

4.0 Existing Conditions

4.0 DESCRIPTION OF WILDERNESS PARK

AWCWP has significant resource values that need to be protected, preserved, and managed. Natural communities within the park include coastal scrub, four types of chaparral, riparian woodland, native grassland, vernal pools, and rock and cliff faces. Cultural resources include historic settlement sites as well as archaeological sites. The following is a summary of the key physical, visual, natural, and cultural resources found within the park. A more detailed description of the park's resources is included in the Existing Conditions Report (Appendix C).

4.1 LAND USE

4.1.1 History of Use

AWCWP contains a wide array of archaeological features that reveal a complex pattern of prehistoric land use and settlement. Prehistoric cultural resources include villages, campsites, open air shell middens, rock shelters, and stone tool manufacturing and re-sharpening sites. The varied and abundant archaeological resources represent a valuable source of information about the prehistoric land use of the region over a long period of time, as well as a source of anthropological information about cultural ecology, adaptation, and interaction.

The lands within the park boundaries were historically part of the Rancho Niguel, granted to Juan Avila in 1842. Since that time, the park lands have been used for cattle and sheep grazing, and cultivation of barley and oats. The rise in population, floods, droughts, heat spells, freezes, plant disease, the 1933 earthquake, and the Great Depression created difficulties for area farmers and the subdivision of Rancho Niguel soon followed. Sites related to these historic land uses and events located within the park include: Moulton Cement Plant, the old corral, Bacon House site, the Mormon trading post site, and Tischler's Rock. In addition, at least two pieces of old farm equipment have been identified in the park. These artifacts have historic value as remnants of the historic agricultural operation of Moulton Ranch and also have interpretive value, as they may be used to help portray the history of the ranch.

More information on the history of the site and its cultural resources is provided in Section 4.6.

4.1.2 Existing Land Uses

AWCWP, with its varied topography, stunning vistas, and 30-mile network of trails weaving through 3,873 acres of preserved open space, provides an abundance of recreational and educational opportunities for a variety of users. The Park accommodates hiking, mountain biking, and equestrian uses, as well as passive recreational activities like birding,

photography, and nature viewing. Wood Canyon Trail connects the majority of AWCWP's trails and provides easy access to multiple geological and biological interpretive sites. Park rangers conduct free half-hour nature walks through the Park at 12 noon on the second and fourth Saturday of every month. Interpretive displays at the Old Corral, Dripping Cave, and Pecten Reef Trail provide an insight into the dense cultural and geological history of the park. The Top of the World vista point, one of many in AWCWP, places the park within a regional context with its breathtaking views of the Pacific Ocean, Aliso and Wood Canyons, and the San Gabriel and San Bernardino Mountains beyond.

4.1.3 Adjacent Land Uses

AWCWP is almost completely surrounded by urban development associated with the communities of Aliso Viejo, Laguna Niguel, Laguna Hills, Laguna Woods, and Laguna Beach (Figure 4: Adjacent Land Uses). These surrounding communities provide existing and potential connections to AWCWP. Public open space located adjacent to or near the park includes: Moulton Meadows Park and the City of Laguna Beach Open Space, Laguna Niguel Regional Park, Laguna Coast Wilderness Park, Crystal Cove State Park, and Indian Hills community park. At its southern end, the park borders Aliso Creek Golf Course. Soka University, a small private college, occupies a prominent location in the viewshed of the park along the eastern ridge of Wood Canyon.

Property to the north between Aliso and Wood Canyons is within Aliso Viejo. Planned uses for this community include medium and high density residential, light industrial, and community commercial. The area north of the Aliso Viejo community is occupied by Rossmoor Leisure World. Leisure World is a retirement community that includes single and multi-family residences plus commercial uses and private parks and open space (Ed Almanza and Associates 1992).

The Chet Holifield federal building and parking lot lies near the northeastern extension of the park, along Upper Aliso Creek. Other existing land uses near that portion of the park include commercial and residential development. Residential areas border the west side of the park in the Temple Hill/Top of the World (TOW) vicinity of Laguna Beach and the east side of the park along Highlands Avenue and Alicia Parkway in Laguna Niguel.

4.2 VISUAL RESOURCES

AWCWP represents a significant visual and scenic resource within the region. The length and configuration of the park's perimeter, coupled with the hilly topography provide significant variety in both viewpoint orientation and available viewsheds, creating a wealth of viewing conditions and opportunities. These resources include a combination of panoramic views in which the canyons form the dominant foreground element and the surrounding hills form the background, as well as distinctive landscape features and built features (Figure 5: Visual Resources).

