

**CALIFORNIA COASTAL COMMISSION**

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**M E M O R A N D U M**

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**TO:** Deanna Christensen  
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**SUBJECT:** ESHA Evaluation and Biological Impacts Analysis – Sweetwater Mesa  
Projects, CDP Application Nos. 4-10-040, 4-10-041, 4-10-042, 4-10-043,  
4-10-044, and 4-10-045

**DATE:** January 25, 2011

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**Documents Reviewed:**

Aerial Information Systems (AIS), Environmental Systems Research Institute (ESRI), California Department of Fish and Game, California Native Plant Society and National Park Service. 2007. Preliminary Spatial Vegetation Data of Santa Monica Mountains National Recreation Area and Environs. USGS-NATIONAL PARK SERVICE Vegetation Mapping Program, Santa Monica Mountains National Recreation Area, Thousand Oaks, CA.

Burton & Company Landscape Architecture. June 19, 2009. Letter from Stephen Billings of Burton & Company to Matt Jewett of Don Schmitz & Associates regarding the '*Landscape Design Approach for Sweetwater Mesa Homes*'.

California Department of Fish and Game (Todd Keeler-Wolf, Wildlife and Habitat Data Analysis Branch) and California Native Plant Society (Julie Evens, Vegetation Program). January 2006. Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties, California. Report submitted to National Park Service.

Dixon, J. 2003. *Designation of ESHA in the Santa Monica Mountains*. A memorandum to CCC South Central Coast District staff dated March 25, 2003. This memorandum includes an edited version of the ESHA findings from the September 29, 2002 Coastal Commission staff report for the City of Malibu Local Coastal Program, which contained significant contributions by Dr. Jon Allen, Staff Ecologist.

Exhibit 27  
CDP 4-10-040 through 4-10-045  
Dr. Jonna Engel Memorandum

ENVICOM Corporation. October 21, 2009. Comparative Impact Analysis of Potable Water Service Options, Sweet Water Mesa. Letter from Travis Cullen, Chief Operating Officer, ENVICOM Corporation to M. Deanna Christensen, California Coastal Commission.

Nelson, Steven G. July 2007. Biological Constraints Analysis for APN 4453-005-018, Malibu, Unincorporated Los Angeles County, California.

Nelson, Steven G. July 2007. Biological Constraints Analysis for APN 4453-005-037, Malibu, Unincorporated Los Angeles County, California.

Nelson, Steven G. July 2007. Biological Constraints Analysis for APN 4453-005-038, Malibu, Unincorporated Los Angeles County, California.

Nelson, Steven G. July 2007. Biological Constraints Analysis for APN 4453-005-091, Malibu, Unincorporated Los Angeles County, California.

Nelson, Steven G. July 2007. Biological Constraints Analysis for APN 4453-005-092, Malibu, Unincorporated Los Angeles County, California.

Nelson, Steven G. January 2008. Biological Resource Assessment for the Sweetwater Mesa Water Line, Malibu, California.

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The proposed projects are located on the southern flank of the Santa Monica Mountains, bordering the Santa Monica Mountains National Recreation Area, in the central portion of the range. The proposed projects are located east of Malibu Canyon Road, west of Las Flores Canyon Road, and approximately one mile inland from Pacific Coast Highway near the terminus of Sweetwater Mesa Road. The project proposals are for five new single-family residences, ranging in size from 7,220 to 12,785 square feet, on five separate parcels - Vera (APN 4453-005-018), Lunch (APN 4453-005-037), Morleigh (APN 4453-005-091), Mulryan (APN 4453-005-092), and Ronan (APN 4453-005-038); a common 6,000 linear foot access road; three Fire Department staging areas; placement and contour grading of excess excavated material, and a municipal water line extending approximately 7,800 linear feet from Costa Del Sol Way to the north to the subject properties (Figure 1).

The five contiguous properties comprising the 'subject properties' total 156 acres and are situated along a significant ridgeline in the Santa Monica Mountains ranging in elevation from 600 to 1,050 feet. The five single-family residences are proposed to be placed more or less linearly along the ridgeline (Figure 1). The ridgeline separates the Sweetwater and Carbon Canyon watersheds, which empty into the ocean approximately one mile south of the project site. We describe the ridgeline as "significant" because it is an important biogeographic feature in the Santa Monica Mountains. The ridgeline separates two major watersheds that have unique physical and ecological attributes including distinct topographic characteristics, microclimates,

water budgets, and plant and animal communities. The ridgeline itself is characterized by thin topsoil, narrow benches, sheer cliffs, and rocky outcrops that limit the vegetation it can support to species adapted to this relatively harsh environment.

The subject properties occur within a largely undisturbed block of wilderness approximately 2,800 acres in size; the area has no paved roads and a minimal amount of dirt roads. About half of this 2,800 acre area is public parkland, most of which is located within the Malibu Creek State Park and the remainder of which consists of Piuma Ridge Park, which is owned by the Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority. The subject properties are immediately adjacent to Malibu Creek State Park to the west, 0.25 miles from Piuma Ridge Park to the north-northwest, near the center of the 2,800 acre block of largely undisturbed wilderness (Figure 1).

The subject properties are located within a habitat linkage area, identified in the National Park Service's *Santa Monica Mountains National Area Land Protection Plan*<sup>1</sup>, that connects Malibu Creek State Park with Cold Creek Canyon Preserve and surroundings to the northeast. The plan defines habitat linkages as "areas which serve to connect two or more core areas and are of sufficient habitat value such that they provide substantial native vegetation cover or, optimally, serve as foraging or breeding grounds for wildlife". As pointed out in the *Designation of ESHA in the Santa Monica Mountains* memorandum (Dixon 2003):

*Connectivity among habitats within an ecosystem and connectivity among ecosystems is very important for the preservation of species and ecosystem integrity. In a recent statewide report, the California Resources Agency identified wildlife corridors and habitat connectivity as the top conservation priority*<sup>2</sup>.

The purpose of our memorandum is to discuss the setting of the subject properties within the Santa Monica Mountains; to identify and discuss the habitats, ecosystem functions (e.g. habitat linkages, wildlife corridors), and environmentally sensitive habitat areas (ESHAs) supported by the subject properties; and to analyze potential biological impacts of the proposed projects. To accomplish this we visited the subject properties on April 23, 2009, reviewed the documents listed above (see "Documents Reviewed"), peer reviewed literature, aerial photographs, and National Park Service vegetation mapping, and engaged in discussions with local experts in several fields, including botany and wildlife biology.

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<sup>1</sup> Kamradt, D. et. al. 1998. *Santa Monica Mountains National Area Land Protection Plan*. U.S. Department of Interior, National Park Service.

<sup>2</sup> Dixon, J. 2003. *Designation of ESHA in the Santa Monica Mountains*. A memorandum to CCC South Central Coast District staff dated March 25, 2003. This memorandum includes an edited version of the ESHA findings from the September 29, 2002 Coastal Commission staff report for the City of Malibu Local Coastal Program, which contained significant contributions by Dr. Jon Allen, Staff Ecologist.

## Santa Monica Mountains

The Santa Monica Mountains are the westernmost and lowest of the transverse ranges in southern California; they are also the most accessible and largest piece of natural open space adjacent to the western Los Angeles Basin. They have the greatest geological diversity of all major mountain ranges within the transverse range province and, according to the National Park Service, the Santa Monica Mountains have 40 separate watersheds and over 170 major streams with 49 coastal outlets<sup>3</sup>. The Santa Monica Mountains are biologically and geologically significant as the crossroads between northern and southern California coastal vegetation<sup>4</sup>.

The Santa Monica Mountains comprise the largest, most pristine, and ecologically complex example of a Mediterranean ecosystem in coastal southern California. The National Park Service states that:

*Mapping of global environments has shown that Mediterranean-type ecosystems are among the smallest and rarest on earth. Five such locations occur on the planet, and each has experienced intensive human occupation due to the comfortable climactic conditions. As a result, only about 18 percent of this ecosystem remains undisturbed, making it the world's least undisturbed and potentially rarest ecosystem type<sup>5</sup>.*

And as pointed out in Dixon (2003):

*.....within the Santa Monica Mountains, this ecosystem is remarkably intact despite the fact that it is closely surrounded by some 17 million people. For example, the 150,000 acres of the Santa Monica Mountains National Recreation Area, which encompasses most of the Santa Monica Mountains, was estimated to be 90 percent free of development in 2000. Therefore, this relatively pristine area is both large and mostly unfragmented, which fulfills a fundamental tenet of conservation biology. The need for large contiguous areas of natural habitat in order to maintain critical ecological processes has been emphasized by many conservation biologists<sup>6</sup>.*

Fire history, soil differences, a variety of moisture regimes, and topography in the Santa Monica Mountains all combine to create complex patterns of chaparral, coastal sage scrub, woodland, and grassland vegetation. This mosaic of habitats supports over 1,000 plant species and provides habitat for approximately 500 bird, mammal, reptile, and amphibian species including large mammals like bobcats, mountain lions, mule

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<sup>3</sup> National Park Service. 2000. Draft general management plan & environmental impact statement. Santa Monica Mountains National Recreation Area – California.

<sup>4</sup> CDFG (Keeler-Wolf, T.) and CNPS (Evens, J.). January 2006. Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties, California. Report submitted to National Park Service.

<sup>5</sup> Kamradt, D. et. al. (1998) op. cit.

<sup>6</sup> Dixon, J. (2003) op. cit.

deer, and badgers, as well as populations of rare species like the southern steelhead trout and coastal California gnatcatcher<sup>7</sup>. The Santa Monica Mountains are located within the Southwest Eco-region of California that contains the highest number of endangered plant species in the United States except for Hawaii<sup>8</sup>.

The Santa Monica Mountains are characterized by numerous natural phenomena including floods, landslides, and fires. While floods and landslides pose serious threats to residents within the Santa Monica Mountains, wildfires are the most formidable and ominous. The Santa Monica Mountains have experienced many aggressive and devastating fires due to the unique relationship between climate, topography, habitat type, fuel load, and “Santa Ana” wind conditions endemic to Southern California. This region burns with relative frequency.

