

Fire Protection Plan

BRASADA
SAN DIMAS
USGS Quad Glendora
T-1N, R-10W, Sections 27 & 34
TENTATIVE TRACT MAP NO.70583

August 24, 2009

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APN-8665-001-004 & 8665-001-005

APN-8678-030-033 & 8665-001-012



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EXECUTIVE SUMMARY

Brasada is a 312 ± acre parcel on private land located within the City of San Dimas, adjacent to, and directly north of the Glendora Country Club. Entrance is at the north terminus of Cataract Ave. The elevation ranges from 1200± ft. to 1,800± ft., ASL. Fire protection is provided by the County of Los Angeles Fire Department, under contract with City of San Dimas.

Fire Station locations, response time and distance to entrance of project off of Cataract Ave

F.S. 64 164 S. Walnut, San Dimas, 1 mile, 2.0 minutes response time

F.S. 86 520 S. Amelia, Glendora, 2.18 miles, 4 minutes response time.

F.S. 85 650 E. Gladstone Ave., Glendora 3.12 miles, 6 minutes

Water is provided from Golden State Water Co. A “Will Service Notice” has been provided.

This area is within a designated Very High Fire Hazard Severity Zone (VHFHSZ).

Vegetative cover may be characterized as non-native grass land, disturbed coastal sage scrub, chaparral and a mix of woodlands consisting of coast live oak, walnut, sycamore and eucalyptus. (All eucalyptus shall be removed)

The proposed Brasada Project will consist of 61 lots, within a 103± acre development envelope.

Lots sizes shall range from ½ acre to 18 acres, with an average size of 2 acres.

A 200' Fuel Modification Zone shall be required for each lot. The Estimated Fuel Modification Distance chart (EFMD) indicates a score of 47. Since the EFMD approaches the 200' foot requirement, the developer has opted for the more stringent 200 foot option. The area is adjacent to the Angeles Forest and heavy continuous chaparral. Each property owner must provide a Fire Protection Plan when a building permit is requested. The entire Brasada project shall be under and HOA, with non-revocable deed restrictions on each parcel to requiring each parcel to participate and to comply with all vegetation management requirements, as outlined within this report.

An emergency secondary access is possible along the east perimeter, 0.6 miles in length, into Sycamore Canyon Rd., and a second emergency access on the west side out through the City of Glendora, into Amelia Ave., at Foothill Blvd. (HWY 66).

All proposed structures shall be required to comply with this Fire/Fuel Modification plan, including the requirement for each individual proposed structure to provide a Fire protection Plan with the City of San Dimas as well as the Los Angeles County Fire Dept.

1. INTRODUCTION

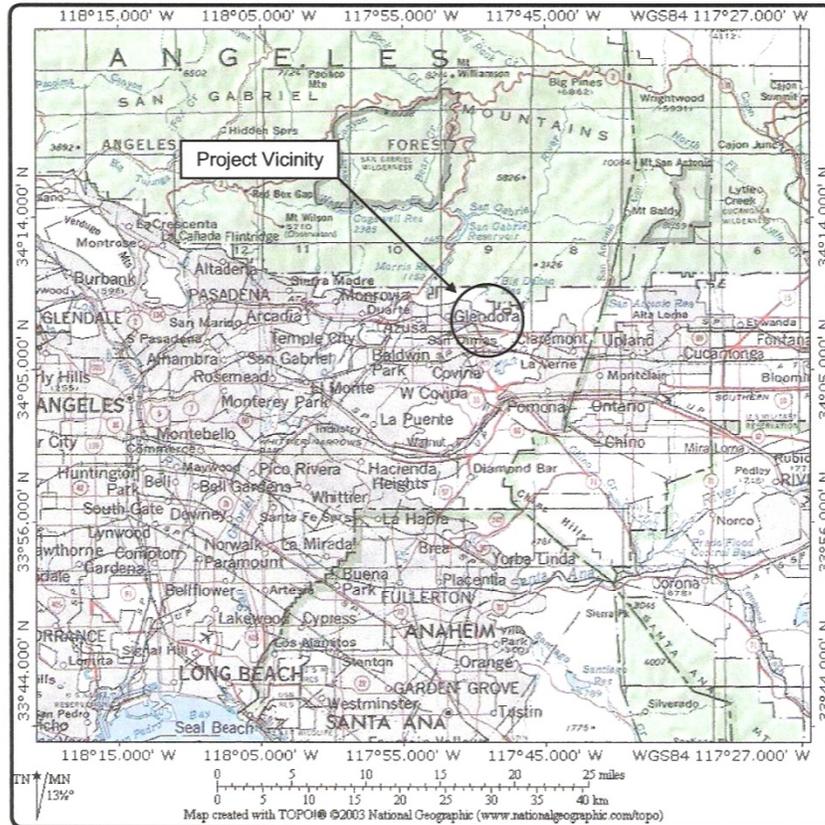
This Fire Protection Plan (FPP) has been prepared for the Brasada Project. The purpose of the FPP is to assess the potential impacts resulting from wildland fire hazards and identify the measures necessary to adequately mitigate those impacts. As part of the assessment, the plan has considered the property 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 infrastructures. The plan recommends measures that property owners must take to reduce the probability of ignition of structures throughout the area addressed by the plan.

The plan recommends restoration/revegetation of oak/sycamore/walnut woodlands as a means to reduce catastrophic wildfire.

1.1 Project Location, Description and Environmental Setting

1.1.1 Project Location

Brasada is located within the community of San Dimas, adjacent to the city of Glendora, above the Glendora Country Club. The project includes portions of Wildwood, Shufer, and Shay canyons. (See page 6) Fire Hx and vicinity maps (See pages 7, 8 & 9).



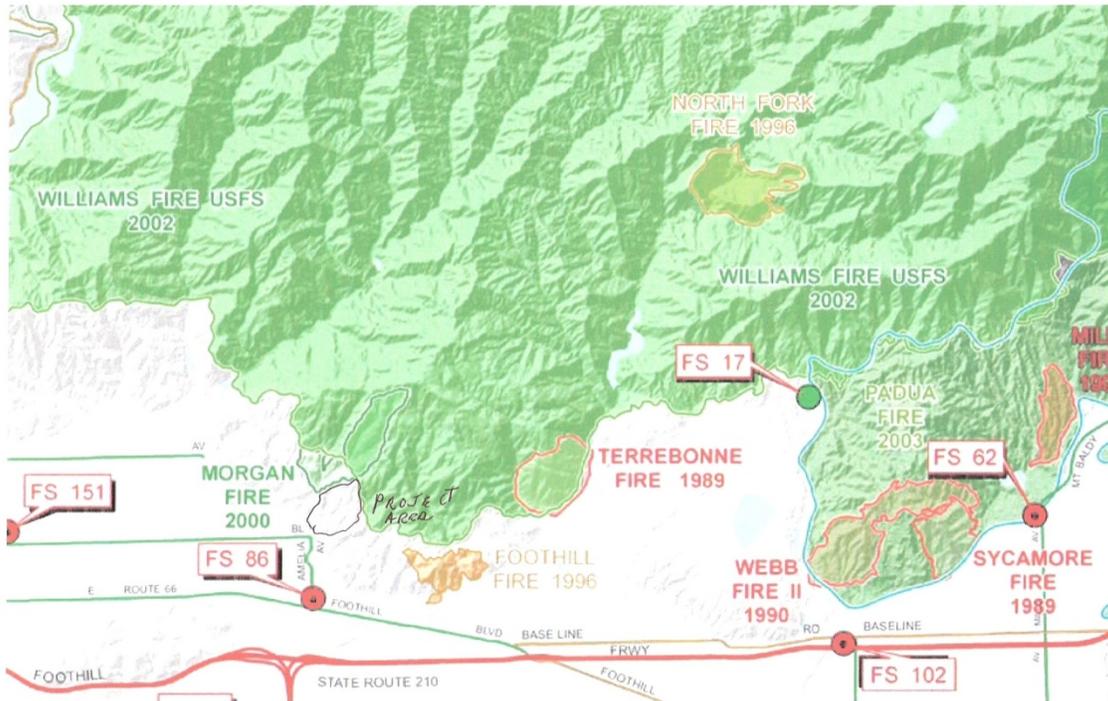
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STF-09-137
June 2009