4.2.1 Scenic Resources

Numerous scenic resources, such as vista points/panoramic views, landscape features, and built features contribute to an existing positive visual experience for park users.

Vista Points/Panoramic Views. Due to the varied topography within the park, several points provide a vantage from which to enjoy the area's scenic resources. "Top of the World," which lies just outside the park, is one of the best-known vista points. From this vista point, one is presented with dramatic and high quality panoramic views of the Pacific Ocean, Santa Catalina Island, and the community of Laguna Beach to the west; the San Gabriel and San Bernardino Mountains to the northeast; and Wood Canyon and surrounding urban development to the south and east. Moulton Peak – the highest point in the park at 890 feet - provides sweeping views of the canyons, ridgelines, and hillsides of the park. Other viewing areas that provide vistas of the park and the surrounding landscape occur at other high points in the park, such as along the West Ridge, Alwut, Aswut, Aliso Summit, and Aliso Peak trails.

Landscape Features. The aesthetic resources of the park are largely due to the native plant associations found there. The park's landscape consists of rugged topography characterized by steep hillsides surrounding deep canyons. Views within the park range from intimate, secluded spaces to grand vistas. In the upper reaches of the two canyons, canyon walls and trees create enclosed spaces where views can focus on details such as rock formations, plants, and animals. Canyon walls also block views of surrounding development atop the ridgelines. In the wider, lower reaches of the canyons, views consist of broad expanses of grassland and grassy meadows, coastal sage scrub and the surrounding hillsides. The diversity of the landscape and topography provides opportunities for a variety of visitor experiences.

Distinctive Features. Other visually distinctive features reflect the unique geology and history of the park. Such features include: Dripping Cave, Cave Rock, and the Old Corral. These features are described more fully in the Existing Conditions Report (Appendix C).

4.2.2 Elements Detracting from Scenic Quality

A number of visual features or characteristics in the park and vicinity detract from the quality of the views and scenic character. Some of these features include: urban and rural development immediately adjacent to the park boundary; unauthorized trails created by park users; and infrastructure such as water tanks and utility lines.

Visual Intrusion of Urban Development. Urban and rural development immediately adjacent to the park boundary is visually intrusive from several locations within AWCWP. As Orange County continues to urbanize, homes are being built on the ridgelines overlooking the park. In fact, views of the park are a key selling point for selling such real estate. This development has an adverse effect on views from the park and the overall scenic quality. Because of these hillside and ridgeline locations, the homes tend to be silhouetted against the sky, significantly altering the skyline and the perception of the park area as a rural, natural area. This problem is most evident along Lower Aliso Canyon, lower Wood Canyon,

and around the Aliso and Wood Canyons Confluence, where residential development hugs the park boundary on bluffs above the park. In addition, inappropriate management of fuel modification zones (*i.e.*, goat grazing, non-compliance with approved landscape palettes) along the urban interface has denuded the hillsides, degrading views from within the park.

Built Features Within the Park. In several locations throughout the park, built features or human intervention detract from the overall visual quality and ultimately the visitor experience. These features include unauthorized trails, utility corridors, and other infrastructure (*i.e.*, poorly constructed road dip crossings, concrete poured over rocks).

In certain areas of Wood Canyon, views are marred by unauthorized trails created by mountain cyclists and other park users. These scars on the hillsides mar the natural landscape and ultimately diminish its scenic value.

