
144	Tree	Pittosporum	phillyreoides	Willow Pittosporum
145	Tree	Platanus	acerifolia	London Plane Tree
146	Tree	Platanus	racemosa	California Sycamore "R"
147	Tree	Populus	alba	White Poplar
148	Tree	Populus	fremontii	Western Cottonwood "R"
149	Tree	Populus	trichocarpa	Black Cottonwood "R"
150	Tree	Prunus	caroliniana	Carolina Laurel Cherry
151	Tree	Prunus	cersifera 'Newport'	Newport Purple-Leaf Plum
152	Tree	Prunus	ilicifolia	Hollyleaf Cherry
153	Tree	Prunus	lyonii	Catalina Cherry

No.	Type	Genus	Species	Common Name
154	Tree	Prunus	serrulata 'Kwanzan'	Flowering Cherry
155	Tree	Prunus	xblireiana	Flowering Plum
156	Tree	Prunus	yedoensis 'Akebono'	Akebono Flowering Cherry
157	Tree	Quercus	agrifolia	Coast Live Oak
158	Tree	Quercus	engelmannii	Engelmann Oak
159	Tree	Quercus	suber	Cork Oak
160	Tree	Rhus	lancea	African Sumac
161	Tree	Salix spp.		Willow "R"
162	Tree	Tristania	conferta	Brisbane Box
163	Tree	Ulmus	parvifolia	Chinese Elm
164	Tree	Ulmus	pumila	Siberian Elm
165	Tree	Umbellularia	californica	California Bay Laurel "R"
166	Vine	Antigonon	leptopus	San Miguel Coral Vine
167	Vine	Distictis	buccinatoria	Blood-Red Trumpet Vine
168	Vine	Keckiella	cordifolia	Heart-Leaved Penstemon
169	Vine	Lonicera	japonica 'Halliana'	Hall's Honeysuckle
170	Vine	Lonicera	subspicata	Chaparral Honeysuckle
171	Vine	Solanum	jasminoides	Potato Vine

APPENDIX 'B'

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

APPENDIX 'B' References:

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

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City of Oceanside, California. 1995. Vegetation Management. Landscape Development Manual. Community Services Department, Engineering Division.

City of Vista, California 1997. Undesirable Plants. Section 18.56.999. Landscaping Design, Development and Maintenance Standards.

www.bewaterwise.com. 2004. Fire-resistant California Friendly Plants.

www.ucfpl.ucop.edu. 2004. University of California, Berkeley, Forest Products Laboratory, College of Natural Resources. Defensible Space Landscaping in the Urban/Wildland Interface. A Compilation of Fire Performance Ratings of Residential Landscape Plants.

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

APPENDIX 'C'

BehavePlus Version 3.0.2
Fire Behavior Calculations
Old Castle Road Project

BehavePlus Logo

BehavePlus 3.0.2 (Build 265)
NE60 FM1 and FM9 Treated
Fri, Sep 11, 2009 at 09:26:03

Input Worksheet

Modules: SURFACE

Input Variables	Input Value(s)	Units
Fuel/Vegetation, Surface/Understory		
First Fuel Model	1	
Second Fuel Model	9	
First Fuel Model Coverage	80	percent
Fuel Moisture		
1-h Moisture	2	percent
10-h Moisture	3	percent
100-h Moisture	5	percent
Live Herbaceous Moisture		percent
Live Woody Moisture		percent
Weather		
Midflame Wind Speed	24	mi/h
Direction of Wind Vector (from upslope)	0	deg
Terrain		
Slope Steepness	20	percent
Notes		

Run Option Notes

Two fuel model weighting method: area-weighted [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from upslope [SURFACE].

