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# LOT SPECIFIC FUEL MANAGEMENT PLAN FOR LOT E7 WILD BOAR RUN

FEBRUARY 10, 2022



DOCUMENT PREPARED IN COORDINATION WITH SANTA LUCIA CONSERVANCY

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# **TABLE OF CONTENTS**

LOT E7 FUEL MANAGEMENT PLAN	2
PURPOSE	2
CURRENT CONDITIONS	3
STRUCTURES	3
LOCATION	3
ROADS OR TRAILS.	5
TERRAIN	5
VEGETATION & HABITAT	6
FIRE HAZARD	8
FUEL MANAGEMENT	11
NON-COMBUSTIBLE ZONE - TO A DISTANCE OF 5 FEET FROM STRUCTURES	15
LANDSCAPING ZONE - WITHIN ENTIRE LANDSCAPED AREA	15
DRIVEWAY ZONE - TO A DISTANCE OF 15 FEET FROM EDGE OF PAVEMENT	15
GRASSLAND ZONE - DISTANCE OF 30 FEET FROM STRUCTURES	16
OAK SAVANNA ZONE - DISTANCE OF 150 FEET FROM STRUCTURES	17
OAK WOODLAND ZONE - DISTANCE OF 150 FEET FROM STRUCTURES	19
OAK WOODLAND & SHRUB ZONE - DISTANCE OF 150 FEET FROM STRUCTURES	21
COASTAL SCRUB ZONE - DISTANCE OF 200 FEET FROM STRUCTURES	23
VEGETATION TREATMENT ILLUSTRATIONS	26
ACKNOWLEDGE, RELEASE, AND HOLD HARMLESS AGREEMENT	28
ADDITIONAL PHOTOS	29

# LOT E7 FUEL MANAGEMENT PLAN

# PURPOSE

This Lot-Specific Fuel Management Plan has been prepared by Rob Thompson with *Thompson Wildland Management* (TWM) for the property owners, Patrick & Janet Curran, and has been reviewed and approved by the Santa Lucia Conservancy. The purpose of this Fuel Management Plan is to guide the implementation of vegetation management and to assist the owner in creating sufficient defensible space and fire safety around the proposed home at 9 Wild Boar Run (Lot E7; APN: 239-102-010-000), as required by *California Public Resources Code 4291*, while still maintaining the natural and aesthetic conservation values of the Santa Lucia Preserve. This plan is pursuant to the Fuel Management Plan for the Santa Lucia Preserve as it may be periodically updated to implement the vegetation treatments outlined in the Fuel Management Standards for the Santa Lucia Preserve, available from the Conservancy's webpage (http://www.slconservancy.org/), attached hereto and incorporated by reference herein.

The Santa Lucia Conservancy's wildfire related responsibilities are to ensure the protection of the natural values protected by the easements. The Conservancy reviews and approves all Lot-specific Fuel Management Plans, as they are developed and periodically updated, prior to their implementation. Conservancy staff are also available to offer support and guidance in landowners' efforts to plan and implement fuel management activities.

It is important to note that the creation of a Lot-specific Fuel Management Plan (FMP) and subsequent implementation of the prescribed treatments found below do not guarantee that the property will be 100% fire-safe, but it will improve fire-fighter safety and lessen potential structural damage.



FIGURE 1. VICINITY MAP.

# **CURRENT CONDITIONS**

Through an analysis of aerial imagery and during a site visit on November 10, 2021 the following conditions were observed by Rob Thompson with Thompson Wildland Management (all photos taken by Rob Thompson, unless otherwise noted).



FIGURE 2. PHOTO OF LOT E7 TYPICAL VEGETATION.

# STRUCTURES

There are currently no structures occurring on the Homeland and this project is presently in the final design phase. Three structures and a pool are proposed for the Homeland. These structures include the main house that will be located towards the southeast central portion of the Homeland; a detached garage located at the south end of the Homeland; and a pool and small adjoining pool house located towards the north central portion of the Homeland. All proposed structures are located in oak woodland bordering an oak savanna clearing that is currently dominated by non-native annual grasses. The proposed structures, hardscape and driveway areas around the main house represent roughly 0.5-acres of the 2.38 acre Homeland.

# LOCATION

Lot E7 is located in the northwestern portion of The Santa Lucia Preserve at 9 Wild Boar Run, which is a 1 mile drive to the south from the Rancho San Carlos Road Gate House. Rancho San Carlos Road is the closest and primary ingress and egress route for the subject property, as well as several other neighboring and nearby lots. Lot E12 borders Lot E7 to the east, northeast; Lot E15 borders it to the east, southeast; Lot E6 borders it to the south; Lot E5 borders Lot it to the west; and Lot E8 borders Lot E7 to the north.

Fire station distances and estimated drive times are provided in Table 1 below.

Station Name	Address	Distance (in miles)	Drive Time (minutes, est.)
Santa Lucia Preserve Corporate Yard	121 Rancho San Carlos Road	10	20-25
Santa Lucia Preserve Gatehouse	1 Rancho San Carlos Road	1	Less than 5
Cypress Fire Department	3775 Rio Road	4.4	10-15
Mid Valley #5 Fire Department	8455 Carmel Valley Road	4.7	10-15

TABLE 1 FIRE STATION LOCATION, DISTANCE FROM LOT E7, AND ESTIMATED DRIVE TIME.



FIGURE 3. AERIAL MAP OF LOT E7. THICK LINES ARE PARCEL BOUNDARIES, THIN LINES ARE HOMELAND BOUNDARIES.

#### **ROADS OR TRAILS**

As previously noted, Lot E7 is accessed using Wild Boar Run. Wild Boar Run is accessed via Rancho San Carlos Road (the primary road for the Preserve) and then Potrero Trail. The relatively flat and moderately curved driveway to the Homeland is approximately 400 feet in length. This driveway does not cross or provide access to any other lots, and does not pose a hindrance to access or maintenance.

To exit the Preserve, go in a northerly direction on Wild Boar Run approximately 0.5 miles until it meets Potrero Trail. Turn left in a northerly direction onto Potrero Trail until it arrives at the Rancho San Carlos Gatehouse approximately 0.5 miles away. Exit The Preserve on Rancho San Carlos Road in a northerly direction towards Carmel Valley Road.