Figure 1
Project Vicinity Map

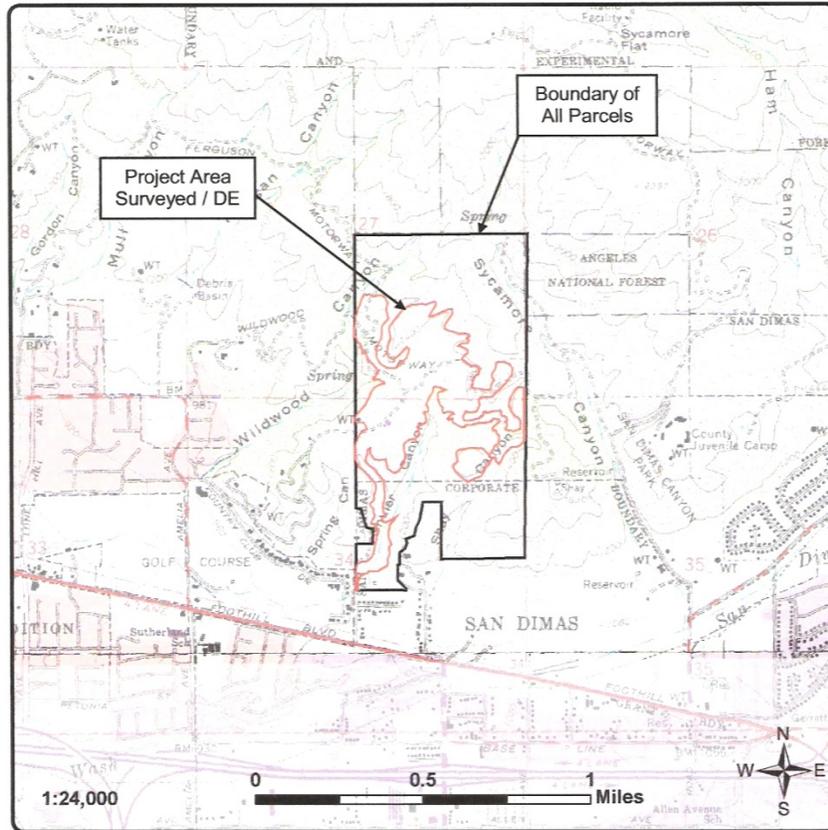
TTM 70583, City of San Dimas
County of Los Angeles, California





1.1.2 Project Description

- The project is comprised of 61 (1 through 61) residential lots, minimum of ½ acre to 18 acres. The project is within a Very High Fire Hazard Severity Zone (VHFHSZ)



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Figure 2
Project Location Map
(USGS Glendora [1972] quadrangle)
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County of Los Angeles, California

1.1.3 Existing Site Conditions

- Vegetative fuel loads adjacent and within the project envelope are light, with non-native grass and coastal scrub 2' in depth. There small pockets of chamise along north perimeter.
- Fire Hx: there no signs of recent fire on the project site. The surrounding area (See Fire Hx maps, pages 7 & 8) has had several fires within the past 20 years. Continuous fuel located along the north and east perimeter of the project (Angeles Forest) poses significant wildfire potential.
- Climate: Average maximum summer air temperatures reach 90° F., extreme temperatures approaching 110°F. June through September is when these temperatures occur. Winter air temperatures are in the 60°F. Range. Extreme minimum may reach as low as 25°F.
- Existing land use: Recreation (golf) and homes adjacent to south boundary. Open space to the west and North West. Open space to the north (Angeles National Forest).
- The entire project (Lots 1 thru 61) are deed recorded by non-revocable CC&R's and HOA that require the developer and HOA to provide vegetation management, per this document, to all lots as well as all roads and driveways. Private vegetation management for each lot would be provided by each owner subject to CC&R's In the event home owner failed to comply the HOA would perform the required vegetation management.

2.0 Fuel Models

Behave Fuel Modeling System, developed by USDA Forest Service (P.Andrews, et.al), and is used to predict fire behavior. The BEHAVE 5.0 Fuel Modeling System is used by wild Fire Professionals as an indicator of wild fire behavior.

The area is comprised of two primary fuel models, oak woodland understory and grass/shrub vegetation.

The grass/ shrub model is Gs-2, moderate load dry climate grass/shrub, 2.4 tons/acre, 2-3' in depth, 8,000 Btu/lb.

The oak woodland understory model is TL2, low load broad leaf litter, 1.4 tons/acre, less than 1' in depth, 8,000 Btu/lb.

Inputs

Summer Fire	Fall Fire
1hr fuel moisture 2%	2%
10 hr fuel moisture 2%	2%
Live fuel moisture 70%	55%
20 ft wind speed 20 mph	60 mph

Air temperature 105°F	85°F
Slope 60%	0%
Outputs Gs-2	
Summer Fire	Fall Fire
Rate of Spread: 75.0 ch/hr or 0.9 mph	392.3 ch/hr or 5 mph
Flame length: 9.4 ft.	20.8 ft.
Spotting Distance: 0.4 miles	1.6 miles
Outputs TL-2 (Oak understory)	
Summer Fire	Fall Fire
Rate of spread: 4.1 ch/hr or 0 mph	4.9 ch/hr or 0.06 mph
Flame length: 1.5 ft	1.7 ft
Spotting Distance: 0.1 miles	0.3 miles

In all cases, ignition probability is 100%

2.1 BRASADA FUEL MODIFICATION REQUIREMENTS:

NO GROUND COVER, SHRUBS OR TREES FOUND ON THE LOS ANGELES COUNTY FIRE UNDESIREABLE LIST ARE ALLOWED WITHIN THE 200' FUEL MODIFICATION ZONE.

A 200' Fuel Modification requirement is necessary because of the adjacent heavy vegetation along the north perimeter (Angeles Forest).

Each lot must exhibit a 200' Fuel Modification Zone (measured from proposed structure). In addition, all roads, driveways must have a 20' fuel modification zone, each side, clear to the sky. All roads must be maintained by the HOA.

Zone A

From structure out 20'. This is the wet zone. Lawn or ground covers less than 4" in depth'

Shrubs less than 2' in height, on 4' centers, tree branches must be 10' away from all open flame devices, including BBQ's and chimneys. Coastal live oak, walnut or sycamore preferred in this area. Tree limbed up 1/3 the height or 6' above ground.