Direction of the wind vector is the direction the wind is pushing the fire [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	626	ft/min
Heat per Unit Area	488	Btu/ft2
Fireline Intensity	1636	Btu/ft/s
Flame Length	13.5	ft
Direction of Maximum Spread (from upslope)	0	deg
Max Eff Wind Exceeded?	No	

End

BehavePlus Logo

BehavePlus 3.0.2 (Build 265)
SW30 FM1 and FM9 Treated
Fri, Sep 11, 2009 at 09:28:49

Input Worksheet

Modules: SURFACE

Input Variables	Input Value(s)	Units
Fuel/Vegetation, Surface/Understory		
First Fuel Model	1	
Second Fuel Model	9	
First Fuel Model Coverage	80	percent
Fuel Moisture		
1-h Moisture	2	percent
10-h Moisture	3	percent
100-h Moisture	5	percent
Live Herbaceous Moisture		percent
Live Woody Moisture		percent
Weather		
Midflame Wind Speed	12	mi/h
Direction of Wind Vector (from upslope)	0	deg
Terrain		
Slope Steepness	20	percent
Notes		

Run Option Notes

Two fuel model weighting method: area-weighted [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from upslope [SURFACE].

Direction of the wind vector is the direction the wind is pushing the fire [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	598	ft/min
Heat per Unit Area	488	Btu/ft2
Fireline Intensity	1415	Btu/ft/s
Flame Length	12.7	ft
Direction of Maximum Spread (from upslope)	0	deg
Max Eff Wind Exceeded?	No	

End

BehavePlus Logo

BehavePlus 3.0.2 (Build 265)
FM4 NE60mph
Fri, Sep 11, 2009 at 08:44:35

Input Worksheet

Modules: SURFACE

Input Variables	Input Value(s)	Units
Fuel/Vegetation, Surface/Understory		
Fuel Model	4	
Fuel Moisture		
1-h Moisture	2	percent
10-h Moisture	3	percent
100-h Moisture	5	percent
Live Herbaceous Moisture	30	percent
Live Woody Moisture	50	percent
Weather		
Midflame Wind Speed	30	mi/h
Direction of Wind Vector (from upslope)	0	deg
Terrain		
Slope Steepness	20	percent
Notes		

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from upslope [SURFACE].

Direction of the wind vector is the direction the wind is pushing the fire [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	2028	ft/min
Heat per Unit Area	3450	Btu/ft2
Fireline Intensity	116646	Btu/ft/s
Flame Length	96.4	ft
Direction of Maximum Spread (from upslope)	0	deg
Max Eff Wind Exceeded?	No	

End

BehavePlus Logo

BehavePlus 3.0.2 (Build 265)
FM4 SW30mph
Fri, Sep 11, 2009 at 08:46:43

Input Worksheet

Modules: SURFACE

Input Variables	Input Value(s)	Units
Fuel/Vegetation, Surface/Understory		
Fuel Model	4	
Fuel Moisture		
1-h Moisture	2	percent
10-h Moisture	3	percent
100-h Moisture	5	percent
Live Herbaceous Moisture	30	percent
Live Woody Moisture	50	percent
Weather		
Midflame Wind Speed	15	mi/h
Direction of Wind Vector (from upslope)	0	deg
Terrain		
Slope Steepness	20	percent
Notes		

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from upslope [SURFACE].

Direction of the wind vector is the direction the wind is pushing the fire [SURFACE].

Results

Output Variable	Value	Units
Surface Rate of Spread (maximum)	770	ft/min
Heat per Unit Area	3450	Btu/ft2
Fireline Intensity	44294	Btu/ft/s
Flame Length	61.7	ft
Direction of Maximum Spread (from upslope)	0	deg
Max Eff Wind Exceeded?	No	

End

APPENDIX 'D'

Non-Combustible & Fire Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

Examples of non-combustible & fire resistant building materials for balconies, carports decks, patio covers and floors are as follow:

I. **NON-COMBUSTIBLE HEAVY GAGE ALUMINUM MATERIALS** - *Metals USA Building Products Group - Ultra-Lattice*

Ultra-Lattice Stand Alone Patio Cover

Ultra-Lattice Attached Patio Cover

Ultra-Lattice Solid Patio Cover

Ultra-Lattice Vs. Wood

II. FRX Exterior Fire-Retardant Treated Wood

Exterior Fire Retardant Treated (FRT) Wood

FRX® fire retardant treated wood may be used in exterior applications permitted by the codes where: public safety is critical, other materials would transfer heat or allow fires to spread, sprinkler systems cannot easily be installed, corrosive atmospheres necessitate excessive maintenance of other materials, or fire protection is inadequate or not readily available. The International Building, Residential and Urban-Wildland Interface Codes and regulations permit the use of fire retardant treated wood in specific instances. See below for typical exterior uses and typical residential uses.

