Proposed

Santa Monica Mountains Local Coastal Program

Technical Appendices

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County of Los Angeles

Department of Regional Planning

TABLE OF CONTENTS

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APPENDIX A
BIOTA

The Santa Monica Mountains are a geographically complex east-west trending range characterized by steep, rugged terrain of mountain slopes, canyons and streams, with elevations ranging from sea level to over 2,800 feet above mean sea level at Castro Peak. There are several major blue-line drainage courses throughout the area, as identified on United States Geological Survey quadrangles *Point Dume*, *Triunfo Pass*, *Malibu Beach*, and *Topanga*. The region has a Mediterranean climate, and is one of only five areas world-wide that enjoy such an environment. The climate encourages the proliferation of numerous plant and animal species, which can be found throughout the Mountains ecosystem, with many vascular plants that are endemic to the region. In fact, the Mountains have one of the greatest levels of species biodiversity within California. The vegetation found within the area subject to the Coastal Zone Plan is integral to many scenic, wildlife, and recreational resources in the region, and also fulfills many functional roles related to cleaning water and air, and stabilizing slopes.

The quality of stormwater runoff and the health of biotic resources are clear reflections of the health and integrity of a watershed, as species rely upon a healthy ecosystem to maintain their vitality. The state of a watershed depends upon the integrity of the natural habitat and the types of uses occurring within that particular watershed. A landscape that is left primarily intact, with little habitat disturbance and minimal point or non-point source pollution, facilitates efficient absorption of nutrients and other pollutants, cleansing runoff before it ever enters a waterway and ultimately the ocean. Correspondingly, an environment with excessive disturbance and habitat degradation does not have the capacity to efficiently absorb pollutants, creating a nutrient and sediment overload that is released into the ocean environment. Unhealthy ecosystems are generally identifiable by large areas of disturbed habitat and non-native invasive species, such as arundo and fennel. These species do a poor job of absorbing pollutants and they clog drainage courses, leaving no room for indigenous riparian species to live.

The impacts of these pollutant inputs on riparian and ocean habitat can be minimized through effective management of runoff from developed areas, with the most important work taking place in upland areas. The longer water remains in upland areas, the longer it has to be filtered by vegetation and earth materials. Once water enters the riparian system, there is generally little filtration taking place in the rapid trip to the ocean. The key is to ensure water is clean before it enters the drainages within the watershed.

The North Santa Monica Bay Watersheds Task Force Implementation Plan is a long-term program of the County of Los Angeles Department of Public Works and nearly 100 municipalities, local agencies, and private non-profit organizations, designed to improve the water quality in North Santa Monica Bay and to comply with National Pollutant Discharge Elimination System permitting requirements. The Implementation Plan identifies 19 watersheds that lie either wholly or partially within the Santa Monica Mountains Coastal Zone and which drain into Santa Monica Bay or the Pacific Ocean. These watersheds are:

- Arroyo Sequit;
- San Nicholas Canyon;
- Los Alisos Canyon;
- Encinal Canyon;
- Trancas Canyon;
- Zuma Canyon;
- Ramirez Canyon;
- Escondido Canyon;
- Latigo Canyon;
- Solstice Canyon;
- Corral Canyon;
- Malibu Canyon;
- Las Flores Canyon;
- Carbon Canyon;
- Piedra Gorda Canyon;
- Peña Canyon;
- Tuna Canyon;
- Topanga Canyon; and
- Ballona Creek.

Each of the watersheds functions at different levels due to their degree of disturbance and level of health, requiring slightly different management strategies to preserve and/or improve water quality. Those watersheds that are primarily intact with minimal pollutants require protection, in the form of minimizing further disturbance, rather than physical or technical solutions, such as equipment installation. These primarily intact watersheds include Arroyo Sequit and Trancas Canyon. Those that have experienced more than moderate development require a combination of preservation and maintenance strategies as well as technical solutions. These include Zuma Canyon, Topanga Canyon, Solstice Canyon, Tuna Canyon, and Peña Canyon. Those watersheds that have been further compromised with extensive development require primarily technical solutions to improve water quality. These include Corral Canyon and Malibu Canyon. Strategies in the Coastal Zone Plan in part reflect the need for these different management strategies, but all watersheds require the protection and management of biota, specifically vegetative resources.

The focus of managing vegetative resources is to protect and maintain the plant communities they are natural to and thrive within. The following plant communities are found within the Santa Monica Mountains Coastal Zone:

- Chaparral;
- Red shank Chaparral;
- Coastal sage scrub;
- Native grassland;
- Coast live oak woodland;
- Valley oak woodland;
- Walnut woodland;
- Southern willow scrub;
- Cottonwood-willow riparian forest;
- Sycamore-alder riparian woodland;
- Oak riparian forest;
- Freshwater marsh;
- Rock outcrop; and

- Barren, ruderal, and reservoir.

Chaparral. Chaparral, the dominant vegetation community in the Santa Monica Mountains, is characterized by deep-rooted, drought- and fire-adapted evergreen shrubs growing on coarse-textured soils, generally on north-facing slopes with limited water-holding capacity. Chaparral consists of hard broad-leafed or needle-leafed shrubs that form a dense, nearly impenetrable wall of scrub up to twelve feet high. The understory is generally devoid of herbaceous vegetation, except for an occasional clump of foothill needlegrass or wildflowers. This community is generally found at elevations higher than coastal sage scrub, usually on deeper, heavier soils with moderate moisture content. However, chaparral vegetation at lower elevations can be found on dry ridges with gravelly, shallow soils. Typical species include toyon, (*Heteromoles arbutifolia*) scrub oak (*Quercus berberidifolia*), sugar bush (*Rhus ovata*), hollyleaf cherry (*Prunus ilicifolia*), hollyleaf redberry (*Rhamnus ilicifolia*), chamise (*Adenostoma fasciculatum*), laurel sumac (*Malosma laurina*), ceanothus species (*Ceanothus* spp.), and manzanita species (*Arcostaphylos* spp.). (SMMNRA 139, VFCDEIR 107)

Red shank chaparral. Red shank chaparral is a rare community that only occurs in four distinct populations in California, with the Santa Monica Mountains being one of them. The community is dominated by red shank (*Adenostoma sparsifolium),* and can be found intermittently throughout the Santa Monica Mountains. In addition to red shank, the community often includes chamise, sugar bush, and a variety of ceanothus species. (SMMNRA 139)

Coastal sage scrub. Coastal sage scrub is a lower elevation plant community generally occurring on dry slopes below chaparral, particularly on coastal south-facing slopes. Often occurring in recently eroded areas, this community plays an important role in soil stabilization. Many of its characteristic plants produce soil-holding, fibrous shallow roots. Soils underlying coastal sage scrub tend to be low in nutrients and subject to rapid erosion, comprised of a high percentage of sand and gravel. The community is composed of shrubs, many of which are summer or drought deciduous, and not as stiff-branched as chaparral plants. Typical species include California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla.*), coast goldenbush (*Isocoma menziesii*), laurel sumac (*Malosma laurina*), bush monkeyflower (*Mimulus aurantiacus*), and coastal buckwheat (*Eriogonum cinereum*). (DEIR 107, SMMNRA 138)

Native grassland. Perennial bunch grasses are considered to be the original native grassland of California, while many common annual grasses were those introduced by the European and Spanish settlers for their livestock. Perennial grasses put much of their energy into establishing a well-developed root system that penetrates deeply into the soil. This root system provides nutrients and water that sustain the grasses through regular summer droughts, as well as holding soil particles firmly in place thereby decreasing the potential for erosion. Native grasslands often include introduced annual grasses as dominants, but do support a significant cover of native perennial grasses such as needlegrass (*Nassella* spp.) and bluegrasses (*Poa* spp). Native wildflowers can be prevalent in this community. (DEIR 107-108, SMMNRA 142)

Coast live oak woodland. The coast live oak woodland is found on the north slopes and in shaded ravines or canyon bottoms throughout the Santa Monica Mountains. The community is dominated by the evergreen coast live oak (*Quercus agrifolia*). Live oaks establish deep taproots to access the permanent water source at the water table. As this oak species is more tolerant of salt-laden fog than other oak species, it can be found relatively close to the ocean on the well-drained soils of coastal plains and protected bluffs. Groves are formed across valleys and along streams and intermittent watercourses. Typical understory species include hollyleaf cherry (*Prunus ilicifolia*), California bay laurel (*Umbellularia californica*), coffeeberry (*Rhamnus californica*), and poison oak (*Toxicedendron diversilobum*). (SMMNRA 140)

Valley oak woodland. The valley oak woodland community within the Santa Monica Mountains typically forms a savannah with a grassy understory. The woodland/grassland community grows in deep, well-drained alluvial soils, usually in valley bottoms. Valley oak is often the only tree species present, although coast live oak and California sycamore may also occur. The understory typically consists of grass species such as wild oats (*Avena* spp.) and brom grasses (*Bromus* spp.), although in relatively undisturbed areas, native bunchgrass such as needlegrass and small-flowered melic-grass (*Melica imperfecta*) may occur. (DEIR 107)

Walnut woodland. Walnut woodland exhibits characteristics similar to oak woodland, with the exception that Southern California black walnut (*Juglans californica* var. *californica*) is the dominant species. In the Santa Monica Mountains, the California walnut woodland sometimes has an understory of toyon, hollyleaf cherry, coffeeberry, chamise, and ceanothus. (DEIR 107)

Southern willow scrub. This is a riparian community consisting of dense, broad-leafed, winter-deciduous riparian thickets occurring within and adjacent to water courses. The dominant species of this community is arroyo willow (*Salix lasiolepsis*), with lesser amounts of mulefat (*Baccharis salicifolia*). Southern willow scrub is found in segments along portions of several drainages as well as the periphery of many ponds, and lakes throughout the Santa Monica Mountains. (2000 SEA Study 8)

Cottonwood-willow riparian forest. This is an open broad-leafed winter deciduous riparian forest dominated by Fremont cottonwood (*Populus fremontii*) or black cottonwood (*Populus balsamifera*), and occasionally red willow (*Salix laevigata*). This community occurs in segments along many of the drainages, ponds and lakes throughout the Santa Monica Mountains. (2000 SEA Study 8)

Sycamore-alder riparian woodland. Southern sycamore alder riparian woodland is a tall, winter-deciduous riparian woodland that grows along rocky stream courses that are subject to seasonal flooding. The woodland is dominated by California sycamore (*Platanus racemosa*) and white alder (*Alnus rhombifolia*). The canopy may be open or closed, and the community may consist of scattered trees within a scrub habitat. Typical understory species include poison oak, California blackberry (*Rubus ursinus*), stinging nettle (*Urtica dioica* ssp. *holosericea*), and horsetail (*Equisetum hymale*). (DEIR 106)

Oak riparian forest. This is an evergreen community dominated by coast live oak. Oak trees require less water than other riparian tree species and generally cannot tolerate moist conditions year-round, therefore this community typically grows above the main flow line of streams, often flanking riparian woodlands that grow in moister conditions. Typical understory species include California rose (*Rosa californica*), poison oak, and mugwort (*Artemesia douglasiana*). (DEIR 106)

Freshwater marsh. This community develops in areas of still or slow-moving permanent freshwater. This community is dominated by perennial, emergent monocot cattails (*Typha* spp.) which reach a height of 4-5 meters and often form a closed canopy. Bulrushes are dominant below the cattail canopy. This is a relatively uncommon plant community, but occurs in small patches in natural or created sinks with water sources.

Rock outcrop. Innumerable cliffs and rock outcrops of sedimentary, metamorphic, and volcanic origin are scattered throughout the Santa Monica Mountains. These rocky outcrops provide nest sites and perches for raptors and habitat for mammals. (SMMNRA 143)

Barren, disturbed, and ruderal. Disturbed or ruderal weedy plant communities are typified by the presence of large areas of disturbance and excessive weedy growth. Ruderal plant communities typically include mustards, brome grasses, wild oats, and thistles. The soil and other physical characteristics are variable, depending to a large degree upon the original plant community present before the disturbed community became established; however, an important factor shared by many disturbed soils is a lack of mycorrhizal fungi, a beneficial root symbiont that many native plants require in order to effectively access soil nutrients. Disturbed areas are usually found in residential developments, vacant cleared lots, paved roads, fire breaks, dirt access roads, trails, and other similarly disturbed areas. Barren land is relatively devoid of terrestrial plant communities. (DEIR 108)

Several of the plant communities and sensitive species that exist in the Santa Monica Mountains are tracked by the California Natural Diversity Database (CNDD), a division of the California Department of Fish and Game. CNDD tracks California species that are endemic, declining in numbers, extinct, rare, or endangered. Tracked species in the Santa Monica Mountains include Braunton's milk-vetch, Lyon's pentachaeta, and Santa Monica Mountains dudleya. Federal- and State-listed sensitive plant species found in the study area are listed in Table 1.

Woodland communities within the study area are identified as sensitive resources. Recognized for their high habitat value, riparian communities, and oak tree communities (*Quercus spp.*) are regulated by county, city, and/or state policies and ordinances. There are additional Federal and State regulations for riparian areas and other wetlands. Federal legislation includes Section 404 of the Clean Water Act, and the State protects riparian areas through the Department of Fish and Game Streambed Alteration Agreement. Coastal sage scrub is also considered a sensitive community based on; 1) Widespread awareness among the resource agencies, policy makers, and public that this community has undergone significant losses in the past, and 2) The State's ongoing effort to create regionally important coastal sage scrub preserves under the Natural Communities Conservation Program (NCCP).

Table 1. Sensitive Plant Species of the Santa Monica Mountains Coastal Zone

Latin Name	Common Name	Federal	State
Cordylanthus marituimus ssp. *Maritimus*	salt marsh bird's-beak	E	E
Pentachaeta lyonii	Lyon's pentachaeta	E	E
Astragalus brauntonii	Braunton's milk-vetch	E	
Astragalus tener var. titi	Coastal dunes milk-vetch	E	
Baccharis malibuensis	Malibu baccharis		E
Astragalus pychostachyus var. lanosissimus	Ventura marsh milk-vetch	SC	CE
Dudleya cymosa ssp. *marcescens*	Marcescent dudleya	T	R
Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya	T	
Dudleya abramsii ssp. *parva*	Conejo dudleya	T	
Dudleya verityi	Verity's dudleya	T	
Dithyrea maritima	beach spectaclepod	SC	T
Eriogonum crocatum	Conejo buckwheat	SC	R
Hemizonia minthornii	Santa Susana tarplant	SC	R
Calochortus plummerae	Plummer's mariposa lily	SC	
Delphinium parryi ssp. *blochmaniae*	dune larkspur	SC	
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	SC	
Dudleya multicaulis	many-stemmed dudleya	SC	
Lasthenia glabrata var. *coulteri*	Coulter's goldfields	SC	
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	SC	
Chorizanthe parryi var. *parryi*	Parry's Spineflower	SC	
Nolina cismontana	California beargrass	SC	

Federal:
E = Endangered
T = Threatened
PE = Proposed Endangered
SC = Species of Concern

State:
E = Endangered
T = Threatened
R = Rare
CE = Candidate Endangered

Wildlife Resources

The Santa Monica Mountains support a variety of wildlife species, including some Federally and State listed animal species, such as the Southern California steelhead trout and the bald eagle. The composition of the species present in a given area is dependent upon the plant community present, the availability of food and water, and seasonal requirements. Federal- and State-listed sensitive animal species found in the study area are listed in Table 2.

Woodland habitats support a variety of bird species, including raptors such as barn owls, great horned owls, and Cooper's hawks. Flickers and woodpeckers use the larger trees in oak woodlands along with smaller passerines such as Wilson's warbler, Hutton's vireo, black-headed grosbeak, hooded oriole, and Nashville warbler. Other animal species that use these habitats include amphibians such as western toads, Pacific tree frogs, and ensatina salamanders, reptiles such as the Western pond turtle and the two-striped garden snake, and mammals such as dusky-footed woodrats and mule deer.

Coastal sage scrub, chaparral, and rock outcrops tend to support similar species, with reptiles such as western fence lizards, western whiptails, western rattlesnakes, and gopher snakes;

birds such as towhees, sparrows, California thrashers, bushtits, and wrentits; and mammals such as bats, wood rats, mule deer, and bobcats.

Grassland habitats support mostly ground dwelling species, including reptiles such as coastal horned lizards; birds such as blackbirds, brown headed cowbirds (winter), horned larks, and mourning doves; and mammals such as black-tailed jackrabbits, Beechey ground squirrels, and Audubon cottontails. The golden eagle, red-tailed hawk, and northern harrier also forage over grasslands.

The Plan area encompasses many year-round water sources, and has abundant raptor foraging, perching and nesting habitat along the northern slopes of the Mountains. The combination of these resources as well as the confluence of many plant community types provides an unusually high diversity of bird species. The southern edge of the area along the coast, including Tuna Canyon and Peña Canyon, is part of the Pacific Flyway. Other animal populations are comparably diverse and reflective of the large size and variation of topography and plant community type. Widespread animal species include the side-blotched lizard, American crow, common raven, northern mockingbird, house finch, and coyote.

Table 2. Sensitive Animal Species of the Santa Monica Mountains Coastal Zone

Latin Name	Common Name	Federal	State
Mammals			
Antrozous pallidus	Pallid Bat	SC	SC
Euderma maculatum	Spotted Bat	SC	SC
Eumops perotis californicus	Greater Western Mastiff Bat	SC	SC
Macrotus californicus	California Leaf-nosed Bat	SC	SC
Myotis lucifugus occultus	Occult Little Brown Bat	SC	SC
Plecotus townsendii townsendii	Pacific Western Big-eared Bat	SC	SC
Sorex ornatus salicornicus	Salt Marsh Ornate Shrew	CS	SC
Reithrodontomys mega lotus limicola	Southern Marsh Harvest Mouse	C3	
Birds			
Pelecanus occidentalis californicus	Brown Pelican	E	E
Falco peregrinus anatum	Peregrine Falcon		E
Rallus longirostris levipes	Light-footed Clapper Rail	E	E
Sterna antillarum browni	California Least Tern	E	E
Empidonax traillii extimus	Southwestern Willow Flycatcher	E	E
Vireo belli pusillus	Least Bell's Vireo	E	E
Haliaeetus leucocephalus	Bald Eagle	T	E
Charadrius alexandrinus nivosus	Western Snowy Plover	T	SC
Poliptila californica	California Gnatcatcher	T	SC
Passerculus sandwichensis beldingi	Belding's Savannah Sparrow	SC	E
Ixobrychus exilis hesperis	Western Least Bittern	SC	SC
Sterna elegans	Elegant Tern	SC	SC
Eremophila alpestris actia	California Horned Lark	SC	SC
Campylorhynchus brunneicapillus couesi	San Diego (Coastal) Cactus Wren	SC	SC
Lanius ludovicianus	Loggerhead Shrike	SC	SC
Agelaius tricolor	Tri-colored Blackbird	SC	SC
Aimophial ruficeps canescens	S. California Rufous-crowned Sparrow	SC	SC

Table 2. Sensitive Animal Species of the Santa Monica Mountains Coastal Zone

Latin Name	Common Name	Federal	State
Oreortyx pictus	Mountain Quail	SC	
Numemius americanus	Long-billed Curlew		SC
Riparia riparia	Bank Swallow		T
Aquila chrysaetos	Golden Eagle		SC
Accipiter cooperii	Cooper's Hawk		SC
Circus cyaneus	Northern Harrier		SC
Pandion haliaetus	Osprey		SC
Falco columbarius	Merlin		SC
Falco mexicanus	Prairie Falcon		SC
Asio otus	Long-eared Owl		SC
Athene cunicularia	Burrowing Owl		SC
Dendroica petechia	Yellow Warbler		SC
Reptiles			
Actinemmys marmorata pallida	Southwestern Pond Turtle	SC	SC
Phrynosoma coronatum	Coast Horned Lizard	SC	SC
Lampropeltus zonata pulchra	San Diego Mountain King Snake	SC	SC
Salvadora hexalepis virgultea	Coast Patch-nosed Snake	SC	SC
Aspidoscelis tigris stejnegeri	Coastal Western Whiptail	SC	
Diadophis punctatus modestus	San Bernardino Ringneck Snake	SC	
Thamnophis hammondii	Two-striped Garter Snake	SC	
Anniella pulchra pulchra	Silvery Legless Lizard		SC
Amphibians			
Rana aurora draytoni	California Red-legged Frog	T	SC
Taricha torosa torosa	Coast Range Newt		SC
Fishes			
Eucyclogobius newberryi	Tidewater Goby	E	CT
Gila orcutti	Arroyo Chub		SC
Oncorhynchus mykiss	Southern California Steelhead Trout	E	
Invertebrates			
Euphydryas editha quino	Wright's Checkerspot Butterfly	E	
Streptocephauls woottoni	Riverside Fairy Shrimp	E	
Lycaena arota nubila	Clouded Tailed Copper Butterfly	SC	
Panoquina errans	Salt Marsh Skipper	SC	
Satyrium auretorum fumosum	Santa Monica Mountains Hairstreak	SC	
Brennania belkini	Belkins Dune Tabanid Fly	SC	
Alglaothorax longipennis	Santa Monica Shieldback Katydid	SC	
Proceratium californicum	Valley Oak Ant	SC	

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Habitat Linkages

A biological issue of special concern in southern California and particularly the Santa Monica Mountains is the preservation of habitat connectivity through habitat linkages, as described below. The National Park Service, California Department of Fish and Game, and the Santa Monica Mountains Conservancy have expressed concerns about the adverse effects of urbanization on wildlife, particularly the fragmentation of habitat areas, which prevents the freedom of movement species once enjoyed and restricts reestablishment in other similar habitat areas. As stated in the 2000 report *Missing Linkages: Restoring Connectivity to the California Landscape*, prepared by the California Wilderness Coalition, the primary features that facilitate movement in the region include waterways, flood-control channels, riparian corridors, contiguous or semi-contiguous habitat, underpasses, and culverts. The primary threats to animal connectivity within the Santa Monica Mountains are: urbanization, extensive road networks, invasive species, agriculture, recreation, perimeter fencing, grazing, and water diversions.