NOTE: If water restrictions are imposed, ground cover to be maintained at 3” or less.

Zone B.

From 21’ to 100’. Ground covers less than 4” in depth. Shrubs maintained at less than 3’ in height, on 5’ centers, trees limbed up 1/3 the height, with 10’ between canopies. Existing oak trees may retain closed canopies, but must have understory maintained at less than 4” in depth.

Zone C:

From 101’ to 200’ or to property line. Ground cover maintained at less than 4” in depth. Shrubs must be maintained at less than 3’ in height, and must have minimum of 5’ between canopies. Trees must have 10’ between canopies and limbed up 1/3 the height or 6’. Oak, sycamore or walnut trees, existing, may have closed canopies, but understory must be maintained at less than 4” in depth, and branches limbed up 6’ from ground.

Note: All driveways must be maintained as Zone “A”, with vertical clearance to the sky.

3.0 Infrastructure

Infrastructure, Water Supply, Roads and Structural Safeguards.

This section of this plan is written for Scott Franklin Consulting Co by James W Hunt, President, Hunt Research Corporation.

The Brasada Development in the City of San Dimas is in a Very High Fire Hazard Severity Zone per the City and the County Fire Department. The APN numbers are:

8665-001-009 & 8665-003-001

8665-001-004 & 8665-001-005

8665-001-012 & 8678-030-033

The LA County Fire Department (LACOFD) states that the City has not approved the State FRAP Fire Hazard Severity Maps at this time. The LA County Fire Department Fuel Modification Section states that the area is a Very High Fire Hazard Severity Zone (VHFHSZ) the City Building Official states that the City will classify it as a VHFHSZ. There will be 61 custom lots, on 313.7 +/- acres, which, will not be built on by the master developer, but will be sold to others for development. The developer has proposed the following:

- 61 homes that average 5000 square feet.
- 17 are proposed to be two story and 41 are proposed to be single story.
- 32 of the 61 lots will be 5000 square feet or less. They will be 1 or 2 story homes.

- ❑ 29 of the lots may include 3 or 4 lots with 7500 square foot one story homes plus ancillary buildings, mother in law quarters, etc.
- ❑ The largest homes will be 10,000 square foot one story homes with no exposures within 25'.
- ❑ The largest two story home will be 4000 square feet on the first floor.

The average lot size is about 2 acres with lots ranging in size from ½ acre to 18-acre sites. Building pads will average about 23,000 square feet. The roads will be private and maintained by the Home Owners Association (HOA). Setbacks of homes will be 25' from the street, 10 and 15' side yard setbacks and 30' rear yard setbacks. Many structures directly abut wildland open space, etc, and therefore should to be set back from the property line and from slopes at least 30 feet.

1. Access Roads:

The main access road, Brasada Lane, is approximately 5100' long starting from Dalepark Drive to the entrance to the cul-de-sac at the end of the road. In addition, cul-de-sacs branch off this road. The longest dead end road off Brasada is Stoney Ridge Lane, which is about 2100', serving three lots. Therefore, the longest length of road from entrance to the development is 7200' (1.36 miles). It is understood from the LACO Fire Department that The Los Angeles County Code, Title 21, Section 21-24.020 allows a cul-de-sac of this length, without secondary access, if there are 75 lots or less served by the culdesac. The number of lots served includes lots inside or outside of the tract. The LACOFD Land Development Unit defines the long cul-de-sac as serving 61 residences plus any offsite residence, which take access from the cul-de-sac, starting at Foothill Road where traffic can go in two directions, per meeting with the LACOFD Land Development Unit on 8-18-09. Therefore, some type of suitable, approved, Emergency Access road will be required, per the Fire Department.

The proposed road widths are 26' unobstructed except for private streets serving 4 or fewer lots, which is allowed by the City to be 20' width.

The LA County Fire Department Fire Code Standard # 10.207 (A) requires a minimum unobstructed road width of 20' clear to sky. If the road grade exceeds 10% or greater, it shall be paved. Roads will need to be posted "No Parking Fire Lane" so that no parked vehicles intrude into the 20' width. Road grades do not appear to exceed 10%. However, all roads will be paved. Fire apparatus weight is considered to be 50,000 pounds by LA County FD. Where Fire hydrants are required on the roads, the access road width shall be increased to 26' for a minimum of 25' on each side of the fire hydrant. All private access roads shall extend to within 150', along the path of access, to all portions of the exterior walls of the first story of any building. Accessory buildings under 1,000 square feet are excluded.

Road curve Radii shall not be less than 32 feet. Measurement is determined at centerline of the road.

Cul-de-sac bulbs (turnarounds) will be at least 80' unobstructed by parking, planters, fountains, trees, etc. and the cul-de-sac should be posted "No Parking-Fire Lane".

Due to the long dead end roads, suitable all weather emergency ingress/egress to approval of the Fire Department, should also be provided for use of responding Fire Apparatus concurrently with evacuation

of residents. There are some existing, dirt, emergency roads which are maintained at about 10-12' width which could be evaluated for acceptance by the LACO Fire Department. These roads would require ongoing maintenance including fuel modification on each side of road. Suitable lock overrides would need to be provided on gates so that residents could open the gates in an emergency without having a key or special knowledge or skill. Gates must be posted on each side; "No Parking; Fire Lane". In addition, residents would need ongoing training by the HOA in location of the roads, and operation of gates. Note, for comparison, although this project is not in a State Responsibility Area (SRA) that Title 14; "SRA Fire Safe Regulations" has the following requirements to maximum length of a dead end road, including all dead end roads accessed from that dead end road, starting at the intersection that begins the road is:

Parcel zoned for less than one acre: 800 feet

Parcels zoned for 1 acre to 4.99 acres: 1320 feet

Parcels zoned for 5 acres to 19.99 acres: 2640 feet

Parcels zoned for 20 acres or higher: 5280 feet.

The City is requiring an approved emergency fire access road along the eastern boundary.

Driveways:

All homes will have a driveway. Driveways shall have grades less than 20%. Driveway widths shall be at least 16'. Driveways in excess of 150' long will have an approved fire apparatus hammerhead turnaround as required by the Fire Department. Lighted house addresses shall be posted at the entrance to each driveway if house numbers are not visible from street. Where possible, hydrants should be placed near entrances to driveways.

Gates:

Any gates proposed for the private roads (public roads are not allowed to be gated) shall be as follows:

- Non-combustible.
- Motorized, horizontal sliding type,
- Vertical clearance open to sky.
- Open at rate of 1 foot per second.
- Failsafe or battery backup feature required.
- Have the ability to be manually opened if power fails.
- Located 30 feet in from any intersecting road.
- Dual KNOX box Key access for Fire District and Law Enforcement. This device shall override all other controls (Knox override switch and secondary controls).
- Gate area to be lighted.
- Width of gated area to be 2' wider on each side than the road, which is gated. (24' minimum for a 20' wide road; 30' for a 26' wide road).

- Gate to have an approved automatic, digital, emergency vehicle preemption system (TPD/EVP activator) if required by Fire Department, and shall be compatible with any Opticom systems on fire trucks.
- Traffic loop device required to open gate from the development side.
- Gates to be posted “No Parking Fire Lane” on each side.
- Residents shall be trained by the HOA on an ongoing basis regarding operation of the gates in an emergency.