Typical Exterior Uses

- Balconies
- Decks

Homeowners and Residential Architects: See this 2-minute video and the diagram below.

For information on fire retardant treated wood for exterior uses, visit www.frxwood.com.

Decking (SFM Standard 12-7A-4)

III. TREX COMPANY, INC –"Trex Accents ®: Fire Defense ™ " wood and polyethylene composite deck board, nominal 5/4" thick x 5-1/2" width, nominal density of 0.036 lb/in^3.

Trex Accents®: Fire Defense™

The perfect blend of beauty and brawn.

Trex's #1 selling platform, Trex Accents®, exceeds the strict fire regulations set by the State of California and San Diego County.

- Offers superior safety performance:
  - Exceeds ASTM E84 Class B Flame Spread.
  - Exceeds 12-7A-4 Part A (underflame) and Part B (Burning Brand).
- Self-extinguishing even under extreme fire exposure.
- Approved for use by the California State Fire Marshal's Office and San Diego County. Read the California Department of Forestry and Fire Protection, Office of the State Fire Marshal WILDLAND URBAN INTERFACE (WUI)PRODUCTS Report. (PDF)

IV. SOLID "WOOD" DECKING

◇Company Name: Various Manufacturers
Product Description: Solid "Wood" decking: "Redwood", "Western Red Cedar", "Incense Cedar", "Port Orford Cedar", and "Alaska Yellow Cedar".
Sizes: Minimum nominal 2" thickness (American Softwood Lumber Standard PS 20).
Lumber grades: Construction Common and better grades for Redwood, 3 Common and better grades for Cedars, and commercial decking or better grades for both Redwood and Cedars.

SPECIAL INSTRUCTIONS: Solid wood decking shall be installed over solid wood joists spacing 24" or less on center.

APPENDIX 'E'

Construction Requirements

As of the date of this Fire Protection Plan (FPP), the following are the Valley Center Fire Protection District's construction requirements for a Very High Fire Hazard Serverity Zone which are designed to meet or exceed the San Diego County Ignition-Resistive Building Construction Standards, California Building Code Chapter 7A and 7B requirements and Class I Ignition Resistant Construction requirements found in the current edition of the Internatinal Wildland Urban Interface Code. The building materials and their application are consistent with NFPA 1144 – Standard for Reducing Structure Ignitions Hazards from Wildland Fire. 2008 Edition. Building exterior construction including roofs, eaves, exterior walls, doors, windows, decks and other attachments must meet the County Building Code Chapter 7A "Exterior Ignition-Resistance" ordinance in effect at the time of building permit application.

1. All structures will be built with a Class A Roof Assembly, including a Class A roof covering, and attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening and shall be covered with 1/4-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection. Attic ventilation shall also comply with the requirements of the Uniform Building Code (U.B.C.). Ventilation louvers and openings may be incorporated as part of access assemblies.

2. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be fire-stopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking.

3. When provided, exposed valley flashings shall be not less than 0.019-inch (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of No. 72 ASTM cap sheet running the full length of the valley.

4. Paper-faced insulation shall be prohibited in attics or ventilated spaces.

5. All chimney, flue or stovepipe openings will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, 12 gauge minimum thicknesses or other material found satisfactory by the Lakeside Fire Protection District, having ½-inch perforations for arresting burning carbon or sparks. It shall be installed to be visible for the purposes of inspection and maintenance.

6. All residential structures will have automatic interior fie sprinklers installed according to the National Fire Protection Association (NFPA) 13D - *Standard for the Installation of Sprinkler Systems in One and Two-family Homes and Manufactured Homes* and the Lakeside Fire Protection District standards.

7. All glass or other transparent, translucent or opaque glazing materials including skylights shall be constructed multi-layered glazed panels one layer of which must be tempered glass. No skylights will be allowed on the roof assembly facing hazardous vegetation.