Habitat connectivity and habitat linkages are important for four main reasons. First, they allow movement through all habitat areas suitable for use by a species. Second, increased connectivity allows for recolonization of areas that were historically occupied but from which a species has been eliminated or pushed out by development or by periodic natural occurrences, such as wildfires. Third, connectivity promotes the exchange of genetic material between populations, which is important in preserving and maintaining genetic variability among sub-populations over time. All species, both plant and animal, depend on immigration and emigration in order to avoid inbreeding and loss of genetic diversity. Fourth, connectivity is critical for species that need large habitat areas for survival (wide-ranging), such as mountain lions, including those individuals of a species that may not move a relatively large distance within a generation (dispersal-limited).

Species used to identify minimum habitat sizes in the design of habitat linkages are referred to as target species. The biological and habitat needs of target species should guide the specific conservation objectives being addressed, and can vary considerably. Edelman (1990) evaluated large and medium-sized predators in a study of linkages in the Santa Monica Mountains. He evaluated the needs of badger, bobcat, mule deer, gray fox, long tailed weasel, mountain lion, and coyote populations. The use of larger mammal species, particularly predatory species, is common because of the assumption that if sufficient high quality wildlife habitat, corridors, and linkages are provided for these species, other species will be adequately provided for. The reasoning is:

- Large animals need more physical space because of their size, breeding requirements, and foraging demands. Territories for these species are large and, therefore, preserved habitat must be large.

- Large predators require a large number of prey to maintain their populations. In order to protect large predators, smaller prey species and their habitat must also be protected.

- Predators such as coyote and bobcat have a varied prey base. Therefore, not only must large numbers of small prey species be maintained, but a variety of these species and their different habitats must also be maintained.

Inter-Range and Intra-Range Habitat Linkages

Inter-range habitat linkages are connections and areas for movement between two mountain ranges. Intra-range habitat linkages are connections and areas for movement within a mountain range. For both types of linkages, functional habitat must be present within the linkages and connected to major core areas.

Edelman (1990) and PCR (2000) indicated that linkages between the Simi Hills and Santa Monica Mountains should ultimately connect with Malibu Creek State Park, "the most centrally located core habitat-area in the Santa Monica Mountain range". The park serves as a connective hub between the Simi Hills to the north, and the open space preserves of Topanga State Park to the east and Mugu State Park to the west. Open space linkages between Kanan Road and Calabasas Parkway are of particular importance for continued wildlife movement between the Santa Monica Mountains and the Simi Hills, due to the lack of alternative routes and encroachment of development. Edelman identified three other potentially viable movement corridors between the Simi Hills and the Santa Monica Mountains:

- Liberty Canyon;
- Crummer Canyon; and
- Las Virgenes Creek/Ventura Freeway.

Intra-Range Corridors

Lieberstein (1989) analyzed the design and function of open space reserves in the Santa Monica Mountains, focusing on east/west, intra-range corridors between Topanga and Malibu Creek State Parks. Applying the principles of island biogeography, she concluded that the optimal reserve design between Topanga and Malibu Creek State Parks would consist of "several [movement] corridors converging into a central hub... to encourage wildlife dispersal between the two parks (p.85)." Presumably, this conclusion applies to preserving movement opportunities throughout the Santa Monica Mountains.

Although previous development and land use patterns have made the establishment and preservation of viable inter-range corridors a more pressing issue than intra-range corridors, the documents reviewed for this assessment support a conclusion that key intra-range corridors must also be maintained within the Coastal Zone Plan area. This is necessary to maintain high biotic diversity within the area and in the Santa Monica Mountains as a whole. It is important to note that inter-range linkages will serve little value unless intra-range connectivity is also protected.

The east-west movement of animals through upper Topanga Canyon, in the northeast corner of the study area, is potentially an intra-range wildlife connectivity issue of regional importance. Presently, east-west movement through upper Topanga Canyon north of the

Coastal Zone Plan area appears to be essentially unconstrained, although a number of roads and some development are present and may increase in the future. Existing development in the Coastal Zone Plan area appears to constrain movement, at least for wildlife species that prefer to move through relatively wide linkages of undeveloped habitat (e.g., mountain lions). It may be that upper Topanga Canyon is the preferred movement corridor for such species when traveling across the northern half of the Santa Monica Mountains.

Artificial Light and its Affect on Wildlife Species

Another issue of concern for wildlife is the impact of artificial lighting. It is often understood that artificial light can adversely impact the quality of night skies for humans. However, wildlife is extremely sensitive to artificial light. Scientists have identified two types of light pollution. The first is "astronomical light pollution," which usually refers to the degradation of human views of the night sky caused by the cumulative contribution of numerous light sources. The second is "ecological light pollution", which refers to artificial light that alters the natural patterns of light and dark in ecosystems. (Verheijen, 1985) Ecological light pollution includes constant or periodically increased illumination, unexpected changes in illumination, and direct glare. Ecological light pollution can disrupt the critical behaviors of animals, such as foraging, reproduction, communication, and migration. These disruptions have serious implications for the viability of both affected animals and, in turn, the habitat in which they live. (Longcore and Rich, 2004)

Plant List for the Santa Monica Mountains

Preserving and expanding the presence of locally-indigenous plant species is important for maintaining a healthy ecosystem in the Santa Monica Mountains. Both efficiently-functioning watersheds and vibrant populations of native animals are dependent upon the existence and health of locally-indigenous plant species. These plants must be used in landscaping within the Santa Monica Mountains to the maximum extent possible. In consultation with Regional Planning's Impact Analysis Section, the Fire Department and the Environmental Review Board, a list of plants suitable for use in the Santa Monica Mountains has been developed and is presented in Table 7, and a list of plants to avoid is presented in Table 8.

Table 7. Recommended Plants for the Santa Monica Mountains

Family	Scientific Name	Common Name	Height	Spread	Irr Tol	Drt Tol	Native Habitat	Hill	Fire Risk	Fuel Mod	Exposure	OT
Bulbs												
Liliaceae	Lilium humboldtii	Humboldt's lily	5	1	X		riparian,forest	X	L	A,B,C	part shade-full shade	X
Bunchgrass and Bunchgrass-like*												
Poaceae	Achnatherum coronatum	needlegrass	3-4	2-3			css,chaparral,woodland	X	M	A,B,C	full sun	
Poaceae	Leymus glaucus	blue wildrye	2-4	5+	X	X	css,chaparral,woodland	X	M	B,C	full sun-part shade	X
Poaceae	Leymus triticoides	creeping wildrye	2-3	6+	X	X	css,chaparral,riparian,woodland	X	M	B,C	full sun-full shade	X
Poaceae	Melica imperfecta	California melic	1-3	2	X	X	css,chaparral,woodland	X	M	A,B,C	full sun-full shade	X
Poaceae	Muhlenbergia rigens	deergrass	5	6	X	X	woodlands	X	M-H	B,C	part shade-full shade	X
Poaceae	Nassella cernua	nodding needlegrass	1-3	2			chaparral,grassland	X	M	A,B,C	full sun-part shade	X
Poaceae	Nassella lepida	foothill needlegrass	2	2			css,chaparral, woodland	X	M	A,B,C	full sun-part shade	X
Poaceae	Nassella pulchra	purple needlegrass	2	2		X	css,chaparral,woodland	X	M	A,B,C	full sun-part shade	X
Cyperaceae	*Carex praegracilis	clustered field sedge	4-18"	1-3	X		marsh,riparian	X	L	A,B	full sun-part shade	
Cyperaceae	*Carex senta	rough sedge	1-3	1-3	X		marsh,riparian	X	L	A,B	part shade-full shade	
Cyperaceae	*Carex spissa	San Diego sedge	1-6	1-6	X		marsh,riparian	X	L	A,B	part shade-full shade	
Juncaceae	*Juncus acutus	spiny rush	1-3	2-4	X		marsh,riparian	X	L-M	A,B,C	full sun-part shade	
Juncaceae	*Juncus mexicanus	Mexican rush	2	2-4	X		marsh,riparian	X	L-M	A,B,C	full sun-full shade	
Juncaceae	*Juncus patens	common rush	1-3	1-3	X		riparian	X	L-M	A,B,C	full sun	
Juncaceae	*Juncus textilis	basket rush	3-6	3-15	X		riparian	X	L-M	A,B,C	full sun-part shade	
Ferns												
Adiantaceae	Adiantum capillus-veneris	Venus-hair fern	18"	12"	X		riparian		M	B,C	part shade-full shade	
Adiantaceae	Adiantum jordanii	maidenhair fern	3-16"	3-16"	X		chaparral,riparian,woodland	X	L-M	A,B,C	part shade-full shade	
Aspidiaceae	Dryopteris arguta	coastal wood fern	2-3	2-3	X	X	riparian,woodland	X	M	A,B,C	full shade	X
Pterophyta	Pellaea andromedifolia	coffee fern	18-36"	18-36"			css,chaparral	X	L-M	A,B,C	full shade	
Pterophyta	Pellaea mucronata	bird's foot fern	6-12"	18-36"			chaparral	X	L-M	A,B,C	full sun-part sun	
Pterophyta	Pentagramma triangularis	goldback fern	6-20"	6-20"		X	css,chaparral,riparian,woodland		L	A,B,C	part sun-full shade	
Polypodiaceae	Polypodium californicum	California polypody	1	1	X		css,chaparral,woodland,riparian	X	M	A,B,C	part shade-full shade	X
Dennstaedtiaceae	Pteridium aquilinum	western bracken fern	1-3	1-3	X		riparian	X	L-M	B,C	sun-part shade	
Blechnaceae	Woodwardia fimbriata	giant chain fern	4-6	4	X		css,chaparral,woodland,riparian	X	L	A,B,C	part shade-full shade	
Vines												
Convolvulaceae	Calystegia macrostegia	morning glory	5-30	1-30			css,chaparral		M	B,C	part sun	
Ranunculaceae	Clematis lasiantha	virgin's blower	climber	climber			chaparral,woodland		M-H	B,C	full sun	X
Ranunculaceae	Clematis ligusticifolia	western virgin's bower	climber	climber	X		riparian		M-H	B,C	full sun	X
Annuals												
Scrophulariaceae	Antirrhinum coulterianum	white snapdragon	1-4	<1			css,chaparral	X	M	A,B,C	full sun	
Scrophulariaceae	Antirrhinum kelloggii	twining snapdragon	1-4	<1			chaparral	X	M	A,B,C	full sun	
Poaceae	Bromus arizonicus	Arizona brome	1-2'	4"	X		css,chaparral,woodland	X	L-M	B,C	full sun	
Portulaceae	Calandrinia ciliata	red maids	<1	6-18"	X	X	css,chaparral,grassland,woodland	X	L-M	A,B,C	full sun	X
Portulaceae	Calandrinia maritima	seaside red maids	1	1		X	css	X	L-M	A,B,C	full sun	

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Family	Scientific Name	Common Name	Height	Spread	Irr Tol	Drt Tol	Native Habitat	Hill	Fire Risk	Fuel Mod	Exposure	OT
Onogracea	Clarkia bottae	farewell to spring	1-2	<1		X	css,chaparral,woodland	X	L	A,B,C	full sun	X
Onogracea	Clarkia unguiculata	elegant clarkia	1-3	<1	X	X	chaparral,woodland	X	L	A,B,C	part shade-full shade	X
Scrophulariaceae	Collinsia heterophylla	Chinese houses	8-20"	6"	X	X	riparian,woodland	X	L	A,B,C	part shade-full shade	X
Papaveraceae	Eschscholzia caespitosa	collarless California poppy	<1	6"		X	css,chaparral,meadow	X	M	A,B,C	full sun	X
Polemoniaceae	Gilia capitata ssp. abrotanifolia	globe gilia	8-32	6-32"		X	css,chaparral	X	L-M	A,B,C	full sun-part sun	
Asteraceae	Lasthenia californica	California goldfields	2-10"	8-18"	X		css,chaparral,woodland	X	L	A,B,C	full sun	
Asteraceae	Layia platyglossa	tidy tips	2-10"	8-18"	X		css,chaparral,woodland,grassland	X	L	A,B,C	full sun	
Fabaceae	Lotus strigosus	strigose lotus	1	<1		X	css	X	M	A,B,C	full sun	
Fabaceae	Lupinus bicolor	dove lupine	4-16"	1-2			css,chaparral	X	L-M	A,B,C	full sun	X
Fabaceae	Lupinus nanus	sky lupine	2-6	2-3			css,grassland		M	B,C	full sun	X
Fabaceae	Lupinus sparsiflorus	Coulter's lupine	<1	1-2			css,chaparral	X	L-M	A,B,C	full sun	X
Fabaceae	Lupinus succulentus	arroyo lupine, foothill lupine	1-2	2-3			css,chaparral,grassland	X	L-M	A,B,C	full sun	X
Fabaceae	Lupinus truncatus	collar lupine	1-3	1-2			css,chaparral		L-M	A,B,C	full sun	X
Scrophulariaceae	Mimulus guttatus	golden monkey flower	1-3	3	X		riparian	X	L	A,B,C	full sun-full shade	
Hydrophyllaceae	Nemophila menziesii	baby blue eyes	4-12"	12-18"		X	css,chaparral,woodland	X	L	A,B,C	full sun	X
Hydrophyllaceae	Phacelia minor	wild Canterbury bells	8-24"	8-20"			css,chaparral	X	L-M	A,B,C	full sun-part shade	
Hydrophyllaceae	Phacelia parryi	Parry's phacelia	6-18"	6-12"			css,chaparral	X	L-M	A,B,C	full sun-part shade	
Hydrophyllaceae	Phacelia tanacetifolia	lady phacelia	1-3	1-3			css,chaparral,woodland		M	B,C	full sun-part shade	X
Papaveraceae	Platystemon californicus	creamcups	6-24"	4-18"			chaparral,woodland		L-M	A,B,C	full sun	
Lamiaceae	Salvia columbariae	chia	6-24"	>6"		X	css,chaparral,woodland	X	L	A,B,C	full sun	
Liliaceae	Toxicoscordion fremontii	star lily	18-36"	3"			css,chaparral,woodland	X	L-M	A,B,C	full sun	
Annuals / Perennial Herbs												
Scrophulariaceae	Antirrhinum multiflorum	rose snapdragon	3-5	2-3			chaparral	X	M	A,B,C	full sun	
Poaceae	Bromus carinatus	California brome, mountain brome	1-4'	6"	X		chaparral,woodland	X	L-M	B,C	full sun	
Poaceae	Bromus laevipes	Chinook brome, woodland brome	2-4'	6"	X		css,chaparral,woodland	X	L-M	B,C	full sun	
Papaveraceae	Eschscholzia californica	California poppy	8-20"	6"	X	X	css,chaparral,meadow	X	M	A,B,C	full sun	X
Perennial Grasses												
Poaceae	Agrostis exarata	bentgrass	6-20"	3-8"	X		riparian,woodland	X	L-M	A,B,C	full sun	
Poaceae	Distichlis spicata	salt grass	1-4"	3-16	X		marsh	X	L	A,B,C	full sun	
Poaceae	Hordeum californicum	meadow barley	7-20"	4-10"	X	X	riparian	X	L	A,B,C	full sun	
Poaceae	Koeleria macrantha	June grass	4-20"	4-6"	X	X	css, woodland	X	L-M	A,B,C	full sun-part sun	X
Poaceae	Poa secunda	Malpais bluegrass	2	6"			chaparral	X	L	A,B,C	full sun-part sun	
Perennial Herbs												
Nyctaginaceae	Abronia umbellata	sand verbena	1	3			css,dune		M	B,C	full sun	
Asteraceae	Achillea millefolium	yarrow	2-4	2-3	X	X	riparian,woodland	X	L	A,B,C	full sun-part shade	
Saururaceae	Anemopsis californica	yerba mansa	1	4-5	X		many	X	L	A,B,C	part shade-full shade	
Scrophulariaceae	Antirrhinum nuttallianum	violet snapdragon	1-3	<1			css,chaparral,dune	X	M	A,B,C	full sun-part shade	
Asteraceae	Artemisia douglasiana	mugwort	6	1-3	X	X	css,riparian	X	M	B,C	part shade	

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Ascelpiadaceae	Asclepias eriocarpa	monarch milkweed	3	1			css, chaparral,woodland	X	L	A,B,C	full sun	
Ascelpiadaceae	Asclepias fascicularis	narrowleaf milkweed	3	1			chaparral	X	L	A,B,C	full sun	
Liliaceae	Bloomeria crocea	goldenstar	8-20"	1		X	chaparral,woodland,grassland	X	L-M	A,B,C	full sun-part shade	X
Liliaceae	Calochortus albus	fairy lantern	6-12"	10"	X	X	riparian,woodland	X	L	A,B,C	part shade	X
Liliaceae	Calochortus catalinae	Catalina mariposa lily	8-24"	12"		X	css,grassland	X	L	A,B,C	part shade	X
Liliaceae	Calochortus clavatus	yellow mariposa	18-36"	6"	X	X	riparian,woodland	X	L	A,B,C	full sun-part sun	X
Onagraceae	Camissonia cheiranthifolia	beach suncups	1-2	3	X	X	dune	X	L	A,B,C	full sun-part sun	
Scrophulariaceae	Castilleja affinis	Indian paintbrush	18"	3		X	css,chaparral		M	B,C	full sun	
Asteraceae	Chrysopsis villosa	golden aster	1	2-3		X	css,woodland		M	B,C	full sun-part shade	
Euphorbiaceae	Croton californicus	California croton	3	3		X	css,dune		M	B,C	part sun	
Ranunculaceae	Delphinium cardinale	scarlet larkspur	6	1-2		X	css,chaparral	X	L	A,B,C	full shade-part shade	
Ranunculaceae	Delphinium parryi	blue larkspur	2	2		X	chaparral,woodland	X	L	A,B,C	full sun-part shade	
Ranunculaceae	Delphinium patens	blue larkspur	8-16"	1-2		X	grassland,woodland	X	L	A,B,C	full sun-part shade	
Alliaceae	Dichelostemma pulchellum	blue dicks, wild hyacinth	6-18"	6"			css,chaparral	X	L-M	A,B,C	full sun	X
Portulaceae	Dodecatheon clevelandii	shooting star	1	1-2			grassy slopes	X	L	A,B,C	part shade-full shade	X
Crassulaceae	Dudleya caespitosa	live-forever	1	1		X	css,grassland	X	L	A,B,C	full sun-part shade	X
Crassulaceae	Dudleya cymosa	marcescent dudleya, liveforever	1	1		X	css,grassland	X	L	A,B,C	full sun-part shade	X
Crassulaceae	Dudleya lanceolata	lance-leaf dudleya, liveforever	1	1	X	X	css,chaparral	X	L	A,B,C	full sun-part shade	X
Crassulaceae	Dudleya pulverulenta	chalk dudleya	1	1		X	css,chaparral	X	L	A,B,C	full sun-part shade	X
Asteraceae	Encelia californica	bush sunflower	3-5	3-5	X		css,chaparral,open	X	M	B,C	full sun	X
Hydrophyllaceae	Eriodictyon crassifolium	yerba santa	3-6	4	X		css,chaparral,washes		M	B,C	full sun	
Polygonaceae	Eriogonum cinereum	ashyleaf buckwheat	2-5	6		X	css	X	M-H	B,C	full sun-part sun	X
Polygonaceae	Eriogonum crocatum	Conejo buckwheat	1	1		X	css	X	M-H	B,C	full sun-part sun	X
Polygonaceae	Eriogonum elongatum	wand buckwheat	4	2		X	css,chaparral,woodland	X	M-H	B,C	full sun	X
Polygonaceae	Eriogonum parvifolium	coastal buckwheat	1-2	4+		X	css,dunes	X	M-H	B,C	full sun-part sun	X
Polygonaceae	Eriogonum wrightii var.	spreading buckwheat	1	3		X	chaparral	X	M-H	B,C	full sun-part sun	X
Brassicaceae	Erysimum capitatum	western wallflower	1	2	X	X	css,chaparral,riparian	X	M	A,B,C	full sun-part sun	
Asteraceae	Gnaphalium bicolor	two-tone everlasting	3	32"	X	X	css,chaparral,woodland		M	B,C	full sun	
Asteraceae	Gnaphalium californica	California pearly everlasting	3	3		X	css,chaparral,woodland		L-M	B,C	full sun	
Asteraceae	Grindelia robusta	gum plant	1-2	2			css,chaparral	X	L	A,B,C	full sun-part shade	X
Asteraceae	Hazardia squarrosa	common hazardia, goldenbush	8-20"	20-40"			css,chaparral	X	M	B,C	full sun	
Asteraceae	Helianthus gracilentus	slender sunflower	1-3	1-3			chaparral	X	M	A,B,C	full sun	
Capparaceae	Isomeris arborea	bladderpod	3-6	4-6		X	css,woodland	X	M	B,C	full sun	X
Scrophularaceae	Keckiella cordifolia	heart-leaved penstemon, climbing penstemon	5-6	8-10			css,chaparral		M	B,C	full sun-part shade	X
Fabaceae	Lathyrus vestitus var. vestitus	wild sweet pea	climber	climber	X	X	css,chaparral,oak woodland,riparian		M	B,C	part shade-full shade	X
Asteraceae	Lessingia filaginifolia	California aster	1	4-6	X	X	css	X	M	A,B,C	full sun-part shade	
Poaceae	Leymus condensatus	giant wildrye	4-8	10	X	X	css,chaparral,riparian,woodland	X	M	B,C	full sun-part shade	X
Plumbaginaceae	Limonium californicum	western sea lavander	8-16"	2+	X	X	marsh	X	L	A,B,C	full sun-part shade	
Caprifoliaceae	Lonicera hispidula	pink chaparral honeysuckle	6-10	6+	X		chaparral,riparian	X	L-M	B,C	part shade-full shade	X
Caprifoliaceae	Lonicera subspicata	chaparral honeysuckle	4+	4+			chaparral,woodland	X	M	B,C	full sun-part shade	