Gates on the Emergency roads shall have approved devices which are operable from development side by residents without key or special knowledge or skills, and which override any locking devices on the gates. Such devices shall be to approval of the LACO Fire Department.

2. Fire Flow, water storage, hydrants and water system:

Fire Flow and hydrants will be provided by the Golden State Water Company. This will be a public water system with public hydrants. The required fire flow must comply with LACOFD Regulation 8. It requires 1250 GPM for 2 hours for a single family detached dwelling less than 5000 sq feet. Dwellings over 5000 square feet are required to follow Table 1 in Regulation 8. For this development, that Table requires the following:

The assumptions, per the Developer’s representative are that the structures will not be within 25’ of each other and that there may be as many as seventeen 2-story homes. The largest structure is proposed to be 10,000 square foot one story. The residences will have internal fire sprinkler systems.

Based on the sizes and number of stories provided by the Developer’s representative, and listed in this section of this plan, and based on a 25% sprinkler credit, and an additional 500 GPM for exposures within 50’ it is estimated that Table 1 and footnotes in Regulation 8 of the County Fire Department, will require a minimum fire flow of 2250 GPM for 2 hours duration at 20 PSI (2500 GPM plus 500 GPM for exposure minus 25% sprinkler credit) This amounts to 270,000 gallons of water storage for Fire Protection in addition to the amount needed for domestic, non-fire use. This storage shall be available at times of maximum peak domestic demand. In addition, adequate pressure shall be available to supply the fire sprinkler systems in homes. The Fire flow and the amount of water storage, discussed in this section is an estimate only. Actual, official, Fire flow and water storage requirements shall be made by the Fire Department Land Development Unit, and may vary from what is estimated this plan.

Fire Water Storage tank:

Developer will install the water tank and the water company will maintain it. The water tank shall be non combustible and shall comply with the requirements of the Water Company, AWWA M-31 standards, LACOFD and Building Official requirements, Seismic requirements, and National Fire Protection Association (NFPA) Standard #22 for Fire Water tanks for private fire protection. The tank shall have a lid and automatic refill capabilities. The water levels shall be remotely monitored by an approved offsite monitoring company; 24/7. Tank shall also have a visible level gage, readable from ground level. There shall be 100’ of fuel modification around all sides of the tank. Water tank shall

provide gravity flow to fire main system without the aid of pumps. A gated 4" male Fire Department pumper connection with cap shall be provided on tank and be accessible to a Fire Engine on an access road to tank, or a fire hydrant shall be provided on road to water tank. If pumps are required to maintain the fire flow, they shall be UL listed or FM approved as a system, per NFPA 20, and have standby power separate from the public power system, and shall be in a sprinklered concrete or block pump house, in compliance with CBC Chapter 7-A, and which is protected by internal fire sprinklers and which has a 100' fuel modification zone on all sides. Pumps shall be inspected, tested, and maintained per NFPA 20 and NFPA inspection and testing standard 25.

Fire Hydrants:

Fire Hydrants are required by Regulation 8 to be spaced at 300' intervals for the estimated fire flow. Hydrants should be located at each intersection, each entrance to a cul-de-sac, and within the cul-de-sac if the distance exceeds 300', but not located in the bulb. No portion of a structure should be placed on a lot where it exceeds 750' via vehicular access from a property spaced fire hydrant that meets the required fire flow.

Roads less than 26' width need to be widened to 26' for 25' on each side of a hydrant to keep the road open while a fire engine is connected to a hydrant. This will affect the 20' private roads.

Fire hydrants along Brasada lane from the entrance to development to the beginning edge of the first lot would be spaced at 600' intervals. Hydrants in areas of roads where there are no houses directly accessed, would have hydrants spaced at 600' intervals.

If there is any center median in a road, then hydrants may be required on each side of the median per Regulation 8.

Fire Hydrant and water system specifications, design, calculations and installations shall comply with LACOFD Regulation 8. Detailed plans shall be submitted to the LACOFD for review and approval prior to installation.

Portions of the water system, which will be designed by the project engineers, will be looped, and some portions may not be looped. System will have water mains, which are at least 8" in diameter, or larger if deemed necessary, by the water system engineers to provide the needed fire and peak domestic flow at acceptable pressures and velocities. Adequate isolation valving should be provided in the mains, per AWWA M-31 recommendations for a fire protection water system. The system should be designed so that no more than 3 fire hydrants (1800') can be shut off at any one time, due to a shutdown of a main. The system should be designed to provide the needed flows with one source of supply shut off. The system must be properly engineered for seismic resistance.

Individual Hydrant flows (one hydrant flowing) are required to be 1250 GPM at 20 PSI with a single hydrant flowing.

Significant water sources such as ponds, pools, etc should be provided with direct access to within 10' for a fire truck to draft water, or, in the alternative, an adequately sized private water main terminating with a gated Fire Department outlet at a point visible to, and accessible by, a fire engine. A durable and readable sign will need to be installed on the outlet. Sign needs to state "Pool water connection; (quantity) gallons."

Fire hydrants, within the area under construction, shall be installed and in an operable condition prior to bringing combustible materials on site.

3. Identification of Roads and Structures:

Structures shall be identified by internally lighted, and reflective, street address numbers at the structure, and at the driveway entrance if house numbers are not visible from roadway. Numbers shall be 4" in height and located 6 to 8' above grade. All addresses of any multiple structures located off driveways shall be posted on structures, on the entrance to individual driveways, and at the entrance to the common driveway.

All streets shall have street names posted on non-combustible street signposts. Letters/ numbers to be 4" high, reflective, on a 6" high backing. Signage to be 7' above grade. There shall be street signs at each intersection, the entrance to the development, and elsewhere as needed.

4. Location of any LPG tanks (such as for structures, barbeques, patio lights, heaters etc), Firewood, hay storage, storage sheds, barns, outbuildings, etc.

The use of any LPG tanks, and any firewood, hay storage, storage sheds, barns, and other combustibles shall be located at least 30' from structures. Storage sheds, barns, and outbuildings shall be of non combustible or ignition resistant construction with approved, listed Class A roof assemblies per CBC Chapter 7-A, so as to not ignite and spread fire to the main structures. Additionally, any of the above listed structures, i.e., out buildings, storage sheds, barns, etc., that are 200 sq ft or more in size, shall be equipped with automatic fire sprinklers.

5. Ignition resistant building construction requirements:

This section describes the concepts for Ignition Resistant Construction. It meets, and in some cases exceeds, the requirements of the LA County Fire Department, the requirements found in Chapter 7-A of the 2007 California Building Code (CBC), and the I.C.C "International Urban-Wildland Interface Code". These recommendations reflect the state-of-the-art in Urban Wildland Interface Fire resistant Construction.

Building construction shall comply with County and California Building Codes, including CBC Chapters 7-A and 15, and LACO Fire Department requirements, due to the Wildland Fire risk.

- A. Exterior walls: Exterior walls of all residences and garages, and significant outbuildings, shall be Ignition Resistant construction per CBC Chapter 7-A (such as approved materials such as stucco, masonry or approved cement fiber board) from top of foundation to roof, terminating at 2" nominal solid wood blocking between rafters at all roof overhangs or in case of enclosed eaves terminate at enclosure. Any eaves shall also comply with Chapter 7-A for ignition resistant construction. Eaves and soffits shall meet the requirements of Chapter 7-A, Section 704A.2.3. Wood shingle and shake wall covering is prohibited. "Ignition Resistant" construction is a new term in the Building Code Chapter 7-A.