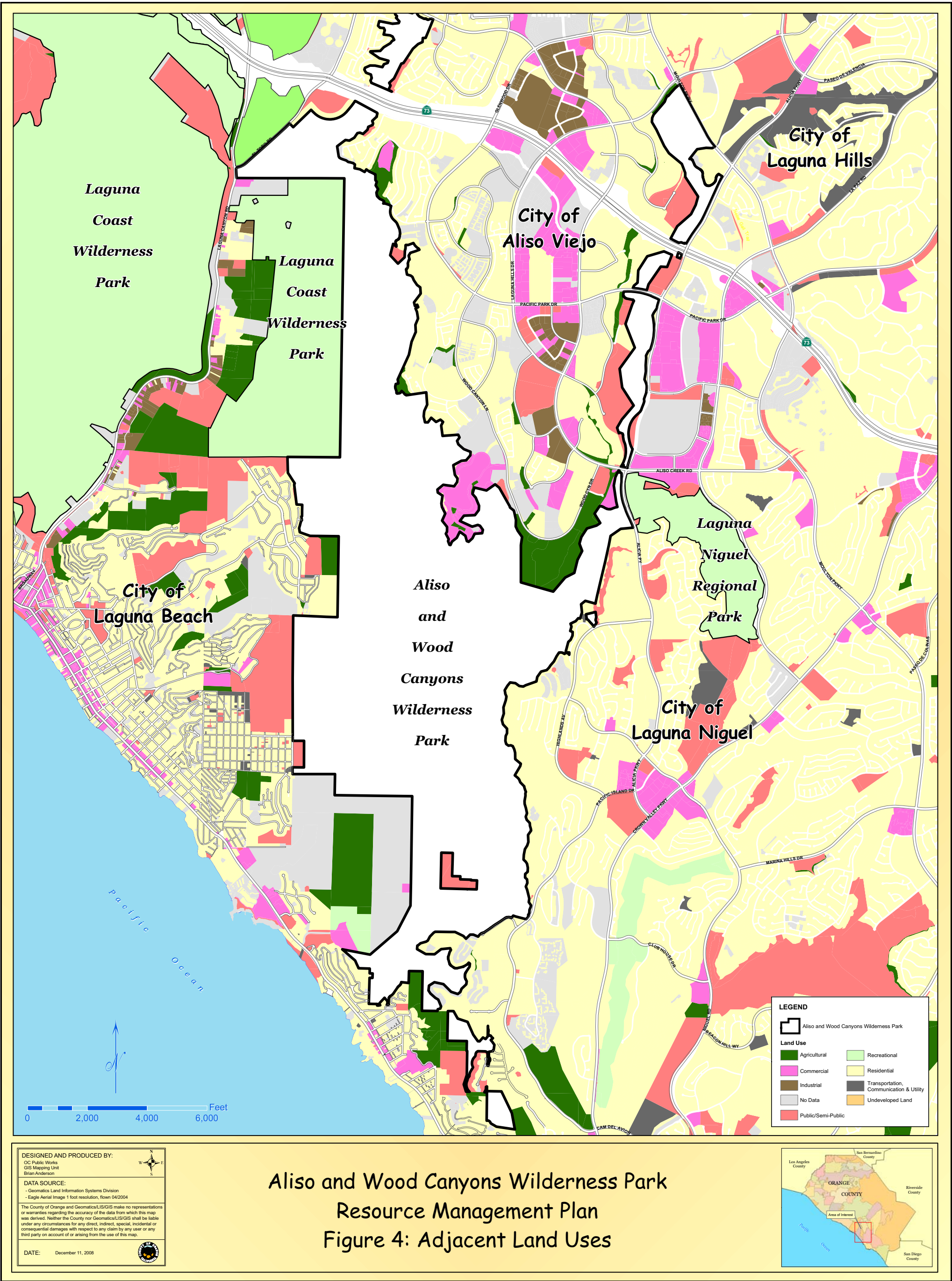
At several locations within AWCWP where infrastructure such as utility lines and water tanks interrupt the scenic landscape and reduce the quality of views from significant vista points. A high-tension electrical transmission line crosses the park from Moulton Peak to a point just west of the West Ridge Trail. Clearly visible from several vantage points within the park, the towers and overhead lines are significant foreground features when viewed from several park trails, including the Rock-It, Five Oaks, and West Ridge trails. Two water tanks are located within the park boundaries. These tanks are owned and operated by the Moulton Niguel Water District and are placed at two of the highest points in the park, at Moulton Peak and along the West Ridge Trail. Due to their elevation, the tanks are highly visible from many vantage points within the park.