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Fabaceae	Lupinus formosus	summer lupine	1-3	1-3			many		L-M	A,B,C	full sun-part shade	X
Fabaceae	Lupinus latifolius	broad-leaved lupine	2-4	3-5	X		oak woodland		M	B,C	full sun	X
Malvaceae	Malacothamnus fasciculatus	chaparral mallow	3-12	6			css,chaparral	X	M	B,C	full sun-part shade	
Scrophulariaceae	Mimulus aurantiacus	bush monkey flower	2	3	X		css,chaparral,riparian,woodland		L-M	A,B,C	full sun-part shade	
Scrophulariaceae	Mimulus cardinalis	scarlet monkey flower	1	2	X		riparian	X	L	A,B,C	full sun-full shade	
Nyctaginaceae	Mirabilis californica	wishbone bush	<3	<3		X	css,chaparral	X	L	A,B,C	full sun	
Lamiaceae	Monardella hypoleuca	monardella	1-2	1-2			css,chaparral,woodland		M	A,B,C	full sun-part shade	X
Paeoniaceae	Paeonia californica	California peony	1	1		X	css,chaparral		L	A,B,C	full sun-part shade	
Scrophulariaceae	Penstemon centranthifolius	scarlet bugler	1-2	1		X	chaparral,woodland		L	A,B,C	full sun-part shade	X
Scrophulariaceae	Penstemon heterophyllus var. australis	foothill penstemon	2	2		X	css,chaparral,woodland	X	L-M	A,B,C	full sun-part shade	X
Scrophulariaceae	Penstemon spectabilis	showy penstemon	2-3	3			css,chaparral,woodland		M	B,C	full sun-part shade	
Scrophulariaceae	Penstemon x parishii	hybrid scarlet bugler	3-5	1-3		X	chaparral,oak woodland	X	L	A,B,C	full sun	
Hydrophyllaceae	Phacelia imbricata	mountain phacelia	6-18"	6-12"			chaparral,woodland	X	L-M	A,B,C	part sun-full shade	
Ranunculaceae	Ranunculus californicus	California buttercup	1-3	1-3	X		oak woodland,grassland	X	M	A,B,C	part shade	
Rhamnaceae	Rhamnus crocea	redberry	3-6	3		X	css,chaparral	X	M	B,C	full sun	X
Saxifragaceae	Ribes aureum	golden currant	3-6	3-6	X	X	chaparral,woodland, riparian	X	M	B,C	part sun	X
Saxifragaceae	Ribes speciosum	fuschia-flowering gooseberry	3-6	3-6		X	css,chaparral, woodland	X	M	B,C	part shade-full shade	X
Rosaceae	Rosa californica	California rose	3-6	5+	X	X	chaparral,riparian,woodland	X	L-M	A,B	full sun-part shade	X
Rosaceae	Rubus ursinus	California blackberry	2-5	6+	X		chaparral, riparian	X	M	B,C	part shade-full shade	
Lamiaceae	Salvia leucophylla	purple sage	3-4	4-6	X	X	css	X	M-H	B,C	full sun	
Lamiaceae	Salvia mellifera	black sage	3-5	6+		X	css,chaparral, woodland	X	M-H	B,C	full sun-part shade	X
Lamiaceae	Salvia spathacea	hummingbird sage	1-2	3	X	X	chaparral,woodland, riparian	X	M	B,C	part shade-full shade	X
Saxifragaceae	Saxifraga californica	California saxifrage	1-2	1-2	X		riparian	X	L	A,B,C	part sun-full shade	
Scrophulariaceae	Scrophularia californica	California figwort	3-5	20-36"	X		css,chaparral,oak woodland,riparian		M	B,C	part shade-full shade	
Lamiaceae	Scutellaria tuberosa	skullcap	2-8"	3			chaparral,woodland	X	L	A,B,C	part shade-full shade	
Malvaceae	Sidalcea malviflora ssp. sparsifolia	checker bloom	<2	<2	X		chaparral,woodland	X	L-M	A,B,C	full sun-part sun	X
Caryophyllaceae	Silene laciniata ssp. major	Indian pink	1-4	2	X	X	css,chaparral	X	L-M	A,B,C	full sun	
Iridaceae	Sisyrinchium bellum	blue-eyed grass	1	1		X	css,chaparral,open meadows	X	L	A,B,C	full sun-part shade	X
Solanaceae	Solanum xanti	purple nightshade	2-3	3	X		css,chaparral,woodland		M	B,C	full sun-part sun	X
Asteraceae	Solidago californica	California goldenrod	1-2	3+	X		woodland,grassland	X	M	A,B,C	full sun-part shade	
Lamiaceae	Stachys bullata	hedge nettle	<1	3+	X	X	chaparral	X	L-M	A,B,C	full sun-part shade	
Caprifoliaceae	Symphoricarpos mollis	snowberry	1-3	3	X	X	css,chaparral,woodland,riparian	X	L-M	A,B,C	part shade-full shade	X
Ranunculaceae	Thalictrum polycarpum	meadow rue	2-6	2	X	X	chaparral,woodland,riparian	X	L	A,B,C	part shade-full shade	X
Lamicaceae	Trichostema lanatum	wooly blue curls	3-5	5		X	css,chaparral,woodland		M	B,C	full sun	
Typhaceae	Typha domingensis	southern cattail	6+	3+	X		marsh		L-M	B,C	full sun-full shade	
Asteraceae	Venegasia carpesioides	canyon sunflower	3-5	3	X		css,chaparral,woodland,riparian	X	M	A,B,C	part shade-full shade	
Violaceae	Viola pedunculata	wild pansy	<1	1-2			css,chaparra,woodland	X	L-M	A,B,C	full sun-part shade	X
Vitaceae	Vitis girdiana	wild grape	climber	climber	X		riparian	X	L	A,B,C	part shade-full shade	
Agavaceae	Yucca whipplei	Whipple's yucca	3	3		X	css,chaparral, oak woodland	X	L	A,B,C	full sun	

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Perennial Shrubs												
Papaveraceae	Dendromecon rigida	bush poppy	3-10	8		X	chaparral	X	L	A,B,C	full sun-part sun	
Fabaceae	Hoita macrostachya	leather root	6	3-6	X		riparian	X	M	B,C	full sun-part shade	
Asteraceae	Isocoma menziesii	coast goldenbush	1-3	3	X		css,dune	X	M	A,B,C	full sun-part shade	
Lamiaceae	Lepechinia fragrans	fragrant pitcher sage	3	4	X		chaparral		M	B,C	full sun-part shade	
Fabaceae	Lotus scoparius	deer weed	2-3	3		X	css,chaparral	X	M	A,B,C	full sun-part shade	
Anachardiaceae	Rhus trilobata	skunkbush	3-5	4	X	X	chaparral,woodland, riparian	X	M	B,C	part shade-full shade	X
Saxifragaceae	Ribes malvaceum	chaparral currant	6-8	6-8		X	chaparral,woodland	X	M	B,C	full sun	X
Solanaceae	Solanum douglasii	white nightshade	1-6	1-6			css,chaparral	X	L	A,B,C	full sun-part shade	
Groundcover and Low Shrubs												
Asteraceae	Baccharis pilularis	dwarf coyote bush	6-12	6	X	X	css,chaparral,woodland	X	L-M	A,B,C	full sun	X
Asteraceae	Baccharis plummerae	Plummer's baccharis	6-12	6	X	X	css,woodland	X	M	B,C	full shade	
Asteraceae	Baccharis salicifolia	mule fat	6-12	6	X	X	css,chaparral,riparian,woodland	X	M	C	full sun	X
Asteraceae	Coreopsis gigantea	giant coreopsis, sea dahlia	3-4	2		X	css,chaparral	X	L-M	A,B,C	full sun-part sun	
Onagraceae	Epilobium canum var. canum	California fuchsia	1-2	3-5	X	X	css,chaparral,woodland	X	L	A,B,C	full sun-part sun	X
Asteraceae	Eriophyllum confertiflorum	golden yarrow	1	2	X	X	rocky slopes,css	X	M	A,B,C	full sun	
Cistaceae	Helianthemum scoparium ssp. vulgare	rockrose, sunrose	1-2	2-3		X	css,rocky slopes	X	L	A,B,C	full sun-part shade	
Polemoniaceae	Linanthus californicus	prickly phlox	2	1			css,chaparral	X	M	A,B,C	sun-shade	
Cactaceae	Opuntia littoralis	coastal prickly pear	2-3	6-10		X	css,chaparral	X	L	A,B,C	full sun	
Cactaceae	Opuntia prolifera	coastal cholla	3-6	3-6		X	css	X	L	A,B,C	full sun-part shade	
Rosaceae	Potentilla glandulosa	sticky cinquefoil	2	3	X	X	css,chaparral,riparian,woodland	X	L-M	A,B,C	full sun	X
Saxifragaceae	Ribes californicum	hillside gooseberry	3	3-6		X	chaparral, woodland	X	M	B,C	part shade	X
Lamiaceae	Salvia apiana	white sage	3-5	3-5		X	css,chaparral,woodland	X	M-H	B,C	full sun	X
Lamiaceae	Satureja douglasii	yerba buena	<1	3+	X	X	css,chaparral,riparian,woodland	X	L	A,B,C	part shade-full shade	X
Crassulaceae	Sedum spathulifolium	stonecrop	<1	18"	X	X	css	X	L	A,B	part shade-full shade	
Small Shrubs												
Fabaceae	Amorpha californica	false indigo	3-6	3-6		X	chaparral	X	M-H	B,C	part sun-full shade	
Berberidaceae	Berberis pinnata var. insularis	California barberry	4-5	4-6	X	X	riparian	X	M	A,B,C	full shade	
Asteraceae	Brickellia californica	California brickel bush	1-3	3-6		X	css,chaparral	X	M	B,C	full sun-part sun	
Fabaceae	Lupinus chamissonis	dune bush-lupine	3-6	3	X	X	css		M	B,C	full sun	X
Fabaceae	Lupinus longifolius	bush lupine	3-5	2-4			css,chaparral,oak woodland		M	B,C	full sun	X
Fabaceae	Pickeringia montana	chaparral pea	3	6		X	chaparral	X	M	B,C	full sun	
Medium Shrubs												
Asteraceae	Artemisia californica	California sagebrush	2-5	2-6	X	X	css,chaparral,woodland	X	H	C	full sun	X
Cornaceae	Cornus glabrata	brown dogwood	3-10	3-6	X		riparian		M	B,C	full sun-full shade	
Polygonaceae	Eriogonum fasciculatum	California buckwheat	3	6		X	css,chaparral, scrub	X	H	C	full sun	X
Large Shrubs / Small Trees												
Fagaceae	Quercus berberidifolia	scrub oak	<20	<20		X	chaparral,woodland	X	M	B,C	full sun-part shade	X

Height and spread measurments in feet unless noted as inches. Irr Tol = Irrigation Tolerant. Drt Tol = Drought Tolerant. OT = Oak Tree Compatilbe. Hill = Stabilizes Hillsides. L=low, M=medium, H=high. css= coastal sage scrub.

Table 7. Recommended Plants for the Santa Monica Mountains

Family	Scientific Name	Common Name	Height	Spread	Irr Tol	Drt Tol	Native Habitat	Hill	Fire Risk	Fuel Mod	Exposure	OT
Rosaceae	Adenostoma fasciculatum	chamise	3-9	2-6		X	css,chaparral,woodland	X	H	C	full sun	
Rosaceae	Adenostoma sparsifolium	red shanks	6-18	2-6		X	css,chaparral	X	H	C	full sun	
Ericaceae	Arctostaphylos glandulosa	Eastwood manzanita	6-15	8		X	chaparral,rocky slopes	X	M	B,C	full sun-part shade	
Ericaceae	Arctostaphylos glauca	bigberry manzanita	15-20	15-20		X	chaparral,rocky slopes,woodland	X	M	B,C	full sun	
Chenopodiaceae	Atriplex lentiformis	quailbush	3-9	3-9			css	X	L	A,B,C	full sun	
Rhamnaceae	Ceanothus crassifolius	hoary-leaved ceanothus	6-10	6-10		X	chaparral	X	M-H	C	full sun-part shade	X
Rhamnaceae	Ceanothus cuneatus	buckbrush	10	10		X	chaparral	X	M-H	C	full sun-part shade	X
Rhamnaceae	Ceanothus leucodermis	white thorn	6-12	10		X	chaparral	X	M-H	C	full sun-part shade	X
Rhamnaceae	Ceanothus megacarpus	big-pod ceanothus	12	12		X	chaparral	X	M-H	C	full sun-part shade	X
Rhamnaceae	Ceanothus oliganthus	harry-leaved ceanothus	9	9	X	X	riparian,chaparral	X	M-H	C	full sun-part shade	X
Rhamnaceae	Ceanothus spinosus	greenbark ceanothus	18	15	X	X	riparian,chaparral	X	M-H	C	full sun-part shade	X
Rosaceae	Cercocarpus betuloides	mountain mahogany	<20	<15	X	X	css,chaparral,woodland	X	M-H	B,C	full sun	
Ericaceae	Comarostaphylis diversifolia	summer holly	6-10	6-8		X	chaparral,woodland		M	B,C	full sun-full shade	
Garryaceae	Garrya veatchii	silk tassel bush	10	3-6		X	chaparral		L-M	B,C	full sun-part sun	
Rosaceae	Heteromeles arbutifolia	toyon	10-25	10-25		X	css,chaparral,woodland	X	M	B,C	full sun-part shade	X
Anacardiaceae	Malosma laurina	laurel sumac	<20	<20			css,chaparral,woodland	X	H	C	full sun-part shade	X
Myricaceae	Myrica californica	California wax-myrtle, Pacific wax myrtle	10-25	10+	X	X	css,riparian	X	M	B,C	full sun-part shade	X
Rosaceae	Prunus ilicifolia	holly-leaf cherry	<20	<15		X	chaparral,css,woodland	X	L-M	B,C	full sun-part shade	X
Rhamnaceae	Rhamnus californica	coffeeberry	3-15	4-15	X	X	css,chaparral,woodland	X	M	B,C	full sun	X
Rhamnaceae	Rhamnus ilicifolia	hollyleaf redberry	3-12	3-12		X	chaparral	X	M	B,C	full sun	
Anachardiaceae	Rhus integrifolia	lemonade berry	<15	<15		X	css,chaparral	X	M	B,C	full sun-part shade	X
Anachardiaceae	Rhus ovata	sugarbush	<20	<20		X	chaparral	X	M	B,C	full sun-part shade	X
Salicaceae	Salix laevigata	red willow	10-40	25+	X		riparian	X	L	A,B,C	full sun-part shade	
Salicaceae	Salix lasiolepis	arroyo willow	20-40	20-30	X		riparian	X	L	A,B,C	full sun-part shade	
Caprifoliaceae	Sambucus mexicana	elderberry	<20	<20	X		css,chaparral,woodland	X	L-M	B,C	full sun-part shade	X
Trees												
Aceraceae	Acer macrophyllum	big-leaf maple	30-95	30-95	X		riparian	X	M	A,B,C	full sun-part shade	
Aceraceae	Acer negundo californicum	box elder	20-50	<50	X		riparian	X	M	A,B,C	full sun-full shade	
Betulaceae	Alnus rhombifolia	white alder	50-90	40+	X		riparian	X	L	A,B,C	full sun-full shade	
Oleaceae	Fraxinus dipetala	foothill ash	18-20	20-30	X	X	riparian		L-M	B,C	full sun	
Oleaceae	Fraxinus velutina	Montebello ash	20-40	20-40	X	X	riparian		M	B,C	full sun	
Juglandaceae	Juglans californica var. californica	California walnut	25-35	30-40	X		riparian,grassland,woodland	X	L-M	B,C	full sun-part shade	X
Platanaceae	Platanus racemosa	western sycamore	50-100	50-100	X		riparian	X	L	A,B,C	full sun	
Salicaceae	Populus balsamifera ssp. trichocarpa	black cottonwood	40-60	40-60	X		riparian	X	L	A,B,C	full sun-part shade	
Salicaceae	Populus fremontii	Freemont cottonwood	40-60	40-60	X		riparian	X	L	A,B,C	full sun-part shade	
Fagaceae	Quercus agrifolia	coast live oak	30-70	70+		X	css,riparian,chaparral,woodland	X	L-M	B,C	full sun-part shade	X
Fagaceae	Quercus lobata	valley oak	70+	70+		X	grassland,woodland	X	L-M	B,C	full sun	X
Lauraceae	Umbellularia californica	California bay	30-75	25+	X	X	chaparral,woodland	X	M	B,C	full sun-part shade	X

Height and spread measurments in feet unless noted as inches. Irr Tol = Irrigation Tolerant. Drt Tol = Drought Tolerant. OT = Oak Tree Compatilbe. Hill = Stabilizes Hillsides. L=low, M=medium, H=high. css= coastal sage scrub.

Table 8. Plants to Avoid in the Santa Monica Mountains

Scientific Name	Common Name
Acacia spp.	acacia, wattle
Aegilops triuncialis	barbed goatgrass
Aeschynomene rudis	rough jointvetch
Ageratina adenophora [Eupatorium a.]	eupatory
Agrostis avenacea	Pacific bentgrass
Ailanthus altissima	tree of Heaven
Albizia spp.	albizia
Alhagi pseudalhagi	camel thorn
Ammophila arenaria	European beach grass
Anthemis cotula	mayweed
Anthoxanthum odoratum	sweet vernal grass
Aptenia cordifolia [Mesembryanthemum cordifolium]	heartleaf iceplant
Arctotheca calendula	capeweed
Arizonicus carinatus	laeripes
Arundo donax	giant reed, arundo
Asphodelus fistulosus	onionweed, asphodel
Atriplex semibaccata	Australian saltbush
Avena spp.	wild oat
Bassia hyssopifolia	bassia
Bellardia trixago	bellardia
Brachypodium distachyon	false brome
Bromus spp. (except B.arizonicus, B.carinatus, B.laevipes)	brome
Cardaria chalepensis	lens-podded white-top
Cardaria draba	white-top, hoary cress
Carduus spp.	thistle
Carpobrotus spp	sea fig, iceplant
Centaurea spp.	starthistle, knapweed
Centranthus ruber	red valerian
Chrysanthemum coranarium	annual chrysanthemum
Cirsium arvense	Canada thistle
Cirsium vulgare	bull thistle
Cistus ladanifer	gum cistus
Conicosia pugioniformis	narrow-leaved iceplant, roundleaf iceplant
Conium maculatum	poison hemlock
Convolvulus arvensis	field bindweed
Conyza Canadensis*	horseweed
Coprosma repens	mirror plant
Cordyline australis	New Zealand cabbage
Cortaderia spp.*	pampas grass
Cotoneaster pannosus, C. lacteus	cotoneaster
Crataegus monogyna	hawthorn

Table 8. Plants to Avoid in the Santa Monica Mountains

Scientific Name	Common Name
Crocosmia x crocosmiiflora	
Crupina vulgaris	bearded creeper, common crupina
Cupressus spp.*	cypress
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Cyperus involucratus	umbrella plant
Cytisus scoparius	Scotch broom
Cytisus striatus	striated broom
Descurainia sophia	flixweed, tansy mustard
Digitalis purpurea	foxglove
Dimorphotheca sinuata	African daisy, Cape marigold
Dipsacus sativus, D. fullonum	wild teasel, Fullerís teasel
Echium candicans, E. pininana	pride of Madeira, pride of Teneriffe
Egeria densa	Brazilian waterweed
Ehrharta spp.	veldt grass
Eichhornia crassipes	water hyacinth
Elaeagnus angustifolia	Russian olive
Erechtites glomerata, E. minima	Australian fireweed
Erica lusitanica	heath
Eucalyptus spp.*	eucalyptus, gum tree
Euphorbia esula	leafy spurge
Euphorbia lathyris	caper spurge, gopher plant
Euphorbia terracina	Geraldton carnation weed
Festuca arundinacea	tall fescue
Ficus carica	edible fig
Foeniculum vulgare	sweet fennel, wild fennel
Fumaria officinalis, F. parviflora	fumitory
Gazania linearis	gazania
Genista monspessulana	French broom
Glyceria declinata	
Halogeton glomeratus	halogeton
Hedera canariensis	Algerian ivy
Hedera helix.	English ivy
Helichrysum petiolare	licorice plant
Holcus lanatus	velvet grass
Hordeum leporinum	foxtail barley, mouse barley
Hydrilla verticillata	hydrilla
Hypericum canariense	Canary Island hypericum
Hypericum perforatum	klamathweed, St. John's wort
Hypochaeris radicata	rough cat's-ear
Ilex aquifolium	English holly
Iris pseudacorus	yellow water iris, yellow flag
Isatis tinctoria	dyers’ woad