FIGURE 4. PHOTO OF LOT E7 DRIVEWAY ACCESS ROUTE. PROPOSED DRIVEWAY WILL GO ALONG TREE LINE ON RIGHT SIDE OF PHOTO.

#### TERRAIN

Lot E7 is in the Potrero Creek and Carmel River watershed and primarily consist of relatively flat to moderately sloped terrain that is dominated by more densely vegetated oak woodland habitat. The Homeland and proposed construction site area is located in a relatively flat oak woodland and savanna vegetation community. Oak trees range from relatively dense to well spaced individual trees or oak groupings, which is characteristic of oak woodland and savanna habitat. Most of the surrounding Openlands consist of steeper and more densely vegetated oak woodland habitat.

Most of the lot is best characterized by relatively flat and moderately sloped terrain, with some Openland areas consisting of relatively steep terrain. Elevations range from 170 feet to 420 feet. The fairly flat oak woodland and savanna Homeland primarily faces a northerly and easterly direction. Terrain on the Homeland and Openlands does not restrict fuel management activities.

The predominant wind direction is from the northwest, however during certain conditions warm and dry winds will come out of the south or east from Potrero Canyon, which can significantly elevate wildfire hazards.



FIGURE 5. TOPOGRAPHIC MAP OF LOT E7. LARGE BLUE ARROWS INDICATE PREVAILING WIND DIRECTIONS AROUND LOT E7, WHICH ARE INFLUENCED BY TERRAIN.

# **VEGETATION & HABITAT**

The Homeland and Openlands that make up the Fuel Management Zone (FMZ) area is a previously disturbed flat to moderately sloped site primarily consisting of oak woodland and savanna habitat that is dominated by mature coast live oak (*Quercus agrifolia*) trees and grassland clearings that are mostly composed of non-native annual grasses, which is characteristic of a oak woodland and savanna habitat occurring in the area. In the oak savanna area located in the western and central portion of the Homeland, low growing understory vegetation is dominated by non-native annual grasses, as well as some native perennial grasses, herbaceous perennials, native broadleaf forbs (e.g., wildflowers), and non-native invasive broadleaf weed populations (e.g., Italian thistle and French broom). In the more densely vegetated mixed oak woodland areas that dominate the remaining portions of the Homeland and

Openlands mostly to the east of the oak savanna clearing and proposed homesite, understory vegetation principally consist of mature and well established woody perennial shrubs (i.e., coastal scrub type vegetation, such as poison oak, coffee berry, coyote brush and toyon). The overstory primarily consist of a relatively dense canopy of coast live oak trees.

There are 5 vegetation and habitat types occurring on Lot E7. These vegetation and habitat types are listed as follows in order of most dominant to least common on the parcel: 1) Oak woodland habitat primarily consisting of mature coast live oaks is occurring in the northern, eastern and southern portion of the Homeland, but also extends into the surrounding Openlands. Within the Homeland most of the undergrowth in the oak woodlands has been mowed on several occasions in recent years, resulting in a relatively low density of taller growing understory shrubs. Consequently, understory vegetation in the Homeland portion of the oak woodland is dominated by lower growing annual grasses, herbaceous perennials, forbs, a relatively low density of shrubs (due to past mowing activities) and non-native invasive broadleaf weeds (e.g., French broom and Italian thistle, among other exotic weeds). In some of the outer Homeland and surrounding Openlands where mowing of understory vegetation has not occurred vegetation types primarily consist of oak woodland and fairly dense understory vegetation; 2) As just noted, oak woodlands with a relatively dense shrub understory (i.e., oak woodland & shrub habitat) dominate most of the outer Homeland and Openland areas to the north, east and south of the Homeland; 3) Grassland clearings primarily consisting of non-native annual grasses and well spaced individual coast live oaks or oak groupings (i.e., oak savanna & grassland habitat) dominate the western portion of the Homeland and a small portion of the surrounding Openlands; 4) A small patch of coastal scrub habitat is occurring in the southwest portion of the Openlands, a short distance to the southwest of the Homeland near the drive leading to the neighboring Lot E6; and 5) Potrero Creek a short distance to the east (i.e., the eastern most portion of the Openlands) supports riparian woodland habitat. This riparian woodland is considered sensitive habitat, but is well outside of the Homeland and Fuel Management Zone (FMZ) so will not be affected by vegetation management activities.

In the oak woodland and shrub understory areas that dominate most of the outer FMZ areas to the north, east and south of the proposed Homesite (i.e., the outer perimeter of the Homeland that extends into Openlands) understory vegetation is relatively dense and well established. This understory vegetation is dominated by woody perennial shrub species, such as native poison oak (*Toxicodendron diversilobum*), coffeeberry (*Frangula californica*), coyote brush (*Baccharis pilularis*) and toyon (*Heteromeles arbutifolia*), among other native species, as well as non-native invasive weed populations primarily consisting of French broom (*Genista monspessulana*), Italian thistle (*Carduus pycnocephalus*; and other thistles) and poison hemlock (*Conium maculatum*). Additionally, there are also understory areas with accumulations of fallen dead woody material and debris. Woodland understory fuel loads are relatively low in most of the Homeland due to past mowing, including the more open oak savanna areas to the west of the proposed homesite that has significantly less tree density. However, as previously indicated, in the outer perimeter of the Homeland that continues into the woodland and shrub Openlands that dominate most of the areas to the north, east and south of the proposed homesite (i.e., the outer FMZ area) understory vegetation and combustible fuel loads (i.e., mostly woody perennial shrubs that serve as potential ladder fuels) is much more dense and abundant.

It should be noted, there are some desirable native perennial grass stands occurring on the lot, particularly in the oak savanna grassland clearings, as well as several populations of undesirable non-native invasive broadleaf weeds. To the extent possible, native grass populations should be protected and promoted to increase their size and coverage and exotic noxious weeds controlled and managed.

Per the field assessment, there do not appear to be any sensitive or protected resources or species within the FMZ area that would limit or restrict vegetation management activities. The previously mentioned riparian woodland (i.e., Potrero Creek) to the east of the Homeland and FMZ will not be impacted by vegetation management activities. The most valuable ecological resource and habitat type occurring on the Homeland and within the FMZ in the Openlands are large landmark oak trees and mixed oak woodland habitat, but as stated earlier, these resources are not expected to be significantly affected by vegetation management operations.