4.3 PHYSICAL RESOURCES

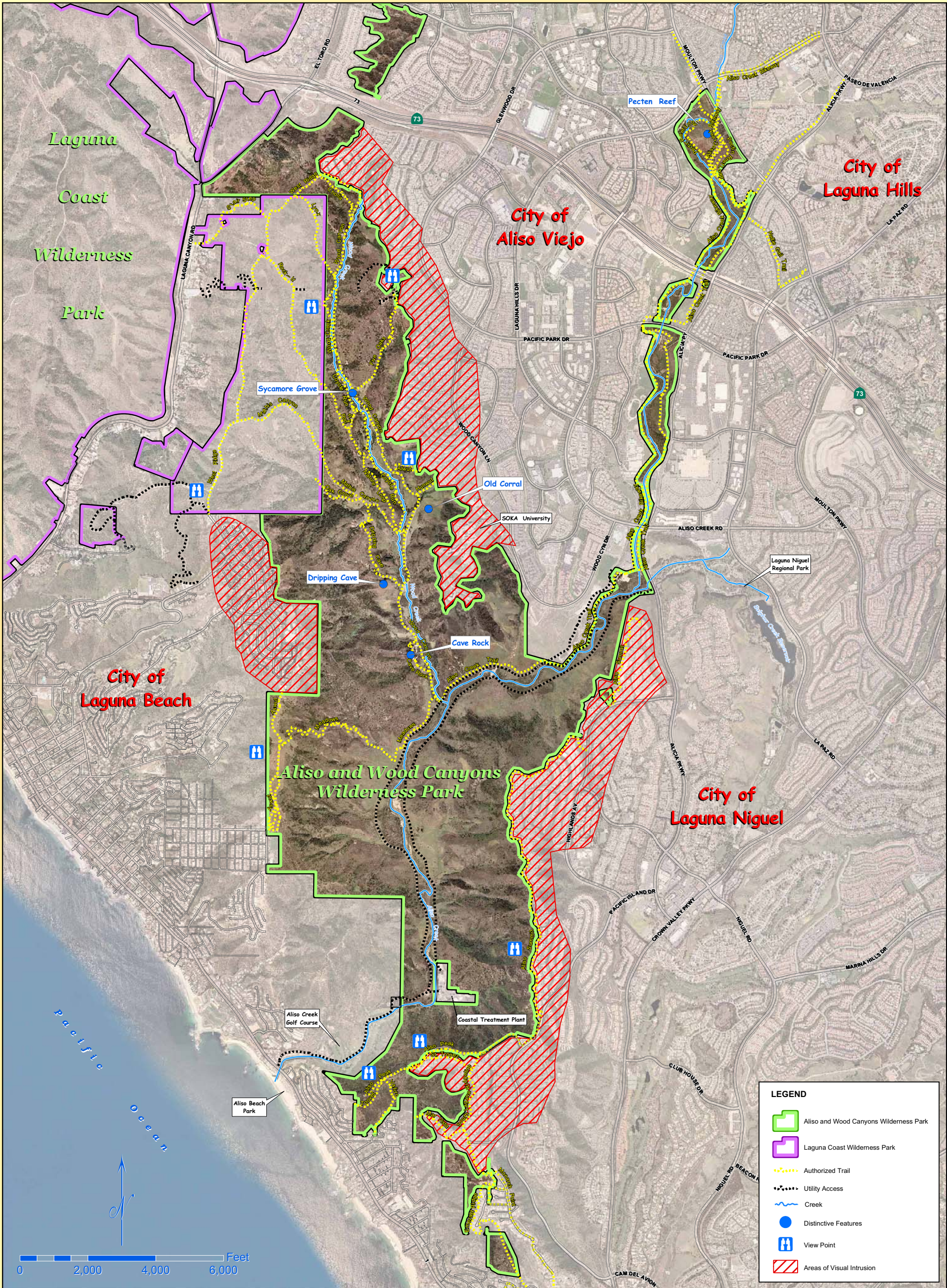
4.3.1 Topography

Elevations in the park range from 20 feet above sea level at the mouth of lower Aliso Canyon to an elevation of 891 feet at Moulton Meadows and Niguel Hill (Figure 6: Topography). The northeastern boundary of the park abuts the tip of a broad alluvial plain. From there, the park continues south along a narrow floodplain bordered on the west by steep hills. Both Aliso and Wood Canyons are characterized by steep canyon walls and a narrow valley floor bisected by Aliso Creek. Notable sandstone rock outcroppings occur along a ridge forming the east side of Wood Canyon and the west side of the upper Aliso Canyon near the confluence of Wood Canyon and El Toro (Rattlesnake) Canyon.

High above the steep canyon walls, bordering the City of Laguna Beach, Moulton Meadows Park, a plateau, overlooks lower Aliso Canyon. From here, broad panoramic views of the Pacific Ocean and inland views continuing all the way to the mouth of upper Aliso Canyon and beyond are available. El Toro Ridge, which forms the northern end of Wood Canyon, is comprised of near vertical sandstone cliffs and rock outcroppings that taper to a narrow valley floor bordering El Toro Road and ending at Laguna Canyon Road.