Table 8. Plants to Avoid in the Santa Monica Mountains

Scientific Name	Common Name
Lepidium latifolium	perennial pepperweed,tall whitetop
Leucanthemum vulgare	ox-eye daisy
Ligustrum lucidum	glossy privet
Limonium perezii	sea lavender
Lobularia maritima	sweet alyssum
Lolium multiflorum	Italian ryegrass
Ludwigia uruguayensis (L. hexapetala)	water primrose
Lupinus arboreus	bush lupine
Lythrum salicaria	purple loosestrife
Malephora crocea	ice plant
Malva parviflora	cheeseweed mallow
Marrubium vulgare	horehound
Maytenus boaria	mayten
Medicago polymorpha	California bur clover
Melilotus officinalis	yellow sweet clover
Mentha pulegium	pennyroyal
Mesembryanthemum spp.	iceplant
Myoporum laetum	myoporum
Myriophyllum aquaticum	parrot's feather
Myriophyllum spicatum	Eurasian watermilfoil
Nerium oleander	oleander
Nicotiana glauca	tree tobacco
Olea europaea	olive
Ononis alopecuroides	foxtail restharrow
Oxalis pes-caprae	Bermuda buttercup
Parentucellia viscosa	
Parthenocissus quinquefolia	Virgina creeper
Paspalum dilatatum	dallisgrass
Passiflora caerulea	
Pennisetum spp.	fountain grass, Kikuyu grass
Phalaris aquatica	Harding grass
Phyla nodiflora	mat lippia
Pinus radiata cultivars	Monterey pine
Pinus spp.*	pine
Piptatherum miliaceum [Oryzopsis m.]	smilo grass
Pistacia chinensis	Chinese pistache
Potamogeton crispus	curlyleaf pondweed
Prunus cerasifera	cherry plum
Pyracantha angustifolia	pyracantha
Retama monosperma	bridal broom
Ricinus communis	castor bean
Robinia pseudoacacia	black locust
Rubus discolor	Himalayan blackberry

Table 8. Plants to Avoid in the Santa Monica Mountains

Scientific Name	Common Name
Rumex conglomeratus	creek dock
Rumex crispus	curly dock
Salsola tragus	Russian thistle, tumbleweed
Salvia aethiopis	Mediterranean sage
Salvinia molesta	giant waterfern
Sapium sebiferum	Chinese tallow tree
Saponaria officinalis	bouncing bet
Schinus spp.	pepper tree
Schismus arabicus	Mediterranean grass
Schismus barbatus	Mediterranean grass
Senecio jacobaea	tansy ragwort
Senecio mikanioides (Delairea odorata)	Cape ivy, German ivy
Sesbania punicea	scarlet wisteria tree
Silybum marianum	blessed milkthistle, milkthistle
Sorghum halepense	Johnson grass
Spartina alterniflora	Atlantic or smooth cordgrass
Spartina anglica	cord grass
Spartina densiflora	dense-flowered cord grass
Spartina patens	salt-meadow cord grass
Spartium junceum	Spanish broom
Stipa capensis	
Taeniatherum caput-medusae	Medusa-head
Tamarix spp.	tamarisk, salt cedar
Tanacetum vulgare	common tansy
Taraxacum officinale	dandelion
Tropaeolum majus	nasturtium
Ulex europaeus	gorse
Urtica urens	burning nettle
Verbascum thapsus	woolly or common mullein
Verbena bonariensis, V. litoralis	tall vervain
Vinca major	periwinkle
Washingtonia spp.	fan palm tree
Xanthium spinosum	spiny cocklebur
Zantedeschia aethiopica	calla lily
Zoysia cultivars	amazoy

*** highly flammable**

APPENDIX B
SENSITIVE ENVIRONMENTAL RESOURCE AREAS

Los Angeles County Sensitive Environmental Resource Areas

Sensitive Environmental Resource Areas (SERA) are areas that have been identified by the Los Angeles County General Plan and Local Coastal Program as containing unique or unusual species assemblages, or areas of habitat that are rapidly declining in Los Angeles County. SERA include Environmentally Sensitive Habitat Areas (ESHA), Significant Watersheds, Significant Woodlands and Savannahs, and Watersheds. The SERA were established to protect a special or unique collection of habitats and species from loss due to encroachment and human disturbances. SERA are not intended to function as isolated preservation areas, but rather as areas subject to strictly enforced land use protections and regulations. The biological resources that constitute SERA and the physical conditions necessary for their survival in the Santa Monica Mountains Coastal Zone are discussed in detail below.

General Description of Biological Resources

Undeveloped lands in the Santa Monica Mountains are a mosaic of predominately native environments variously disrupted by weedy non-native species, mostly in areas of past and continuing disturbance. Disturbances are of many types and include burned areas, abandoned road networks dating to the early 1900s, pads graded more recently, and fuel modification zones surrounding buildings and along roads. In general, very old disturbances have recovered to native vegetation though the landforms may remain altered. More recent disturbances tend to be more weedy. This is probably as a result of a complex combination of chronic early succession brought about by recent changes in disturbance frequency (especially brush clearance, fire, and off-road vehicle use) and the historical artifact of a greater abundance and diversity of invasive species in recent decades. The oldest additions to the Santa Monica Mountains non-native flora include mostly Mediterranean and African taxa associated with ranching and the Spanish Colonial period. These are generally annual species such as wild oats (*Avena barbata*, *A. fatua*), black and common mustards (*Brassica nigra*, *B. rapa*), and ripgut and red bromes (*Bromus diandrus, B. rubens*). Giant reed (*Arundo donax*) was added to the flora probably at around the same time; it is known to have been cultivated in the Los Angeles River in the mid-1800's, where it was used as a soil stabilizer and a source for light-construction and roofing material. The first houses in the mountains were accompanied by species such as English ivy (*Hedera helix*), slender mustard (*Hirschfeldia incana*), castor bean (*Ricinus communis*), and periwinkle (*Vinca major*). In the mid-1900s Spanish broom (*Spartium junceum*) was widely planted by road crews. Other relatively recent additions to the local flora include ornamental and nuisance species such as golden wattle (*Acacia pycnantha*), false olive (*Buddleja saligna*), yellow star-thistle (*Centaurea melitensis*), Cape ivy (*Delairea odorata*), terrate spurge (*Euphorbia terracina*), gazania (*Gazania linearis*, *G. pectinifera*), and rat-tail fescue (*Vulpia myuros*).

Topographic and geologic diversity are the primary drivers of biological diversity in the Santa Monica Mountains. Topographic variation exposes landscapes to a variety of intensities in sunlight, wind, fog and rain. Geologic diversity further complicates these correlations by providing selective pressure for plant species with varying chemical tolerances and requirements. In addition to these fundamental factors is uplifting of the mountain range within a matrix of species originating in the deserts, plains, mountain ranges, and seashores of Mexico, the Great Basin, and Coastal California.

In general, south-facing slopes are dominated by the most drought-tolerant vegetation types, collectively grouped under the name of 'coastal sage-scrub.' These formations have an upper canopy of semi-woody shrubs and sub-shrubs, mostly derived from the small-seeded and easily-dispersed sunflower, mint, and buckwheat families. Chaparral formations dominate on north-facing slopes receiving less intense sunlight. Chaparrals have an upper canopy of woody shrubs and small trees, generally derived from species in the rose, buckthorn, oak, and sumac families. Coastal sage-scrub species are usually a sub-dominant or successional component of chaparral communities.

The majority of habitats dominated by trees are confined to riparian areas, but many oak and walnut woodlands occur outside of the direct influence of surface water. In these instances, the woodlands are confined, like the chaparrals, to north-facing slopes. Often, oak woodlands and forests may be found growing on landslides, where soils are deep and well-aerated. Walnut woodlands are another prevalent upland woodland type and occur in areas of higher drought stress than those which would support oak habitats.

Habitats along canyon bottoms and in swales receive greater water inputs than the surrounding uplands. These habitats support riparian and wetland communities mostly dominated by deciduous trees of the willow and sycamore families and shrubs of the sunflower, currant, and honeysuckle families. In areas of permanent flow and exceptionally high water availability, maple, alder, and bay trees are found. Wetlands and areas of low flow velocity support clonal perennial species such as bulrush and cattail.

Watershed function as a biological resource and how it relates to the Local Coastal Program

One of the primary functions of the Local Coastal Program (LCP) is to maintain and improve water quality in the Coastal Zone. To that end, watersheds play an essential role and are afforded heightened protection within the LCP. It is therefore essential to appreciate the dynamic nature of water as a component of the landscape. It may seem obvious, but it is important to understand that *water moves through the landscape*, not simply over it. As it does so, it records the landscape's condition. This record is commonly referred to as "water quality." Watersheds that are impaired, that export water of poor quality, do not convey water at rates that allow for the chemical breakdown and elimination of pollutants. These chemical processes are in large measure, biological processes. The biological processes involved in the removal of pollutants from water require time and a high degree of physical contact between the water and the organisms acting on it. In natural systems these processes occur predominately in upland environments and shallow wetlands of low-velocity flow. Dissolved and suspended constituents of water moving slowly through soil and shallow wetlands have a very high probability of contacting living surfaces, be they microorganisms, fungi, or plant roots. It is at this contact space between the bulk water and living surfaces where water quality is modulated.

It is necessary to highlight the role of upland areas in the modulation of water quality, since a common conception is that water quality is principally regulated by riparian systems (streams and creeks). However, this is not the case. Riparian systems are the recipients of materials produced and transformed in the uplands. In that regard, they are indicative of the eco-system health of the uplands.

A healthy ecosystem is an efficient consumer of nutrients and energy, and allows very little to escape; in a healthy ecosystem, water and other exported materials are "clean." Ecosystems that are denuded of vegetation or overwhelmed by invasive species lack the diversity which fosters a nearly complete use of energy coming into the ecosystem. Hence, they export excessive amounts of sediment and nutrients. The best way to foster the export of clean water from the Santa Monica Mountains is to ensure that development minimizes disturbances to vegetation and maximizes retention of water and pollutants. Key to this is the use of native plants in landscaping. Native plants do not require irrigation, pesticides, or frequent maintenance, and when these extraneous "energy inputs" are eliminated from an ecosystem, export of pollution is minimized.

For these reasons, development in upland habitats must allow for the slow-rate processes that depend on infiltration and retention of water in soils, and development along streams and creeks must be configured to eliminate the possibility of pollutants entering the water late in its course towards the ocean.

Watersheds, as a fundamental component of ecosystem health, are used in the Coastal Zone Plan to facilitate organization and description of the environmental resources within the Santa Monica Mountains Coastal Zone. The Santa Monica Mountains are incised by a number of drainage systems that have been organized into nineteen named watersheds. In reality the number of watersheds is larger than nineteen and would be defined by the number of drainages leading to the ocean. This is a potentially incalculable number, and for the sake of manageability the Los Angeles County Department of Regional Planning has opted to follow the organizational system developed by the Los Angeles County Department of Public Works. This system groups some of the smaller watersheds and sub-watersheds previously identified as specific resource areas in the 1986 Malibu Land Use Plan. These smaller watersheds and sub-watersheds include Lachusa Canyon, now discussed as a part of Los Alisos Canyon; Newton Canyon, now discussed as a part of Zuma Canyon; Dry Canyon, now discussed as a part of Solstice Canyon; Puerco Canyon, now discussed as a part of Corral Canyon; Cold Creek Canyon, now discussed as a part of Malibu Creek Canyon; and Hepatic Gulch, discussed as a part of Las Flores Canyon. In addition, the Ballona Creek watershed is not discussed here as it occupies a very small portion of the Coastal Zone and drains primarily outside of the immediate vicinity of the Coastal Zone.

Specific Descriptions of Biological Resources by Watershed

The following sections describe the biological attributes of watersheds within the Santa Monica Mountains in order of outflow to the Santa Monica Bay, from west to east.

1. **Arroyo Sequit** supports one of the most extensive and well-developed riparian and oak woodlands and associated stream habitats in the Santa Monica Mountains Coastal Zone. Natural pools, waterfalls, and a variety of riparian trees are present. Arroyo Sequit is one of the few streams in southern California, and one of three watersheds in the Santa Monica Mountains within Los Angeles County, that still sustains a population of native southern steelhead trout (*Oncorhynchus mykiss irideus*, Federal Endangered, California Species of Concern). The watershed is largely undisturbed, but scattered development is present in the upper watershed along Mulholland Highway west of Little Sycamore Canyon Road, and homes and a campground fragment a stretch of the Canyon bottom north of Leo Carrillo State Park. The creek has been channelized with grouted rip-rap through the campground, and the associated woodland in that area is degraded as a result of building construction, irrigation and soil compaction. Dense thickets of California bay (*Umbellularia californica*) grow extensively along the East Fork. The lower third of the Canyon is within Leo Carrillo State Park and is mostly undisturbed with the exception of campground facilities located on the Canyon floor. The mouth of the Canyon contains significant marine resources. Plummer's mariposa lily (*Calochortus plummerae*, CNPS List 1B) grows within the Canyon and may be impacted by collection by hikers.

2. Most of **San Nicholas Canyon** is within the City of Malibu. Portions within the unincorporated area support a well-developed coast live oak (*Quercus agrifolia*) woodland in association with the creek and native perennial grassland in upland areas.

3. Much of the **Los Alisos (Decker) and Lachusa Canyon** uplands have been developed at a low density and large areas have been converted to non-native grasslands. The entire area burned in 1985. Lowlands support diverse riparian woodlands dominated by western sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*). Plummer's mariposa (*Calochortus plummerae*, CNPS List 1B) is recorded in Alisos Canyon. The woodland in the vicinity of Decker School Road has been substantially altered or removed as a result of residential development. Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*, CNPS List 2) and the endemic Santa Monica grasshopper (*Trimerotropis occidentalis*) have been reported from Lachusa Canyon.

4. The floor of **Encinal Canyon** is narrow and supports a dense oak- and sycamore-dominated woodland. A ridge east of Encinal Canyon Road has been severely altered by grading, and scattered residences occur along Encinal Canyon Road near Potrero Road. The Encinal Canyon population of Santa Susana tarplant (*Deinandra minthornii*, State Rare, CNPS List 1B) is likely to be the southernmost occurrence of that species in the world and has been severely impacted by fire suppression activities. The riparian habitat within the Canyon supports a population of Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*, CNPS List 2).

5. **Trancas Canyon** is one of the larger canyons in the Santa Monica Mountains Coastal Zone. The watershed is relatively undisturbed south of Encinal Canyon Road. Homes, ranches, and recreational facilities, including a golf course, fragment the watershed north of Encinal Canyon Road and along Mulholland Highway. Coast live oak (*Quercus agrifolia*) and western sycamore (*Platanus racemosa*) dominate the riparian woodland. Isolated oak woodlands occur west of Decker Road. Red shanks (*Adenostoma sparsifolium*)

is relatively common in the northern Canyon. Santa Monica populations of this species are disjunct from the core range of the species, mostly within San Diego County and Baja California. A population of southwestern pond turtle is known in Trancas Canyon. Santa Monica Mountains grasshopper (*Trimerotropis occidentaloides*) has been collected here and is known only from the Santa Monica Mountains. Lyon's pentachaeta (*Pentachaeta lyonii*, Federal and State Endangered) is also recorded from this watershed.

6. **Zuma Canyon** is one of the least disturbed and most remote canyons in the Santa Monica Mountains. The slopes are vegetated with coastal sage scrub and chaparral, and the Canyon bottom supports freshwater pools and diverse riparian woodlands. The westernmost-recorded occurrence of Braunton's milkvetch (*Astragalus brauntonii*, Federal Endangered) is in fire breaks in the upper watershed. Distinctive freshwater fauna, including Southwestern pond turtle (*Emys marmorata pallida*, California Species of Concern) and native fish, are associated with the pools scattered throughout the narrow reaches of the Canyon. Golden eagles (*Aquila chrysaetos*, California Species of Concern), bobcats (*Lynx rufus*), mountain lions (*Puma concolor*), and many other secretive species continue to be reported in Zuma Canyon. Zuma Canyon supported nesting habitat for the formerly endangered peregrine falcon (*Falco peregrinus anatum*, California Species of Concern). The Zuma Canyon watershed is largely undeveloped, disturbed mostly by firebreaks and dirt roads. Development is generally confined to the area near the intersections of Kanan Dume Road with Mulholland Highway and Latigo Canyon Road. Infestations of golden wattle (*Acacia pycnantha*) are becoming entrenched near residential developments on Latigo Canyon Road. A vineyard has been established in Newton Canyon, a tributary to Zuma Creek. Newton Canyon also supports riparian woodlands and dense oak woodlands.

7. The upper and middle reaches of **Ramirez Canyon** are densely wooded, primarily with native coast live oak (*Quercus agrifolia*) and isolated western sycamore (*Platanus racemosa*). Grading for Kanan-Dume Road on the west side of the Canyon has disturbed the watershed but the woodland is sufficiently distant from the road to support diverse wildlife, including gray foxes (*Urocyon cinareoargentus*). The lower one-third of the watershed is developed with residences, but the natural stream and many native trees are intact throughout the Canyon bottom, downstream nearly to Pacific Coast Highway. Dense infestations of Spanish broom (*Spartina junceum*) occur along Kanan-Dume Road and Ramirez Motorway; otherwise the vegetation is in excellent condition.

8. The **Escondido Canyon** watershed includes numerous homes and associated roads, particularly on the ridge west of the Canyon bottom. A major route, Latigo Canyon Road, traverses portions of the east side of the watershed. The streambed supports a riparian woodland dominated by western sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*), similar to that of Ramirez Canyon. Oak woodlands with scattered southern California black walnut (*Juglans californica* var. *californica*, CNPS List 4) occur on the cooler, north-facing slopes west of the stream bottom. An isolated alder (*Alnus rhombifolia*) woodland occurs about mid-canyon. Both the middle and lower reaches of Escondido Canyon have been developed with single-family residences, many of them situated in the riparian woodland habitat. The streambed and many native trees are intact throughout much of the developed lower watershed. The natural stream habitat is

substantially more disturbed in the middle reaches where grading and development are more extensive.

9. The **Latigo Canyon** watershed encompasses scattered homes, small roads, and major parts of Latigo Canyon Road on the west side of the Canyon. The watershed is small relative to many other watersheds in the area; correspondingly, the riparian woodland corridor is short (one-half to two-thirds the length of many others). The least disturbed and most heavily wooded portions of the Canyon are located below and upstream from the Malibu Vista rural village.

10. Most of the **Solstice Canyon** watershed is relatively undisturbed and encompasses highly varied, well-developed riparian woodlands dominated by white alder (*Alnus rhombifolia*), coast live oak (*Quercus agrifolia*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*). An infestation of terrate spurge (*Euphorbia terracina*) has become established and is expanding at the lower end of the Canyon. There are a few scattered homes and a narrow road in the Canyon bottom, but the woodland is intact throughout the Canyon. Lyon's pentachaeta (*Pentachaeta lyonii*, Federal and State Endangered) is known from this canyon. Due both to the lack of disturbance and the well-developed vegetation, large native wildlife populations are present. Unlike many coastal canyons in the Malibu area, white alder (*Alnus rhombifolia*) occurs even in the lowermost reaches of Solstice Canyon, attesting to the perennial nature of the water supply. Like Zuma Canyon, Solstice Canyon historically provided nesting habitat for the formerly endangered peregrine falcon (*Falco peregrinus anatum*, California Species of Concern). The riparian woodland extends downstream to Pacific Coast Highway.

11. A dense cluster of residences has been developed in **Dry Canyon**, a tributary of Solstice Canyon in the eastern part of the watershed. This is adjacent to the extensively developed El Nido rural village and is traversed by Corral Canyon Road on the east. Dry Canyon supports well-developed riparian woodland habitat, but is not particularly diverse relative to less-disturbed canyons. Wildlife populations are not expected to be large, and sensitive animal species requiring remote, undisturbed habitats are not expected to frequent this watershed. Nevertheless, a large population of Catalina mariposa lily (*Calochortus catalinae*, CNPS List 4) is known from this area, and shrubland understory vegetation is intact, relatively free of invasive species, and supports a high diversity of native grasses.

12. **Corral Canyon** supports dense, diverse, well-developed riparian woodlands similar to those of Solstice Canyon to the west. The upper stretches of the watershed are heavily wooded with mixed riparian and pure oak woodlands. The watershed is relatively undisturbed compared to many other coastal canyons, with the exception of the existing Malibu Bowl rural village, a few structures in the lower Canyon, and scattered dirt roads. Brush clearing activities along Corral Canyon road have encouraged a severe infestation of terrate spurge (*Euphorbia terracina*) and castor bean (*Ricinus communis*). A population of Santa Susana tarplant (*Deinandra minthornii*, State Rare, CNPS List 1B) occurs in marine sandstone outcrops at the top of the watershed, and ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellata*) is known from Corral Creek.

13. **Puerco Canyon** is a small watershed adjacent to Corral Canyon, the floor of which is densely lined by willows and associated riparian shrubs. The Canyon floor is disturbed by a road and abandoned residences that were burned in wildfires. A large area of fill was developed at the head of the Canyon prior to the 1950s, possibly in relation to the construction of Pacific Coast Highway or Malibu Canyon Road. These disturbed sites and areas south of the intersection of Puerco Motorway and De Bell Ranch Road are the principle areas in which non-native vegetation is most prevalent. Adjacent slopes are largely undisturbed and support diverse coastal sage scrub and chaparral. Braunton's milkvetch (*Astragalus brauntonii*, Federal Endangered) is known north of the Malibu city boundary. Though relatively small, this canyon is expected to support large wildlife populations due to its relatively undeveloped condition.