As previously noted, non-native invasive plants, such as French broom (*Genista monspessulana*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), milk thistle (*Silybum marianum*) and poison hemlock (*Conium maculatum*), among other species of noxious broadleaf weeds and exotic grasses (mostly aggressive annual species) are common in the Homeland and Openlands, particularly French broom and Italian thistle. Non-native invasive weeds are degrading to habitat and can significantly increase combustible fuel loads and wildland fire hazards. Consequently, noxious weeds should be controlled, managed and, where possible, eradicated to improve habitat and reduce combustible fuel loads.



FIGURE 6. VEGETATION MAP OF LOT E7.

#### **FIRE HAZARD**

As previously discussed, vegetation and habitat types on the Lot E7 Homeland and most of the surrounding Openlands immediately surrounding the Homeland (i.e., the Fuel Management Zone [FMZ]) are primarily composed of oak savanna to the west of the proposed homesite (i.e., well spaced oak trees with clearings and understory vegetation dominated by exotic annual grasses) and oak woodland and shrub understory vegetation occurring to the north, west and south of the proposed homesite. Terrain is relatively flat to moderately sloped on the Homeland to relatively steep in some of the surrounding Openlands. Non-native annual grasses (i.e., the dominant vegetation type in the

Homeland portion of the FMZ) is considered a highly ignitable and combustible fuel source if not managed properly (i.e., mowed before the dry season), and if a fast moving grass fire spreads into the more densely vegetated oak woodland areas the wildfire could quickly intensity into a more severe woodland fire event that is more difficult to control and extinguish. In the right conditions (i.e., hot, dry and windy weather conditions where understory fuels [particularly dry annual grasses] have not been properly maintained and managed [e.g., grasses mowed, shrub density reduced and trees limbed up]) these fuel types that dominate the FMZ can produce and sustain fast spreading and high intensity vegetation fires that are potentially hazardous to life, property and ecological resources.

Based on current conditions, property features (i.e., terrain and vegetation types) and predicted flame length modeling, a vegetation fire on the property would burn at a fairly low to moderate intensity in most of the Homeland and adjacent Openlands immediately surrounding the Homeland (i.e., the FMZ area), with pockets of higher fire intensity. However, in high wildfire conditions (i.e., hot, dry and windy red flag conditions) with little or no fuel reduction implemented, a low to moderate intensity vegetation fire could quickly intensity into a more severe and hazardous conflagration.

Predicted flame length modeling (both pre- and post-fuel treatment modeling; refer to Figures 7 & 10) indicates low flame lengths of 0-2 feet, which may be the case in the flatter mowed grassland and oak savanna areas to the west of the proposed homesite. However, based on current conditions, flame lengths in the more densely vegetated and steeper sloped woodland areas within the FMZ to the north, east and south of the proposed homesite would likely be higher than 2 feet (possibly ranging from 4-8 feet), with pockets of higher fire intensity.

During high fire risk weather events flame lengths could potentially be significantly higher than the predicted flame length modeling. In the FMZ area around the proposed structures lower flame lengths ranging from 0-2 feet (or potentially higher) would likely be occurring in most of the flatter to moderately sloped areas around the proposed home (i.e., most of the Homeland) that are dominated by annual grasses that have been mowed, and higher 2-4 foot flame lengths (or potentially higher) occurring in the steeper woodland areas along the edges of the Homeland and into the adjacent Openlands that despite the annual mowing of understory grasses and limbing up of trees have a greater abundance of woodland type vegetation that can potentially reflect on-site conditions based on current fuel loads and potential extreme weather events. Fire behavior modeling does not necessarily take into account current vegetation management practices, which include Homeland mowing.

In the event of a wildland fire, most of the steeper and denser vegetated woodland and shrub areas of the Openlands outside of the FMZ (i.e., beyond 150 feet from structures) would burn at a higher intensity with greater flame lengths due to an absence of vegetation management. Conversely, fire intensity and flame lengths within the FMZ (i.e., 0-150 feet from structures) would be significantly less due to lower vegetation density and lower combustibility fuels, which would be by design based on the layout, configuration and design of the home and surrounding landscape, as well as vegetation management activities that will be occurring within the FMZ on a regular and as needed basis (particularly prior to the fire season) that will result in lower combustibility fuel loads around the structures.

Per the assessment, the greatest fire threat to proposed structures based on potentially hazardous fuel loads within the FMZ appears to be highest from the steeper and more densely vegetated oak woodland and shrub slopes that are to the north, east and south of the proposed homesite and Homeland. However, it should be noted that fuel reduction operations will be conducted to address and mitigate these higher risk areas that are primarily in the Openlands.

In most of the FMZ areas that are dominated by non-native annual grasses in clearings and in the woodland understory, fire has the potential of spreading rapidly. Non-native annual grasses on the property should be mowed annually prior to the fire season to reduce the abundance of dry and highly combustible fuels. The proper maintenance and management of vegetation around proposed structures reduces the threat of fire to acceptable levels. Wherever mowing has occurred (or in some cases grazing may be an effective alternative), minimal flame lengths and slow rates of spread can be expected.

Vegetation management and fuel reduction on the site will be needed to maintain a low and reduced level of combustible fuels, including the targeted removal and thinning of some understory vegetation occurring beneath the canopy of oak trees (e.g., woody perennial shrubs, non-native annual grasses, broadleaf weeds and some accumulations of dead woody material) in woodland areas within the FMZ. The lower limbs and branches of trees located within the FMZ area should be properly pruned and limbed up to reduce ladder fuels, which will limit the possibility of fire spreading into the canopy. This is particularly important in the woodland areas to the north, east and south of the proposed structures.