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LEGEND

- Aliso and Wood Canyons Wilderness Park
- Laguna Coast Wilderness Park
- Authorized Trail
- Utility Access
- Creek
- Distinctive Features
- View Point
- Areas of Visual Intrusion

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DATA SOURCE:
- Geomatics Land Information Systems Division
- Eagle Aerial Image 1 foot resolution, flown 04/2004

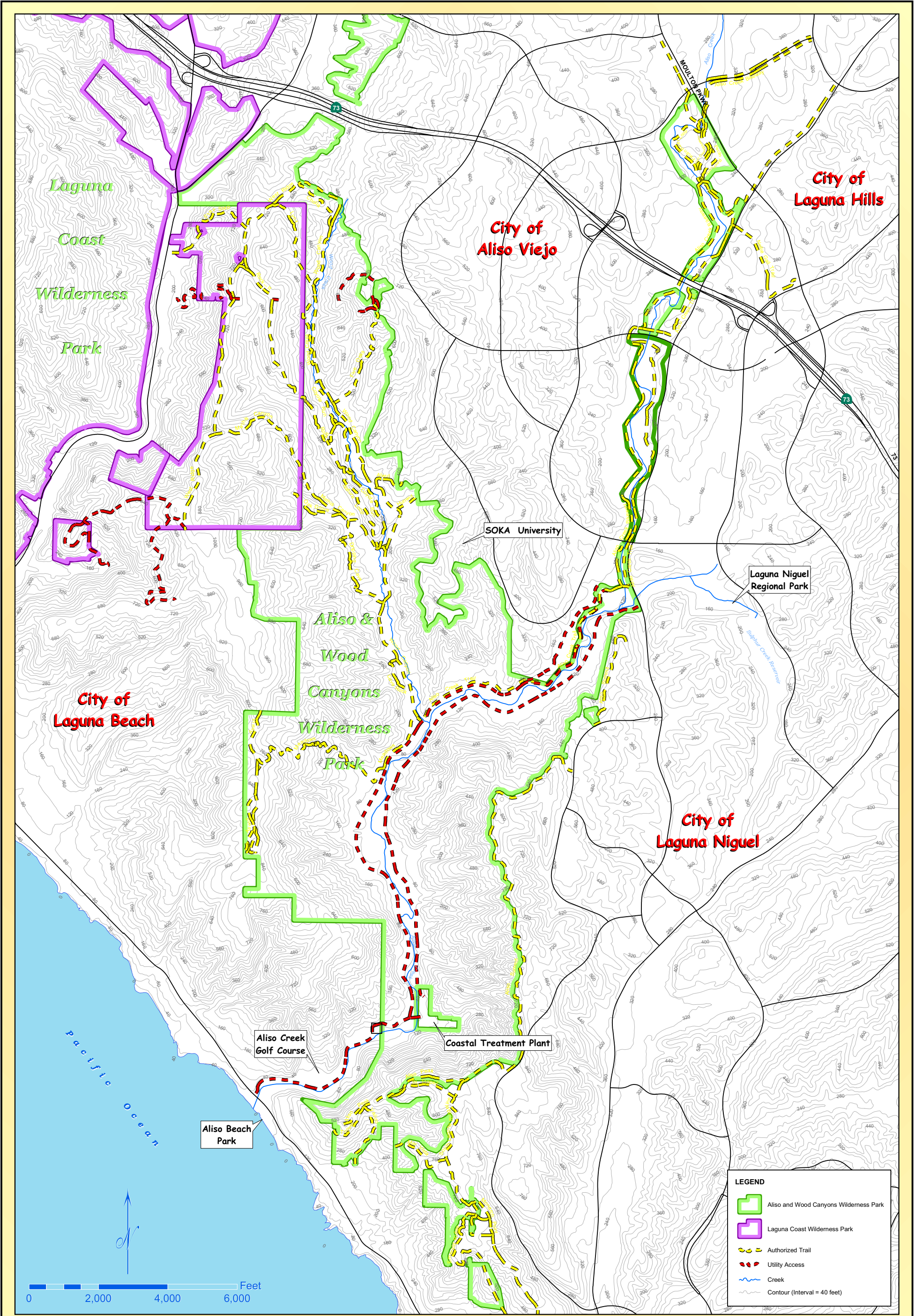
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Aliso and Wood Canyons Wilderness Park
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Figure 5: Visual Resources



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DATA SOURCE:
- Geomatics Land Information Systems Division
- USGS 10 meter DEM 1999

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Figure 6: Topography



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4.3.2 Geology and Soils

Geology. The park is underlain by geologic units ranging in age from the Oligocene Epoch (35 million years ago) to the present day (Figure 7: Geology). Formations present (listed in order of oldest to youngest) include:

- Sespe/Vaqueros Undifferentiated Formation (Ts, Tv, Tsv)
- San Onofre Breccia (Tsob)
- Topanga Formation (Tt)
- Monterey Formation (Tm)
- Capistrano Formation (Tcs)
- Niguel Formation (Tn)
- Marine Terrace Deposits (Qvop)
- Younger Alluvium/Colluvium

The Existing Conditions Report (Appendix C) provides a more detailed analysis of the geologic units present in AWCWP.