14. The **Malibu Creek Watershed** is by far the largest of the watersheds in the Santa Monica Mountains. Indeed, the creek is older than the mountains, as evidenced by the fact that the creek begins north of the range. The watershed supports outstanding oak and riparian woodlands with an unusually large variety of riparian plant species. Black cottonwood (*Populus nigra*), California bay (*Umbellularia californica*), leather-leaf ash (*Fraxinus velutina*), white alder (*Alnus rhombifolia*), arroyo willow (*Salix lasiolepis*), western sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), California wild grape (*Vitus californica*), and giant chain fern (*Woodwardia fimbriata*) are all present. Portions of the watershed are remote and undisturbed, particularly the central northern portions. Malibu baccharis (*Baccharis malibuensis*, CNPS List 1B) was discovered here in the late 1980s and officially described in 1996. Its range was originally thought to be limited to the Malibu Creek Watershed from the areas near SOKA University westward to Malibu Lake. However, in 2002 a highly noteworthy occurrence was recorded in Orange County. Additional rare plant occurrences within Malibu Canyon include a large population of Plummer's mariposa lily (*Calochortus plummerae*, CNPS List 1B) near Red Rock Canyon, marcescent dudleya (*Dudleya cymosa* ssp. *marcescens*, Federal Threatened, State Rare, CNPS List 1B) in Udell Gorge, Santa Monica Mountains dudleya (*D. cymosa* ssp. *ovatifolia*, Federal Threatened, CNPS List 1B), a disjunct population of round-leaved filaree (*Erodium macrophyllum*, CNPS List 2), Lyon's pentachaeta (*Pentachaeta lyonii*, Federal and State Endangered), and broadleaf stonecrop (*Sedum spathulifolium*). Malibu Creek continues to sustain native steelhead trout (*Onchorhynchus mykiss irideus*, Federal Endangered, California Species of Concern) populations below Rindge Dam, as well as many wildlife species declining in numbers, such as Southwestern pond turtles (*Emys marmorata pallida*, California Species of Concern), mountain lions (*Puma concolor*), and golden eagles (*Aquila chrysaetos*, California Species of Concern). Furthermore, the mouth of Malibu Creek supports the only remaining functional lagoon in Los Angeles County. This area provides a critical refuge for migratory shorebirds and waterfowl, and supports populations of at least 18 native fishes. The lagoon and lower portions of the creek support populations of tidewater goby (*Eucyclogobius newberryi*, Federal Endangered, California Species of Concern) and arroyo chub (*Gila orcutti*, California Species of Concern). Malibu Canyon and the lagoon have been subjected to various human impacts including habitat removal, increased siltation, sewage effluent discharge, harassment of wildlife by domestic animals and people, and fragmentation by roads and residences. North of Pepperdine University, a small-scale grazing and agricultural operation has contributed to the local increase of invasive species, including terrate spurge (*Euphorbia terracina*) and pigweed amaranth (*Amaranthus retroflexus*). Much of the

remaining watershed within the Coastal Zone is undisturbed. Development is concentrated in the middle watershed (Monte Nido area) and the lower watershed (vicinity of the Malibu Civic Center). The watershed is dominated by a diverse mosaic of chaparral, coastal sage scrub, grassland, and native woodlands.

15. **Cold Creek Canyon** is an eastern tributary of Malibu Creek. It contains year-round water and supports well-developed native vegetation and wildlife. Undisturbed stands of chaparral, oak woodland, coastal sage scrub, riparian woodland, and associated wildlife inhabit Cold Creek Canyon. The Cold Creek watershed is one of two remaining watersheds in the Santa Monica Mountains to contain stoneflies (Order Plecoptera), a group of aquatic insects very sensitive to impacts from siltation and urban runoff. Many other uncommon plant and animal species occur in this area including big-leaf maple (*Acer macrophyllum*), red shanks (*Adenostoma parvifolia*), Malibu baccharis (*Baccharis malibuensis*, CNPS List 1B), island mountain mahogany (*Cercocarpus betuloides* var. *blancheae*, CNPS List 4), Santa Susana tarplant (*Deinandra minthornii*, State Rare, CNPS List 1B), stream orchid (*Epipactis gigantea*), flowering ash (*Fraxinus dipetala*), ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*, CNPS List 4), and interior live oak (*Quercus wislizenii*). In addition, several pockets of native grassland supporting Federally-endangered Lyon's pentachaeta (*Pentachaeta lyonii*, Federal and State Endangered) occur here. The central core of the Cold Creek watershed, much of it in public ownership, is generally undisturbed and utilized for natural resource-oriented activities. Residential development is heaviest along Stunt Ranch Road within a mile of Mulholland Highway and lower in the drainage basin within the community of Monte Nido, before the watershed joins the Malibu Creek drainage.

16. The floor of **Carbon Canyon** is lined with well-developed riparian woodland, particularly in the upper reaches. The lowermost portion of the Carbon Canyon riparian corridor is more disturbed, sparsely developed, and located immediately adjacent to Carbon Canyon Road. The west side of the watershed is relatively undeveloped, and the east side contains numerous residences and is traversed by Rambla Pacifico, a major road. Extensive rock formations in the head of Carbon Canyon provide perching and nesting habitat for sensitive birds of prey.

17. The middle and upper reaches of **Las Flores Canyon** are remote and undisturbed, whereas the lower reaches contain substantial development concentrated along Las Flores Canyon Road. A critical portion of the Las Flores watershed is the dense riparian woodland and associated stream habitat that extends upstream from the intersection of Gorge Road and Las Flores Canyon Road. This area supports western sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), California bay (*Umbellularia californica*), coast live oak (*Quercus agrifolia*), and associated sensitive understory species. Wildlife requiring undisturbed remote brush areas frequent this canyon as do sensitive riparian wildlife such as red-shouldered hawk (*Buteo lineatus*). The Canyon and associated upland vegetation have been severely damaged by frequent brush fires.

18. Another highly significant feature of Las Flores Canyon is **Hepatic Gulch**, a small, rocky area supporting an unusual blend of primitive, moisture-requiring plant species known collectively as cryptogams. These include mosses, liverworts, hornworts, and ferns. These plants form an unusual association with drought-adapted plant species such

as yucca and other chaparral species. This unique habitat has developed as a result of the concentration of runoff along the sandstone rock formation. The area also supports numerous uncommon taxa of vascular plants, including wooly Indian paintbrush (*Castilleja foliolosa*), Wright's buckwheat (*Eriogonum wrightii* var. *membranaceum*), and an unusually dense population of red-skinned onion (*Allium haematochiton*). The area is affected by surrounding residential development, and has been moderately invaded by non-native grasses. A population of false olive (*Buddleja saligna*) is becoming established, probably originating from ornamental plantings in a residential development on higher slopes.

19. **Piedra Gorda Canyon** is a small, undeveloped watershed. It is not heavily wooded like nearby Las Flores or Tuna Canyons; rather, it supports scattered riparian trees and dense riparian thickets. Wildlife populations are expected to be fairly large despite the small size of this watershed due to its degree of isolation.

20. **Tuna and Peña Canyons** are nearly undisturbed with the exception of several concentrated ranch and residential areas at the top of Tuna Canyon. A winding narrow one-way road (Tuna Canyon Road) runs the length of Tuna Canyon. Several single-family residences have been constructed in the upper reaches of the Tuna Canyon watershed within recent years, and a reservoir was built here in the latter half of the 1900s that now serves as a stopover point for waterfowl. Tuna and Peña Canyons are considered sensitive because of a combination of factors including the presence of healthy vegetation, well-developed riparian woodlands, year-round water, and the near lack of significant development with the exception of upper Tuna Canyon. In addition to dense stands of western sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*), these canyons also support white alder (*Alnus rhombifolia*), black cottonwood (*Populus nigra*), and giant chain fern (*Woodwardia fimbriata*). Peña Canyon is nearly undisturbed with the exception of off-road vehicle tracks in its uppermost reaches. Tuna Canyon has undergone considerably more human impact, particularly in the northwest portion where grading and grazing have been relatively heavy.

21. **Topanga Canyon** is a large coastal canyon that supports varied native riparian vegetation and wildlife. It also contains extensive residential and commercial development in the northern two thirds of its length. The southern portion has remained undisturbed between the communities of Fernwood and Sunset Point and is under the ownership of California State Parks. The Canyon bottom and adjacent north-facing slopes contain diverse riparian woodlands with stands of California bay (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and Fremont cottonwood (*Populus fremontii*) in addition to the more common coast live oak (*Quercus agrifolia*) and western sycamore (*Platanus racemosa*) woodlands. Tributary canyons draining into Topanga, such as Old Topanga, Red Rock, Hondo, and Greenleaf, also support dense native woodlands. The chaparral and coastal sage scrub covering many of the slopes in the Topanga watershed are in good condition and typical of undisturbed brush habitats in the coastal Santa Monica Mountains. Plummer's mariposa lily (*Calochortus plummerae*, CNPS List 1B), Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*, Federal Threatened, CNPS List 1B), and Braunton's milk-vetch (*Astragalus brauntonii*, Federal Endangered) have all been recorded from Topanga Canyon, as well as southwestern

pond turtle (*Emys marmorata pallida*, California Species of Concern) and southern steelhead (*Oncorhynchus mykiss irideus*, Federal Endangered, California Species of Concern). The Topanga Canyon watershed is one of two remaining watersheds in the Santa Monica Mountains to contain stoneflies (Order Plecoptera), a group of aquatic insects very sensitive to impacts from siltation and urban runoff. Gertsch's socalchemmis (*Socalchemmis gertschi*), a species of spider discovered in nearby Brentwood Canyon to the east, was described in 2001 and is also known from Topanga Canyon.

APPENDIX C
HISTORIC AND CULTURAL RESOURCES

The Santa Monica Mountains is an area rich in historic and cultural resources, including paleontological, archaeological, and Native American resources. Many of these resources are found on lands under the management of the National Park Service, the California Department of Parks and Recreation, and the Santa Monica Mountains Conservancy. The stewardship and preservation of historic and cultural resources in the Santa Monica Mountains is important for three main reasons:

- Increasing public use, growing pressures for development and deterioration through age and exposure continue to place the Mountains' historic resources at risk.
- It is in the public interest to preserve historic resources because they are irreplaceable and offer cultural, educational, aesthetic, and inspirational benefits.
- The stewardship of historic resources is necessary to deepen cultural and historical awareness as well as to increase the public's understanding of the existing environment.

The National Park Service conducts ongoing research on the history and cultural heritage of the Santa Monica Mountains. Summarized below are some of the major findings of its research.

Paleontological Resources

Paleontological resources, or fossils, are the remains of ancient animals and plants, as well as trace fossils such as burrows, which can provide scientifically significant information on the history of life on earth. Paleontological resources in the Santa Monica Mountains include isolated fossil specimens, fossil sites, and fossil bearing rock units. Fossils of fish, pectinids (scallops), gastropods (single valve mollusks), protists (microbes, including slime molds, protozoa and primitive algae), pelecypods (bivalves), barnacles, and some rare fragments of bone have been recovered from the geologic units that are exposed in the study area. These specimens are scientifically significant, and have yielded information on evolutionary patterns and geographic dispersal of many animal groups within the last 15 million years. This paleontological material has also been useful in the interpretation of paleoenvironmental conditions and the ages of rocks in this area of southern California. The oldest paleontological resources in the Mountains come from the Late Cretaceous Chatsworth formation. Ammonites, extinct mollusks related to the chambered nautilus, have been collected from this formation, as well as marine foraminifera, clams, snails, bryozoans, and shark teeth.

The Santa Monica Mountains area has been the site of marine deposition for much of the Cenozoic period (the last 65 million years). There are a number of tertiary rock units in the mountains known to yield scientifically significant paleontologic resources, including the Topanga, Modelo, and Pico formations. The Topanga formation, a shallow-water marine sandstone unit, contains abundant specimens of gastropods, valves of the giant pectinid (scallop), and about 50 species of mollusks. Bony fish, bivalves, and gastropods have been found in the Calabasas formation.

Paleontological sensitivity varies throughout the Coastal Zone and depends on local geology as well as geomorphic factors. The geology and depositional history of different rock units, in turn largely determines the potential for yielding scientifically or educationally significant fossil remains. Marine sediments, in contrast to terrestrial sediments, often do not contain fossils. This is because they are normally deposited under subaerial conditions, an environment of deposition not conducive to fossil preservation. Table 5 summarizes the rock units and the paleontological sensitivity of those formations within the Santa Monica Mountains Coastal Zone:

Table 5. Rock Formations of the Santa Monica Mountains

Formation	Paleontological Sensitivity
Igneous Rocks	
Conejo Volcanics (Tco, Tcom, Tcosc, Tcor, Tcob, Tcof, Tcop, Tcos)	none
Zuma Volcanics (Tz)	none
Sedimentary Rocks	
Tuna Canyon Formation (Kt)	high
Coal Canyon Formation (Tcc)	high
Sespe Formation (Ts, Tsp)	moderate
Vaqueros Formation (Tv)	high
Topanga Canyon Formation (Tt, Ttc, Ttf, Tts)	high
Calabasas Formation (Tc, Tcmp, Tcn, Tcd, Tclc)	high
Monterey Shale/Modelo Formation (Tm)	high
Trancas Formation (Tr)	high
Llajas Formation (Tll)	high
Intrusive Rocks (Ti)	moderate
Unconsolidated Quaternary Sediments	
Artificial Fill (af)	none
Quaternary Landslide Deposits (Qls)	high
Beach Deposits (Qb)	low
Colluvium (Hills Slope Deposits) (Qc)	low
Alluvial Fan Deposits (Qal, Qalc, Qalp)	low
Valley Fill Deposits (Qt, Qts, Qtm, Qu)	moderate to high

Source: SMMNRA EIS 2000, USGS 2005

Given the high occurrence of paleontological resources within the Coastal Zone Plan Area, individual development projects occurring within sensitive or potentially sensitive rock formations will require site specific surveys and analyses to determine potential impacts and mitigation requirements.

Cultural Resources

The Santa Monica Mountains have been at the heart of cultural activity for thousands of years, affecting cultural processes throughout the region. The indigenous Chumash and Gabrieliño/Tongva peoples, two of the most populous and sophisticated native cultures, have occupied land within the Mountains since prehistoric times. The Chumash people have inhabited the Mountains for nearly 8,000 years, while the Gabrieliño/Tongva people moved into the eastern Santa Monica Mountains about 2,000 years ago. According to ethnographic records and Spanish accounts, the Fernandeño-speaking Native Americans, related to the Gabrieliños, occupied the area east of Topanga Creek, and the Ventureño-speaking Chumash occupied the area to the west. Languages spoken east and west of Topanga Canyon indicate that the study area lies at the border between two different language and cultural groups. Mission records also document intermarriages between the Gabrieliño and Chumash; thus, it can be expected that a mixture of cultural traits may be represented in the archaeological record in the study area (VFCDEIR, 134). The Native peoples initially practiced a mixed hunting and plant gathering food strategy, emphasizing seed processing over hunting. This shifted towards more of a reliance on ocean resources and an increase in the size and number of permanent villages. Over time, the Chumash and Gabrieliño/Tongva people developed a monetary system and exchange network, establishing more permanent villages along trading routes, referred to as rancherías by the Spanish. They traded extensively among their own villages as well as with neighboring groups. This subsistence pattern and increased trade allowed permanent villages to grow into regional centers, encompassing smaller surrounding communities.

The Chumash and Gabrieliño/Tongva cultures thrived until late 18th century when Spanish missions increasingly encroached upon their lives and livelihood. Exploration of California was initiated by explorers from Spain, Portugal, and Mexico from the 1500s to the 1700s. During the Spanish Colonial period from 1769 to 1822, Spain established a chain of Franciscan missions in California. The first mission in the vicinity of the Santa Monica Mountains was the San Gabriel Mission, established in 1771. Regional missions enlisted the workforce of the Native Americans who voluntary left or were coaxed from their villages, persuaded by food, shelter and clothing, and often were forced to relinquish their indigenous ways.

Around 1800, the Spanish Crown began granting land to retiring Spanish soldiers, much of which was in the Santa Monica Mountains. Many of these granted lands, known as ranchos, were used for cattle ranching and farms and often were worked by the Native Americans. Throughout the 1800s, after winning independence from Spain, the Mexicans continued to distribute mission lands to settlers and grant large tracks of land to private individuals. By the late 19th century, most Native Americans had move to missions or were employed by ranchos, and no longer lived on their ancestral lands. Divided and absorbed into the Spanish mission and ranch system, the Chumash and Gabrieliño/Tongva lost control of their destiny. During the mid to late 19th century, after the Treaty of Hidalgo was signed in 1848 and California was annexed into the United States, much of the area was homesteaded by Americans looking for land. Large ranches were divided into smaller farms to open up more opportunities for families moving to the area, completing the displacement of the Chumash and Gabrieliño/Tongva from their ancestral lands. Throughout the 20th century, much of the land in the Mountains was developed for recreational and commercial uses.

Archaeological Resources

Archaeological resources refer to any material remains of past human life or activities that are of archaeological interest, including Native Archaeological resources such as pottery, basketry, bottles, weapons, weapon projectiles, tools, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, and historic cultural resources such as structures or portions of structures.

An estimated 30 percent of the land throughout the Santa Monica Mountains has been surveyed for archaeological sites. The South Central Coastal Information Center (SCCIC) at California State University Fullerton serves as the repository for archaeological and cultural historic resources within Southern California. Through discussions with SCCIC and past archaeological surveys, it is evident that the Mountains contain many geologic elements that indicate the presence of archaeological resources, such as drainage courses, springs, knolls, rock outcroppings, and oak trees. There are over 1,500 known archaeological sites in the mountains, one of the highest densities of any mountain range in the world. Additionally, five major plant communities that would have existed as the source of important resources in prehistoric times are still present in the planning area. These plant communities are chaparral, coastal sage scrub, native grasslands, southern oak woodlands, and riparian. Each plant community provided a unique resource to the Native Americans that populated the area. Known native archaeological resources in the Mountains include pictographs, village sites, sacred sites, and special use sites such as ovens and other stone accumulations, including tools and organic remains. Collectively, these sites represent roughly 9,000 years of human use, including burial grounds dating back more than 1,000 years. Such sites document the gradual adaptation of the Chumash and Gabrieliño/Tongva to the region's resources over thousands of years.

The area also contains significant more recent historical artifacts dating back over the past few hundred years, including a cemetery dating from the period 1775 to 1825. Another local site is used by archaeologists as the defining location for early archaic structures in Southern California. With nearly 1,300 homestead claims in the Santa Monica Mountains, in addition to hundreds of structures in the Mountains and in the adjacent foothills, there are numerous features that are considered to be of at least local historical significance, including houses, ranches, and barns. Some are significant for events that occurred there, while others are significant for the individuals who lived there, or are important in terms of architectural history.

Unfortunately, many of the known sites show considerable disturbance due to erosion that results from fire, flood, earthquakes, the effects of human land use practices, and vandalism. In some instances, historic and prehistoric artifacts such as stone tools, antique nails, and equipment parts have been gathered or even destroyed by visitors or residents. Recreation area operations have also negatively impacted historic trails and roads when these trails and roads have been converted to other uses or obliterated.

The long term interaction of the natural landscape and the practices of its inhabitants create the cultural landscape of an area. The Native American Chumash and Gabrieliño/Tongva peoples have occupied land within the Santa Monica Mountains since prehistoric times. During the 19^{th} century, farms and cattle ranches were established and eventually, much of the land was established as recreational and commercial uses. Each cultural landscape contains features that include barns, corrals, fences, farmhouses, archeological sites, roads and trails, water management structures, non-native vegetation and landscaping, all of which provide tangible evidence of the activities and habits of people who occupied, developed, used, and shaped the land to serve their needs.

Impacts

The land use changes proposed under the Coastal Zone Plan result in reduced development intensity compared to what would occur under the 1986 Malibu Land Use Plan. However, future development still has the potential to significantly affect cultural resources. In locations where undeveloped land exists and future development is proposed, unknown and buried prehistoric or historic resources could be affected. It would be expected that areas of known moderate and high paleontological and archaeological sensitivity would be more significantly affected than areas of lesser sensitivity. Each specific development project proposed within the planning area that involves surface disturbances (i.e., grading for project development and infrastructure) carries some potential for significant impacts to these resources. County development review procedures include consideration of all historic and cultural resources, including paleontological, archaeological and historic, and Native American cultural resources. Mitigation measures are required where it is determined development will adversely impact any of these resources.

APPENDIX D
GEOTECHNICAL RESOURCES

Geologic Setting

The Santa Monica Mountains Coastal Zone is situated within the Transverse Range Geomorphic Province of Southern California. The province includes the Transverse Mountain Ranges and structural basins, which trend approximately east-west. This trend is inconsistent with the majority of Southern California mountain ranges, which typically trend north-south. The Transverse Range Geomorphic Province forms a major structural block of the earth's crust between the San Gabriel and San Andreas faults on the northeast, and the Malibu Coast and Anacapa-Santa Monica faults on the south.

Geological conditions within the Coastal Zone are substantially diverse, with a range of geologic formations. The dramatic topographic relief in the Santa Monica Mountains is a result of differential erosion and plate tectonics. This is evidenced by the hillside, valley, and coastal characteristics found throughout the study area, with elevations ranging from 2,824 feet at Castro Peak to sea level along the coastline. Level topographic areas comprise only a small portion of the total land area. Overall, these conditions reflect north-to-south stresses creating folds (a curve or bend in the strata) and accompanying thrust faults (a fault which results in movement of one rock unit over another). These stresses have been active since at least the middle Miocene time, approximately 22.5 million years ago, when major plate tectonic activity occurred.