The site of the subject project itself has a daunting fire history that includes the following seven fires between 1925 and 2007; Las Flores (October 20, 1942), Hume (December 27, 1956), Wright (September 25, 1970), Piuma (October 14, 1985), Old Topanga (November 2, 1993), Calabasas (October 21, 1996), and Canyon (October 21, 2007) fires. In an effort to include consideration of natural processes important to ecosystem dynamics in land use planning efforts and development plans, the National Park Service has developed hazard zone maps<sup>9</sup>. The subject properties are located within a National Park Service hazard area that is designated as a “Very High Fire Hazard Severity Zone” (Figure 2). The most recent fire that impacted the subject properties was the fall 2007 Canyon Fire. The cause of this fire is attributed to the conditions just listed; Santa Ana winds, dry conditions, fuel load, and steep and rugged topography.

### **Biological Resources of the Subject Properties**

During our site visit on April 23, 2009 we observed the habitat along the access road and visited each of the proposed home locations. In addition to our site visit we reviewed the applicant’s biological assessments for each parcel, aerial photos of the subject properties, and the National Park Service vegetation map covering the subject properties.

The applicants submitted Biological Assessments (see Steven G. Nelson’s “Biological Constraints Analysis” for each parcel under ‘documents reviewed’ above) for their respective developments that address the habitats present on each project site. The reports identify three vegetation communities on the project sites: mixed chaparral, non-native grassland, and ruderal vegetation. The reports also state that several widely-scattered coast live oak trees are present on several of the properties, but note that they do not form woodland communities. The mapped ruderal and non-native grassland communities are primarily situated in the areas of the existing access route and

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<sup>7</sup> National Park Service ([www.nps.gov](http://www.nps.gov)), Santa Monica Mountains. Last updated June 18, 2009. *Nature & Science*. U.S. Department of Interior.

<sup>8</sup> Dobson, A. P., Rodriguez, J. P. Roberts, W. M. and Wilcove, D.S. 1997. Geographic distribution of endangered species in the United States. *Science*, Vol. 275: 550-553.

<sup>9</sup> Kamradt, D. et. al. 1998. op. cit.

proposed development areas that have been traversed for site reconnaissance and geologic testing. In addition, a large area on the Mulryan and Lunch properties is identified as non-native grassland and is characterized as a mesa. The biological consultant delineates the disturbed non-native grassland mesa as a large approximately 245,000 square foot (5.6 acres) area on the Mulryan and Lunch properties. The remainder and vast majority of on-site vegetation is mapped as mixed chaparral. The proposed off-site water line alignment is identified as consisting of mixed chaparral, ruderal, and non-native plant communities.

In 2001 the National Park Service undertook a high resolution vegetation mapping effort in the Santa Monica Mountains<sup>10</sup> (Figures 3a & 3b). The National Park Service mapping effort involved fine scale mapping of plant community species alliances. Their mapping methodology entailed the use of aerial imagery in combination with ground truthing<sup>11</sup>. The National Park Service vegetation mapping was completed in 2007 and covers the entire subject properties. The National Park Service map of the subject properties shows the area to be dominated by native chaparral habitats intermixed with coastal sage scrub habitats and an oak woodland habitat.

Chaparral is characterized by tall, deep-rooted evergreen shrubs (over 100 species may be found in chaparral<sup>12</sup>) with hard, waxy leaves that minimize water loss during drought conditions. The root systems of chaparral plants extend far below the surface and may penetrate the bedrock below<sup>13</sup>, thus aiding in erosion control, especially on steep slopes<sup>14</sup>. In addition, soil erosion from precipitation is greatly reduced by interception of rain water by chaparral leaves and foliage and greater rain water soil infiltration under the chaparral canopy. Chaparral is a fire adapted habitat; fire serves to rejuvenate senescing chaparral communities and many chaparral species require fire in order to germinate. The subject properties support several locally common but regionally restricted chaparral species including greenbark (*Ceanothus spinosus*) and big pod ceanothus (*Ceanothus megacarpus*)<sup>15</sup>. The National Park Service mapped the following chaparral community associations on the subject properties:

- laurel sumac (*Malosma laurina*) shrubland association

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<sup>10</sup> CDFG (Keeler-Wolf, T.) and CNPS (Evens, J.). January 2006. op. cit.

<sup>11</sup> Aerial Information Systems (AIS), Environmental Systems Research Institute (ESRI), California Department of Fish and Game, California Native Plant Society and National Park Service. 2007. Preliminary Spatial Vegetation Data of Santa Monica Mountains National Recreation Area and Environs. USGS-NPS Vegetation Mapping Program, Santa Monica Mountains National Recreation Area, Thousand Oaks, CA.

<sup>12</sup> Keely, J.E. and S.C. Keeley. *Chaparral*. Pp. 166-207 in M.G. Barbour and W.D. Billings, eds. North American Terrestrial Vegetation. New York, Cambridge University Press.

<sup>13</sup> Helmers, H., J.S. Horton, G. Juhren and J. O'Keefe. 1955. *Root systems of some chaparral plants in southern California*. Ecology, Vol. 36, No. 4:667-678. Kummerow, J. and W. Jow. 1977. *Root systems of chaparral shrubs*. Oecologia, Vol. 29:163-177.

<sup>14</sup> Radtke, K. 1983. *Living more safely in the chaparral-urban interface*. General Technical Report PSW-67. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Berkeley, California. 51 pp.

<sup>15</sup> CDFG (Keeler-Wolf, T.) and CNPS (Evens, J.). January 2006. op. cit.

- greenbark ceanothus (*Ceanothus spinosus*) shrubland association
- big pod ceanothus (*Ceanothus megacarpus*) shrubland association
- chamise (*Adenostoma fasciculatum*) shrubland association
- mountain mahogany (*Cercocarpus betuloides*) shrubland association
- greenbark ceanothus, big pod ceanothus, mountain mahogany (*Ceanothus spinosus*, *Ceanothus megacarpus*, *Cercocarpus betuloides*) shrubland superalliance

Coastal sage scrub is a generic vegetation type that includes several subtypes<sup>16</sup>. It is dominated by soft-leaved, generally low-growing aromatic shrubs that die back and drop their leaves in response to drought. Stands of coastal sage scrub are much more open than chaparral and contain a greater admixture of herbaceous species. Coastal sage scrub is generally restricted to drier sites, such as low foothills, south-facing slopes, and shallow soils at higher elevations. The subject properties support patches of coastal sage scrub on the lower slopes of the ridgeline with fingers that penetrate larger chaparral areas. The National Park Service mapped the following coastal sage scrub community associations on the subject properties:

- bush mallow (*Malacothamnus fasciculatus*) shrubland
- purple sage (*Salvia leucophylla*) coastal sage scrub

Chaparral and coastal sage scrub habitats are often interspersed such that many of the same species are found in both habitats. Under some circumstances, coastal sage scrub is successional to chaparral, meaning that after disturbances such as landslides or fires, a site may first be covered by coastal sage scrub, which is then replaced with chaparral over long periods of time<sup>17</sup>.

Coast live oak woodland is a rare habitat type that occurs mostly on north slopes, shaded ravines, and canyon bottoms. Coast live oak woodland is more tolerant of salt-laden fog than other oaks and is generally found nearer the coast<sup>18</sup>. Coast live oak also occurs as a riparian corridor species within the Santa Monica Mountains. The National Park Service mapped one patch of live oak woodland on the subject properties:

- Coast live oak (*Quercus agrifolia*) woodland

In addition to native plant communities, the National Park Service mapped two areas on the subject properties as 'native and non-native herbaceous superalliance'. These include the mesa located on the Mulryan and Lunch parcels and a continuous area along and adjacent to the access road on the Morleigh parcel.

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<sup>16</sup> Dixon, J. (2003) op. cit.

<sup>17</sup> Ibid.

<sup>18</sup> National Park Service. 2000. op. cit.

## Access Road

In 2004, the Commission approved Coastal Development Permit No. 4-01-108, authorizing Jean Ross, LLC, to improve and expand an existing 1,750 foot long, 10 foot wide jeep trail from Sweetwater Mesa Road up to the Lunch parcel to provide access for geologic testing purposes. The approved pilot access road traversed across two of the subject parcels (Mulryan and Vera). A special condition of the Commission's permit approval required re-vegetation of the graded and disturbed slopes of the pilot road upon completion of final grading. The road was rough graded pursuant to the permit in 2006. However, it does not appear that the pilot road was ever re-vegetated to its 10 foot width as required by the permit.

When evaluating baseline conditions for a site, Commission staff must consider the condition of the site prior to any unpermitted development. Similarly, if authorization for development was expressly made temporary, with a requirement that, at some specified time, the site be returned to its pre-development natural state, and that time has passed, Commission staff must view the site as if it had been returned to that state. Upon review of historic aerial photographs, it is evident that the approved pilot access road generally followed an existing trail up to the mesa. That trail, traversing up to the mesa area across two of the subject parcels (Mulryan and Vera), appears relatively unchanged in aerial photos dating back to 1975, which is prior to the effective date of the Coastal Act. According to the historic aerial photographs, the baseline conditions appear to consist of a trail approximately 10 feet wide flanked on either side by undisturbed native chaparral vegetation.

Currently, there is an access road (a continuation of the access road described above) north of the mesa area, delineated by the applicant's biological consultant as non-native grassland. The National Park Service mapped a portion of this section of the road and area along the road, on the Morleigh parcel, as native and non-native herbaceous superalliance. However, review of permit records and aerial photographs dating from 1975 to present, indicate that the road is not permitted, and was not authorized by Coastal Development Permit No. 4-01-108. The road first appears in aerial photos from 2001, and through to the present. Prior to that, that area had been undisturbed and part of the larger area of native chaparral vegetation. No road or trail or associated disturbed areas are evident in the area north of the historic mesa from 1975 through 2000. Commission staff must consider the condition of the site prior to any unpermitted development as the baseline. As such, we consider the area of unpermitted disturbance north of the historic mesa to be undisturbed native chaparral vegetation. The remaining analysis treats those areas as such, except where expressly stated otherwise.

Figure 3a illustrates vegetation communities along the proposed access road as mapped by the National Park Service.



## Vera Parcel

The first home proposed along the lower ridge is located within the Vera parcel. The home is sited along the edge of an overlook that is characterized by patches of vegetation interspersed with rocky outcrops. The vegetation in the area where the home is proposed consists of a mixture of both chaparral and coastal sage scrub species. A few coast live oaks are scattered around the home site. The dominant chaparral shrubs are laurel sumac and chamise. Both the laurel sumac and the chamise are growing up from root crowns of shrubs that were burned in the fall 2007 Canyon fire. Intermixed with these shrubs are coastal sage scrub plants including California sage brush (*Artemisia californica*), ashleaf buckwheat (*Eriogonum cinereum*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), giant rye-grass (*Leymus condensatus*), deerweed (*Lotus scoparius*) and wild cucumber (*Marah macrocarpus*). Interspersed among the chaparral and sage scrub species are native wildflowers including Catalina mariposa lily (*Calochortus catalinae*), a California Native Plant Society List 4 species, wild hyacinth (*Dichelostemma capitatum*), wild morning glory (*Calystegia macrostegia*), Indian pink (*Silene laciniata*) and non-native European annual grass species including ripgut brome (*Bromus diandrus*), foxtail chess (*Bromus madritensis*), wild oat (*Avena sp.*) and black (*Brassica nigra*) and Mediterranean (*Hirschfeldia incana*) mustard.