A potential worse case scenario would be a summer or fall wildland fire event during during dry and hot conditions with low humidity and strong and erratic winds that is made more severe and hazardous due to a prolonged drought period. These type of red flag conditions could result in a vegetation fire rapidly approaching the property from all directions, particularly from the north, east or west, which could cut off the only escape route from Wild Boar Run to Rancho San Carlos Road; or a fast and high intensity crown fire approaching from the steeper woodland and shrub sloped areas to the north, east and south of the Homeland. Either of these scenarios has the potential of spreading embers that could result in multiple spot fires occurring on the property, which would pose a significant threat and hazard to the property and its structures, as well as any other structures occurring in the area. This threat can be significantly reduced and mitigated through the proper implementation of fuel reduction and vegetation management best management practices (BMP's) on Lot E7, which to some extent has already occurred through the mowing of grasslands and understory vegetation within the Homeland.



FIGURE 7. MAP OF PREDICTED FLAME LENGTHS ON LOT E7 (WITHOUT TREATMENT).

# **FUEL MANAGEMENT**

In addition to the Fuel Management Treatment Zones, the Santa Lucia Preserve Fuel Management Standards outline Best Management Practices to help ensure implementation of each Lot-Specific Plan is conducted in a manner that minimizes environmental impacts. If available refer to the lot's *Openlands Management Plan* provided by the Santa Lucia Conservancy that may provide additional guidelines and recommendations for the effective management of vegetation, such as invasive weed control, that will further assist in supporting vegetation management activities that will help to mitigate fire hazards, improve defensible space and enhance habitat. Please keep in mind the following guidelines when implementing treatments recommended in this plan:

- 1. Treatments shall be scheduled and implemented for the appropriate season.
  - a. Trees should be pruned between November and April.
  - b. Mowing should occur late spring to early summer. Timing of mowing affects the species composition in subsequent years. A Lot-specific plan may advise for the appropriate timing and frequency to retain desirable wildflowers, native grasses, or protected species.
- 2. Native vegetation should be retained as much as possible when creating and maintaining enough defensible space and safe access to protect watershed functions and scenic values.
- 3. Conversion of existing native habitat types in the Openlands is only permitted with a multi-year habitat restoration plan with the Conservancy (if available, refer to Openlands Management Plan).
- 4. Use of vehicles in the Openlands shall be limited to the area necessary for treatment.
- 5. Invasive weeds shall be removed from both the Homelands and Openlands of each Lot as part of annual vegetation management (if available, refer to Openlands Management Plan).

For additional guidance on ways to minimize environmental impacts, please refer to the Best Management Practices for Fuel Management section of the Santa Lucia Preserve Fuel Management Standards.

If the treatments described below are properly implemented in the Fuel Management Zone (FMZ) of Lot E7 (also in some cases referred to as the fuel reduction zone and defensible space zone) 0-2 foot flame lengths may occur in most of the flatter mowed areas of the FMZ, exception being some of the steeper woodland areas in the outer FMZ where flame lengths could exceed 8 feet despite vegetation management activities. Fuels that produce lower flame lengths and prevent ember production are the result of fuel mitigation treatments of varying actions and distances from the structure, based on existing vegetation and terrain within the FMZ. On Lot E7 the property boundary does not limit or constrain fuel reduction activities, and in no case does this Fuel Management Plan authorize the property owner to take fuel management actions beyond the property boundary. The Conservancy must approve this FMP prior to performing any fuel management activities in the Openlands. Furthermore, fuel management activities shall not be conducted anywhere in the Openlands beyond the approved FMZ area. This rule and restriction also applies to the surrounding Wildlands, which are owned and managed by the Conservancy.

Each zone has a unique set of standards by which compliance will be gauged. Treatments in each zone are fully described in the Fuel Management Standards. Unless specified here, treatments must be consistent with the Standards. <u>Any exceptions and additional actions will be noted in bold, underlined italics.</u>

The Fuel Management Zones are as follows:

- 1. Non-combustible Zone To a distance of 5 feet from structures.
- 2. Landscaping Zone Per landscaping plans.
- 3. Driveway Zone To a distance of 15 feet from edge of pavement.
- 4. Grassland Zone To a distance of 30 feet from structures.
- 5. Oak Savanna Zone To a distance of 150 feet from structures.
- 6. Oak Woodland Zone To a distance of 150 feet from structures.
- 7. Oak Woodland and Shrub Zone To a distance of 150 feet from structures.
- 8. Coastal Scrub Zone To a distance of 200 feet from structures.



FIGURE 8. FUEL MANAGEMENT MAP WITH ZONES DELINEATED.



FIGURE 9. SENSITIVE RESOURCES MAP WITH FUEL MANAGEMENT ZONES: NO SENSITIVE AND/OR PROTECTED RESOURCES OR SPECIES OBSERVED THAT WOULD LIMIT OR RESTRICT VEGETATION MANAGEMENT ACTIVITIES IN THE FMZ.



FIGURE 10. MAP OF PREDICTED FLAME LENGTHS ON LOT E7 (WITH TREATMENT).

For reference, here are the fuel management standards for the zones on Lot E7.

# NON-COMBUSTIBLE ZONE – TO A DISTANCE OF 5 FEET FROM STRUCTURES.

#### A non-combustible zone should be maintained within a 5-foot buffer around structures.

Property development has not started so the non-combustible zone does not yet exist. Hardscape surfaces or landscape materials, such as gravel, bare soil or low growing and high moisture content irrigated turf, native perennial bunch grasses and/or succulent herbaceous plants, are examples of materials that are suitable for the 0-5 foot non-combustible zone. Wood mulch is not considered non-combustible. Landscape architects are encouraged to make liberal use of hardscaping within 5 feet of structures. Care should be taken in the design phase to ensure there is adequate room within the Homeland for such treatments.

# LANDSCAPING ZONE – WITHIN ENTIRE LANDSCAPED AREA.

The Homeland has not yet been developed so the landscape zone does not yet exist. Approved landscaping must be designed and maintained to minimize flammability. All landscaping occurs within the Homeland area.

Ornamental landscaping often results in large amounts of more combustible shrubby vegetation being planted near structures. Many commonly used landscape plants, such as more flammable woody trees and shrubs, and tall ornamental grasses, should be avoided in the maintained landscape because they may create a fire threat to a home that would otherwise be fire safe. All plant material that is removed from the landscaping must be composted within the Homeland or removed from The Preserve and disposed of properly. In no case can material from the landscaping zone be left in the Openlands, and must be properly processed if it will remain in the Homeland.