Stratigraphy and Formational Description

The Mountains are a complex assemblage of marine and non-marine deposits. Thirteen different rock units are found within the study area as outlined in Table 6: Monterey Shale/Modelo Formation (Tm), Trancas Formation (Tr), Zuma Volcanics (Tz), Intrusive Rocks (Ti), Calabasas Formation (Tc, Tcmp, Tcn, Tcd, Tclc), Conejo Volcanics (Tco, Tcom, Tcosc, Tcor, Tcob, Tcof, Tcop, Tcos), Topanga Canyon Formation (Tt, Ttc, Ttf, Tts), Vaqueros Formation (Tv), Sespe Formation (Ts, Tsp), Llajas Formation (Tll), Coal Canyon Formation (Tcc), Tuna Canyon Formation (Kt), and several Unconsolidated Quaternary Sediments (af, Qal, Qalc, Qalp, Qc, Qb, Qls, Qu, Qt, Qts, Qtm). The rock units range in age from approximately 65 million years old to modern times.

Table 6. Geologic Units of the Santa Monica Mountains Coastal Zone

af	**Artificial Fill** (late Holocene) - Confined mainly to roadways	
Qal	**Alluvium** (late Holocene) **-** Sand, gravel, and silt, confined to active and recently active channels and floodplains	
	Qalc	**Alluvium**-Active channels.
	Qalp	**Alluvium-**Floodplain deposits, mudflow deposits.
Qc	**Colluvium (**Holocene and late Pleistocene) - Silt, clay, and sand, locally with abundant rock fragments; chiefly material that has moved downslope by gravity. Commonly mantles slopes mapped as bedrock to depths of 0.1 to 1 meter but may be as thick as 12 m along coastal slopes. "Parent" material of debris flows generated by soils slips during heavy rainfall.	
Qb	**Beach Deposits** (Holocene) - Fine- to medium-grained sand; rounded pebble gravel locally present.	

Qls		**Landslides and Landslide Deposits** (Holocene and late Pleistocene) - Chiefly deposits but also includes scar areas, resulting from mass wasting by slides, slumps, falls, and flows. "Parent" materials may be bedrock or surficial deposits or both.
Qu		**Undifferentiated Surficial Deposits** (Holocene and late Pleistocene) **-** alluvium and colluvium; wind-deposited silt and sand.
Qt		**Coastal Terrace Deposits** (Holocene and late Pleistocene) - nonmarine, alluvium, gravel, silt and clay. Consists of stream terrace and coastal terrace deposits (marine and nonmarine).
	Qts	**Stream Terrace Deposits** - nonmarine, gravel, sand and silt.
	Qtm	**Coastal Terrace Deposits** - marine, sand, silty sand and gravel.
Tm		**Monterey Shale** (South of Malibu Coast fault) (middle to early Miocene) - Marine shale and siltstone, locally silicious to cherty.
Tr		**Trancas Formation** (late to middle Miocene) - Marine mudstone, siltstone, and sandstone; underlain by and may intertongue with Zuma volcanics.
Tz		**Zuma Volcanics** (late to middle Miocene) - Chiefly basaltic and andesitic flows, breccia, pillow lava, tuff, mudflow breccia, volcanic sand and conglomerate, minor mudstone and siltstone interbeds; probably all deposited in a marine environment.
Ti		**Intrustive Rocks** (middle Miocene) - Basaltic (locally diabasic) and andesitic dikes, sills, and irregular bodies. Intrusive into early middle Miocene and older strata north of Malibu Coast fault.
		Topanga Group (middle Miocene) **- Divided into:**
Tc		**Calabasas Formation** - Marine sandstone, interbedded siltstone, silty shale, sedimentary breccia, or conglomerate (proximal turbidites). Includes:
	Tcmp	**Mesa Peak Breccia Member** - Sedimentary breccia a conglomerate consisting chiefly of angular fragments of basalt and andesite in a matrix of very coarse grained sandstone.
	Tcn	**Newell Sandstone Member** - Sandstone and interbedded platy to shaley siltstone with large dolomitic concretions (proximal turbidites).
	Tcd	**Dry Canyon Sandstone Member** - Sandstone and subordinate interbedded siltstone (proximal turbidites). Intertongues with Malibu Bowl Tongue of Conejo Volcanics in eastern part of Malibu Bowl.
	Tclc	**Latigo Canyon Breccia Member** - Sedimentary breccia.
Tco		**Conejo Volcanics** - Basaltic and andesitic breccia, flows, pillow breccia, aquagene tuff, pillow lava, mudflow breccia, volcanic sandstone, and dark-gray siltstone; probably all depositied in a marine environment. Includes:
	Tcom	**Malibu Bowl Tongue** - Basaltic andesitic flows and flow breccia.
	Tcosc	**Solstice Canyon Tongue** - Basaltic and andesitic flows, breccia, tuff, and volcanic sandstone.
	Tcor	**Ramirez Canyon Tongue** - Andesitic and basaltic breccia and tuff breccia (probably mudflow breccia in part), flows, and minor volcanic sandstone.
	Tcob	**Volcanic breccia** - Chiefly andesitic and basaltic; thin limestone.
	Tcof	**Flows** - Chiefly basaltic and andesitic, locally contains interbeds of volcanic sandstone with marine fossils and dark-gray platy to shaly siltstone.
	Tcop	Pillow breccia, aquagene tuff, and pillow lava-chiefly basaltic.
	Tcos	Sandstone (volcanic litharenite) and dark-gray platy to shaly siltstone.
Tt		**Topanga Canyon Formation** -Marine sandstone, siltstone, and pebbly sandstone. East of Malibu Canyon divided into:
	Ttc	**Cold Creek Member** - Marine sandstone, siltstone, and pebbly sandstone.
	Ttf	**Fernwood Member** - Nonmarine sandstone, pebbly sandstone, and mudstone, with minor tuff and limestone.
	Tts	**Saddle Peak Member** - Marine sandstone, pebbly sandstone, and siltstone; pebble-cobble conglomerate at base.
Tv		**Vaqueros Formation** (early Miocene) - Chiefly marine sandstone, minor pebbly sandstone, and interbedded nonmarine mudstone.
Ts		**Sespe Formation** (late Eocene, Oligocene, early Miocene) - Nonmarine sandstone, pebbly sandstone, conglomerate, and mudstone. Characteristically a redbed sequence, but in some localities red color is absent. Includes:
	Tsp	**Piuma Member**-Nonmarine grayish-red sandstone, pebbly sandstone, and mudstone, with minor tuff and limestone.
Tll		**Llajas Formation** (middle Eocene) - Marine sandstone and siltstone.

Tcc	**Coal Canyon Formation** (late Paleocene and Eocene) - Marine sandstone, siltstone, pebbly sandstone, and conglomerate.
Kt	**Tuna Canyon Formation** (Upper Cretaceous) - Marine sandstone with slate chips, siltstone, locally thick cobble conglomerate (turbidite).

Source: Yerkes and Campbell, 1980

Seismic Geologic Hazards

Natural seismic and non-seismic activities in the Santa Monica Mountains contribute to potential hazards faced when developing in the planning area. Two components of seismic activity present a significant hazard: 1) Surface rupturing along fault lines; and 2) Damage to structures due to seismically-induced ground shaking. Other considerations include landslides, liquefaction, and seismically-induced settlement. Soils surveys by agencies such as the Natural Resources Conservation Service identify areas throughout the study area susceptible to landslides and slope failures, particularly during seismic events.

The region contains many faults that have a high potential for seismic activity. The Malibu Coast-Santa Monica-Raymond Hill fault system poses a potentially substantial risk of earthquake damage in the general area. The Simi-Northridge-Verdugo fault system to the north, and the Sycamore Canyon-Boney Mountain System can also significantly impact the planning area. The San Andreas Fault, although located at a greater distance from the study area than the aforementioned faults, also poses a potentially substantial risk to cause seismic damage in the Santa Monica Mountains. The active Malibu Coast Fault, which follows the coastline primarily south of the City of Malibu, is an Alquist-Priolo Earthquake Fault Zone.

Historic Seismic Activity

Although the Coastal Zone lies within a region where large earthquakes have taken place, the study area has not been the epicenter of a large historic earthquake. Local geology makes the region subject to surface rupture during an earthquake along nearby faults, such as the one that occurred in the vicinity of Las Virgenes Road south of Agoura Road in the 1994 Northridge earthquake. Table 7 lists the major seismic activity that has occurred in the region since the late 1800s.

Table 7. Regional Historic Seismic Activity

Earthquake Location	Intensity	Year of Occurrence
Northridge	6.7	1994
Pt. Mugu	5.7	1973
San Fernando	6.5	1971
Wheeler Ridge	7.7	1952
Santa Barbara	5.9	1941
Santa Barbara	6.3	1925
Newhall	6	1893

Source: LSA Associates, Inc., 1996

Seismic activity in the Santa Monica Mountains can have widespread impacts, despite relatively low development densities and the required compliance with current building and safety codes. Earthquakes can cause direct damage to structures, roadways, and utilities, as well as trigger landslides in unstable areas, endangering lives and property. Maps by the California Geological Survey (page D-44) identify many areas in the Santa Monica Mountains with the potential for earthquake-induced landslides. The 1994 Northridge earthquake triggered more than 1,400 individual landslides within the Mountains (USGS 1995, SMMNRA 2000). It is clear from the Geological Survey maps that large areas susceptible to seismically-induced landslides are also those areas that contain slopes over 25 percent. However, potentially significant hazards exist even without an earthquake due to the prevalence of unstable slopes.

Non-Seismic Geologic Hazards

Non-seismic geologic hazards in the Santa Monica Mountains include slope instability that can contribute to landslides (including rockfalls, landflows, debris flows, and mudflows), liquefaction, and slumping, all of which are normal processes of the Santa Monica Mountains. Landslides within the Coastal Zone as shown on the Geologic Hazards Map consist of two types: 1) Those that have been confirmed to exist; and 2) Those that are suspected to exist, but which are not confirmed. The latter are commonly identified by aerial interpretation only. The Santa Monica Mountains are naturally prone to landslides due to a combination of unstable steep slopes and often poorly cemented sedimentary rock. There are several confirmed and probable bedrock landslides throughout the planning area. More than 2,000 quaternary landslide deposits are still apparent in the Santa Monica Mountains and the Simi Hills. These events are exacerbated not only by seismic activity but also by slopes over 25 percent, by grading, vegetation removal, increased soil saturation, and the additional runoff resulting from development in the Mountains' watersheds.

Landslides of many types have occurred and continue to occur in the hillside and mountainous portions of the area, despite the best efforts of geologists and civil engineers. Within the planning area, the finer grained portions of those formations most susceptible to deep-seated landsliding are also usually the most prone to mudslides, slumps, and erosion, and have been known to occur where cut and fill slopes were inadequately constructed. Historically, mudflows are most common during or shortly after a heavy rainfall or series of rainfalls, and can occur with great suddenness and destructive force. Debris flows are a type of landslide that occur with some regularity in the Santa Monica Mountains. They occur where there are sufficient sediments (debris flow deposits) that mix with water to form a thick slurry of water, soil, and rock that has the potential for great destructive power. Though debris flows are a natural process in the study area, conditions suitable for their occurrence are exacerbated by disturbance of soil, slopes, or vegetation, as well as channelized waterways and impervious materials that increase the amount of runoff. Rockfalls are generally associated with seismic ground shaking, rock blasting for development, and rain washing out soil containing large rocks and boulders. Rockfalls are a potential hazard for developments at the base of those steep slopes that contain fractured rock outcroppings or large exposed boulders. Soil slumping is a slower process that can cause extensive structural damage, although it typically is not as immediately life-threatening as other soil stability hazards. In addition, manufactured slopes steeper than 2:1 have experienced slope instability. Development in proximity to unstable slopes is strictly regulated, as these slopes constitute a significant threat to life, property, and public safety.

Liquefaction can be described as a "quicksand" condition in which there is a loss of foundation support caused by a shock – typically an earthquake of significant magnitude. Technically, this condition results from a sudden decrease in the resistance of a cohesionless soil (such as sand) accompanied by a temporary increase in pore water pressure. Important factors in determining liquefaction potential are the intensity and duration of shaking, coupled with the presence of relatively low density fine sand and silt in an area of shallow groundwater. The potential for liquefaction has been identified in areas with alluvium and shallow groundwater. Low-lying areas with relatively loose soils – primarily alluvium (In the study area: af, Qal, Qalc, Qalp, Qc, Qb, Qls, Qu, Qt, Qts, Qtm) – have a high potential for liquefaction. These areas are shown on the Geologic Hazards Map.

Another type of liquefaction, which occurs at some depth from the surface, can result in ground lurching (movement of earth along a fault trace), fissuring (separation of land along a fault trace), or cracking. These effects are ascribed to flow landsliding or lateral spreading landslides, which can occur at very low angles. Areas having the highest relative liquefaction potential are considered primarily to be alluvial areas having groundwater depths less than about 30 feet and possibly up to 50 feet. Given the local bedrock geology and depth to groundwater within the planning area, liquefaction potential is considered low. However, seasonal fluctuations in rainfall, as well as the effects of development, can cause the local water table to rise, thereby increasing the potential for liquefaction to occur.

In the absence of a shallow water table, but with soil conditions otherwise ideal for liquefaction, an earthquake may cause soil consolidation. The degree of settlement depends on the intensity of shaking and the looseness of the soil. This compacting process would damage structures primarily where there is significant differential settlement within a short distance; for example, in alluvial valleys or where a structure was built partially on bedrock and partially on fill. Areas subject to this hazard must be identified on a project-by-project basis.

Another important concern is the shrink-swell behavior and erosiveness of clay-rich soils found throughout the Mountains, typically in the Topanga, Modelo, and Conejo Volcanics formations. Ungraded native lowland soils exhibit the highest potential for shrinkage and swelling, and must be removed or extensively modified prior to development. The Natural Resources Conservation Service and others have identified soil types that are particularly susceptible to this behavior and to subsidence and hydrocompaction. Development is likely to be constrained in areas with these difficult soil conditions. Table 8 provides further details on development constraints. Soil erosion typically results from concentrated runoff on unprotected slopes or in stream channels. Undeveloped hillside and mountainous areas may also experience substantial erosion from runoff whenever the vegetation cover is destroyed by fire or grading operations, or removed for brush clearance.

Local seepage problems and poor soil percolation are other areas of concern in the Santa Monica Mountains. Surfacing groundwater that causes boggy ground or heavy rains that give rise to ephemeral springs may occur locally due to barriers to subsurface water flow. Seepage problems will commonly occur where porous rock overlies non-porous sediments, a condition occurring throughout the Coastal Zone. New grading activities may also encounter other springs or seepage areas. In most instances, surfacing water is a nuisance rather than a hazard to building sites or slope stability. Nevertheless, the need for mitigation measures during development should be anticipated in potentially affected areas.

The soil and bedrock formations typically found in the region have very poor water percolation rates because of their generally fine-grained or indurated (cemented) nature, particularly those composed of Conejo Volcanics. The most significant development constraint or hazard resulting from poor soil percolation would be limitations on the feasibility of certain onsite wastewater treatment systems, and the potential for creating slope stability problems.

Structural Integrity

Most older buildings that have been damaged by earthquakes were built lacking sufficient reinforcement. The County requires that current building designs and construction materials withstand certain levels of ground shaking during earthquakes. These requirements are based on site-specific soil and geologic conditions, as well as on the level of risk associated with potential damage to the building. Construction techniques for all buildings, once environmental protection policies are met, are regulated either by the most recent State of California Uniform Building Code, or by requirements increased as necessary to reduce geologic and seismic risks to acceptable levels. County development review procedures also evaluate soil erosion and require appropriate mitigation when necessary.

Geotechnical Limitations

A geologic map of an area shows what geologic formations may be found there. Further site analysis must be conducted to evaluate other factors that may indicate geologic constraints to development. The material strength of rock or soil, slope angle, climate, vegetation, and time all determine slope stability, and play a significant role in controlling driving or resisting forces. These factors together determine the geotechnical limitations of a site. Although two neighboring parcels of land may have similar geologic composition, it is possible for them to have different geologic constraints and conditions. The Los Angeles County Department of Public Works (DPW) requires all applicants to do a seismic slope analysis on all slopes that they believe may pose a safety risk or other significant issues. Upon review of the analysis, DPW makes recommendations and suggests mitigation measures to the applicant.

Table 8 lists adverse conditions due to geologic factors that may affect the general areas and neighborhoods within the Coastal Zone as noted; some conditions may or may not apply to specific property and some conditions affecting a specific property may not be identified:

Table 8. General Locations of Adverse Conditions Caused by Geologic Factors

Topanga:	
Old Topanga Canyon Road to CA State Park:	Numerous large landslides; daylighted bedding°; locally steep slopes; elevated groundwater*
Fernwood:	Large mapped landslides; daylighted bedding°; steep slopes
Saddle Peak Road:	Some steep slopes; landslides; daylighted bedding°
Tuna Canyon Road:	Landslides; daylighted bedding°; some steep slopes
Old Topanga Canyon:	Surficial instability; elevated groundwater*; some landslides
Topanga Skyline loop:	Numerous landslide, some recently active; adverse bedding; steep slopes
Malibu:	
Sunset Mesa:	Steep descending slopes; landsliding; thick fill and/or poorly consolidated terrace deposits
Piuma Road to Schueren Road:	Some large landslides; poor percolation in Sespe Formation*
Rambla Pacifico/Las Flores Canyon:	Active landsliding; steep slopes; elevated groundwater

	possibly exacerbating conditions
Stunt Road:	Large mapped landslide; rockfall hazard
Corral Canyon – El Nido; Malibu Bowl:	Daylighted bedding°; steep slopes; mapped landslides
Latigo Canyon:	Daylighted bedding°; steep slopes; mapped landslides
Latigo Canyon – Vicinity of Ocean View Drive:	Large mapped landslide; steep slopes
Mulholland Highway: Kanan Road to PCH:	Volcanic bedrock; variable percolation rates; some landslides
Kanan Dume Road:	Intermittent volcanic bedrock and sedimentary rock; adverse bedding possible; steep slopes
Encinal Canyon:	Volcanic bedrock; daylighted bedding° when in sedimentary rock
Decker Canyon:	Primarily volcanic bedrock
Calabasas:	
Mulholland Highway – City of Calabasas to Stunt Road:	Daylighted bedding°; expansive soils/bedrock
Mulholland Highway – Stunt Road to Las Virgenes Road/Malibu Canyon:	Volcanic bedrock; some steep slopes
Stokes Canyon:	Potential adverse bedding; expansive soils/bedrock; debris flow potential; elevated groundwater*
Monte Nido: Cold Canyon Road to Piuma Road:	Volcanic bedrock; elevated groundwater*
Agoura:	
Mulholland Highway: Las Virgenes Road/Malibu Canyon to Kanan Road	Primarily volcanic bedrock; some areas subject to rockfall hazard
Malibu Lake	Volcanic bedrock; elevated groundwater at lower elevations*

°Daylighted bedding occurs where a slope is steeper than a planar feature, such as layers of bedrock or bedding, and the planar feature is exposed within that slope, resulting in an unsupported surface. When this condition is present, the likelihood of landsliding along this slope may be increased and was often the cause of an existing landslide or may cause future landslides.

*Could affect percolation rates.

APPENDIX E
SIGNIFICANT RIDGELINES

The natural beauty of the Santa Monica Mountains is widely recognized as one of its most distinctive and valuable attributes, making it a primary attraction to residents, visitors, and businesses. Visitors enjoy a number of local and regional recreation trails as well as scenic driving routes that meander through the Mountains, including at least one officially designated county scenic highway. The dramatic topography, with rugged sandstone-covered peaks, chaparral-covered hillsides, and extensive ridgelines that dominate the landscape, greatly contribute to the unique beauty of the area and constitute a valuable scenic resource due to their high visibility from many vantage points. Significant Ridgelines are defined as the line formed by the meeting of the tops of sloping surfaces of land. In general, Significant Ridgelines are designated based on their proximity to scenic routes and trails, the role they serve in maintaining the character and quality of developed neighborhoods, and to preserve the overall unique character of the landscape of the Santa Monica Mountains Coastal Zone.

Given the proximity of development to the Coastal Zone Plan area's abundant scenery, any form of physical alteration on or close to the top of a Significant Ridgeline has immediate and noticeable effects. The visual impact of building, grading, or merely removing vegetation can be just as dramatic as the natural features themselves. In some parts of the Santa Monica Mountains, development on private land has shown little concern for the protection of scenic resources such as Significant Ridgelines, effectively obliterating any scenic qualities. Coastal Act provisions state that the scenic and visual resources of the Coastal Zone are to be protected and that new development must be sited in a manner so as to preserve these resources.

Development activity resulting in the following impacts would be considered to have an adverse effect on the aesthetic resources associated with Significant Ridgelines:

- Development activity that would encroach into regionally or locally significant skylines and ridgelines. This might include structures that would be visible along the ridgeline, and grading that would modify ridgeline landforms or result in the removal of natural vegetation along the ridgeline.

- Development of natural open space considered to have high natural aesthetic values. This would include land development projects ranging from those of a rural character to those with a suburban intensity, and would apply primarily to areas that are apart from existing development.