Soils. Soils along Aliso Creek in the northeastern arm of the park are generally clay and sandy loams. The soil types east of the creek in lower AWCWP are predominantly loam and clay loams at the base of Aliso Canyon, transitioning to rock outcrop at higher elevations toward Laguna Niguel. Silty clay loam soils dominate the western half of AWCWP, with free-draining sandy loam soils prevalent around Wood Creek. Figure 8, Soils, illustrates the variety of soil types found within the park boundaries. Soil information was obtained from the U.S. Department of Agriculture and the Soils Conservation Service and was also supplied by the County GIS (geographic information system) mapping efforts. The Existing Conditions Report (Appendix C) provides more detailed information on the soil types in AWCWP.

Landslides. Approximately 12 major bedrock landslides occurred on the upper canyon slopes of the Topanga Formation south of Sheep Hills in lower Aliso Canyon (Figure 9: Landslides). Geology and engineering investigations indicate that these slides are unmanageable (Ed Almanza and Associates, 1992). Several additional verified and suspected slides are located in upper Wood Canyon. Several other slides are found in lower Wood Canyon and on both sides of upper Aliso Canyon within AWCWP boundaries.

4.3.3 Hydrology

AWCWP includes the confluence of two main creeks and the canyon slopes surrounding these two creeks: Aliso Creek and Wood Creek. Aliso Creek Watershed encompasses a drainage area of approximately 36 square miles and includes portions of the cities of Aliso Viejo, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, and Mission Viejo (Figure 10: Watershed Map). The watershed extends approximately 19 miles

from the foothills of the Santa Ana Mountains to the Pacific Ocean south of Laguna Beach, and includes the tributaries of Wood Creek, Sulphur Creek, Aliso Hills Channel, Dairy Fork, Munger Creek, and English Canyon. Residential developments within the watershed include portions of Lake Forest, Laguna Beach, Foothill Ranch, Portola Hills, Mission Viejo, Laguna Hills, Aliso Viejo, and Laguna Niguel (California Coastal Conservancy 2001).

Aliso Creek flows approximately 19 miles (30 kilometers) from its headwaters in the Cleveland National Forest south past the confluence with Wood Creek and into the ocean at Aliso Beach Park in the City of Laguna Beach. The AWCWP portion of Aliso Creek encompasses the drainage section south of Moulton Parkway and Aliso Canyon through which Aliso Creek flows before entering the ocean. AWCWP also includes the Wood Creek watershed which extends northwesterly from its confluence with Aliso Canyon and includes Mathis Canyon and its tributaries. Wood Creek is approximately 3 miles (4.8 kilometers) long from its headwaters at a detention basin to its confluence with Aliso Creek at an elevation of approximately 90 feet (27 meters) (Figure 11: AWCWP Hydrology).

The Aliso Creek watershed, like other watersheds in Orange County, has been significantly affected by development. Aliso Creek, once an intermittent stream before the region became heavily urbanized, now flows year-round through the eastern and southern sections of AWCWP, augmented in recent years by significant increases in upstream urban runoff. Specific watershed concerns include channelization, poor surface water quality from discharge of non-point sources, loss of habitat in the floodplain, loss of riparian habitat, paving of the flood plain, decline of water supply and flows, biodiversity loss, invasive plant and animal species, surface erosion, and over use of existing resources (California Coastal Conservancy 2001).