8. The exterior walls surface materials shall be non-combustible or an approve alternate. In all construction, exterior walls are required to be protected with 2-inch nominal solid blocking between rafters at all roof overhangs.

9. All eaves, fascias and soffits will be enclosed (boxed) with non-combustible materials. This shall apply to the entire perimeter of each structure.

10. All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies .

11. Gutters shall be provided with the means to prevent the accumulation of leaf litter and debris that contribute to roof edge ignition.

12. All side yard fence and gate assemblies (fences, gate and gate posts) when attached to the home shall be of non-combustable material. The first five (5) feet of fences and other items attached to a structure shall be of non-combustible material.

13. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.

14. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction or pressure-treated exterior fire-retardant wood. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain same fire-resistant standards as the exterior walls of the structure.

15. Exterior doors shall be approved non-combustible construction, solid core wood and shall conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved noncombustible construction, or solid core wood having stiles and rails not less than 1⅜ inches thick with interior field panel thickness no less than 1¼ inches thick, or shall have a fire-resistance rating of not less than 20 minutes when tested according to ASTM E2074.

16. Vinyl window assemblies are deemed acceptable if the windows have the following characteristics:

    - Frame and sash are comprised of vinyl material with welded corners
    - Metal reinforcements in the interlock area
    - Glazed with insulating glass, annealed or tempered
    - Frame and sash profiles are certified in AAMA Lineal Certification Program
    - Certified and labeled to ANSI/AAMA/NWWDA 101/LS2-97 for Structural Requirements

17. All windows shall be provided with 1/8 inch mesh metal or similar non-combustible screens to prevent embers from entering the structure during high wind conditions.

18. Roof vents, dormer vents, gable vents, foundation ventilation openings, ventilation openings in vertical walls, or other similar ventilation openings shall be louvered and covered with 1/4-inch, noncombustible, corrosion-resistant metal mesh or other approved material that offers equivalent protection. Turbine attic vents shall be equipped to allow one-way direction rotation only; they shall not free spin in both directions.

19. Combustible eaves, fascias and soffits shall be enclosed. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section heavy timber construction shall consist of a minimum of 4x6 rafter ties and 2x decking.

20. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall not exceed 144 square inches per opening and shall be covered with ¼-inch mesh corrosion-resistant metal screen or other approved material that offers equivalent protection.

APPENDIX 'F'

Water and Fire Service Availability Forms

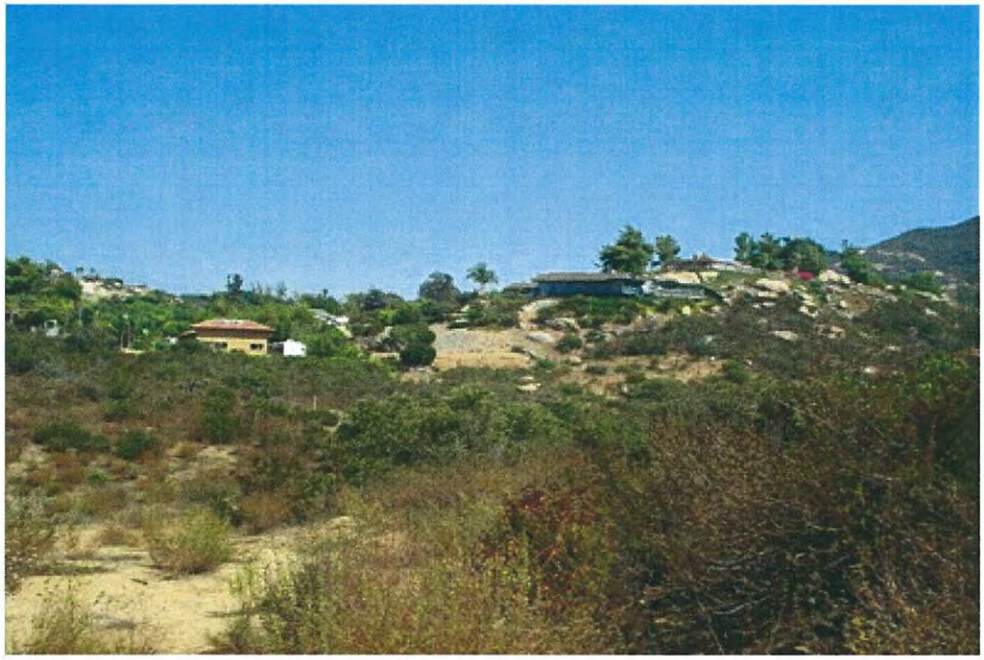
(executed forms to be provided by the applicant)