All under floor areas and appendages shall be enclosed with the same type of construction as required for exterior walls or shall be enclosed to grade.

There shall be no use of paper faced insulation in the attic or other ventilated spaces.

There shall be no use of plastic, vinyl or light (easily ignitable) woods on the exterior wall surfaces.

- B. Roofs: All roofs shall be listed Class "A" fire rated roof assemblies, per CBC Chapter 7-A and Chapter 15, and installed per Manufacturer's installation instructions. Tile roofs are recommended. Where there is a space between roof covering and roof decking, spaces shall be constructed to prevent intrusion of flames and embers, per CBC Chapter 7-A. Roofs shall be made tight with no gaps in valleys, on edges, etc. Any openings on ends of roof tiles shall be enclosed to prevent intrusion of burning debris. Bird stops shall be installed.
- C. Roof Valleys: When provided, valley flashings shall not be less than .019 inch (no. 26 galvanized sheet gage) corrosion resistant materials installed over a minimum 36 inch wide underlayment consisting of one layer of No. 72 ASTM cap running the full length of the valley.
- D. Ventilation: No attic ventilation openings or ventilation louvers shall be permitted in soffits, cornices, eaves, eave overhangs, between rafters at eaves, or in other overhanging areas. Attic or foundation ventilation openings or ventilation openings in vertical walls (including garage walls) shall be covered with 1/8" to 1/4" mesh corrosion-resistant, non-combustible metal screen or other approved material that offers equivalent protection. Vent area opening (the opening where the vent goes) are generally required to not exceed 144 square inches of clear ventilation space each. Official requirements shall be established by the LACO Fire Department and the Building Official. Attic ventilation shall also comply with the requirements of the State and County Building Code. Vents shall not be placed on roofs unless they are approved for Class "A" roof assemblies, and contain an approved baffle system to stop intrusion of burning material.
- E. Vents shall be designed to resist the intrusion of flame and embers into the attic, other ventilated spaces and garages.
Vents shall not face wildland areas or flammable vegetation. Note; The Building official should investigate use of appropriate alternative methods of approved venting that will prevent the intrusion of flame and embers into the attic, other ventilated space and

garages, as new products are being introduced as a result of recent fires. One example of a baffled vent is “Brandgaurd Vents”; www.brandgaurdvents.com. It was discovered that in the recent major wildland fires, that burning embers were entering through vents and igniting fires in the attics and garages. . This is currently a major issue in Urban Wildland Interface fire protection.

- F. Fire Sprinklers: All structures over 200 sq. ft. shall have automatic fire sprinkler systems designed and installed to the NFPA 13-D sprinkler standard. A four head calculation should be required. Sprinkler coverage shall also be provided for the garage and any enclosed porches or overhangs. Attic sprinkler heads should be considered by the Sprinkler designer and the Fire Department due to the risk of airborne burning embers entering attic vents. Actual design is the responsibility of the fire protection system designer, to Fire Department approval. Note that pressures exceeding the required 20 PSI residual in water system may be needed for the sprinklers.
- G. Glazing: Exterior glazing, including window glass, window walls, glazed doors, glazed openings in exterior doors, or other transparent, translucent or opaque glazing, leaded glass, etc, shall be insulating glass units with a minimum of one tempered pane, tempered, approved glass blocks or have a 20 minute fire rating per CBC Chapter 7-A. Glazing facing slopes exceeding 15% should be tempered glass. Plastic or vinyl window frames shall be of an approved type, which will not melt, ignite, or fail. Frames shall have “welded” corners and metal reinforcement in the interlock area to maintain integrity, and be certified to ANSI/AMMA/NWWDA 101/.S.2-97. The size and amount of glazing facing wildland, open space and park areas should be minimized. Screens should be steel rather than plastic.
- H. Skylights should be tempered glass due to potential of airborne burning debris striking them during a wind drive wildfire.
- I. There shall be no combustible rain gutters or downspouts. Roof gutters shall be provided with an approved means to prevent the accumulation of leaves and debris in gutter, per CBC Chapter 7-A.
- J. Exterior doors shall be approved non combustible or solid core wood having stiles and rails not less than 1 3/8 inches thick with interior field thickness of no less than 1 ¼ inches thick, or have a fire resistive rating of not less than 20 minutes. Refer to CBC Chapter 7-A. Garage doors should be made of substantial metal or approved fire retardant material. Garage doors should also have substantial gasketing on sides to help prevent ember intrusion into garage. Glazing in garage door windows should comply with Chapter 7-A glazing requirements, or provide equivalent protection.
- K. Projections: Exterior balconies, carports, decks, deck surfaces, treads, risers, landings of decks, porches, balconies, patio covers, gazebos, outbuildings, unenclosed roofs and floors, and similar architectural appendages and projections shall be of approved non combustible construction, ignition resistant construction, heavy timber, approved exterior fire retardant wood, approved non combustible material, or one hour fire resistive construction. There shall be no plastic or vinyl decking or railings. The ends of decks shall be enclosed with the same type of material. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the fire resistive integrity of the exterior wall, and shall have the same fire rating. There shall be no decks or overhangs over slopes. Decking, floors and underfloor protection to comply with CBC Chapter 7-A, Sec 704 A.4. Plastic webbing, split or whole

bamboo, reed or straw-like materials, corrugated plastic or fiberglass materials and similar flammable materials shall not be permitted for use on patio covers. There should be no Palapas, combustible jungle gyms, playhouses, etc, in any Fuel Modification Zones around houses or ancillary structure.

L. Awnings/ canopies: there shall be no combustible awnings or canopies.

M. Wood fences should be prohibited. Any fencing on private lots facing wildland and open space areas should be 6' high solid block or masonry. Approved view glass may be installed in walls if glazing is a listed fire rated assembly with an adequate fire rating and approved by the Fire Official and Building Official. Wood fences must not be used as they can serve as a fuse to spread fire to a structure.

N. There shall be no plastic or vinyl railings or fencing in the development.

O. Spark Arrestors: all chimneys and other vents on heating appliances using solid or liquid fuel shall have spark arrestors of a type approved by the LA County Fire Department. Arrestors shall be visible from the ground.

P. Dryer and Air conditioning vent intakes should not face wildland areas and open space/ park areas.

All official requirements and approvals shall be obtained from the LA County Fire Department, the Building Official and the City prior to any construction occurring. All applicable codes and standards shall be complied with. Although these infrastructure and structural recommendations should provide reasonable fire protection, there are no guarantees expressed or implied that that structures would not be damaged by fire or that injuries or death would not occur.

6.0 APPENDIX

Page 22: Estimated fuel Modification Chart (EFMD) (Exhibit B)

Estimated Fuel Modification Chart is a requirement of Los Angeles county Fire Department to indicate the required Fuel Modification Zone requirement. While a score of 47 was indicated for Brasada, a 200' Fuel Modification Zone in lieu of 150' is required due to continuous fuel (vegetation) abutting the north and east perimeter of the project.

Page 23: Fuel Assessment Zones and Maintenance Requirements

The Fuel Assessment Maintenance Zones are L.A. County Fire Dept. minimum requirements.