The *Landscaping Zone* should consist of firesafe landscape materials, a mosaic of low density and lower growing planting configurations, and properly spaced and pruned trees and shrubs, or, alternatively, a minimalist type landscape that would have few or no trees and shrubs. This zone should be a firesafe landscape that is not overly dense with vegetation and should be designed and properly maintained in a manner to provide adequate horizontal and vertical spacing between various vegetation types. Landscape flora should primarily be composed of drought tolerant species and plants with a higher moisture content that have a greater resistance to fire (e.g., native bunch grasses, succulents, ferns, among several other options [consult The Preserves DRB regarding approved landscaping plants and materials]). Landscape plants and plant groupings should not be allowed to get too dense and should be properly maintained (i.e., pruned and thinned) to remove dense, unhealthy and dead plant material that is highly flammable. Larger landscape plants, such as trees and shrubs, should not be located too close to one another. The taller and wider the shrubs, trees or plant groupings the more spacing is needed between them. A properly maintained landscape mosaic with minimal vegetation primarily consisting of low growing and higher moisture content plants that are more fire resistant, such as native perennial bunch grasses, should be encouraged.

# DRIVEWAY ZONE – TO A DISTANCE OF 15 FEET FROM EDGE OF DRIVEWAY PAVEMENT.

#### Safe ingress and egress must be maintained along the driveway.

The driveway has not yet been constructed. The proposed Driveway Zone is important to allow for safe ingress and egress to the property, and to provide a location where firefighters and first responders can safely move and engage in fire response (refer to Figure 4 earlier in the report). Similar to the Homeland, vegetation along the proposed driveway (both in the clearings and in the oak woodland and savanna understory) is dominated by non-native annual grasses.

- a. Grassland areas along the driveway should be mowed to a minimum of 15 feet from the edge of pavement, according to the recommendations in the grassland zone.
- b. All tree branches extending over driveway surfaces should be pruned to ensure 15 feet of vertical clearance. Whenever possible, healthy overhanging branches higher than 15 feet should be left in place to shade driveway areas, which will assist in reducing understory growth.
- c. Every residential structure shall have a dedicated fire hydrant and a hammerhead or other safe turnaround for fire equipment access as detailed in the Santa Lucia Preserve Design Guidelines. Vegetation around these facilities must be maintained as needed to ensure visibility and access, vegetation must be cleared three feet around fire hydrant.

It should be noted that a minimum 3-foot radius from each fire hydrant shall be free of vegetation.

# **GRASSLAND ZONE** – TO A DISTANCE OF 30 FEET FROM STRUCTURES.

#### Grassland zones must be mowed at least once annually in the late spring or early summer.

Grasslands dominated by non-native annual grasses are generally dry and become flammable at the start of summer. As a result, grassland areas will need annual attention by mowing prior to the summer season. By mowing in late spring, native grasses and wildflowers are retained and will contribute to reduced fuel loads and a lower fire hazard condition. Non-native invasive weed species, such as French broom, poison hemlock and thistles should be removed annually.

As previously discussed, most of Lot E7 is dominated by oak woodland habitat, but a significant portion of the Homeland (i.e., the western portion) is composed of an open grassland clearing and oak savanna vegetation community. Understory vegetation in savanna and oak woodland areas is primarily composed of non-native annual grasses. According to fire behavior predictions, grassland areas are expected to produce flame lengths ranging from 0-2 feet following vegetation treatments, which appears to be accurate assuming property execution of vegetation management activities and the absence of extreme weather/fire conditions.

#### Prescriptions for grass mowing:

- a. Within 30 feet from structures, on an annual basis and prior to the fire season (i.e., late spring) all grassland areas should be mowed to maintain a minimum height of 4 inches.
- b. Native perennial grasses and wildflower stands should not be mowed more frequently than 60 days, ideally shortly after they have set seed. This may require a delayed mowing schedule in wetter years to maintain their density. Consult with the Conservancy staff as needed.
- c. Trees occurring within the grassland zone should be treated according to the recommendations made in the oak savanna and woodland zone.
- d. Coyote brush and other shrub species occurring within the grassland zone may be removed to maintain open grasslands as part of an approved Lot-Specific Plan.



FIGURE 11. GRASSLAND AND OAK SAVANNA DOMINATED AREAS PRIMARILY CONSISTING OF MATURE OAKS AND NON-NATIVE ANNUAL GRASSES. LOWER BRANCHES OF TREES IN OAK SAVANNA SHOULD BE PRUNED TO 8 FT IN HEIGHT OR NO MORE THAN A 1/3 OF THE HEIGHT OF THE TREE. CARE SHOULD BE TAKEN TO REMOVE ONLY BRANCHES SMALLER THAN 3 INCHES IN DIAMETER.

#### OAK SAVANNA ZONE - TO A DISTANCE OF 150 FEET FROM STRUCTURES.

#### Grass under trees must be mowed annually, and small-diameter lower tree branches must be pruned.

Oak savannas consist of well spaced individual oaks or oak groupings with clearings (areas with no canopy cover) and understory vegetation primarily composed of grasses (refer to previous photos, Figures 2, 4 & 11). Both trees and grass should be maintained to provide a vertical separation between the ground and the tree canopy. This corresponds to the area mapped as coast live oak to the west of the proposed homesite. Mowing grasses under and around trees reduces fire intensity and rate of spread of fire to an acceptable level, and diminishes the possibility that fire can climb into the tree canopy. Pruning small lower tree branches, as noted below, will reduce the possibility that a fire can spread into the canopy.

Highly flammable invasive weed species, such as French broom, poison hemlock and thistles, should be removed annually. According to fire behavior predictions, many areas of oak savanna are expected to produce flame lengths ranging from 0-2 feet following vegetation treatments, which appears to be accurate assuming property execution of vegetation management activities and the absence of extreme weather/fire conditions.