APPENDIX 'G'

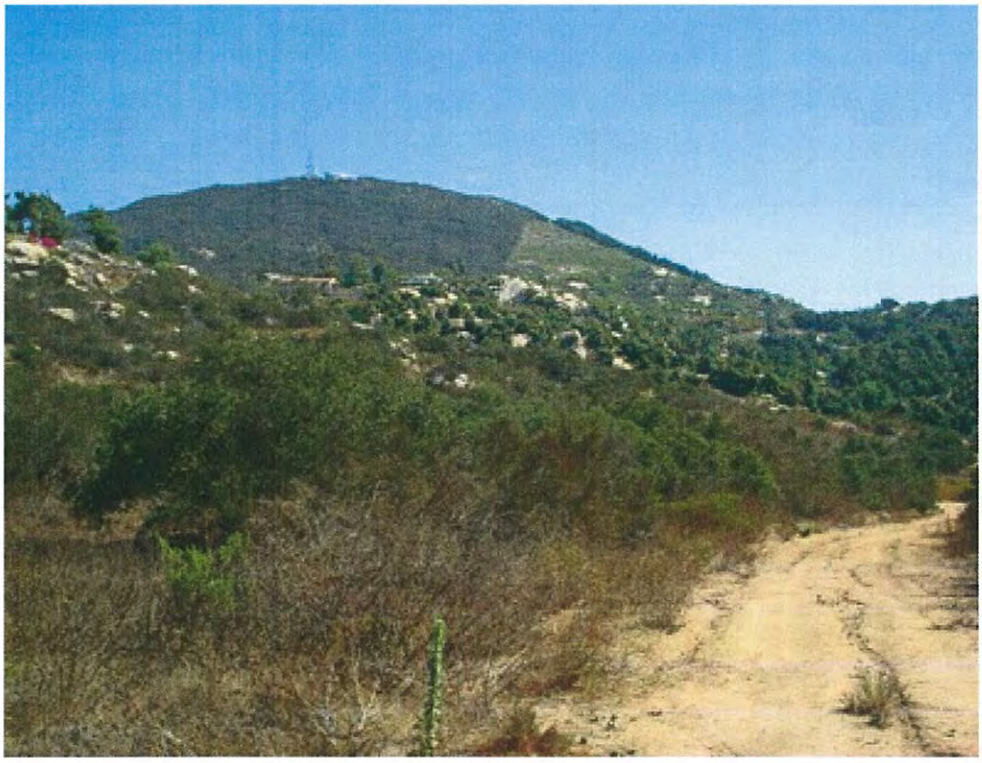
Additional Photos of Proposed Project Site