Page 25: Long Term Maintenance Agreement

The Long Term Maintenance Agreement is a requirement of L.A. County Fire to assure that all requirements of this plan are in compliance, annually.

EXHIBIT B

ESTIMATED FUEL MODIFICATION DISTANCE CHART (EFMD)

STRUCTURE CONSTRUCTION			SCORE
GOOD/CURRENT FIRE ZONE 4 OR VHFHSZ REQUIREMENTS			1
MODERATE			5
POOR			10
FUELS			
PRIMARILY GRASSLAND			5
COASTAL SAGE SCRUB/OAK WOODLAND			10
CHAPARRAL			15
SLOPE*	DOWN-SLOPE	UP-SLOPE	
		0 - 20 DEGREES	1
	0 - 20 DEGREES	20 - 40 DEGREES	2
	20 - 40 DEGREES	40 - 60 DEGREES	4
	40 - 60 DEGREES	60 < DEGREES	8
	60 < DEGREES		16
ASPECT**			
NORTH			1
EAST			2
WEST			4
SOUTH			8
FIRE TOPOGRAPHY***			
- DISTANCE FROM SLOPE, CHIMNEYS, SADDLES, CANYONS			
250 - 300			1
200 - 250			2
150 - 200			3
100 - 150			4
50 - 100			5
30 - 50			10
< 30			15
FIRE HISTORY/ POTENTIAL			
- HISTORICAL FIRE PATTERNS/INTENSITY			
LOW			5
MODERATE			10
HIGH			15
TOTAL			47

ESTIMATED FUEL MODIFICATION DISTANCE****		EFMD
TOTAL	DISTANCE	
14-24	50'	
25-34	100'	
35-49	150'	
50-69	200'	
70 +	300'	150

* SELECT CATEGORY THAT CORRESPONDS TO THE LOCATION OF THE REQUIRED MODIFICATION

** VALUES ASSIGNED MAY VARY, BASED ON PREVAILING WEATHER PATTERN AND FIRE HISTORY

*** SUBDIVISIONS SHOULD ENTER A VALUE OF (5) FOR THIS CATEGORY

**** MEASUREMENT IN FEET TAKEN ALONG SLOPE (HYPOTENUSE)

ASSESSMENT FOR FUEL MODIFICATION PLAN

Zone A – Setback Zone

- Extends 20 feet beyond the edge of any combustible structure, accessory structure, appendage or projection.
- Irrigation by automatic or manual systems shall be provided to landscaping to maintain healthy vegetation with high live fuel moisture and greater fire resistance.
- Landscaping and vegetation in this zone shall consist primarily of green lawns, ground covers, and adequately spaced shrubs and trees. The overall characteristics of the landscape shall provide adequate defensible space in a fire environment.
- Plants in Zone A shall be inherently highly fire resistant and spaced appropriately. Species selection should be made referencing the *Fuel Modification Plant Reference*. Other species may be utilized subject to approval.
- Except for dwarf varieties or mature trees small in stature, trees are generally **not recommended** within Zone A.
- Target species will typically not be allowed within 30 or more feet of combustible structures and may require removal if existing on site.
- Vines and climbing plants shall not be allowed on any combustible structure.

Zone B – Irrigated Zone

- Extends from the outermost edge of Zone A to 100 feet from structure.
- Irrigation by automatic or manual systems shall be provided to landscaping to maintain healthy vegetation with high live fuel moisture and greater fire resistance.
- Landscaping and vegetation in this zone shall typically consist primarily of green lawns, ground covers, and adequately spaced shrubs and trees. The overall characteristics of the landscape shall provide adequate defensible space in a fire environment.
- Plants in Zone B shall be fire resistant and spaced appropriately. Species selection should be made referencing the *Fuel Modification Plant Reference*. Other species may be utilized subject to approval.

Zone C – Native Brush Thinning Zone

- Extends from the outermost edge of Zone B to 200 feet from structure.
- Irrigation systems are not required for this zone. (Native plants are generally not compatible with regular, un-seasonal supplemental water.)
- Landscaping and vegetation in this zone may consist of modified existing native plants, adequately spaced ornamental shrubs and trees, or both. There may also be replacement landscape planting with ornamental or less flammable native species to meet minimum slope coverage requirements of City or County Public Works or Parks & Recreation Landscape or Hillside ordinances. In all cases the overall characteristics of the landscape shall provide adequate defensible space in a fire environment.
- Existing native vegetation shall be modified by thinning and removal of species constituting a high fire risk; including but not limited to laurel sumac, chamise, ceanothus, sage, sage brush, buckwheat, and California juniper. Please reference the *Fuel Modification Plant Reference*.
- Fuel loads shall be reduced by pruning up the lower 1/3 of remaining trees or shrubs and removing dead wood. Native plants may be thinned by reduced amounts as the distance from development increases.
- Plants in Zone C shall be spaced appropriately. Species selection should be made referencing the *Fuel Modification Plant Reference*. Other species may be utilized subject to approval.
- General spacing for existing native shrubs or groups of shrubs is 15 feet between canopies.
- General spacing for existing native trees or groups of trees is 20 feet between canopies.

Fire Access Road Zone

- Extends 10 feet from the edge of any public or private roadway that may be used as access for fire-fighting apparatus or resources.
- Clear and remove flammable growth for a minimum of 10 feet on each side of Fire Access Roads. (Fire Code 317.10)
- Fire access roads, driveways and turnarounds shall be maintained in accordance with fire code. Fire Access Roads shall have unobstructed vertical clearance. (Fire Code 503.2.1)
- Landscaping and native plants within the 10-foot Fire Access Road Zone shall be appropriately spaced and maintained to provide safe egress in wildland fire environments.