The National Park Service vegetation map (Figure 3a) identifies laurel sumac shrubland as the dominant chaparral alliance on the Vera parcel. In fact, the National Park Service identifies laurel sumac shrubland along the entire length of the ridgeline and access road spanning the five parcels except for the mesa and a section between the Morleigh and Mulryan proposed home sites that are mapped as native and non-native herbaceous superalliance mapping unit. The proposed Vera home site, the fuel modification zone, and beyond are all mapped as laurel sumac shrubland. Although not a fire follower per se, laurel sumac benefits greatly from fire. It resprouts readily and quickly forms cover for wildlife (pers. comm., Tarja Sagar, National Park Service Botanist, January 6, 2011). Greenbark ceanothus and bush mallow shrubland are mapped west of the proposed home site. Bush mallow is a known fire follower (pers. comm., Tarja Sagar, National Park Service Botanist, January 6, 2011).

Based on our aerial photo analysis, site visit observations, and the National Park Service vegetation map, we conclude that the entire Vera parcel, including the areas mapped by the applicant's biologist as non-native grassland in the biological assessment<sup>19</sup>, are nearly pristine to pristine native habitats.

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<sup>19</sup> The areas mapped as non-native grassland by the applicant's biological consultant are situated along the existing access road and near the proposed development area; these areas have been disturbed by traffic for site reconnaissance and geologic testing but historically consisted of undisturbed native habitat.

## Lunch Parcel

The second proposed home along the ridge is sited on the eastern side of the access road on the Lunch parcel within the area referred to as the mesa. The proposed Lunch home development footprint straddles the Lunch and Mulryan parcel line, with the house located in the Lunch parcel and the fuel modification zone extending into the Mulryan parcel. The proposed house is sited close to the steep canyon walls that drop into Carbon Canyon. The vegetation in the development footprint for the home is dominated by non-native species including ripgut brome, foxtail chess, wild oat and black and Mediterranean mustard. Native bunch grass (*Nassella lepida*) and giant rye-grass are interspersed among the non-natives. In addition, this area of the mesa supports a number of coastal sage scrub species including California sage brush, ashyleaf buckwheat, sawtooth goldenbush (*Hazardia squarrosa*), sugar bush (*Rhus ovata*), black sage, giant rye-grass, deerweed, and wild morning glory. A spattering of native wildflowers including Catalina mariposa lily, blue-eyed grass (*Sisyrinchium bellum*), large flowered phacelia (*Phacelia grandiflora*), prickly popcorn flower (*Cryptantha muricata*) and wild hyacinth are found throughout the sage scrub species. Several laurel sumac shrubs are scattered around the perimeter of the home site. The vegetation on the eastern slopes bordering the home site is chaparral characterized by laurel sumac and chamise recruits and root-crown re-sprouts following the fall 2007 Canyon fire.

Based on the National Park Service vegetation map (Figure 3a), the proposed Lunch home development footprint is located within the native and non-native herbaceous superalliance mapping unit that corresponds with the mesa area. The habitat in the fuel modification zone is mapped as native and non-native herbaceous superalliance with a small pocket of laurel sumac shrubland west of the proposed home and greenbark ceanothus, bigpod ceanothus, mountain mahogany shrubland superalliance and laurel sumac shrubland east of the proposed home. North of the proposed home the parcel is mapped with three distinct vegetation alliances including greenbark ceanothus, bigpod ceanothus, mountain mahogany shrubland superalliance, chamise shrubland, and mountain mahogany shrubland.

Based on our aerial photo analysis, site visit observations, and the National Park Service vegetation map, we conclude that the Lunch parcel is characterized by nearly pristine to pristine native habitat except for the historic mesa area as described below.

## Morleigh Parcel

The third home proposed along the ridgeline is sited on the western side of the access road on the Morleigh parcel half-way within a disturbed grassy bowl that supports scattered coastal sage scrub and chaparral species. The vegetation in the bowl is dominated by non-native species including ripgut brome, foxtail chess, wild oats, and mustard. Non-native annual grasses often get a jump start on native species after a fire if they have been present in an area. Non-natives are present along the access road and the proposed home sites, which have experienced a lot of traffic. Scattered among

the non-natives are two species of native bunch grass (*Nassella pulchra* and *N. lepida*) and giant rye-grass.

The coastal sage scrub and chaparral species scattered throughout the disturbed grassy bowl include; California sage brush, ashleaf buckwheat, bush mallow, sawtooth goldenbush, chamise, big pod ceanothus, and laurel sumac. Catalina Mariposa lily and wild morning glory also occur at this site. Just south of the proposed home there is a large patch of chamise recruits and vegetative growth sprouting from the root crowns of chamise that burned in the fall 2007 Canyon fire. There is also a considerable amount of bush mallow, a known fire follower, in the area of the proposed home site.

The disturbed bowl area and access road first appear in aerial photos from 2001 to the present, as discussed above (see "Access Road" section). Prior to 2001, the areas that are currently occupied by the access road and the disturbed bowl had been undisturbed and part of the larger native vegetation. As indicated above, there has been no coastal permit authorization for disturbance to these areas. We therefore consider the baseline in this area to be undisturbed native habitat.

According to the National Park Service vegetation map (Figure 3a), the proposed Morleigh home is sited within laurel sumac shrubland and the native and non-native herbaceous superalliance mapping unit. The fuel modification zone is mapped as native and non-native herbaceous superalliance where it intercepts the access road area and laurel sumac shrubland west of the proposed home site. The remainder of the Morleigh parcel (west and south of the property footprint) is dominated by laurel sumac shrubland with pockets of greenbark ceanothus shrubland to the west and chamise shrubland to the east.

Based on our aerial photo analysis, site visit observations, and the National Park Service vegetation map, we conclude that the Morleigh parcel consists entirely of nearly pristine to pristine native habitat.

### **Mulryan Parcel**

The fourth home proposed along the upper ridgeline is the Mulryan home, which is located between the proposed Morleigh and Ronan home sites within what is currently the Morleigh parcel. The applicant is proposing a lot line adjustment so that the Mulryan home site could be located within the existing Morleigh parcel and outside mapped landslide areas. The proposed Mulryan home site is located on a flat plateau that supports a nearly pure stand of chamise chaparral. The chamise on the plateau consists of 1 to 2 foot high recruits and vegetative growth from root crowns of chamise burned in the fall 2007 Canyon fire. Surrounding the plateau is laurel sumac chaparral; the laurel sumac consists almost entirely of vegetative growth springing from root crowns of laurel sumac that also burned in the fall 2007 Canyon fire. A number of coastal sage scrub and chaparral species are scattered throughout the chamise and laurel sumac including giant rye-grass, bush mallow, deerweed, sawtooth goldenbush, rock-rose (*Helianthemum scoparium*) and yucca (*Yucca wipplei*). *Phacelia* and wild

morning glory as well as non-native annual grasses and mustard are also growing amongst the chamise and laurel sumac.

According to the National Park Service vegetation map (Figure 3a) the proposed Mulryan home is located within laurel sumac shrubland. The fuel modification zone encompasses chamise shrubland to the southeast, native and non-native herbaceous superalliance to the west and southwest, and laurel sumac shrubland to the south and northwest. The dominant vegetation directly to the north of the proposed home development footprint is laurel sumac shrubland. The southern portion of the proposed home development footprint is bordered by pockets of chamise, mountain mahogany, and laurel sumac shrublands. The remainder of the parcel as it is proposed to be reconfigured (to the south and southwest) is dominated by laurel sumac shrubland and fingers of greenbark ceanothus shrubland that extend inward from the western border of the parcel.

Based on our aerial photo analysis, site visit observations, and the National Park Service vegetation map, we conclude that the proposed Mulryan parcel is entirely characterized by nearly pristine to pristine native habitat.

### **Ronan Parcel**

The fifth and final home proposed along the upper ridgeline is located on the Ronan parcel on a knoll that supports a nearly pure stand of chamise chaparral. Surrounding the knoll are rocky slopes that support laurel sumac chaparral that exhibit signs of the fall 2007 Canyon fire such as vegetative growth sprouting from charred branches. Stands of both chamise and greenbark ceanothus chaparral are just north of the home site. In addition to laurel sumac, chamise and greenbark ceanothus, the slopes around the proposed home site includes toyon (*Heteromeles arbutifolia*), mountain mahogany, California brickkelbush (*Brickellia californica*), ashyleaf buckwheat, rye-grass, sawtooth goldenbush, canyon sunflower (*Venegasia carpesioides*) and bush monkey flower (*Mimulus aurantiacus*). Large flowered *phacelia* and prickly popcorn flower, both known fire followers, are scattered as well as forming occasional substantial patches amongst the coastal sage scrub and chaparral shrubs.

According to the National Park Service vegetation map (Figure 3a) the proposed Ronan home is located in laurel sumac shrubland. The fuel modification zone is located in a pocket of coast live oak woodland to the northeast, chamise shrubland to the southeast, and laurel sumac to the south-by-northwest border. The vegetation communities mapped in the fuel modification zone extend out to the parcel boundaries.

Based on our aerial photo analysis, site visit observations, and the National Park Service vegetation map, we conclude that the entire Ronan parcel is characterized by nearly pristine to pristine native habitat.

## Historic Mesa

The existing grassland mesa area of the subject properties is located on the Mulryan and Lunch parcels. In addition to the proposed Lunch residence, the applicants propose to site a portion of the proposed access road and a 20,000 square foot Fire Department staging area in the mesa area. In addition, the applicants propose to place and contour grade 13,950 cubic yards of excess material, to a maximum depth of five feet and a maximum slope of 3:1 (H:V), upon a 1.88 acre area of the mesa west of the proposed access road.