# Prescriptions for grass mowing:

- a. Within 30 feet of structures, all grassland areas should be mowed in late spring or early summer to a height of 4 inches, according to the recommendations in the Grassland Zone.
- b. Within 100 feet of structures, all grasses growing under trees, out to 6 feet beyond the driplines of trees, should be mowed in late spring or early summer to a height of 4 inches.
- c. Within 30-100 feet of structures (depending on slope and other factors), grasses growing in the open, away from trees, do not need to be mowed.
- d. Trees occurring within the oak savanna and grassland zone should be treated according to the recommendations made in the oak woodland zone.
- e. Coyote brush and other shrub species occurring within the grassland zone may be removed to maintain open grasslands as part of an approved Lot-Specific Plan.

#### Prescriptions for removing dead wood on the ground:

- a. Throughout the Fuel Management Zone (FMZ), remove all dead branches on the ground smaller than 6-inch diameter.
- b. Large dead material located within the FMZ may be removed or relocated as recommended by a Lot-Specific Plan. Dead limbs larger than 8 inches diameter in the Openlands portion of the FMZ should remain on the site if isolated from dead material that is smaller than 4-inches in diameter, if not under a tree canopy, or if moved at least 100 feet from the structure. Large woody material by itself does not ignite readily and does not produce long flames. Retaining these features in open areas serves a beneficial purpose of retaining soil moisture and supporting nutrient cycling and wildlife habitat. Once dead logs become rotted through and friable, they should be removed or scattered in the general area to avoid a concentration of lighter fuels.

#### Prescriptions for tree pruning:

- a. All branches, living or dead, less than 3 inches diameter in width and less than either 8 feet from the ground or 3 times the height of any understory shrubs, whichever is greater, shall be removed. Lower branches of trees should be pruned to 8 ft in height or no more than a 1/3 of the height of the tree. Care should be taken to remove only branches smaller than 3 inches in diameter.
- b. Living branches that are greater than 3 inches in diameter, but lower than 8 feet in height can be retained, provided that the area within the dripline of trees is maintained. Oaks with large living limbs resting on the ground need not be removed, but all ground debris around and beneath the limbs must be removed to reduce fire risk.
- c. Dead limbs less than 8 feet in height shall be removed.
- d. In landscaped areas, healthy tree branches less than 3 inches in diameter or 8 inches diameter if split or diseased, should be removed to provide vertical clearance of 3 times the height of the understory plants, or 8 feet above understory plants, whichever is greater.
- e. For trees shorter than 24 feet in height, remove lower 1/3 of branches smaller than 3 inches in diameter, or alternatively, treat as a shrub grouping.
- f. Once initial pruning is performed, tree pruning is likely to be needed infrequently, on an interval of about once every 3 to 5 years.
- g. Do not thin or prune the tree canopy, as this will provide increased sunlight penetration that will encourage more plant growth in the understory, resulting in increased risk that fire will spread to the tree canopy.

h. Sometimes small trees may need to be cut to the ground in order to achieve the separation of the ground level from the tree canopy, or because mowing equipment cannot avoid the small trees. In all circumstances, removal of native oak seedlings and saplings in the Openlands requires prior approval from the Santa Lucia Conservancy.

#### OAK WOODLAND ZONE - TO A DISTANCE OF 150 FEET FROM STRUCTURES.

#### Understory vegetation must be kept short and small lower tree branches must be removed.

The woodland areas on the property consist of blue oak, valley oak and coast live oak trees in moderate to steep terrain. Understory fuels primarily consist of non-native annual grasses, some stands of exotic broadleaf weeds, a relatively low density of native shrub species, and some fallen tree limbs and other dead material.

The understory of oak woodland habitat includes shade tolerant shrubs and grasslands. The goal of vegetation management activities is to maintain an existing woodland with a short-statured understory of grasses (preferably native perennial grasses), forbs, herbaceous plants and perennial shrubs, and a tree canopy at least 8 feet above the ground. An initial treatment will be required to prune smaller branches of trees up to 8 feet above the ground and to reduce density and stature of native understory shrubs. Non-native invasive shrubs and weeds should be controlled, contained, managed and removed. After the initial treatment, annual maintenance will be needed to cut back shrub sprouts in order to maintain a maximum height of 2 to 3 feet. According to fire behavior predictions, many areas of oak woodland are expected to produce flame lengths ranging from 0-2 feet following vegetation management activities, but this does not appear to accurately reflect on-site conditions. Based on current conditions and vegetation types, predicted flame lengths would more likely range from 0-4 feet, with pockets of higher fire intensity.

#### Prescriptions for understory maintenance:

- a. Within 30 feet from structures, at the beginning of each summer ensure that the herbaceous and grass understory is maintained at a maximum height of 4 inches.
- b. Understory vegetation should not be completely removed. Instead, selectively remove more flammable species like coyote brush and exotic broadleaf weeds (e.g., French broom, thistles), and prune-back and remove dead branches from less flammable native species (e.g., coffeeberry, toyon).
- c. Native understory shrubs are to be kept free of dead branches and no more than 2 to 3 feet in height.
- d. Leaf litter depth should not exceed 4 inches.

#### Prescriptions for removing dead wood on the ground:

- a. Throughout the Fuel Management Zone (FMZ), remove all dead branches on the ground smaller than 6-inch diameter.
- b. Large dead material located within the FMZ may be removed or relocated as recommended by a Lot-Specific Plan. Dead limbs larger than 8 inches diameter in the Openlands portion of the FMZ should remain on the site if isolated from dead material that is smaller than 4-inches in diameter, if not under a tree canopy, or if moved at least 100 feet from the structure. Large woody material by itself does not ignite readily and does not produce long flames. Retaining these features in open areas serves a beneficial purpose of retaining soil moisture and supporting nutrient cycling and wildlife habitat. Once dead logs become rotted through and friable, they should be removed or scattered in the general area to avoid a concentration of lighter fuels.