Significant Ridgelines were selected through a point evaluation system based on the following criteria:

a) Topographic complexity: Ridges that have a significant difference in elevation from the valley or canyon floor;

b) Near/far contrast: Ridges that are a part of a scene that includes a prominent landform in the foreground and a major backdrop ridge with an unbroken skyline;

c) Cultural landmarks: Ridges that frame views of well-known locations, structures, or other places which are considered points of interest in the Santa Monica Mountains Coastal Zone;

d) Overall integrity of the surrounding and adjacent mountain system;

e) Uniqueness and character of a specific location: Peaks and their adjoining ridges;

f) Existing community boundaries and gateways: Ridges and surrounding terrain that provide the first view of predominantly natural, undeveloped land as a traveler emerges from the urban landscape;

g) The ridgeline frames a view of the ocean or large expanse of sky;

h) The ridgeline is visible from a Scenic Route; and

i) The ridgeline is visible from an official public trail.

Each criterion was rated on a scale from 1 to 4. Table 9 describes each criterion within the context of each point evaluation level. Table 10 lists the selected ridgelines and the points received for each criterion. Those ridgelines that received five or more points of 3 or 4 were designated as Significant Ridgelines. Of the sixty-seven ridgelines that were evaluated, forty-seven ridgelines received the number of 3- and 4-point evaluations necessary to be designated Significant Ridgelines. The Significant Ridgelines are identified on the Significant Ridgelines map following this section, and in Map 3 Scenic Elements, included as part of the Coastal Zone Plan.

Table 9. Significant Ridgeline Point Evaluation

Point Evaluation	Topographic Complexity	Near/Far Contrast	Cultural Landmark	Overall Integrity	Uniqueness and Character	Existing Community Boundary or Gateway	Silhouettes Sky or Ocean View	Visible From Scenic Route	Visible from Public Trail (identified from map)
4 - Very High	Sharp elevation contrasts between ridgelines and canyons or valley floors	Great contrasts of scale, detail, and perspective between foreground, middleground, and background	Ridgeline is part of a widely-accepted cultural landmark, such as Saddle Rock, Ladyface Mountain, or coastline	Visually part of greater mountain system that contains no grading, vegetation disturbance or other indication of human	Highly unique features, such as sandstone peaks or dramatic rock formations, or ridgeline frames an exceptional view	Ridgeline strongly defines the boundary between developed communities or jurisdictions or establishes a visual gateway between different areas of Coastal Zone	Ridgeline dramatically frames the ocean or large expanse of sky from a public road	Ridgeline is clearly visible from both directions along a designated Scenic Route	Ridgeline is clearly visible from or overlays one or more official public trails
3 - High	Typical mountain geography, lacking jagged tops or steep features	Moderate contrasts	Ridgeline is in the same viewshed as a widely-accepted landmark or part of an important scenic area	Contains some human disturbance or minor development	Part of or framing an unusual view offered from more than one location	Ridgeline somewhat defines the boundary between communities or jurisdictions, or may be considered part of a gateway	Ridgeline frames a slight view of the ocean or expanse of sky from a public road	Ridgeline is clearly visible from one direction along a Scenic Route	Ridgeline is visible from parts of, is surrounded by, or runs adjacent to one or more official public trails
2 - Medium	Moderately varied terrain with broad slopes, valleys, and hills	Little contrast; view is dominated by either foreground, middleground or background	Ridgeline is in close proximity to a widely-accepted landmark	Contains a significant amount of human disturbance and development	Part of a common view found throughout the area	May be considered as a community divider	Ridgeline frames the sky from intermittent locations along a public road	Ridgeline is slightly visible from a Scenic Route	Ridgeline is visible from or runs perpendicular to an official public trail
1 - Low	Unvaried terrain with large, flat expanses and no distinguishable landforms	No contrast; topography is level within the viewshed	Ridgeline has no association with a cultural landmark	Ridgeline is part of a very disturbed and developed	Does not contribute to or frame any unique view	No part in defining community boundaries or gateways	Ridgeline does not frame any ocean or sky view	Ridgeline is not visible from a Scenic Route	There are no official public trails near the ridgeline

Table 10. Ridgeline Criteria Evaluation

Number on Map	Topographic Complexity	Near/Far Contrast	Cultural Landmark	Overall Integrity	Uniqueness and Character	Existing Community Boundary or Gateway	Frames Sky or Ocean View	Visible From Scenic Route	Visible from Official Public Trail	Five or More Points of 3 or 4
1	2	2	3	4	2	4	3	4	4	X
2	2	1	3	4	1	4	3	4	4	X
3	2	1	3	1	4	3	4	4	4	X
5	3	2	1	4	2	3	3	4	4	X
6	2	2	1	4	2	3	2	4	1	
7	3	2	1	3	3	3	3	4	4	X
8	1	1	1	4	1	1	2	4	1	
11	2	2	1	3	2	3	3	3	3	X
12	2	1	1	2	2	2	2	2	4	
13	2	2	1	2	2	3	3	3	3	
14	4	4	3	4	4	4	4	4	4	X
15	4	4	4	4	4	2	1	4	4	X
16	2	3	1	3	3	3	3	4	2	X
17	3	3	1	3	3	3	2	4	2	X
18	3	3	3	4	4	2	2	4	2	X
19	2	3	3	3	2	2	1	4	3	X
20	1	2	1	3	2	2	2	3	4	
21	2	3	2	3	3	3	2	1	2	
21a	2	2	1	4	2	3	4	4	4	X
22	2	4	4	3	3	2	2	4	2	X
23	3	4	4	2	3	2	1	4	2	X
24	2	3	1	3	2	2	2	4	2	
25	2	3	1	3	2	3	3	4	4	X
26	2	3	1	2	2	3	3	4	3	X
27	2	3	1	2	1	2	3	4	2	
28	2	2	1	3	2	3	3	4	4	X
29	2	3	1	4	1	1	2	3	1	
30	2	1	3	2	2	3	3	4	4	X
31	2	2	2	2	3	3	3	4	4	X
32	3	4	3	4	3	3	4	4	3	X
33	3	3	3	2	3	2	4	4	2	X

Number on Map	Topographic Complexity	Near/Far Contrast	Cultural Landmark	Overall Integrity	Uniqueness and Character	Existing Community Boundary or Gateway	Frames Sky or Ocean View	Visible From Scenic Route	Visible from Official Public Trail	Five or More Points of 3 or 4
34	2	3	3	3	3	2	3	4	4	X
36	2	2	1	4	2	3	4	4	3	X
38	4	4	1	4	3	3	4	4	4	X
~~39~~	~~2~~	~~2~~	~~1~~	~~3~~	~~2~~	~~3~~	~~3~~	~~4~~	~~4~~	~~X~~
40	3	1	2	2	3	2	2	4	2	
41	3	2	2	3	3	4	4	4	4	X
42	3	3	2	3	3	2	1	3	3	X
43	3	3	3	3	4	4	4	4	4	X
44	2	2	1	3	2	3	3	4	4	X
45	2	2	1	3	2	3	4	4	4	X
46	2	3	1	2	2	3	4	4	3	X
47	3	3	1	3	2	2	3	1	3	X
48	3	3	2	4	3	4	4	4	4	X
49	2	2	1	3	2	2	4	4	3	
50	2	3	1	3	2	3	3	4	4	X
51	2	3	1	2	1	2	3	1	4	
52	2	3	1	3	2	4	4	4	4	X
53	1	2	1	2	2	3	3	4	3	
54	2	2	1	2	1	2	1	4	3	
55	2	2	1	3	2	2	1	2	4	
56	2	2	1	3	3	3	3	4	4	X
57	3	4	3	3	3	2	4	4	3	X
58	2	2	1	3	2	4	2	1	4	
59	2	3	3	3	2	2	3	1	4	
60	2	2	2	3	2	3	3	3	4	X
61	2	3	1	3	2	4	3	2	3	X
62	2	2	4	2	3	2	4	4	4	X
63	3	3	4	4	4	4	3	4	3	X
64	3	3	2	3	2	3	2	2	4	X
65 *	3	2	3	4	4	3	1	1	2	X
66	3	2	3	3	3	1	2	1	2	

* Unable to Evaluate in the Field

Number on Map	Topographic Complexity	Near/Far Contrast	Cultural Landmark	Overall Integrity	Uniqueness and Character	Existing Community Boundary or Gateway	Frames Sky or Ocean View	Visible From Scenic Route	Visible from Official Public Trail	Five or More Points of 3 or 4
68	3	3	1	4	3	3	3	4	4	X
69	1	3	3	3	2	3	3	4	3	X
70	3	3	3	4	3	1	0	4	3	X
71	2	1	2	2	1	3	1	3	4	
72	2	2	0	3	1	4	3	4	4	X
73	1	1	0	3	2	2	3	3	4	

APPENDIX F
AIR QUALITY

Setting

The Santa Monica Mountains lie within the South Coast Air Basin (Basin) and serve as an airshed for the Southern California metropolitan area. The Basin is a 6,600-square-mile area bounded by the Pacific Ocean on the west and the San Gabriel, San Bernardino, and San Jacinto Mountains on the north and east. The South Coast Air Quality Management District (AQMD) is the regional agency responsible for air quality monitoring and air pollution control within the Basin.

The topography and climate of Southern California combine to create an area of high air pollution potential in the Basin. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cup over the cool marine layer, which prevents pollution from dispersing upward. This inversion allows pollutants to accumulate within the lower layer. The lack of winds during the summer further limits ventilation from occurring.

Due to the low average wind speeds in the summer and a persistent daytime temperature inversion, emissions of hydrocarbons and oxides of nitrogen have an opportunity to combine with sunlight in a complex series of reactions. These reactions produce a photochemical oxidant commonly known as "smog." Because the Basin experiences more days of sunlight than any other major urban area in the U.S. except Phoenix, the smog potential in the region is higher than in most other major metropolitan areas in the country. Since the 1940s, air quality measurements taken in urban Los Angeles have been among the worst in the country. In particular, the South Coast Air Basin is in extreme non-attainment for ozone, serious non-attainment for carbon monoxide, and serious non-attainment for small particulate matter under 10 microns (PM_{10}).

Air quality in the vicinity of the Santa Monica Mountains varies widely as a result of physiography, climatological conditions, the location or presence of an inversion layer, distance from the coast, and the amount of pollutants emitted into the atmosphere. The Santa Monica Mountains lie along a route for air exchange between coastal and inland valley areas. In the absence of large-scale influences, a daily sea breeze/drainage flow - characterized by afternoon breezes flowing from the sea inland, followed by late evening/early morning breezes from land to sea - dominates local wind patterns. The afternoon winds, which are generally strongest during the summer, flow northward and can reach average speeds of 8 to 12 miles per hour. The late evening/early morning winds generally flow to the south. These drainage winds are strongest in the winter season and average 5 miles per hour. Overall, coastal areas experience better air quality than inland interior valleys and the Santa Monica Mountains exhibit better air quality than the urban landscape.

Sources of Air Pollution

There are two main sources of air pollution in the Santa Monica Mountains: vehicular traffic and construction and grading activities. The largest existing sources of pollutants within the area are vehicles on the local roadway network. In particular, heavy-duty diesel engines - trucks and buses -

release unburned hydrocarbons, carbon monoxide (CO), sulfur oxides, nitrogen oxides (NO_x), particulate matter, and other toxic compounds. Although diesel trucks and buses account for only a small amount of hydrocarbon emissions and carbon monoxide emissions, they contribute large amounts of NO_x and particulates.

Air pollution from construction may include diesel emissions from heavy construction equipment and fugitive dust emissions from grading and other ground disturbing activities. Compliance with AQMD rules and regulations, including Rule 403, would minimize the emission of air pollutants from construction activities and stationary sources. Air quality impacts during construction would be short-term and would be minimized due to the implementation of air pollutant control measures required by these rules and regulations. Because the Coastal Zone Plan identifies future permitted land uses and does not include specific development proposals, construction-related emissions of individual future projects cannot be quantified at this time. Project-specific environmental analysis would be required for future development projects, which may provide additional measures to further reduce air quality impacts during construction.

Two other sources of air pollution are wildfires and prescribed burns. Wildfires are one of many natural sources of particulate matter. Particulate matter is the main pollutant of concern from smoke because it can cause serious health problems. Smoke can also adversely affect the clarity (visual range) of the air. A large-scale fire can significantly increase air levels of carbon monoxide and other pollutants. The amounts depend upon its size, the fuels burning, moisture content of those fuels, topography, and meteorological conditions. Most of the particulate matter produced in wildfires is respirable, meaning it is small enough to pass through the upper respiratory system and enter the lungs. Acute smoke impacts include eye, mucous membrane and respiratory tract irritation, aggravation of chronic respiratory and cardiac disease, and reduced lung function.

Prescribed burns affect local air quality for short periods of time, with air quality returning to normal levels once the burning is completed. Particulate matter is the primary air pollutant from prescribed burns, and may cause short term localized impacts on visibility or serious health effects to sensitive individuals. The use of prescribed fire for land management purposes is regulated by the California Air Resources Board (ARB) under the jurisdiction of the AQMD. The use of backing fires, wind patterns that disperse smoke away from sensitive areas, fuel moisture conditions which promote rapid burnout, and good smoke management plans, all help limit the air pollution contributions from prescribed burns.

Air Quality Standards

Air quality in the Santa Monica Mountains is regulated by several agencies including the U.S. Environmental Protection Agency (EPA), the ARB, and the AQMD. The EPA has established primary and secondary National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb), which are referred to as criteria air pollutants. The primary standards protect public health and the secondary standards protect public welfare. The ARB has established California Ambient Air Quality Standards (CAAQS) for these same pollutants, as well as sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulates, which in most cases are more stringent than the NAAQS. Table 11 summarizes current federal and state ambient air quality standards. The standards are designed to protect the most sensitive persons from illness or discomfort with a margin of safety.

Table 11. Air Pollution Sources, Effects, and Standards

Air Pollutant	State Standard	Federal Standard	Sources	Primary Effects
Ozone (O_3)	0.09 ppm, 1-hour average	0.12 ppm, 1-hour average; 0.08 ppm, 8-hour average	Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	Aggravation of respiratory and cardiovascular diseases; irritation of eyes; impairment of cardiopulmonary function.
Carbon Monoxide (CO)	9.0 ppm, 8-hour average; 20 ppm, 1-hour average	9.0 ppm, 8-hour average; 35 ppm, 1-hour average	Incomplete combustion of fuels and other carbon-containing substances such as motor vehicle exhaust; natural events, such as decomposition of organic matter.	Reduced tolerance for exercise; impairment of mental function; impairment of fetal development; death at high levels of exposure; aggravation of some heart diseases; reduced visibility.
Nitrogen Oxides (NO_X)	0.25 ppm, 1-hour average	0.053 ppm, annual average	Motor vehicle exhaust; high-temperature stationary combustion; atmospheric reactions.	Aggravation of respiratory illness; reduced visibility; reduced plant growth; formation of acid rain.
Sulfur Dioxide (SO_2)	0.25 ppm, 1-hour average; 0.05 ppm, 24-hour average with ozone ≥ 0.10 ppm, 1-hour average or TSP ≥ 100 $\mu g/m^3$, 24-hour average	0.03 ppm, annual average; 0.14 ppm, 24-hour average	Combustion of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ores; industrial processes.	Aggravation of respiratory diseases (asthma, emphysema); reduced lung function; irritation of eyes; reduced visibility; plant injury; deterioration of metals, textiles, leather, finishes, coatings, etc.
Respirable Particulate Matter (PM_{10})	30 $\mu g/m^3$, annual geometric mean; > 50 $\mu g/m^3$, 24-hour average	50 $\mu g/m^3$, annual arithmetic mean; 150 $\mu g/m^3$, 24-hour average	Stationary combustion of solid fuels; construction activities; industrial processes; atmospheric chemical reactions.	Reduced lung function; aggravation of the effects of gaseous pollutants; aggravation of respiratory and cardio-respiratory diseases; chest discomfort; reduced visibility.
Lead	1.5 $\mu g/m^3$, 30-day average	1.5 $\mu g/m^3$, calendar quarter	Contaminated soil.	Increased body burden; impairment of blood formation and nerve conduction; behavioral and hearing problems in children.

$\mu g/m^3$ = micrograms per cubic meter of air; ppm – parts per million parts of air, by volume.

Source: CEQA Air Quality Handbook, South Coast Air Quality Management District.

Sensitive Receptors

Certain population groups are especially sensitive to air pollution and should be given special consideration when evaluating air quality impacts from projects. These groups include children, the elderly, persons with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. As defined in the AQMD *CEQA Air Quality Handbook* (1993), a sensitive receptor to air quality is defined as any of the following land use categories: (1) long-term health care facilities; (2) rehabilitation centers; (3) convalescent centers; (4) retirement homes; (5) residences; (6) schools; (7) parks and playgrounds; (8) child care centers; and (9) athletic fields.

Air Quality Monitoring

The Santa Monica Mountains Coastal Zone is located within Source/Receptor Area (SRA) 2 (Northwest Coastal Los Angeles County). This SRA is one of 38 designated areas under the jurisdiction of the AQMD. Communities within a given SRA are expected to have similar climatology, traffic levels, and local point sources of emissions. Subsequently, similar ambient air pollutant concentrations are expected within any given SRA. Unfortunately, fine particulate matter is not monitored within SRA 2. The Southwest Coastal monitoring station (SRA 3) is the next closest station and collects data on particulate matter. The most current six years of data monitored at these two stations are included in Table 12.

Overall, air quality in Northwest Coastal Los Angeles County has improved over the past six years, with the maximum levels of carbon monoxide, nitrogen dioxide, and inhalable particulates on the decline since 1999. The levels of ozone have fluctuated over the past six years, but have improved since 2003.

Table 12. Ambient Air Quality Monitoring Summary, Northwest Coastal Los Angeles/ Southwest Coastal Los Angeles Monitoring Stations[1]

Pollutant/Standard	Number of Days Thresholds Were Exceeded and Maximum Levels During Such Violations					
	1999	2000	2001	2002	2003	2004
Ozone						
Days exceeding:						
State 1-Hour ≥ 0.09 ppm	4	2	1	1	11	5
Federal 1-Hour > 0.12 ppm	0	0	0	0	1	0
Federal 8-Hour > 0.08 ppm	0	0	0	0	1	1
Maximum levels:						
Maximum 1-Hour Conc. (ppm)	0.117	0.104	0.099	0.118	0.134	0.107
Maximum 8-Hour Conc. (ppm)	0.082	0.079	0.080	0.077	0.105	0.089
Carbon Monoxide						
Days exceeding:						
State 8-Hour > 9.0 ppm	0	0	0	0	0	0
Federal 8-Hour ≥ 9.5 ppm	0	0	0	0	0	0
Maximum level:						
Maximum 8-Hour Conc. (ppm)	3.6	4.3	4.0	2.7	2.7	2.3

Table 12. (continued) Ambient Air Quality Monitoring Summary, Northwest Coastal Los Angeles/ Southwest Coastal Los Angeles Monitoring Stations[1]

Pollutant/Standard	Number of Days Thresholds Were Exceeded and Maximum Levels During Such Violations					
	1999	2000	2001	2002	2003	2004
Nitrogen Dioxide						
Days exceeding:						
State 1-Hour ≥ 0.25 ppm	0	0	0	0	0	0
Maximum level:						
Maximum 1-Hour Conc. (ppm)	0.13	0.16	0.11	0.11	0.12	0.09
Inhalable Particulates						
Days exceeding:						
State 24-Hour > 50 μg/m³	6	9	8	12	3	2
Federal 24-Hour > 150 μg/m³	0	0	0	0	0	0
Maximum level:						
Maximum 24-Hour Conc. (μg/m³)	69	74	75	121	58	52

[1] Ozone, carbon monoxide, and nitrogen dioxide are as monitored at the Northwest Coastal Los Angeles County station. Particulate matter is as monitored at the Southwest Coastal station; particulate matter is not measured at the Northwest Coastal station.

ppm: parts per million; μg/m³: micrograms per cubic meter

Source: South Coast Air Quality Management District, 2005.

Air Quality Impacts

Development through 2025 consistent with the land use policies of the proposed Coastal Zone Plan could result in the addition of approximately 1,400 units to the Coastal Zone Plan area's existing housing stock of 2,700 units, for a total of 4,100 units. This is based on the County's projection that approximately 56 units would be built annually in the Coastal Zone between 2000 and 2025.

Construction Impacts

Future development in the Coastal Zone will generate construction-related air quality impacts associated with the following activities: 1) construction equipment exhaust emissions; 2) dust from grading and earth-moving operations; 3) emissions from worker vehicles traveling to and from construction sites; and 4) volatile organic compounds (VOC) emissions from the application of architectural coatings and solvent usage. Construction related air quality impacts will occur periodically throughout the life of the Coastal Zone Plan. Because the Coastal Zone Plan identifies future land uses and does not contain specific development proposals, construction related emissions are speculative and cannot be accurately determined at this stage of the planning process. Thus it is appropriate to require individual development projects to assess the potential significance of construction emissions at subsequent levels of planning and environmental review.

Nevertheless, construction emissions may be estimated for residential projects that would be allowed under the proposed Coastal Zone Plan. A review of grading permits issued in the area over the past three years reveals that approximately 14 permits are issued annually for residential projects, including single-family residences and accessory uses. Using the methodology outlined in the

AQMD *CEQA Air Quality Handbook*, the daily construction emissions associated with grading for 14 housing units have been estimated and are shown below in Table 13. It is assumed that a maximum of 280,000 square feet or 6.4 acres of land would be graded on any given day because each of the 14 homes is anticipated to have a graded surface of 20,000 square feet.