Upon review of aerial photographs dating from 1975 to present, the mesa area appears consistently as grassland habitat that is distinct from the surrounding mixed chaparral. However, the size of the mesa area had historically been smaller than is presently delineated by the applicant's biological consultant. Aerial photos from 1975 through 2003 indicate that the mesa area had been relatively constant in size, occupying the south half of the area the applicant's consultant has delineated. The historic mesa area that pre-dates the effective date of the Coastal Act is estimated to be approximately 3.0 acres in size. Starting in 2004, aerial photographs show additional disturbance in the mesa area. However, there is no record of that disturbance being authorized through a coastal development permit. Coastal Development Permit No. 4-01-108, associated with the pilot access road, did not permit development within or beyond the historic mesa area. As such, the additional disturbance that occurred in the mesa area beginning in 2004 is considered unpermitted. Therefore, for purposes of determining ESHA and analyzing impacts, the mesa area is considered to be approximately 3.0 acres in size, and it is treated as surrounded by undisturbed native chaparral vegetation (Figure 4).

The applicant's biological consultant and the National Park Service map the mesa area as non-native grassland and native and non-native herbaceous superalliance, respectively. During our site visit we found the mesa area to be dominated by non-native annual European grasses including riggut brome, foxtail chess, and wild oat as well as the non-native black and Mediterranean mustards. In addition we observed the highly invasive Geraldton Spurge (*Euphorbia terracina*) that has become a serious problem in southern California coastal habitats. Native bunch grass (*N. lepida*) and giant rye-grass are interspersed among the non-natives and this area of the mesa also supports scattered coastal sage scrub species including California sage brush, ashleaf buckwheat, sawtooth golden bush, black sage, giant rye-grass, and deerweed. A spattering of native wildflowers including Catalina Mariposa lily, blue-eyed grass, white popcorn flower, and wild morning glory are found throughout the coastal sage scrub species.

While the mesa does support scattered native species, we found that non-natives currently dominate the area. The applicants assert that the mesa area has been disturbed consistently since the late 1920's and was likely used for grazing livestock. However, there is no evidence available to confirm that. It is also possible that the distinct grassland character of the mesa is due to the underlying landslide geology.

Given that the history of this area is a mystery and that determining the species character of the area from aerial photos is not possible, we can not know whether it ever supported pristine native grassland. Based on available information (aerial photos and current conditions) we find that this area on the subject properties is characterized by a disturbed, non-native annual grassland that supports scattered native species.

## **Water line**

In addition to the access road and five single-family residences, the applicant's have proposed a water line that begins at Costa Del Sol Way in the north and extends south approximately 7,800 linear feet to its end point at the proposed Vera home site (Figure 4b). During our site visit we did not visit the proposed water line alignment. According to the water line Biological Assessment, vegetation along the proposed water line and associated maintenance road is dominated by mixed chaparral, with some non-native grassland and ruderal species present. For purposes of analysis, we relied more heavily on Envicom Corporation's report, "*Comparative Impact Analysis of Potable Water Service Options; Sweet Water Mesa*" because it provides higher resolution imagery and more detailed analysis of the plant communities along and adjacent to the proposed water line alignment. We also reviewed the National Park Service vegetation mapping along the water line alignment. To describe the proposed water line, it is divided into four parts.

Section 1 of the proposed water line runs for approximately 1,256 linear feet along the paved Costa Del Sol Way and approximately 1,416 linear feet along an unpaved, dirt roadway. Envicom describes the vegetation along these roadways as non-native ornamental and ruderal species with pockets of chaparral communities containing laurel sumac, greenbark ceanothus, and chamise shrubland. However, according to permit records and aerial photographs dating back to 1975, the existing unpaved dirt road that the proposed water line follows for 1,416 feet just south of Costa Del Sol Way is unpermitted and cannot be considered the baseline ecological condition for purposes of this analysis. Prior to the unpermitted grading of the road, the area had been undisturbed native chaparral vegetation, similar to that of the surrounding area, based on aerial photographs. As such, the proposal to utilize the existing 1,416 foot dirt road to install the water line and access the line for maintenance must be considered a new impact for purposes of analyzing the biological impacts of the proposal. We estimate that this stretch of the water line would result in approximately 0.31 acres of permanent impacts to native chaparral vegetation.

According to Envicom, Section 2 of the proposed water line is sited along west facing slopes that support native habitat dominated by laurel sumac and chamise shrubland. Envicom states that other species including mountain mahogany, ashy-leaf buckwheat and giant rye-grass are present at lower cover. They estimate that the chaparral in the area contains an average of 10 to 25% non-native grasses and ruderal species. This work proposed for this section of water line entails construction of a 10 foot wide unpaved maintenance road to support the water line. The road and water line will extend south approximately 990 feet. Envicom estimates that 0.43 acres of native vegetative will be permanently impacted in this section.

Envicom states that Section 3 of the proposed water line would “be aligned and buried beneath undeveloped, naturally vegetated terrain for 903 linear feet”. Installation of the water line in this area would involve disturbance of a 10 foot wide swath of native vegetation similar to that found in Section 2. Envicom estimates that approximately 0.21 acres of native vegetation would be impacted. They describe the impact as temporary because the applicants are proposing to fully restore the vegetation in this section of water line.

Section 4 of the proposed water line would be installed entirely within the proposed access road and would terminate at the Vera property driveway.

We find that both the Biological Assessment and the Envicom water line alignment vegetation descriptions concur more or less with the National Park Service vegetation mapping of this area. In Section 1, the National Park Service maps areas along the paved and unpaved road as urban/disturbed or built-up surrounded by patches of laurel sumac, greenbark ceanothus, and mountain mahogany shrubland. The National Park Service map of the habitats within and along Section 2 and 3 of the water line alignment is dominated by laurel sumac shrubland that is interspersed with patches of chamise, greenbark ceanothus, and greenback ceanothus, big pod ceanothus and mountain mahogany superalliance shrublands.

Based on our aerial photo analysis, the Biological Assessment and the Envicom report, and the National Park Service vegetation map, we conclude that Section 4 and a portion of Section 1 of the water line alignment occurs within the disturbed footprint of paved roadways or in areas proposed to become paved roadways and that Sections 2, 3, and a portion of Section 1 occur in nearly pristine to pristine native habitat.

### **Sensitive Species**

The chaparral, sage scrub, and oak woodland communities present at the subject properties provide important native habitat suitable to support sensitive species. For instance, we observed Catalina Mariposa Lily, a California Native Plant Society List 4 species at several of the home sites. Several other sensitive plant species are known to occur in the chaparral of the Santa Monica Mountains area including the Santa Susana tarplant (*Hemizonia minthornii*), Lyon’s pentachaeta (*Pentachaeta lyonii*), and Braunton’s milk vetch (*Astragalus brauntonii*)<sup>20</sup>. A number of sensitive animal species are also known to occur in chaparral in the area including the Santa Monica shieldback katydid (*Neduba longipennis*), western spadefoot toad (*Scaphiopus hammondi*), silvery legless lizard (*Anniella pulchra pulchra*), San Bernardino ring-neck snake (*Diadophis punctatus modestus*), San Diego mountain kingsnake (*Lampropeltis zonata pulchra*), coast patch-nosed snake (*Salvadora hexalepis*), sharp-shinned hawk (*Accipiter striatus*), southern California rufous-crowned sparrow (*Aimophila ruficeps\_ruficeps*),

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<sup>20</sup> Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.

Bell's sage sparrow (*Amphispiza belli*), yellow warbler (*Dendroica petechia brewsteri*), pallid bat (*Antrozous pallidus*), long-legged myotis bat (*Myotis volans*), western mastiff bat (*Eumops perotis*), and San Diego desert woodrat (*Neotoma lepida intermedia*)<sup>21</sup>.

Biological surveys appropriate for detecting sensitive species have not been conducted to date. The biological information contained in the Biological Assessments is incomplete. We know that data collection for the Biological Assessments occurred on two days (May 10, 2001 and June 1, 2007) but the reports provide no information regarding survey methodology. In order to adequately examine the subject properties for sensitive plants and animals, surveys employing specified protocol standards are necessary.

### **Wildlife Corridors/ Habitat Linkages**

Wildlife corridors facilitate wildlife movement and migration by creating links between isolated or fragmented habitats. Traditionally, ecologists have defined corridors as a "linear habitat, embedded in a dissimilar matrix, that connects two or more larger blocks of habitat and that is proposed for conservation on the grounds that it will enhance or maintain the viability of specific wildlife populations in the habitat blocks"<sup>22</sup>.

The value of a corridor is measured by the core habitats that it connects. In most urban areas, habitat is not connected and therefore, fragmented, making species more vulnerable to population size fluctuations (increases and declines), catastrophic events, introduced species, pathogenic outbreaks, and overall loss of genetic diversity. Wildlife corridors enable species to travel between habitats, or migrate to new habitats, thereby increasing the ability for populations to sustain themselves. A significant threat of urbanization is the reduction in the range of large predators; wildlife corridors can provide valuable linkages in large predator ranges.

The Santa Monica Mountains, which are surrounded by development, fall within the Santa Monica Mountains Conservancy zone, which covers an area from the edge of the Mojave Desert to the Pacific Ocean. In addition to the Santa Monica Mountains, the zone includes the Simi Hills, the Verdugo Mountains, and significant portions of the Santa Susana and San Gabriel Mountains. This rich ecosystem is supported by a tenuous network of cross-freeway habitat linkages and wildlife corridors that keep the various habitats and wildlife ranges biologically inter-connected. Population analyses show that without these movement corridors, all of the mountain ranges in the Santa Monica Mountains Conservancy zone, except the San Gabriel Mountains, contain insufficient habitat area to support larger mammals<sup>23</sup>.

The subject properties are known to support wildlife corridors and a mapped habitat linkage area. For example, since 2002 the National Park Service has been studying the

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<sup>21</sup> Ibid.

<sup>22</sup> Beier, P. and R. F. Noss. 1998. *Do Habitat Corridors Provide Connectivity?* Conservation Biology, Vol. 12, No. 6: 1241-1242.