Old Castle Road
Fire Protection Plan
Additional Project Photos

Old Castle Road
Fire Protection Plan
Additional Project Photos



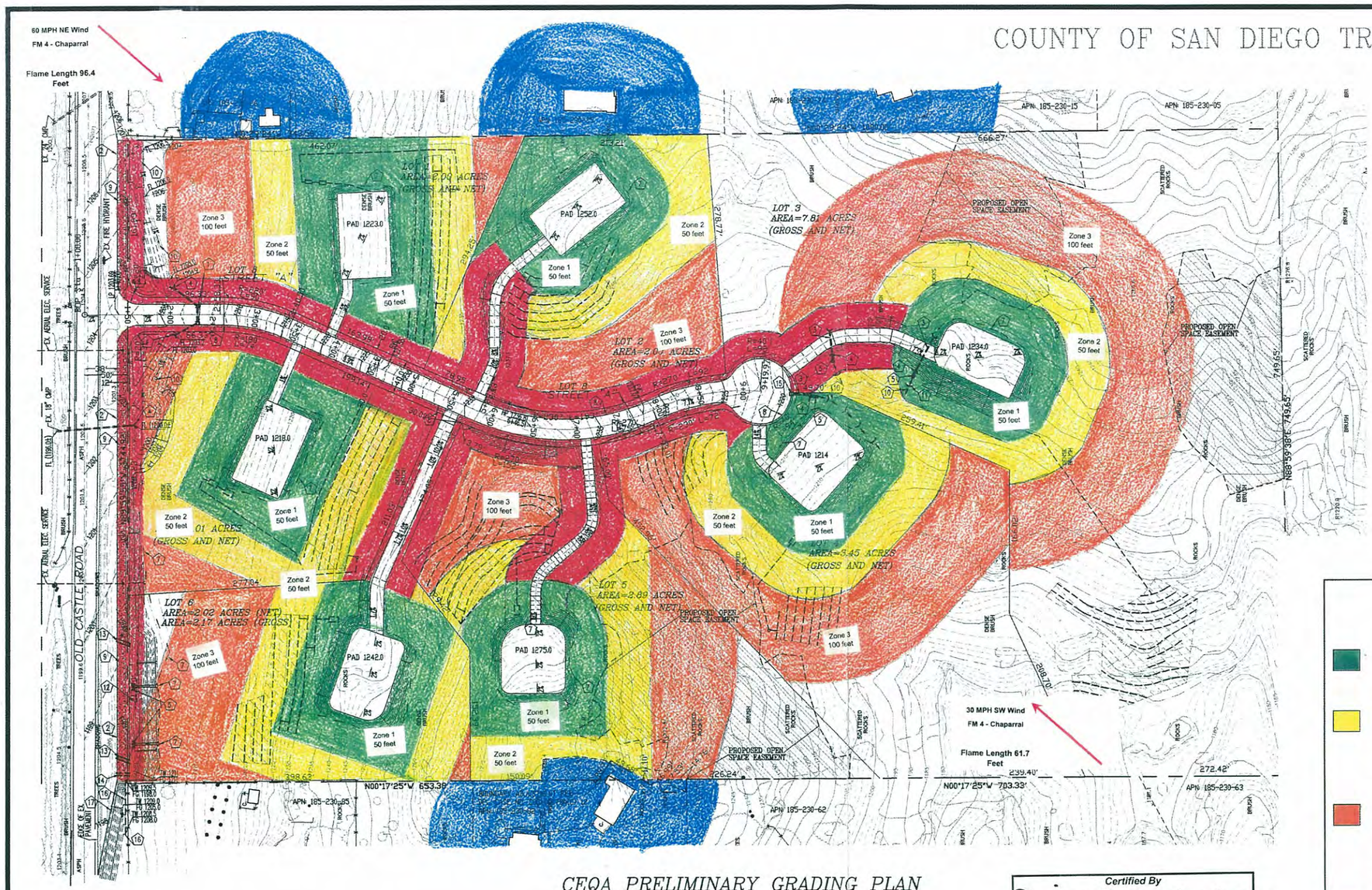
Old Castle Road
Fire Protection Plan
Additional Project Photos



Old Castle Road
Fire Protection Plan
Additional Project Photos

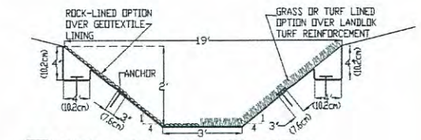
COUNTY OF SAN DIEGO TRACT NO. 5315 (RPL #5)

ER 03-02-035



CEQA PRELIMINARY GRADING PLAN

SCALE: 1" = 60'



A TYPICAL DRAINAGE DITCH DETAIL

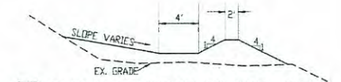
NO SCALE

NOTES:

1) PLACE 3 ANCHORS PER SQUARE YARD OF MATERIAL

2) FOR ROCK-LINED OPTION, INSTALL GEOTEX WOVEN MONOFILAMENT GEOTEXTILE (NO. 117F OR EQUAL)

3) FOR GRASS OR TURF OPTION, INSTALL LANDLOK TRM 450 TURF REINFORCEMENT MAT.