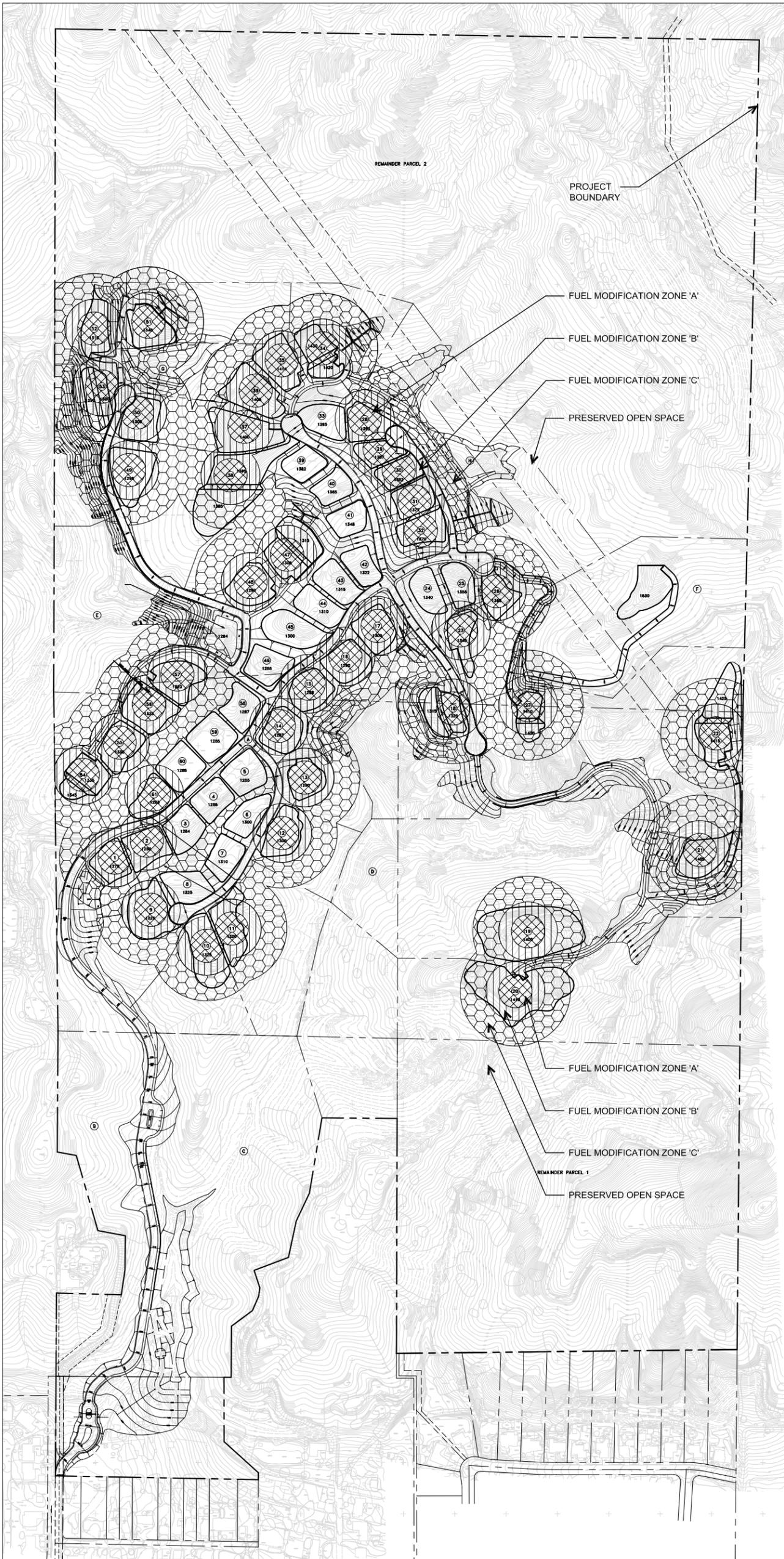
Maintenance

- **Routine maintenance shall be regularly performed in all zones which requires:**
- Removal or thinning of undesirable combustible vegetation and replacement of dead or dying landscaping.
- Pruning and thinning to reduce the overall fuel load and continuity with other fuels.
- Pruning lower branches of trees and tree-form shrubs to 1/3 of their height (or 6 feet from lowest hanging branches) to help prevent fire from spreading upward into the crown.
- Unless otherwise approved, Ground covers shall be maintained at a height not to exceed 6 inches in Zone A, 12 inches within 50 feet of a structure in Zone B, and 18 inches in Zone B beyond 50 feet. Annual grasses and weeds shall be maintained at a height not to exceed 3 inches.
- Accumulated plant litter and dead wood shall be removed. Debris and trimmings produced by thinning and pruning should be removed from the site or chipped and evenly dispersed in the same area to a maximum depth of 5 inches.
- Manual and automatic irrigation systems shall be maintained for operational integrity and programming. Effectiveness should be regularly evaluated to avoid over or under-watering.
- Compliance with the Fire Code is a year-round responsibility. Enforcement will occur following inspection by the Fire Department annually and as needed. Annual inspections are conducted following the natural drying of grasses and fine fuels, between the months of April and June depending on geographic region.
- Brush Clearance enforcement issues on adjacent properties should be directed to the County of Los Angeles Fire Department's Brush Clearance Unit at (626) 969-2375.
- All future plantings shall be in accordance with the County of Los Angeles Fire Department Fuel Modification Guidelines and approved prior to installation. Changes to the approved plan which require an additional plan review will incur a plan review fee.
- Questions regarding landscape planting and maintenance with regard to fire safety should be directed to the Fire Department's Fuel Modification Unit at (626) 969-5205.
- **HOA is responsible for ensuring that all landscaping complies with the approved Fuel Modification plan**

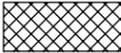
Long Term Maintenance Agreement

- All future plantings shall be in accordance with the County of Los Angeles Fire Department Fuel Modification Guidelines.
- Lots within this project may be required to submit plans to the Fuel Modification Unit prior to landscaping being installed and must be identified in the CC&Rs.
- Changes to the landscaping in common areas or individual lots reviewed by the Fuel Modification Unit shall be approved prior to installation.
- Walls may be required on lots based on location of structure and proximity to slope (to be determined upon final tract submittal or individual lot review)
- Adjoining property owners are responsible for offsite Brush Clearance as required by the Fire Code.
- **Zone C may be adjusted during inspection depending upon field conditions.**
- The property owner(s) agree to be responsible for the long-term maintenance of this fuel modification plan, as described herein. Notification of Fuel Modification requirements is to be made upon sale to new owners. Proposed changes to the Final Fuel Modification plan must be submitted to the Fuel Modification Unit for approval, prior to implementation. Regular inspections will be performed by the Fire Department to ensure compliance with the approved plan. Failure to comply with the Fuel Modification Plan requirements may result in an Administrative Fine not to exceed \$1000 and possible legal action.

_____ Name (Print)	_____ Signature	_____ Date
_____ Name (Print)	_____ Signature	_____ Date



FUEL MODIFICATION LEGEND

-  FUEL MODIFICATION ZONE 'A' (0' - 50')
-  FUEL MODIFICATION ZONE 'B' (51' - 100')
-  FUEL MODIFICATION ZONE 'C' (101' - 200')

 LOT # - USED AS POINT OF OFFSET FOR FUEL MODIFICATION ZONES

FUEL MODIFICATION NOTE:

NO GROUND COVER, SHRUBS, OR TREES FOUND ON THE LOS ANGELES COUNTY FIRE UNDESIRABLE LIST ARE ALLOWED WITHIN THE 200' FUEL MODIFICATION ZONE.

ZONE A:

FROM STRUCTURE OUT 50'. THIS IS THE WET ZONE. LAWN OR GROUND COVERS LESS THAN 4" IN DEPTH.

SHRUBS LESS THAN 2' IN HEIGHT, ON 4' CENTERS, TREE BRANCHES MUST BE 10' AWAY FROM ALL OPEN FLAME DEVICES, INCLUDING BBQs AND CHIMNEYS. COASTAL LIVE OAK, WALNUT, OR SYCAMORE PREFERRED IN THIS AREA. TREES LIMBED UP 1/2 THE HEIGHT OR 6' ABOVE GROUND.

NOTE: IF WATER RESTRICTIONS ARE IMPOSED, GROUND COVER TO BE MAINTAINED AT 3" OR LESS.

ZONE B:

FROM 51' TO 100'. GROUND COVERS LESS THAN 4" IN DEPTH. SHRUBS MAINTAINED AT LESS THAN 3" IN HEIGHT, ON 5' CENTERS. TREES LIMBED UP 1/2 THE HEIGHT, WITH 10' BETWEEN CANOPIES. EXISTING OAK TREES MAY RETAIN CLOSED CANOPIES, BUT MUST HAVE UNDERSTORY MAINTAINED AT LESS THAN 4" IN DEPTH.