<sup>23</sup> Santa Monica Mountains Conservancy. 2007. Plants & Wildlife. [www.lamountains.com](http://www.lamountains.com)



behavior and ecology of mountain lions in the Santa Monica Mountains through the use of GPS radio-collars and they have produced mountain lion home range maps<sup>24</sup> (Figure 5). According to Jeff Sikich, National Park Service Wildlife Biologist, seven different mountain lions have been identified that use the proposed subject properties. The seven lions have all been located within 1500 feet of the five proposed single-family residences and some of them have been located within the fuel modification zones<sup>25</sup>. In email correspondence, Mr. Sikich stated that “We documented our first lion (P01) passing through this area just 2 months after we captured him in July 2002. The latest lion to use this area was P14, he passed through just the other day on January 18th<sup>26</sup>”. Mr. Sikich believes it is likely that un-collared lions also use the area. The National Park Service recently began tracking bobcats and has radio-collared cats in the Point Mugu and Los Virgenes areas. Based on local knowledge about dietary needs, habitat preferences, and range, it is presumed that bobcats also frequent the subject properties<sup>27</sup>. In addition, the subject properties fall between Malibu Canyon State Park (classified by National Park Service as a protected core habitat area) and Cold Creek Canyon Preserve in an important habitat linkage area identified by the National Park Service.

The subject properties are uniquely sited and suited for linking habitats and providing wildlife corridors. They comprise a 156 acre area of undeveloped, unfragmented, nearly pristine to pristine chaparral and coastal sage scrub habitat that itself is imbedded in a larger (2,800 acres) block of undeveloped land that also supports unfragmented, pristine habitat (Figure 1). The subject properties span a significant ridgeline that links the Sweetwater and Carbon Canyon watersheds. And the habitat on the properties undoubtedly serves as foraging and or breeding grounds for a wide variety of wildlife.

## **ESHA Definition**

Coastal Act sections 30107.5 and 30240 are relevant to the review of Coastal Development Permit Application Nos. 4-10-040, 4-10-041, 4-10-042, 4-10-043, 4-10-044, and 4-10-045.

Section 30107.5 provides the following definition for environmentally sensitive habitat:

*Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.*

Section 30240 requires protection of environmentally sensitive habitat and specifies allowable uses within environmentally sensitive habitat:

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<sup>24</sup> Personal communication, Jeff Sikich, National Park Service Wildlife Biologist and project lead for mountain lion tracking program, November 30, 2010.

<sup>25</sup> Email communication, Jeff Sikich, National Park Service Wildlife Biologist and project lead for mountain lion tracking program, January 20, 2011.

<sup>26</sup> Ibid.

<sup>27</sup> Personal communication, Jeff Sikich, National Park Service Wildlife Biologist, November 30, 2010.

*(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

*(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

In addition to the above Coastal Act policies, Los Angeles County's certified Malibu/Santa Monica Mountains Land Use Plan (LUP) provides additional guidance. The LUP ESHA policies include the following:

*P57 Designate the following areas as Environmentally Sensitive Habitat Areas (ESHAs): (a) those shown on the Sensitive Environmental Resources Map (Figure 6), and (b) any undesignated areas which meet the criteria and which are identified through the biotic review process or other means, including those oak woodlands and other areas identified by the Department of Fish and Game as being appropriate for ESHA designation.*

*P68 Environmentally sensitive habitat areas (ESHAs) shall be protected against significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas. Residential use shall not be considered a resource dependent use.*

*Designation of ESHA in the Santa Monica Mountains (Dixon 2003) provides further guidance for determining what constitutes environmentally sensitive habitat in the Santa Monica Mountains:*

*....the Mediterranean Ecosystem in the Santa Mountains is rare, and especially valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. Therefore, areas of undeveloped native habitat in the Santa Monica Mountains that are large and relatively unfragmented may meet the definition of ESHA by virtue of their valuable roles in that ecosystem, regardless of their relative rarity throughout the state.*

The memorandum (Dixon 2003) continues:

*For habitats in the Santa Monica Mountains, particularly coastal sage scrub and chaparral, there are three site-specific tests to determine whether an area is ESHA because of its especially valuable role in the ecosystem. First, is the habitat properly identified, for example as coastal sage scrub or chaparral? The requisite information for this test generally should be provided by a site-specific biological assessment. Second, is the habitat largely undeveloped and otherwise relatively pristine? Third, is the habitat part of a large, contiguous block of*

*relatively pristine native vegetation? This should be documented with an aerial photograph from our mapping unit (with the site delineated) . . . .*

Therefore, areas of undeveloped native habitat in the Santa Monica Mountains that are large and relatively unfragmented meet the definition of an environmentally sensitive habitat area by virtue of their valuable roles in that ecosystem, regardless of their relative rarity throughout the state.

## **ESHA Determination**

The applicant's biological consultant makes an environmentally sensitive habitat (ESHA) determination for the subject properties based on the Coastal Act definition and the aforementioned criteria from the *Designation of ESHA in the Santa Monica Mountains* memorandum (Dixon 2003). First, regarding rarity, he concludes that mixed chaparral and non-native grassland are not rare after consulting the California Department of Fish and Game's California Natural Diversity Database. As stated in *Designation of ESHA in the Santa Monica Mountains* (Dixon 2003), the Santa Monica Mountain's Mediterranean Ecosystem habitats, including chaparral and coastal sage scrub, that are relatively pristine, physically complex, and biologically diverse and that are large and relatively unfragmented are rare. The subject properties are comprised of an integrated mosaic of nearly pristine stands of chaparral, coastal sage scrub, and oak woodland that support hundreds of plant and animal species. The subject properties occur within a 2,800 acre block of unfragmented habitat; there are no paved roads or development in this area. For these reasons we disagree with the applicant's biological consultant and conclude that the subject properties support habitat that is rare. The site may also support sensitive plant and animal species that have not been identified because the appropriate surveys have not been performed.

Second, the applicant's consultant contends that the habitat on the subject properties is not especially valuable because it consists of mixed chaparral that is "fairly uniformly spread over the properties and broken only in limited areas by previous disturbance." We disagree with this conclusion for several reasons. When examined at a higher resolution such as that provided by the National Park Service vegetation mapping and confirmed during our site visit, the subject properties are observed to support a complex and diverse mosaic of numerous chaparral and coastal sage scrub community alliances, as well as an oak woodland habitat, that in turn support high species diversity. We found the habitats on site to be dominated by a diverse array of native species in nearly pristine condition. Finally, the subject properties support important habitat linkages and wildlife corridors that connect the diverse habitats and span the Sweetwater and Carbon Canyon watersheds. For these reasons, we determine that the habitat supported by the subject properties is especially valuable for its ecosystem services.

Lastly, in addition to rarity and ecosystem value, an area must also be easily disturbed or degraded by human activities and developments in order to qualify as an ESHA.

We find that the relatively pristine chaparral, coastal sage scrub, and oak woodland habitats supported by the subject properties could be easily disturbed or degraded by human activities. This is evidenced by the loss of native habitat and the disturbance and introduction of non-native species along the access road, within the mesa, at the proposed home sites, and where geologic testing has occurred.

Based on the rarity, ecosystem value, and vulnerability to disturbance and degradation, we conclude that the entire area comprising the subject properties, with the exception of the historic mesa area and the existing 10 foot wide jeep trail up to it, rises to the level of ESHA. We also conclude that Sections 2, 3 and a portion of Section 1 of the proposed water line alignment rise to the level of ESHA.

### **Potential Impacts Upon Environmentally Sensitive Habitat**

The proposed projects have the potential to negatively impact the subject properties' sensitive habitat (ESHA). Factors that may contribute to the potential loss and degradation of ESHA include direct displacement of the habitat by physical development, fragmentation of the remaining habitat, creation of artificial barriers, introduction of non-native species, increased fire risk, and fuel modification.

Wilcove et al. (1986) state that "Habitat fragmentation has been recognized as the leading factor in species loss, on both a local and global level"<sup>28</sup>. Increasing the number of landscape pieces, decreasing interior habitat area, increasing the extent of habitat edges, and increasing habitat isolation all contribute to habitat fragmentation<sup>29</sup>. Animals with relatively large ranges such as birds and large mammals are often the first to be affected by habitat fragmentation<sup>30</sup>. And plant communities and individual plant species have specific threshold habitat size requirements below which the population will not persist through time (Schaffer 1981)<sup>31</sup>.

It is important to note (Dixon 2003):

*The habitat integrity and connectivity that is still evident within the Santa Monica Mountains is extremely important to maintain, because both theory and experiments over 75 years in ecology confirm that large spatially connected habitats tend to be more stable and have less frequent extinctions than habitats without extended spatial structure. Beyond simply destabilizing the ecosystem, fragmentation and disturbance can even cause unexpected and irreversible*

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<sup>28</sup> Wilcove, D.S., C. H. McLellan, and Dobson, A. P. 1986. *Habitat fragmentation in temperate zones*. In Conservation Biology: The Science of Scarcity and Diversity. pp. 237-256. Edited by M. Soulé. Sinauer Associates, Sunderland, MA, USA.

<sup>29</sup> Li, H., J. F. Franklin, Swanson, F. J. and Spies, T.A. 1993. *Developing alternative forest cutting patterns: A simulation approach*. Landscape Ecology, Vol. 8: 63-75.

<sup>30</sup> Beier, P. 1993. *Determining minimum habitat areas and habitat corridors for cougars*. Conservation Biology, Vol. 7:94-108.

<sup>31</sup> Schaffer, M.L. 1981. Minimum Population Sizes for Species Conservation. BioScience, Vol. 31, No. 2: 131-134.

*changes to new and completely different kinds of ecosystems (habitat conversion)*<sup>32</sup>.

Swenson and Franklin (2000) conducted a study using GIS modeling to project future urban development in the Santa Monica Mountains<sup>33</sup>. They examined the effects that various development patterns could have on different vegetation communities and the spatial pattern and connectivity of the natural habitat. They determined that the pattern and placement of development was critical to the ultimate level of habitat fragmentation. When they simulated development of a few isolated clusters versus development scattered across a landscape, the habitat was significantly less fragmented<sup>34</sup>.

The development proposed in the subject permit applications; access road, five single-family residences and their associated fuel modification, and water line; arranged in a more or less linear alignment, would significantly fragment the habitats between the western and eastern slopes and their respective watersheds. This development would introduce the first paved roads and homes into an otherwise pristine 2,800 acre block of Mediterranean ecosystem habitats thus bisecting the area into two discreet wilderness areas and fragmenting plant community alliances into smaller patches with a concomitant increase in habitat edges (Figure 1).

In addition to fragmenting habitat, the 20 foot wide asphalt access road (that includes Fire Department staging areas, hammerhead turnarounds, retaining walls, drainage improvements, and entry gates), the five single-family residences (including 200 foot radius, four acre, fuel modification zones), placement of excess fill, and water line (that includes a 10 foot maintenance road), along with their associated disturbances such as lighting, noise, human presence, maintenance, etc., may significantly impede plant and animal movement and dispersal. Plants with limited dispersal abilities may be functionally isolated by such barriers while small animals, such as reptiles and rodents, may be separated into distinct populations<sup>35</sup>. Larger animals, while physically capable of crossing such barriers, may avoid doing so instinctively<sup>36</sup>.