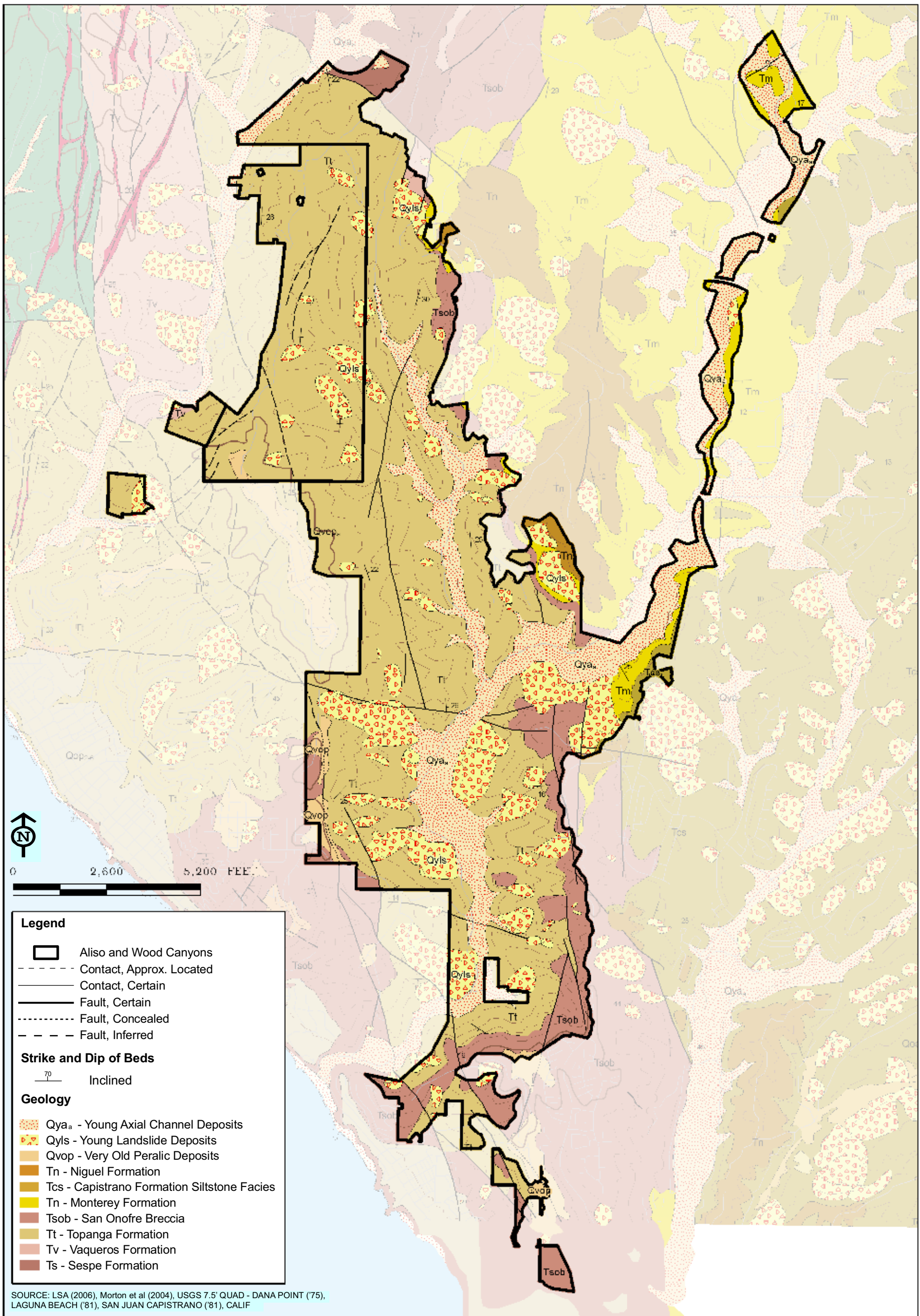
AWCWP also includes Wood Creek which extends northwesterly from its confluence with Aliso Creek and includes Mathis Canyon and its tributaries. Wood Creek is approximately 3 miles (4.8 kilometers) long from its origins at a detention basin collecting storm water and nuisance runoff in the City of Aliso Viejo to its confluence with Aliso Creek at an elevation of approximately 90 feet (27 meters). This creek is less affected by development than its neighbor Aliso Creek, but still has many of the same concerns.

River geomorphology conditions within AWCWP have been degrading for several decades. Degradation within AWCWP is caused by several factors including past cattle grazing, current goat grazing and dry farming, urbanization of the upper watershed, improper fuel zone management, natural and artificial fluctuations of the water levels in the channel, and human activities such as impeding the channel at trail, spillway, and road crossings.

Additional information on hydrology and water quality within AWCWP is included in Section 9.0.

4.3.4 Climate

AWCWP is located within the South Coast Air Basin (SCAB), bound by the Pacific Ocean on the west and the San Gabriel, San Bernardino, and San Jacinto mountains on the north and east. The regional climate in the SCAB is classified as Mediterranean, characterized by



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DATA SOURCE:
- LSA (2006); Morton et al (2004), USGS 7.5' Quad - Dana Point (75); Laguna Beach (81), San Juan Capistrano (81), Calif.