B TYPICAL DRAINAGE CHANNEL DETAIL

NO SCALE

CONSTRUCTION LEGEND

1 PROPOSED CATCH BASIN PER S.D.R.S.D. D-8

FUEL TREATMENT LOCATION
For
Old Castle Road Project
SAN DIEGO COUNTY, CALIFORNIA

IRRIGATED ZONE 1 (LOT OWNER MAINTAINED) - The area within 50 feet of any structure greater than 250 square feet shall be maintained to Irrigated Zone 1 criteria. A permanent irrigation system shall be installed and maintained within this zone. Only plants from the approved San Diego County plant list are to be installed. All combustible building materials including combustible decks, patio covers and gazebos will be prohibited in this zone. See Fire Protection Plan for details.

THINNING ZONE 2 (LOT OWNER MAINTAINED) - Zone 2 begins at the outer edge of Zone 1 and extends for a distance of 50 feet or to the property line. It is a non-irrigated thinning zone and includes all natural and manufactured slopes. All exotic and flammable native plants shall be removed with the original canopy and fuel loading reduced to 50%. Maintenance will be on-going throughout the year as needed with continuous removal and/or thinning of undesirable combustible vegetation to maintain 50% thinning, and limbing and shaping, of the retained fire resistant native plants. Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they will be cut to 4 inches or less in height. See Fire Protection Plan for details.

THINNING ZONE 3 (LOT OWNER MAINTAINED) - Zone 3 begins at the outer edge of Zone 2 and extends for a distance of 100 feet or to the property line. It is a non-irrigated thinning zone and includes all natural and manufactured slopes. All exotic and flammable native plants shall be removed with the original canopy and fuel loading reduced to 30%. Maintenance will be on-going throughout the year as needed with continuous removal and/or thinning of undesirable combustible vegetation to maintain 30% thinning, and limbing and shaping, of the retained fire resistant native plants. Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they will be cut to 4 inches or less in height. See Fire Protection Plan for details.

ROADWAY CLEARANCE (LOT OWNER MAINTAINED) - An area thirty (30) feet in width along each side of the roadway shall be cleared of flammable vegetative growth and maintained at a minimum to Zone 2 criteria.

ADJACENT PARCEL FUEL TREATMENT (ADJACENT PARCEL OWNER MAINTAINED). Property owners of adjacent parcels are responsible for thinning and maintenance of the areas around any structures greater than 250 square feet to the same Zone 1 and Zone 2 requirements detailed in this plan.

Prepared For: Jerry Gaughan
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Certified By
David C. Bacon June 6, 2010
David C. Bacon, President — Date

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60 0 60 120
Scale: 1" = 60'

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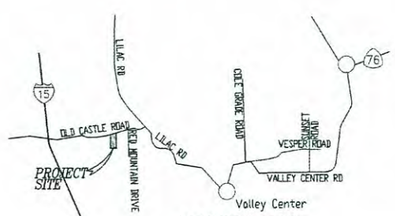

VICINITY MAP

NO SCALE

SYMBOL LEGEND

DESCRIPTION	SYMBOL
ELEVATION, TOP OF FOOTING	TF
ELEVATION, TOP OF WALL	TW
ELEVATION, TOP OF CURB	TC
ELEVATION, FINISH SURFACE	FS
ELEVATION, FINISH GRADE	FG
ELEVATION, TOP OF GRATE	TG
ELEVATION, BOTTOM OF FOOTING	BF
ELEVATION, FLOW LINE	FL
ELEVATION, INVERT ELEVATION	IE
ELEVATION LABEL, EXISTING	(596.00)
ELEVATION LABEL, PROPOSED	596.00

DETAIL REFERENCE C/2 DETAIL LABEL / SHEET NO.

SHEET 1 OF 1 SHEETS

plot date: 11-21-08