#### Prescriptions for tree pruning:

- a. All branches, living or dead, less than 3 inches diameter in width and less than either 8 feet from the ground or 3 times the height of any understory shrubs whichever is greater, shall be removed. Lower branches of trees should be pruned to 8 ft in height or no more than a 1/3 of the height of the tree. Care should be taken to remove only branches smaller than 3 inches in diameter.
- b. Living branches that are greater than 3 inches in diameter but lower than 8 feet in height can be retained, provided that the area within the dripline of trees is maintained. Oaks with large living limbs resting on the ground need not be removed, but all ground debris around and beneath the limbs must be removed to reduce fire risk.
- c. Dead limbs less than 8 feet in height shall be removed.
- d. In landscaped areas, healthy tree branches less than 3 inches in diameter or 8 inches diameter if split or diseased, should be removed to provide vertical clearance of 3 times the height of the understory plants, or 8 feet above understory plants, whichever is greater.
- e. For trees shorter than 24 feet in height, remove lower 1/3 of branches smaller than 3 inches in diameter, or alternatively, treat as a shrub grouping.
- f. Once initial pruning is performed, tree pruning is likely to be needed infrequently, on an interval of about once every 3 to 5 years.
- g. Do not thin or prune the tree canopy, as this will provide increased sunlight penetration that will encourage more plant growth in the understory, resulting in increased risk that fire will spread to the tree canopy.
- h. Sometimes small trees may need to be cut to the ground in order to achieve the separation of the ground level from the tree canopy, or because mowing equipment cannot avoid the small trees. In all circumstances, removal of native oak seedlings and saplings in the Openlands requires prior approval from the Santa Lucia Conservancy.



FIGURE 12. MORE DENSELY VEGETATED OAK WOODLAND ZONE ON NORTH FACING SLOPE TO THE NORTH OF PROPOSED HOMESITE. MOW UNDERSTORY GRASSES AND LIMB UP TREES USING PROPER PRUNING PRACTICES AND PRESCRIPTIONS.

# OAK WOODLAND AND SHRUB ZONE - TO A DISTANCE OF 150 FEET FROM STRUCTURES.

Understory vegetation must be kept short and small lower tree branches must be removed.

Woodland with coastal scrub type understory is a common vegetation type that is occurring on the subject property. The goal of vegetation management treatments is to facilitate the conversion from a transitional woodland/shrubland vegetation type, into a more fire-safe oak woodland with an understory primarily consisting of grasses (preferably native perennial grasses), herbaceous perennials, forbs and/or other lower-growing vegetation that is more fire resistant. Native understory shrubs are preferred and acceptable, if maintained to a maximum height of 2 to 3 feet, and if kept free of dead branches. Once the conversion has been made to a stable oak woodland, minimal vegetation treatment will be necessary other than the routine and normal treatments for the oak woodland zone. Non-native invasive weeds, such as French broom, poison hemlock and thistles should be aggressively controlled and managed.

According to fire behavior predictions, many areas of the oak woodland and shrub zone are expected to produce flame lengths ranging from 0-2 feet following vegetation management activities, but this does not appear to accurately reflect on-site conditions. Based on current conditions (i.e., prevegetation treatment) and vegetation types, predicted flame lengths would more likely range from

4-8+ feet. However, following fuel reduction and vegetation management activities flame lengths will more likely range from 2-4+ feet, with pockets of higher fire intensity.

#### Prescriptions for understory maintenance:

- a. Within 30 feet from structures, at the beginning of each summer ensure that the herbaceous and grass understory is maintained at a maximum height of 4 inches.
- b. Understory vegetation should not be completely removed. Instead, selectively remove more flammable species like coyote brush and exotic broadleaf weeds (e.g., French broom, thistles), and prune-back and remove dead branches from less flammable native species (e.g., coffeeberry, toyon).
- c. Native understory shrubs are to be kept free of dead branches and no more than 2 to 3 feet in height.
- d. Leaf litter depth should not exceed 4 inches.

#### Prescriptions for removing dead wood on the ground:

- a. Throughout the Fuel Management Zone (FMZ), remove all dead branches on the ground smaller than 6-inch diameter.
- b. Large dead material located within the FMZ may be removed or relocated as recommended by a Lot-Specific Plan. Dead limbs larger than 8 inches diameter in the Openlands portion of the FMZ should remain on the site if isolated from dead material that is smaller than 4-inches in diameter, if not under a tree canopy, or if moved at least 100 feet from the structure. Large woody material by itself does not ignite readily and does not produce long flames. Retaining these features in open areas serves a beneficial purpose of retaining soil moisture and supporting nutrient cycling and wildlife habitat. Once dead logs become rotted through and friable, they should be removed or scattered in the general area to avoid a concentration of lighter fuels.

#### **Prescriptions for tree pruning:**

- a. All branches, living or dead, less than 3 inches diameter in width and less than either 8 feet from the ground or 3 times the height of any understory shrubs whichever is greater, shall be removed. Lower branches of trees should be pruned to 8 ft in height or no more than a 1/3 of the height of the tree. Care should be taken to remove only branches smaller than 3 inches in diameter.
- b. Living branches that are greater than 3 inches in diameter but lower than 8 feet in height can be retained, provided that the area within the dripline of trees is maintained. Oaks with large living limbs resting on the ground need not be removed, but all ground debris around and beneath the limbs must be removed to reduce fire risk.
- c. Dead limbs less than 8 feet in height shall be removed.
- d. In landscaped areas, healthy tree branches less than 3 inches in diameter or 8 inches diameter if split or diseased, should be removed to provide vertical clearance of 3 times the height of the understory plants, or 8 feet above understory plants, whichever is greater.
- e. For trees shorter than 24 feet in height, remove lower 1/3 of branches smaller than 3 inches in diameter, or alternatively, treat as a shrub grouping.
- f. Once initial pruning is performed, tree pruning is likely to be needed infrequently, on an interval of about once every 3 to 5 years.
- g. Do not thin or prune the tree canopy, as this will provide increased sunlight penetration that will encourage more plant growth in the understory, resulting in increased risk that fire will spread to the tree canopy.

h. Sometimes small trees may need to be cut to the ground in order to achieve the separation of the ground level from the tree canopy, or because mowing equipment cannot avoid the small trees. In all circumstances, removal of native oak seedlings and saplings in the Openlands requires prior approval from the Santa Lucia Conservancy.



FIGURE 13. MORE DENSELY VEGETATED OAK WOODLAND AND SHRUB ZONE TO THE EAST OF PROPOSED HOMESITE.

# COASTAL SCRUB ZONE - TO A DISTANCE OF 200 FEET FROM STRUCTURES.

All shrubs within coastal scrub must be thinned or mowed within 200 feet of structures.