ZONE C:

FROM 101' TO 200'. GROUND COVER MAINTAINED AT LESS THAN 4" IN DEPTH. SHRUBS MUST BE MAINTAINED AT LESS THAN 3" IN HEIGHT, AND MUST HAVE A MINIMUM OF 5' BETWEEN CANOPIES. TREES MUST HAVE 10' BETWEEN CANOPIES AND LIMBED UP 1/2 THE HEIGHT OR 6'. OAK, SYCAMORE, OR WALNUT TREES, EXISTING, MAY HAVE CLOSED CANOPIES, BUT UNDERSTORY MUST BE MAINTAINED AT LESS THAN 4" IN DEPTH, AND BRANCHES LIMBED UP 6' FROM GROUND.

NOTE: ALL DRIVEWAYS MUST BE MAINTAINED AS ZONE 'A', WITH VERTICAL CLEARANCE TO THE SKY, PER THE BRASADA SAN DIMAS FIRE PROTECTION PLAN.

NOTE: REFER TO BRASADA SAN DIMAS FIRE PROTECTION PLAN FOR ENTIRE SET OF FUEL MODIFICATION REQUIREMENTS.



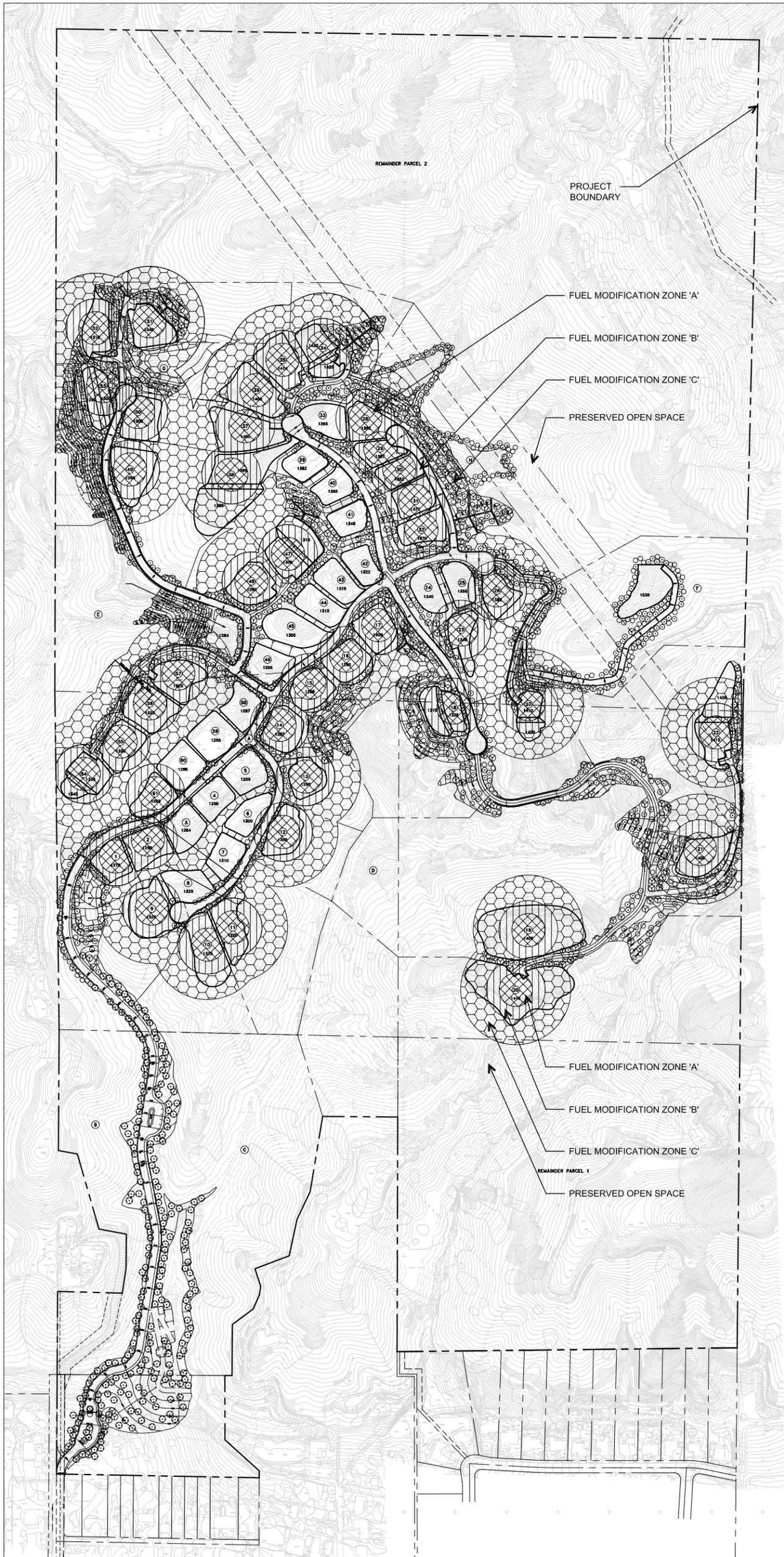
NORTH



SCALE: 1"=200'-0"



August 19, 2009



FUEL MODIFICATION LEGEND

	FUEL MODIFICATION ZONE 'A' (0' - 50')
	FUEL MODIFICATION ZONE 'B' (51' - 100')
	FUEL MODIFICATION ZONE 'C' (101' - 200')
	LOT # - USED AS POINT OF OFFSET FOR FUEL MODIFICATION ZONES

CONCEPTUAL TREE LEGEND

ENTRY/ MITIGATION TREES	
BOTANICAL NAME	COMMON NAME
Aesculus californica	California Buckeye
Juglans californica	California Walnut
Lyonthalmus floribundus asplenifolius	Island Ironwood
Platanus racemosa	California Sycamore
Prunus ilicifolia ilicifolia	Hollyleaf or Island Cherry
Quercus species	Oak

NOTE: Native ground plane plant material will support mitigation trees.

FOCAL/ CANOPY TREES	
BOTANICAL NAME	COMMON NAME
Fraxinus species	Ash
Juglans californica	California Walnut
Quercus species	Oak
Ulmus species	Elm

STREETSCAPE & VERTICAL BUFFER TREES	
BOTANICAL NAME	COMMON NAME
Platanus racemosa	California Sycamore
Tristania conferta	Brisbane Box
Umbellularia californica	California Bay

SLOPE/ OPEN SPACE TREES	
BOTANICAL NAME	COMMON NAME
Cercis occidentalis	Western Redbud
Ginkgo biloba	Maidenhair Tree
Heteromeles arbutifolia	Toyon
Liquidambar styraciflua	American Gum
Prunus lyonii	Catalina Cherry

NOTE: Refer to Plant List on Sheet 2 for additional trees for consideration.

FUEL MODIFICATION NOTE:

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NOTE: REFER TO BRASADA SAN DIMAS FIRE PROTECTION PLAN FOR ENTIRE SET OF FUEL MODIFICATION REQUIREMENTS.

BRASADA
SAN DIMAS, CA
NJD LIMITED

FUEL MODIFICATION COMPOSITE PLAN



NORTH



SCALE: 1"=200'-0"



August 19, 2009