Introduction of non-native species is another significant threat posed by development in pristine habitats. New roads in pristine habitat can be an inroad for non-native species and air- and water-borne toxins and lead to increased run-off and general disturbance by human activities<sup>37</sup>. Chaparral is especially vulnerable to edge effects created by roadways because it is slow to recover once disturbed. Even though some off-road

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<sup>32</sup> Dixon, J. (2003) op. cit.

<sup>33</sup> Swenson, J. & J. Franklin. 2000. *The effects of future urban development on habitat fragmentation in the Santa Monica Mountains*. Landscape Ecology, Vol., 15: 713-730.

<sup>34</sup> Ibid.

<sup>35</sup> Quinn, R. D. 1990. *Habitat preferences and distribution of mammals in California chaparral*. Research paper PSW-202. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, Berkeley, CA, USA.

<sup>36</sup> Swenson, J. J. and J. Franklin. 2000. *The effects of future urban development on habitat fragmentation in the Santa Monica Mountains*. Landscape Ecology, Vol. 15: 713-730.

<sup>37</sup> Murphy, D. D. 1988. *Challenges to biological diversity in urban areas*. Pp. 71-76 in Biodiversity, edited by E. O. Wilson. National Academy of Press, Washington, DC, USA.

trails exist in the region, a research study evaluating the spread of invasive species showed that paved roads were far more likely to be invaded by non-native species than those along 4-wheel drive tracks:

*Vehicles can transport non-native seeds into uninfested areas, and clearing land during road construction gives weed seeds a place to become established. Intuitively, it makes sense that improved roads would spread weeds more than primitive roads because the former have more traffic, more exposed soil and more maintenance such as mowing and herbicide treatments, all of which can favor invasive species. Overall, the cover of non-native plants was more than 50% greater in interior sites adjacent to paved roads than in those adjacent to 4-wheel drive tracks. In addition, road improvement changed the number of both exotic and of native species in the interior community study plots: the number of exotic species was more than 50% greater and the number of native species was 30% lower<sup>38</sup>.*

Even though every precaution may be undertaken, the risk of fire is inherently greater when development encroaches into otherwise pristine open space. Sparks from vehicles, careless disposal of cigarettes, unintended waste ignition, are just a few ways development can increase fire risk. Habitat, exposure, and setting are all important considerations for determining fire risk. Upon review of these factors as well as others, the National Park Service identified an area that includes the subject properties as a “Very High Fire Hazard Severity Zone”.

Fuel modification, which can entail vegetation clearing, trimming, and laddering, is required by the California Department of Fire and will significantly impact habitat on the subject properties. The fuel modification necessary for defending homes located along a remote ridgeline characterized by fire prone habitats and sheer slopes exposed to Santa Ana winds is considerable. The fire department is requiring a 200 foot zone of modified habitat around each of the subject project’s proposed homes in order to reduce the threat of fire. This amounts to approximately four acres of significant impacts to the chaparral and coastal sage scrub habitats surrounding each home. As pointed out in Dixon (2003):

*Where native vegetation has been cleared for firebreaks around residences and along ridge tops in the Santa Monica Mountains, exotic grass species dominate. Naturally sparse Mediterranean scrub habitats, such as those in the Santa Monica Mountains, are especially vulnerable to edge effects and exotic invasions<sup>39</sup>.*

Studies have also shown that the effects of fuel modification extend beyond the recommended clearance area. For example, Stalberg (2000) looked at the impacts of fuel clearance on bird communities and found that the number of migrants and

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<sup>38</sup> Gelbard, J. 2003. *Paving roads can increase weed invasions*. Society for Conservation Biology. Published by The American Association for the Advancement of Science on [www.eurekalert.org](http://www.eurekalert.org)

<sup>39</sup> Dixon, J. (2003) op. cit.

chaparral-associated species decreased due to habitat fragmentation while the abundance of urban-associated species increased<sup>40</sup>. Fuel clearance and habitat modification may also disrupt the local ecology in indirect ways. For example, non-native landscaping and intensive irrigation favors the invasive and non-native Argentine ant. This ant forms “super colonies” that can forge more than 650 feet out into surrounding native habitats such as chaparral or coastal sage scrub<sup>41</sup>. The Argentine ant competes with native harvester and carpenter ants displacing them from the habitat. The effect of replacing native ants with Argentine ants reverberates up the food chain; for instance, the main prey of the coast horned lizard (*Phrynosoma coronatum*), a California species of special concern, is native harvester ants; coast horned lizards will not eat Argentine ants.

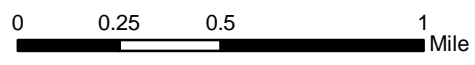
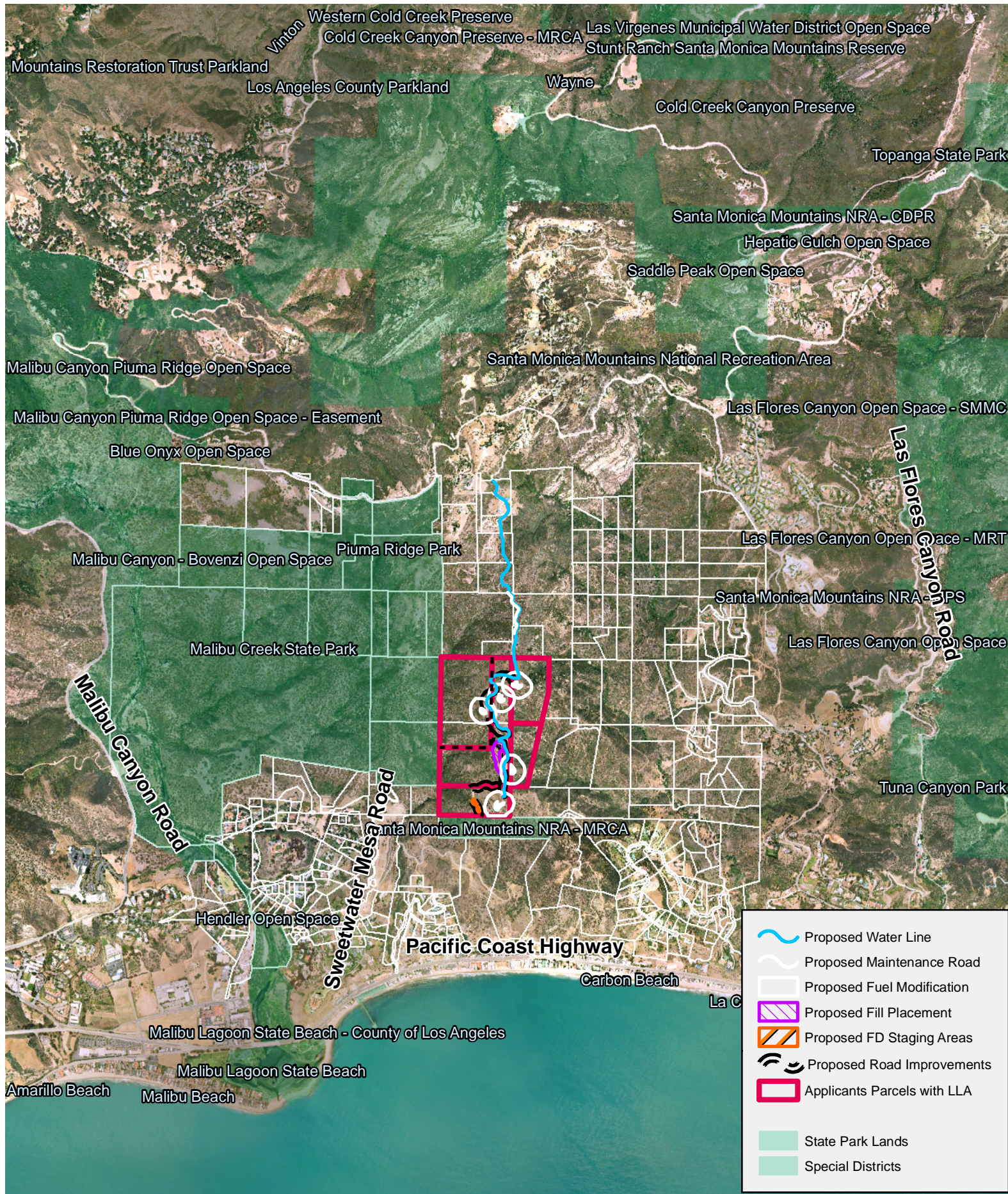
In summary, the subject properties and proposed water line are sited near the center of a 2,800 acre section of undeveloped and unfragmented land in the Mediterranean ecosystem of the Santa Monica Mountains. The subject properties and Section 2, 3, and a portion of Section 1 of the proposed water line alignment are dominated by nearly pristine to pristine chaparral and coastal sage scrub habitats arranged in a diverse mosaic of specific community alliances that support a diverse array of plant and animal species. Due to the pristine, physically complex, and biologically diverse nature of the habitats, we have determined that they are especially valuable. We have also found that these habitats are easily disturbed and degraded by human activities, and therefore, for these reasons, rise to the level of ESHA. The only areas on the subject properties that do not rise to the level of ESHA are the historic mesa area and existing 10-foot wide jeep trail up to it.

Construction of the access road, five single-family residences, excess fill placement area, and water line will directly eliminate approximately 7, 25, 2.6 and 1 acres of ESHA, respectively. In addition to the direct loss of ESHA, development of the subject property may impart significant impacts upon ESHA including habitat fragmentation, artificial barriers, introduction of non-native species, increased fire risk, and fuel modification.