Coastal Scrub habitat is common and widespread on the Preserve, but only a relatively small coastal scrub patch is inhabiting the Lot E7 Openlands to the southwest of the Homeland within the FMZ area. However, it should be noted that coastal scrub type vegetation (e.g., coyote brush, coffeeberry and toyon) is common in the woodland understory of Lot E7.

Similar to chaparral habitat, coastal scrub is an important habitat type occurring on the Preserve. Coastal scrub is composed of a variety of native shrub species, including coyote brush, poison oak, coffeeberry, toyon, wild blackberry, California sagebrush, manzanita and blue blossom ceanothus, amongst others. Like most woody perennial chaparral type vegetation, shrub species occurring in coastal scrub habitat will typically crownsprout vigorously when mowed or burned, so coastal scrub zones will need to be managed and retreated on a regular basis.

Predicted flame length modeling (both pre- and post-fuel treatment modeling; refer to Figures 7 & 10) indicates low flame lengths of 0-2 feet, which does not accurately reflect on site conditions. Based on current conditions and vegetation types, flame lengths could exceed 12 feet in the event of a wildland fire. However, following proper fuel reduction and vegetation management activities (e.g., mowing to remove dense and tall coastal scrub bushes and shrubs) to convert high fuel load coastal scrub to lighter grass type fuels, flame lengths would likely range from 2-4 feet, with pockets of higher fire intensity.

- a. In open areas away from trees and within 200 feet of structures, change the vegetation configuration into discontinuous groups of shorter, younger and more succulent shrubs (i.e., a mosaic of native vegetation), and ensure the distance between groups of shrubs is at least 2 times the height of the shrub patch.
- b. In coyote brush dominated stands, if other more desirable and less common shrub species are present, retain them at the expense of coyote brush. Retain less flammable desirable species, such as coffeeberry and toyon.
- c. It is not necessary to eliminate coyote brush within the fuel management zone. Instead, change the pattern into a discontinuous mosaic of shorter, younger and more succulent shrubs. If native perennial bunch grasses are present, consult with the Conservancy regarding restoring grassland conditions through permanent removal of encroaching shrub species.
- d. Remove all dead branches from less flammable desirable shrub species, such as coffeeberry and toyon.
- e. Healthy trees within the 200 foot coastal scrub zone should be retained. As tree density increases within the coastal scrub or chaparral community, they provide a long-term reduction in shrub cover and fire hazard.



FIGURE 14. SMALL COASTAL SCRUB ZONE (RIGHT SIDE OF PHOTO) LOCATED A SHORT DISTANCE TO SOUTH OF THE LOT E7 HOMELAND.

# **VEGETATION TREATMENT ILLUSTRATIONS**



FIGURE 15. CREATE VERTICAL SPACING UNDER LOWER TREE BRANCHES BY REMOVING SMALL TREE BRANCHES FROM THE BOTTOM 8 FT OF THE TREE OR FROM THE BOTTOM ONE-THIRD OF THE TREE, WHICHEVER IS LESS.



FIGURE 16. CREATE HORIZONTAL SPACING BETWEEN TREES AND SHRUBS, BY REMOVING SHRUBS FROM AROUND TREES WITHIN A RADIUS THAT EXTENDS 3 FEET FROM THE TREE'S DRIP LINE. FOR TREES TALLER THAN 6 FEET, REMOVE SHRUBS WITHIN A DISTANCE OF 6 FEET FROM THE TREE'S DRIP LINE.



FIGURE 17. CREATE GROUPS OF SHRUB GROUPINGS TO PROVIDE HORIZONTAL SEPARATION BETWEEN SHRUBS. EACH GROUP OF SHRUBS SHOULD BE NO WIDER THAN 2 TIMES ITS HEIGHT, OR LESS THAN 120 SQUARE FEET IN AREA. THE SPACE BETWEEN SHRUB GROUPS SHOULD BE AT LEAST TWO TIMES THE HEIGHT OF THE SHRUBS, OR A DISTANCE OF 10 FEET, WHICHEVER IS GREATER.

# ACKNOWLEDGE, RELEASE, AND HOLD HARMLESS AGREEMENT

In consideration of the Santa Lucia Conservancy's preparation of this Plan, by signing below, the undersigned acknowledge and agree that:

- 1) Owner has read this Plan;
- 2) The current conditions described in this Plan generally characterize the existing conditions of Lot E7;
- 3) Owner is solely responsible for implementing and maintaining vegetation consistent with this Plan. Any duty for wildfire protection or suppression (Lot E7) on the part of the Santa Lucia Conservancy to Owner is limited to approval of the plan of action embodied in this Plan;
- 4) Owner assumes all risks of any manner or degree arising from or in connection with wildfire (on Lot E7) and hereby waives, releases and forever discharges the Santa Lucia Conservancy and its officers, directors, agents, employees and other representatives from any and all liability arising from or in connection with the preparation this Plan or its implementation by any person or entity;
- 5) In the event of any dispute arising out of this agreement, the prevailing party shall be entitled to collect its reasonable attorneys' fees, costs and expenses from the other party.

Executed at Carmel, California and effective as of the latest date set forth opposite the signatures below. HOMEOWNER

By

Mr. & Mrs. Patrick Curran, Owners Lot E7, 9 Wild Boar Run Santa Lucia Preserve, Carmel, California

Reviewed and approved by: SANTA LUCIA CONSERVANCY

By

Jamison Watts Date Date

Date

# **ADDITIONAL PHOTOS OF LOT E7**



FIGURE 18. PORTION OF PROPOSED HOMESITE IN OAK WOODLAND CLEARING.



FIGURE 19. PORTION OF PROPOSED HOMESITE IN OAK WOODLAND AREA. 2/10/2022 Lot E7 FUEL MANAGEMENT PLAN 29



FIGURE 20. OAK WOODLAND WITH UNDERSTORY SHRUBS IN BACKGROUND NEAR PROPOSED GARAGE. PROPERLY LIMB UP TREES AND REMOVE PILES OF DEAD FALLEN BRANCHES.



Figure 21. Properly prune and LIMB up oaks to a height of 8 feet or no more than 1/3 of total tree height. 2/10/2022 Lot E7 FUEL MANAGEMENT PLAN 30