Table 13. Typical Peak Grading Day Construction Emissions

Number and Equipment Type	Hours of Operation	Pollutants (Pounds/day)				
		CO	ROG	NO_x	SO_x	PM_{10}
14 – Off-Highway Trucks	8	201.6	21.3	467.0	50.4	29.1
7 – Track-type Loaders	8	11.3	5.3	46.5	4.3	3.3
7 – Wheeled Dozers	8	100.8	10.6	--[1]	19.6	9.2
7 – Scrapers	8	70.0	15.1	215.0	25.8	23.0
Worker Commute Exhaust[2]		17.5	1.7	2.4	--[3]	--[3]
Subtotal Exhaust Emissions		**401.2**	**54.1**	**731.0**	**100.0**	**64.6**
Fugitive Dust Emissions						
Open Stockpile[4]						55.0
Dirt/Debris Pushing[5]						348.8
Graded/Exposed Surface[6]						169.7
TOTAL GRADING WITHOUT MITIGATION		**401.2**	**54.1**	**731.0**	**100.0**	**638.1**
Threshold		**550**	**75**	**100**	**150**	**150**
Significant?		**NO**	**NO**	**YES**	**NO**	**YES**

Note: Emission factors provided by South Coast Air Quality Management District, *CEQA Air Quality Handbook* (1993), Tables A9-8-A and A9-9.

Assumptions:

1. NO_X emission factor was not available for wheeled dozers.
2. Based on 44 miles round trip commute length for 42 workers.
3. Negligible amount.
4. Emissions from 28,000 square feet of open stockpiles.
5. Emissions by 2 dozers operating 8 hours a day each.
6. Emissions from 6.4 acres of graded/exposed surface.

Grading and construction activities would cause combustion emissions from utility engines, heavy-duty construction vehicles, haul trucks, and vehicles transporting the construction crew. Exhaust emissions during grading and construction activities within individual development sites will vary daily at each site as construction activity levels change. It is assumed that building construction would not begin until after mass grading on any project site is completed. Therefore, there would be no overlap in emissions from grading or building/construction within a project site. It is to be expected, however, that grading on one or more development sites will overlap construction on one or more other sites. In general, the peak grading days of a development project would generate larger amounts of air pollutants than during peak building construction days.

Fugitive dust emissions are generally associated with demolition, land clearing, exposure, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions. Nearby sensitive receptors and workers may be exposed to blowing dust, depending upon prevailing wind conditions.

The AQMD estimates that each acre of graded surface creates about 26.4 pounds of PM_{10} per workday during the construction phase of the project and 21.8 pounds of PM_{10} per hour from dirt/debris pushing per dozer. It is assumed that up to a maximum of 6.4 acres of land would be graded on any one day and that two dozers would be used up to eight hours a day each. A total of 28,000 square feet of open stockpiles would occur on the 14 project sites, which would generate 55 pounds per day (ppd) of PM_{10}. Therefore, approximately 638 pounds of PM_{10} per day would be generated from soil disturbance without mitigation during peak construction phase. This level of dust emission would exceed the AQMD threshold of 150 pounds per day.

It is assumed further that a total of 42 workers would be working on the 14 project sites. Assuming an average 44-mile round trip commute length for each worker, emissions from the daily 1,848 miles travel by worker commute would generate 17.5 ppd of CO, 1.7 ppd of ROG, and 2.4 ppd of NO_x. Emissions of SO_x and PM_{10} from vehicle exhaust and tire wear are negligible. As shown in Table 14, peak grading day construction equipment emissions would exceed the AQMD thresholds for NO_x and PM_{10}. Emissions of other criteria pollutants would be below the thresholds.

Architectural coatings contain VOCs that are part of the ozone precursors. Because there is insufficient information at this time for future projects, the VOC emissions associated with architectural coatings are not calculated. Emissions associated with architectural coating can be reduced by using pre-coated/natural colored building materials, water-based or low-VOC coating, and using coating transfer or spray equipment with high transfer efficiency. Compliance with AQMD Rules and Regulations for architectural coatings would reduce this potential impact to a less than significant level.

Individual development projects within the Coastal Zone will be required by law to comply with regional air quality rules, which would assist in reducing the short-term air pollutant emissions. AQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, Rule 402 requires the implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementation of these techniques can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 to 75 percent. Compliance with Rules 402 and 403 would reduce impacts on nearby sensitive receptors.

Operational Impacts

After housing units are built and occupied, emissions would be generated by both stationary and mobile sources on a regular, day-to-day basis. Stationary emissions would be generated primarily as a result of natural gas consumption, landscape maintenance, and consumer products, such as aerosol sprays and barbeque lighter fluid. Mobile source emissions would be generated by motor vehicles traveling to, from, and within the Coastal Zone Plan area. Table 14 reports the estimated air pollution emissions associated with an increase of 1,400 units in the housing stock, from 2,700 units in 2000 to 4,100 units in 2025. Future pollutant emissions were calculated using the URBEMIS (urban emissions) model.

Table 14. Estimated Air Pollutant Emissions Associated with an Increase in the Housing Stock (Pounds per Day)

Pollutant	Housing Stock in 2000 (2,700 units)	Housing Stock in 2025 (4,100 units)	Difference[1]	Percent Change	AQMD Thresholds	Significant Impact?
Carbon Monoxide (CO)	4,706	962	(3,744)	-80%	550	No
Reactive Organic Gases (ROG)	528	303	(225)	-43%	55	No
Nitrogen Oxides (NO_x)	415	123	(292)	-70%	55	No
Particulate Matter less than 10 microns (PM_{10})	219	320	101	46%	150	No

[1]Numbers in parentheses indicate a reduction in emissions.

Source: URBEMIS 2002 Model conducted by Department of Regional Planning staff, November 2005.

As shown above, in spite of new development within the Coastal Zone Plan area and the region, long-term pollutant emissions are projected to decrease between 2000 and 2025 for all pollutants except PM_{10}. This can be explained by several factors including (but not limited to):

- Effective ongoing efforts of the AQMD to improve the Basin's air quality, such as incentives and enforcement of rules/regulations;
- Phase-out of older automobiles from the vehicle fleet;
- Improvement of vehicle emissions-control technology, particularly within diesel vehicles; and
- Better control of VOC release from all sources.

Between 2000 and 2025, the level of PM_{10} is projected to increase by 46 percent. PM_{10} typically originates from the stationary combustion of solid fuels, construction activities, and atmospheric chemical reactions. A possible explanation for PM_{10} increasing over the next 20 years is a lack of specific legal control measures for this pollutant. However, this increase would not exceed the AQMD threshold of 150 pounds per day.

Mitigation

The following measures have been shown to mitigate air quality impacts from development activity:

- Require that all new development comply with applicable AQMD construction emissions rules and regulations.
- Enforce the following at construction sites to reduce fugitive dust emissions:
    a. Require trucks hauling soil, dirt, sand, and other emissive materials to cover their loads.
    b. Require the suspension of all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour.

c. Enclose, cover, water when necessary, or apply approved soil binders, according to manufacturers' specifications, to exposed stock piles, specifically gravel, sand, and dirt.
d. Require the installation of truck wheel washers and other types of barriers at construction sites to prevent the transport of soil onto public rights-of-way.
e. Encourage developers to maintain the natural topography to the extent possible to eliminate the need for extensive land clearing, blasting, ground excavation, grading, and cut and fill operations.

- Require all contractors to:
    a. Maintain construction equipment in peak operating condition so as to reduce operation emissions.
    b. Use low-sulfur diesel fuel in all equipment.
    c. Use electric equipment whenever practicable.
    d. Shut off engines when equipment is not in use for more than five minutes.
- Require the use of vegetative cover, windbreaks, and improved tillage practices to minimize fugitive dust from agricultural uses.
- Encourage the use of building materials and methods that minimize the emissions of reactive organic gases and particulate.
- Require stationary air pollution sources, such as gasoline stations, restaurants with charbroilers and deep fat fryers, to comply with or exceed applicable AQMD rules and control measures.
- Enforce regulations against illegal fires.
- Create the maximum possible opportunities for bicycles and horses as alternative transportation modes and recreational uses.
- Support the development of alternative fuel infrastructure that is publicly accessible.
- Cooperate and participate in the development and implementation of regional air quality management plans, programs and enforcement measures.

APPENDIX G
TRANSPORTATION STUDY

Background

In March 2006 the Los Angeles County Department of Public Works (DPW) completed an updated transportation study for the Ventura Corridor area, which includes the Santa Monica Mountains Coastal Zone. The study area is bounded on the north and west by Ventura County and the City of Thousand Oaks; on the south by the Pacific Ocean; and on the east by the City of Los Angeles and Topanga Canyon State Park.

DPW developed a model that was used to analyze current traffic deficiencies and identify congested areas. The model output was for a selected base year (2005) validated by comparing traffic volumes anticipated by the model to actual counts. The model was then expanded to forecast future (2030) traffic conditions by assuming that the General Plan highway network would be in place and that the area would be built out in accordance with local general plans; that is, the Santa Monica Mountains North Area Plan and the Coastal Zone Plan. Socioeconomic variables, such as population, employed residents, and available employment data were calculated based on the land uses designated in each zone. The study area was then divided into traffic analysis zones (TAZ), which are geographic subareas that facilitate the characterization of different parts of a study area. These socioeconomic data provided a basis for estimating trip generation by identifying levels of employment and population densities in each TAZ within the study area. The expanded model was then used to predict future circulation deficiencies.

Highway Network

The highway network is a computerized representation of the major street and highway system within the study area. Data was collected regarding the existing standards for the roadways currently serving the area.

The geographical and operational characteristics of each segment of roadway are contained in the network database. These characteristics include length, speed, capacity, number of lanes, and standard classification.

Only key roads, arterial highways, and freeways are included in the network. However, local streets and driveways for major commercial developments are replicated in the model by the use of centroid connectors. A centroid is an assumed point in a TAZ that represents the origin or destination of all trips to or from the TAZ and a centroid connector links the TAZ to the model highway network.

Model Assumptions

Several field reviews in 1993 of the model study area revealed special considerations that are still viable and need to be addressed in the current base year (2005) model. These special considerations are as follows:

- Malibu Canyon Road: The average daily traffic (ADT) capacity assigned to this road was increased from 9,000 vehicles per day (vpd) (standard for a major highway) to 13,000 vpd each direction. The peak hour capacity was raised from 1,000 vehicles per hour (vph) to 1,300 vph each direction to replicate actual operational conditions observed in the field.

- Topanga Canyon Boulevard: The ADT capacity assigned to this road was increased from 8,000 vpd (standard for a secondary highway) to 12,000 vpd each direction. The peak hour capacity was raised from 850 vph to 1,200 vph each direction to replicate actual operational conditions observed in the field.

Congestion Summary

Degree of congestion is ascertained by looking at volume-to-capacity (v/c) ratios. Various agencies define levels of congestion based on these ratios. For the purpose of this study, the degrees of congestion are as follows: a ratio greater than 1.00 would generally be considered severely congested. Ratios in the range of 0.85 to 1.00 are considered to be congested.

The modeled base year (2005) cumulative congestion areas for daily and morning (AM) peak hour scenarios are shown in Table 15 below. As shown below, locations of year 2005 traffic congestion include segments of the following roadways: Malibu Canyon Road, Mulholland Highway, Pacific Coastal Highway, and Topanga Canyon Boulevard. The study did not identify any congestion areas within the Coastal Zone for afternoon (PM) peak hour scenarios.

Table 15. Locations of Year 2005 Traffic Congestion within the Coastal Zone

	Roadway	Location
Morning Peak Hour	Malibu Canyon Road	Southbound from Mulholland Highway to Civic Center Way
	Pacific Coast Highway	Eastbound from Civic Center Way to the eastern boundary of Coastal Zone Plan area
	Topanga Canyon Boulevard	Southbound from Mulholland Highway to Pacific Coast Highway
Average Daily Traffic (ADT)	Malibu Canyon Road	Northbound from south of Piuma Road to Mulholland Highway
	Mulholland Highway	Eastbound from Mulholland Drive to Topanga Canyon Boulevard
	Pacific Coast Highway	Eastbound from just west of Topanga Canyon Boulevard to the eastern boundary of the Coastal Zone Plan area

Planning studies often use a horizon date of approximately 20 years in the future. The year 2030 designation does not imply that full buildout of the area will occur by 2030, but represents a useful horizon year for planning the area's transportation needs.

The 2030 land use data was compiled to account for all possible development under the two local general plans, the North Area Plan, and the Coastal Zone Plan. The data compiled took into account all proposed, tentative, and approved developments as well as approved plan amendment developments as of mid-2005.

Based upon the highway network and socioeconomic factors, a deficiency analysis for the Future Year 2030 scenario was performed to determine the expected congested areas of the roadway network. As with the deficiency analysis performed for the base year (2005) conditions, these expected areas of congestion can then be studied in more detail to determine causes and possible solutions to each problem. The projected year (2030) cumulative congestion areas for average daily, morning, and afternoon peak hour scenarios are shown in Table 16 below.

Table 16. Locations of Projected Year 2030 Traffic Congestion within the Coastal Zone

	Roadway	Location
Morning Peak Hour	Malibu Canyon Road	Southbound from Mulholland Highway to Civic Center Way
	Pacific Coast Highway	Eastbound from Civic Center Way to Topanga Canyon Boulevard. Both directions from Topanga Canyon Boulevard easterly to the Coastal Zone Plan area boundary
	Topanga Canyon Boulevard	Southbound from just south of Mulholland Highway to Pacific Coast Highway
Afternoon Peak Hour	Malibu Canyon Road	Southbound from Mulholland Highway to Civic Center Way
	Pacific Coast Highway	Both directions from the study area boundary to Topanga Canyon Boulevard
	Topanga Canyon Boulevard	Southbound from Fernwood Pacific Drive to Pacific Coast Highway
Average Daily Traffic (ADT)	Malibu Canyon Road	Both directions from Mulholland Highway to Piuma Road and northbound from just north of Civic Center Way to Piuma Road
	Mulholland Highway	Both directions from Cornell Road to Las Virgenes Road
	Pacific Coast Highway	Both directions from Civic Center Way eastbound to the eastern boundary of the Coastal Zone Plan area

According to the study, traffic conditions will worsen between 2005 and 2030. As shown above, locations of projected year 2030 traffic congestion include segments of the following roadways: Malibu Canyon Road, Mulholland Highway, Pacific Coastal Highway, and Topanga Canyon Boulevard. While the study did not identify any congestion areas within the Coastal Zone for afternoon peak hour scenarios in 2005, three were identified for the year 2030: Malibu Canyon Road, Pacific Coast Highway, and Topanga Canyon Boulevard.

APPENDIX H
STORMWATER POLLUTION MITIGATION
BEST MANAGEMENT PRACTICES

Many pollutants are introduced into watersheds through water that runs off from developed areas. The runoff picks up materials such as oil, transmission fluid, cleansers, animal waste, and pesticides from driveways, streets, and landscaping. This polluted runoff reaches Santa Monica Bay and the Pacific Ocean, contributing to the impairment of those waters. These pollutants can have significant impacts on the ability of fauna such as amphibians and fish to reproduce viable offspring, the ability of locally-indigenous vegetation to remain healthy, and can present a significant health risk to humans.

These materials are a part of modern life. It is when they are used or disposed of improperly that they become a pollutant and a hazard. While it is probably not possible to eliminate these materials from the environment, it is imperative to reduce their impact on the natural environment. The impacts can be reduced by utilizing the following three management strategies:

1. Site design
2. Source control
3. Treatment control

Site design involves practices such as minimizing impervious surfaces, physically directing runoff to landscaping that acts as a filter for the pollutants, and retaining natural vegetation and topography.

Source control involves preventing the introduction of materials into the environment through minimizing the exposure of these materials to rainfall or irrigation.

Treatment control utilizes various practices to trap water and remove pollutants soon after their introduction to the environment, preventing widespread impacts.

The following are a list of management practices designed to implement the three management strategies discussed above. These best management practices (BMPs), compiled from the Department of Public Works, the Environmental Review Board, and industry practices, should be incorporated into all development projects, whether for a new single-family residence or for a landscape remodel. Many of the BMPs may be incorporated into existing development and landscaping with minimal expense. All BMPs must be utilized consistent with County zoning and building codes and other applicable regulations.

Site Design BMPs

Minimizing Impervious Areas

- Reduce sidewalk widths
- Incorporate landscaped buffer areas between sidewalks and streets

- Design residential streets for the minimum required pavement widths
- Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce impervious cover
- Use open space development that incorporates smaller lot sizes
- Increase building density while decreasing the building footprint
- Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together
- Reduce overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas

Increase Rainfall Infiltration

- Use permeable materials for private sidewalks, driveways, parking lots, and interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.)
- Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas, and avoid routing rooftop runoff to the roadway or the urban runoff conveyance system

Maximize Rainfall Interception

- Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs

Minimize Directly Connected Impervious Areas (DCIAs)

- Draining rooftops into adjacent landscaping prior to discharging to the storm drain
- Draining parking lots into landscape areas co-designed as biofiltration areas
- Draining roads, sidewalks, and impervious trails into adjacent landscaping

Slope and Channel Protection

- Planting native or drought-tolerant vegetation on slopes
- Use of natural drainage systems to the maximum extent feasible
- Energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels
- Stabilizing permanent channel crossings

Maximize Rainfall Interception

- Cisterns
- Foundation planting

Increase Rainfall Infiltration

- Dry wells

Source Control BMPs

- Storm drain system stenciling and signage
- Regular street and parking lot sweeping
- Outdoor material and trash storage area designed to reduce or control rainfall runoff
- Efficient irrigation system

Treatment Control BMPs

Biofilters

- Grass swale
- Grass strip
- Wetland vegetation swale
- Bioretention

Detention Basins

- Extended/dry detention basin with grass lining
- Extended/dry detention basin with impervious lining

Infiltration Basins

- Infiltration basin
- Infiltration trench
- Porous asphalt
- Porous concrete
- Porous modular concrete block

Wet Ponds and Wetlands

- Wet pond (permanent pool)
- Constructed wetland

Drainage Inserts

- Oil/Water separator
- Catch basin insert
- Storm drain inserts
- Catch basin screens

Filtration Systems

- Media filtration
- Sand filtration

Hydrodynamic Separation Systems

- Swirl Concentrator
- Cyclone Separator

APPENDIX I
STATEMENT OF DEFENSE FORM

A person may engage in activity in the Coastal Zone that requires a coastal development permit from the County without first having obtained the permit, or in activity that may be inconsistent with a coastal development permit previously issued by the County. In these instances, the director may issue an order directing that person to cease and desist such activity, and may issue a restoration order. The Statement of Defense form provides that person a way to respond in writing to the cease and desist or restoration order.

Statement of Defense Form

DEPENDING ON THE OUTCOME OF FURTHER DISCUSSIONS THAT OCCUR WITH THE DEPARTMENT OF REGIONAL PLANNING ENFORCEMENT STAFF AFTER YOU HAVE COMPLETED AND RETURNED THIS FORM, (FURTHER) ADMINISTRATIVE OR LEGAL ENFORCEMENT PROCEEDINGS MAY NEVERTHELESS BE INITIATED AGAINST YOU. IF THAT OCCURS, ANY STATEMENTS THAT YOU MAKE ON THIS FORM WILL BECOME PART OF THE ENFORCEMENT RECORD AND MAY BE USED AGAINST YOU.

YOU MAY WISH TO CONSULT WITH OR RETAIN AN ATTORNEY BEFORE YOU COMPLETE THIS FORM OR OTHERWISE CONTACT THE DEPARTMENT OF REGIONAL PLANNING ENFORCEMENT STAFF.

This form is accompanied by either a cease and desist order or restoration order issued by the director or a notice of intent to initiate cease and desist order or restoration order proceedings before the Regional Planning Commission. This document indicates that you are or may be responsible for or in some way involved in either a violation of County code provisions or of a coastal development permit. The document summarizes what the (possible) violation involves, who is or may be responsible for it, where and when it (may have) occurred, and other pertinent information concerning the (possible) violation.

This form requires you to respond to the (alleged) facts contained in the document, to raise any affirmative defenses that you believe apply, and to inform the staff of all facts that you believe may exonerate you of any legal responsibility for the (possible) violation or may mitigate your responsibility. This form also requires you to enclose with the completed statement of defense form copies of all written documents, such as letters, photographs, maps, drawings, etc. and written declarations under penalty of perjury that you want the Regional Planning Commission to consider as part of this enforcement hearing.

You should complete the form as fully and accurately as you can and as quickly as you can and return it no later than ______________________ to the Department of Regional Planning's enforcement staff at the following address:

Department of Regional Planning
320 West Temple Street, 13th Floor
Los Angeles, CA 90012

If you have any questions, please contact as soon as possible _______________________ of the Department of Regional Planning enforcement staff at telephone number (213) 974-6483.

1. Facts or allegations contained in the cease and desist order or the notice of intent that you admit (with specific reference to the paragraph number in such document):

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2. Facts or allegations contained in the cease and desist order or notice of intent that you deny (with specific reference to the paragraph number in such document):

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3. Facts or allegations contained in the cease and desist order or notice of intent of which you have no personal knowledge (with specific reference to the paragraph number in such document):

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4. Other facts which may exonerate or mitigate your possible responsibility or otherwise explain your relationship to the possible violation (be as specific as you can; if you have or know of any document(s), photograph(s), map(s), letter(s), or other evidence that you believe is/are relevant, please identify it/them by name, date, type, and any other identifying information and provide the original(s) or (a) cop(y/ies) if you can):

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5. Any other information, statement, etc. that you want to offer or make:

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6. Documents, exhibits, declarations under penalty of perjury or other materials that you have attached to this form to support your answers or that you want to be made part of the administrative record for this enforcement proceeding (Please list in chronological order by date, author, and title and enclose a copy with this completed form):