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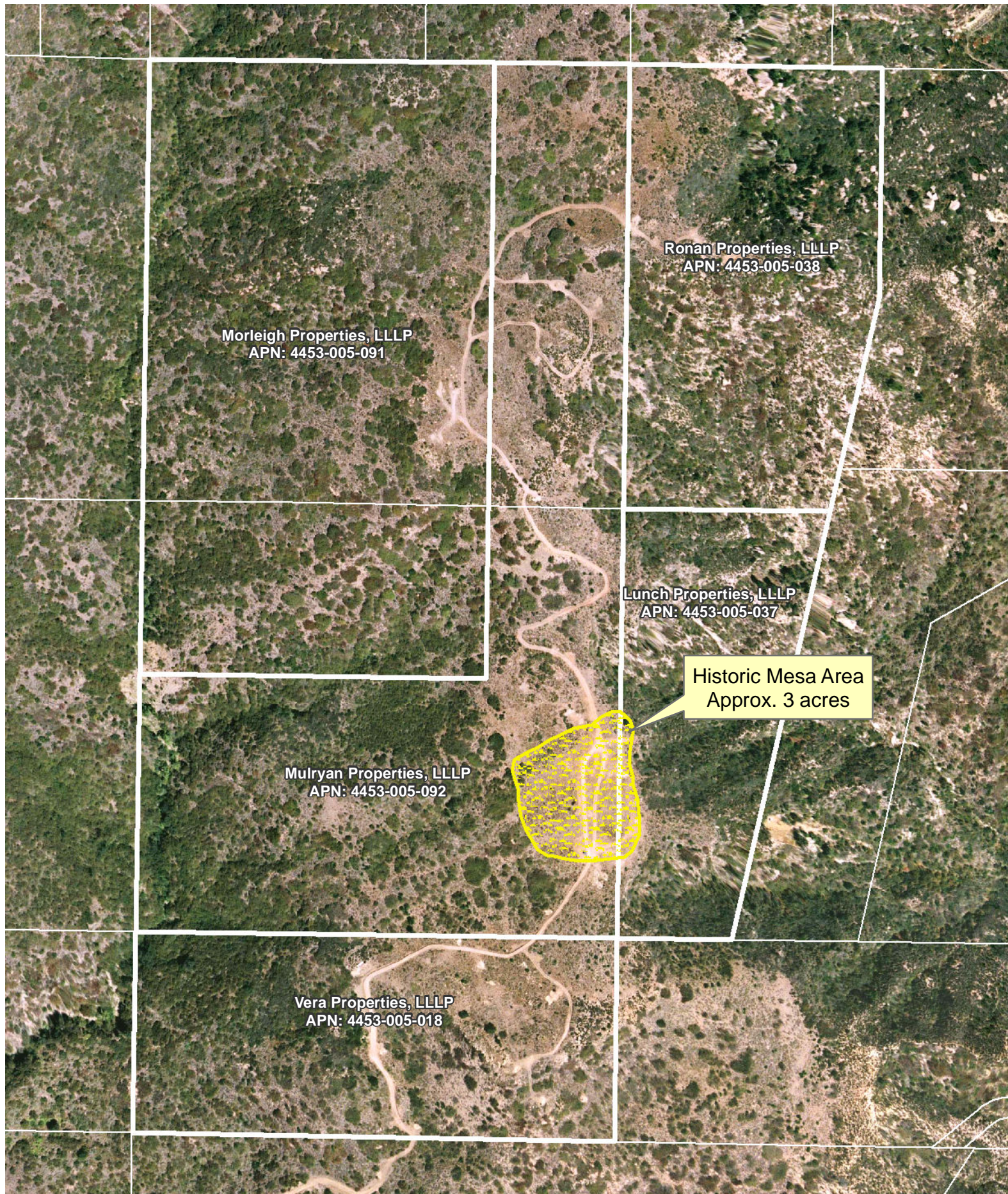
<sup>40</sup> Stralberg, D. 2000. *Landscape-level urbanization effects on chaparral birds: a Santa Monica Mountains case study*. Pp. 125-136 in Keeley, J.E., M. Baer-Keeley, and C. J. Fotheringham (eds.). 2<sup>nd</sup> interface between ecology and land development in California. U.S. Geological Survey, Sacramento, California.

<sup>41</sup> Suarez, A. V., D. T. Bolger and T.J. Case. 1998. *Effects of fragmentation and invasion on native ant communities in coastal Southern California*. Ecology, Vol. 79 (6): 2041-2056.



**Figure 1**





Historic Mesa Area  
Approx. 3 acres

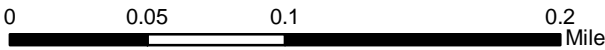
Morleigh Properties, LLLP  
APN: 4453-005-091

Ronan Properties, LLLP  
APN: 4453-005-038

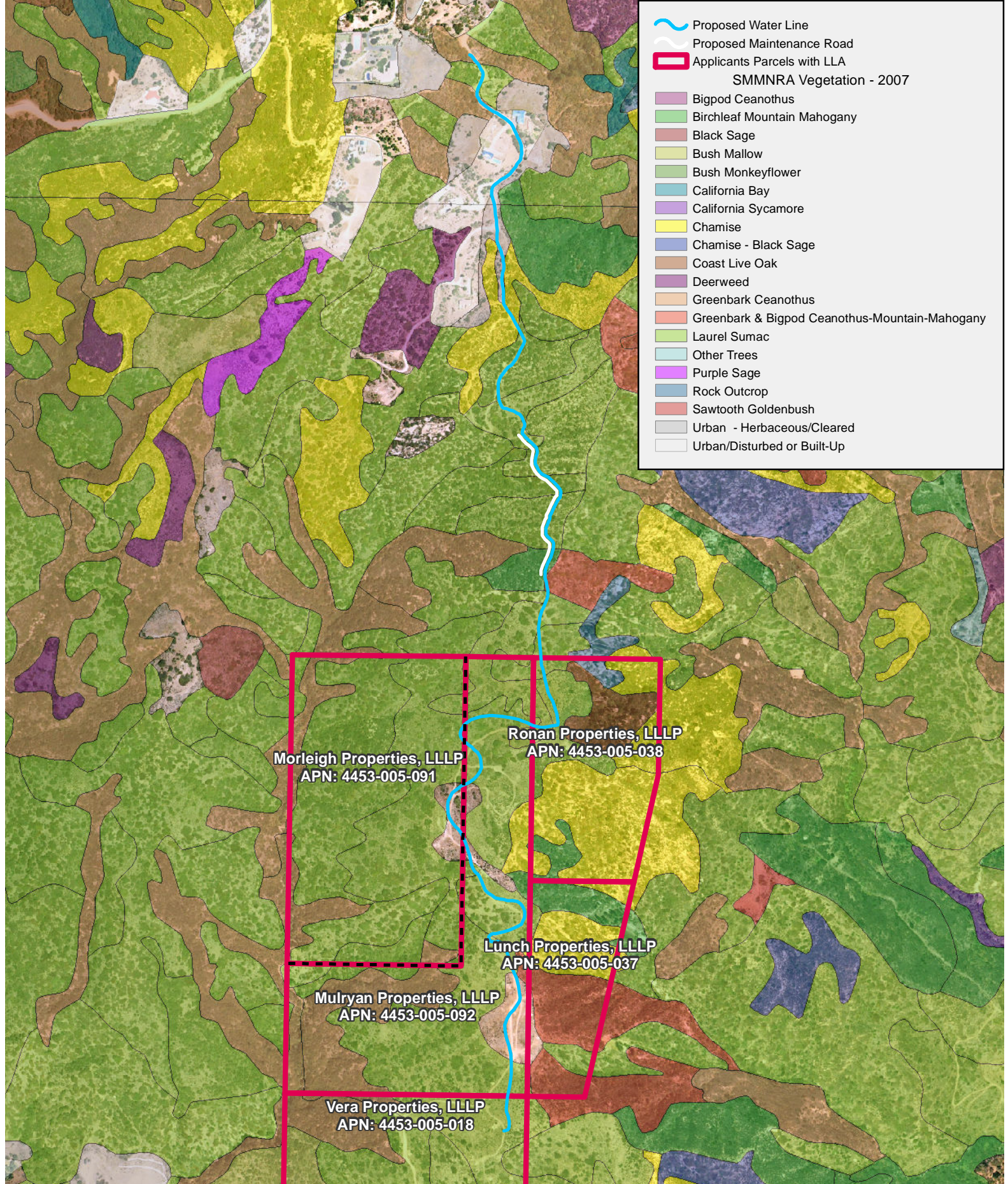
Lunch Properties, LLLP  
APN: 4453-005-037

Mulryan Properties, LLLP  
APN: 4453-005-092

Vera Properties, LLLP  
APN: 4453-005-018



**Figure 4: Historic Mesa Area**



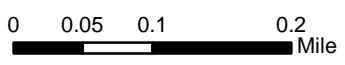
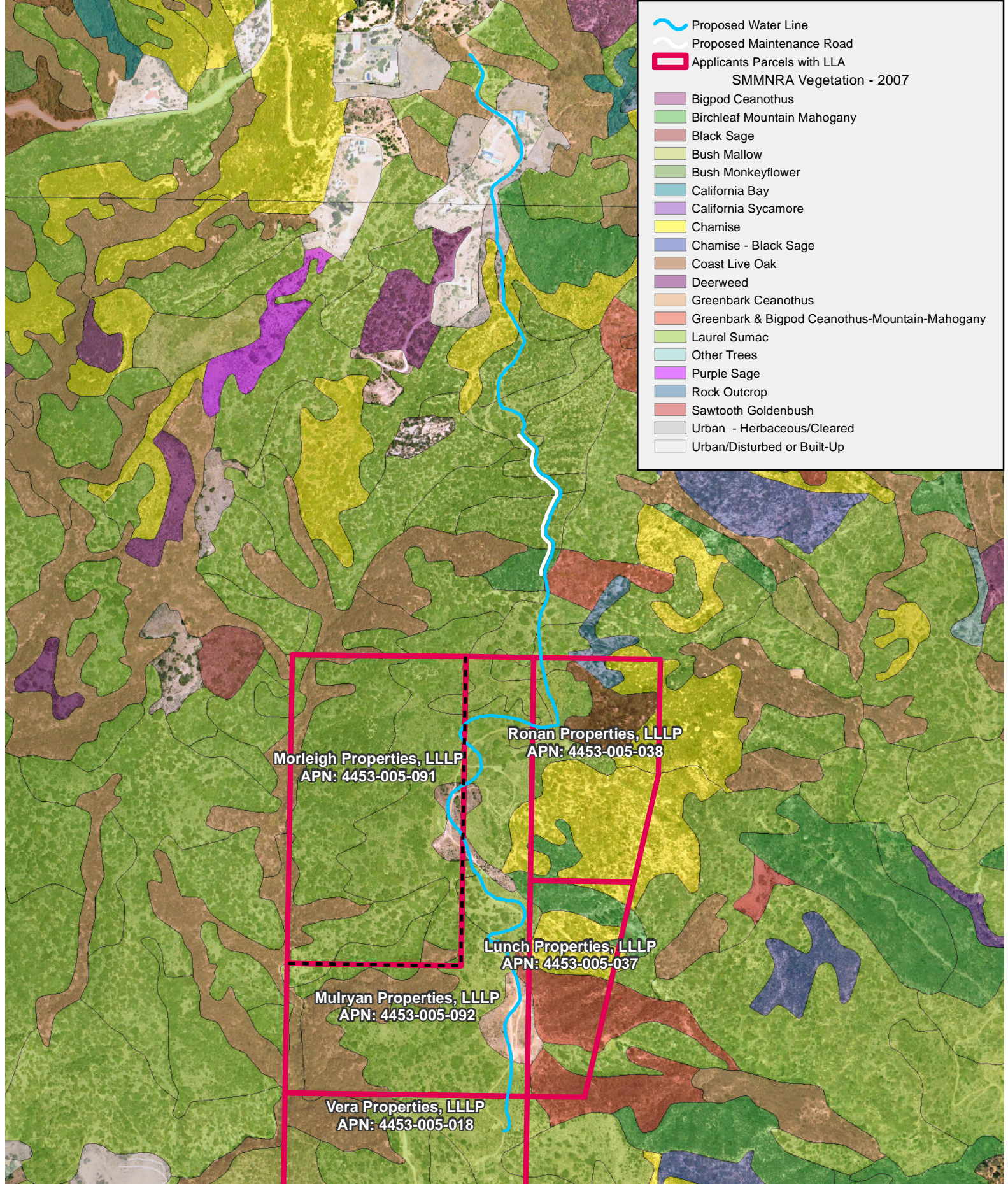
- Proposed Water Line
- Proposed Maintenance Road
- Applicants Parcels with LLA
- SMMNRA Vegetation - 2007**
- Bigpod Ceanothus
- Birchleaf Mountain Mahogany
- Black Sage
- Bush Mallow
- Bush Monkeyflower
- California Bay
- California Sycamore
- Chamise
- Chamise - Black Sage
- Coast Live Oak
- Deerweed
- Greenbark Ceanothus
- Greenbark & Bigpod Ceanothus-Mountain-Mahogany
- Laurel Sumac
- Other Trees
- Purple Sage
- Rock Outcrop
- Sawtooth Goldenbush
- Urban - Herbaceous/Cleared
- Urban/Disturbed or Built-Up

0 0.05 0.1 0.2  
 Mile

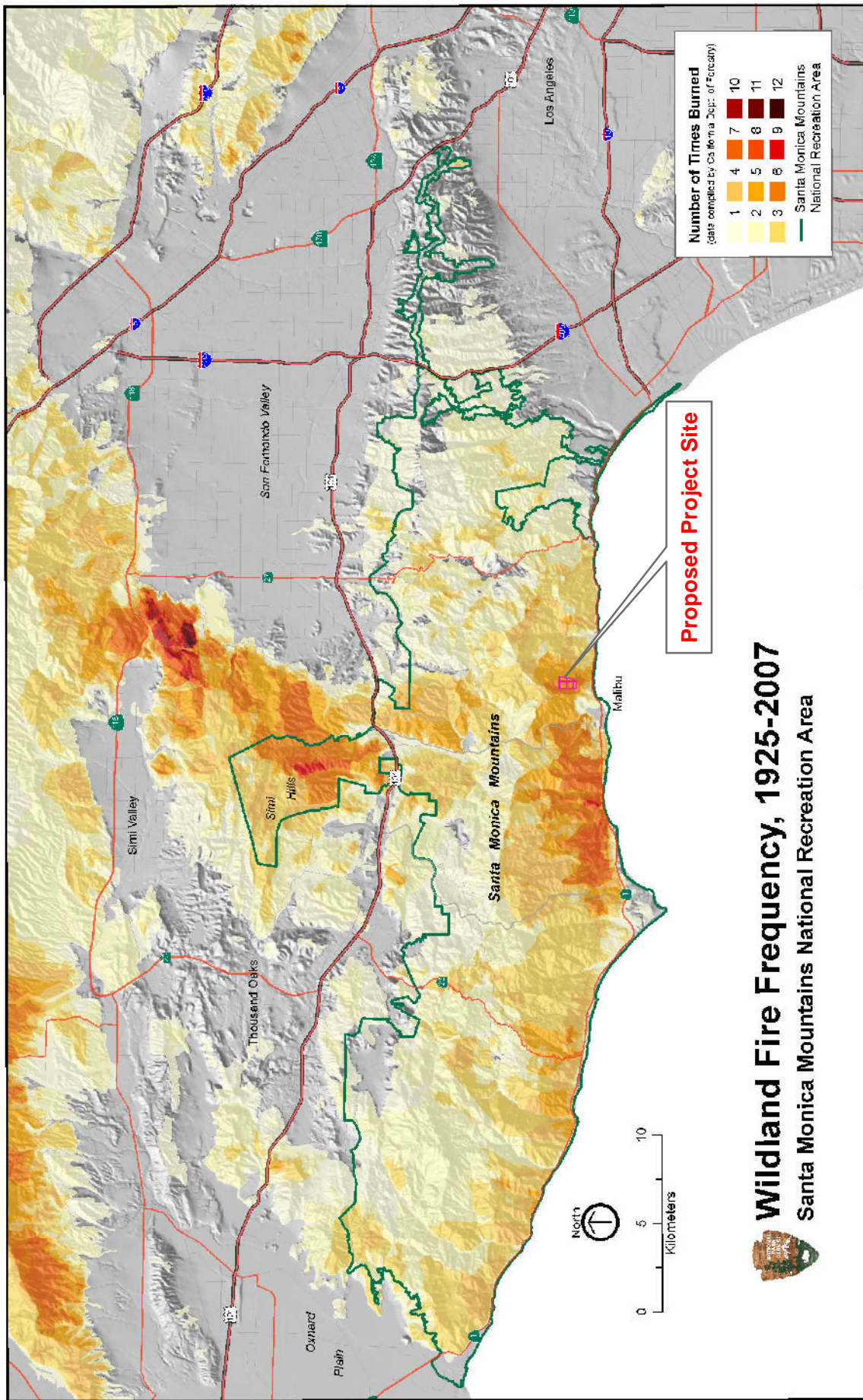
All Locations Approximate.  
 For Illustrative Purposes Only.  
 Sources: AirPhotoUSA, SMMNRA, County of L.A.



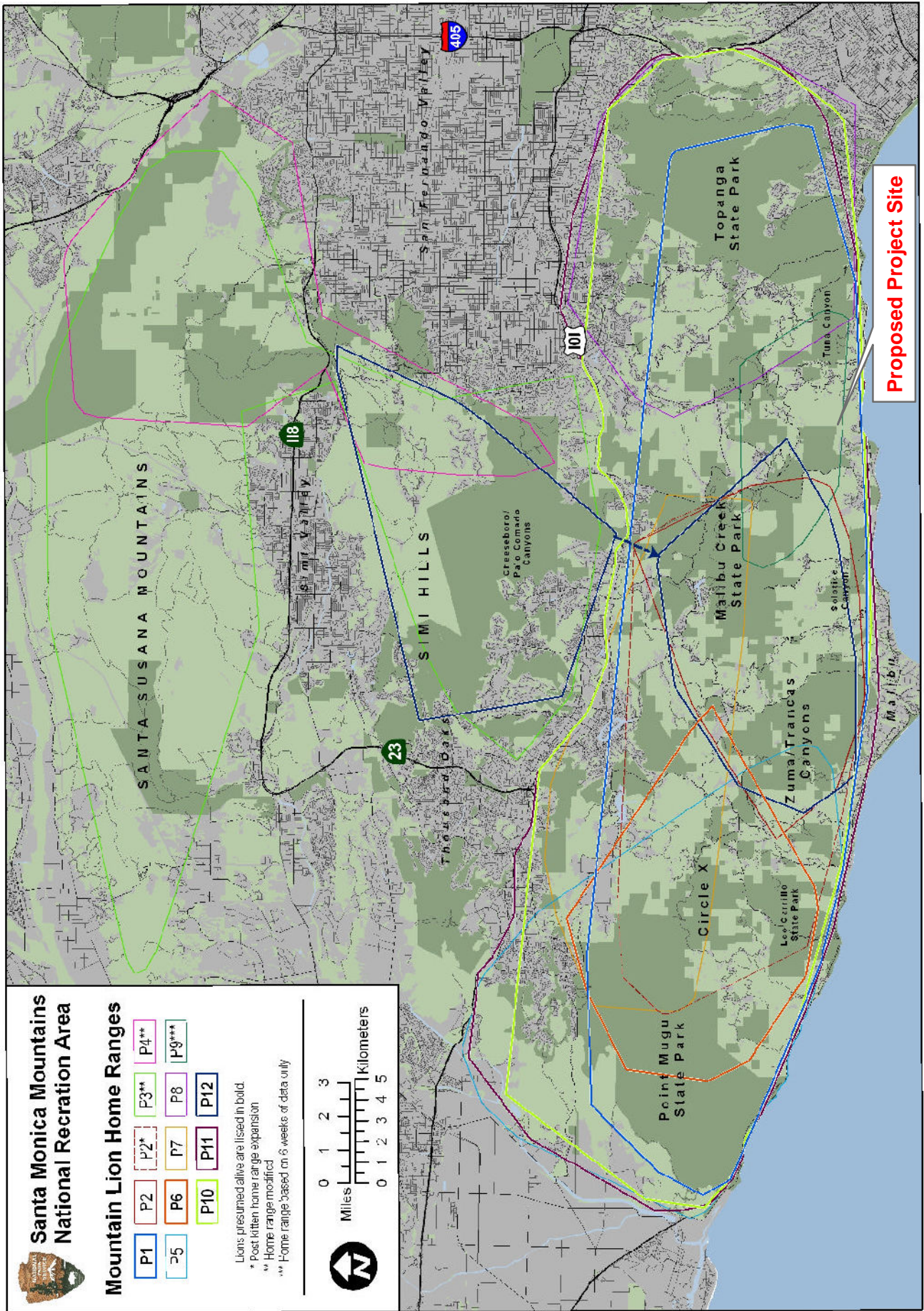
**Figure 3b:**  
**National Park Service Vegetation Mapping**  
**Proposed Project Water Line**



**Figure 3a:**  
**National Park Service Vegetation Mapping**  
**Proposed Project Properties**



**Figure 2: SMMNRA Fire Hazard Zone Map**



**Figure 5: SMMNRA Mountain Lion Home Ranges Map**