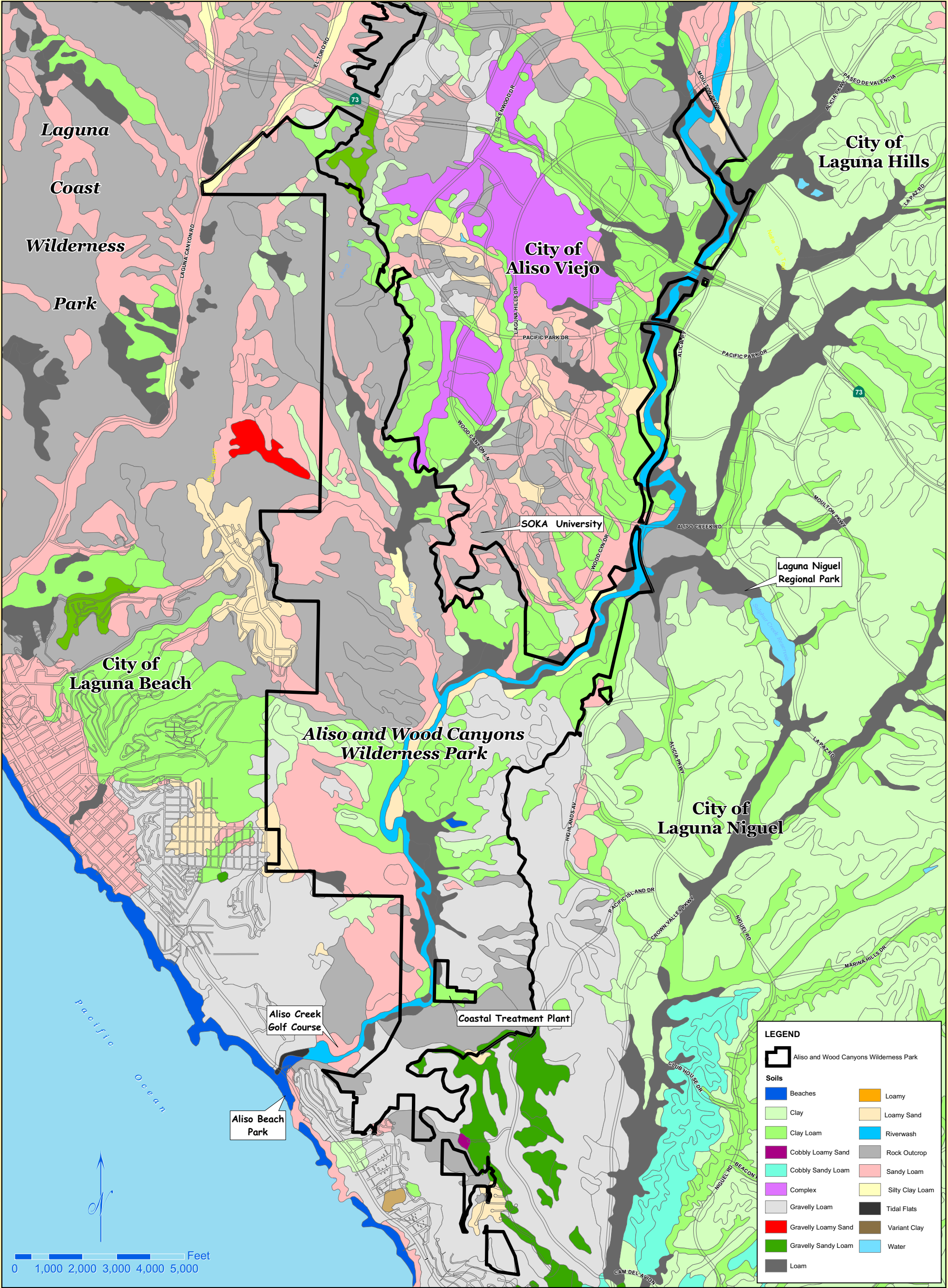
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Aliso and Wood Canyons Wilderness Park Resource Management Plan Figure 7: Geology



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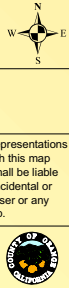
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DATA SOURCE:

- Geomatics Land Information Systems Division
- Eagle Aerial Image 1 foot resolution, flown 04/2004
- USDA Soil Data, 2006

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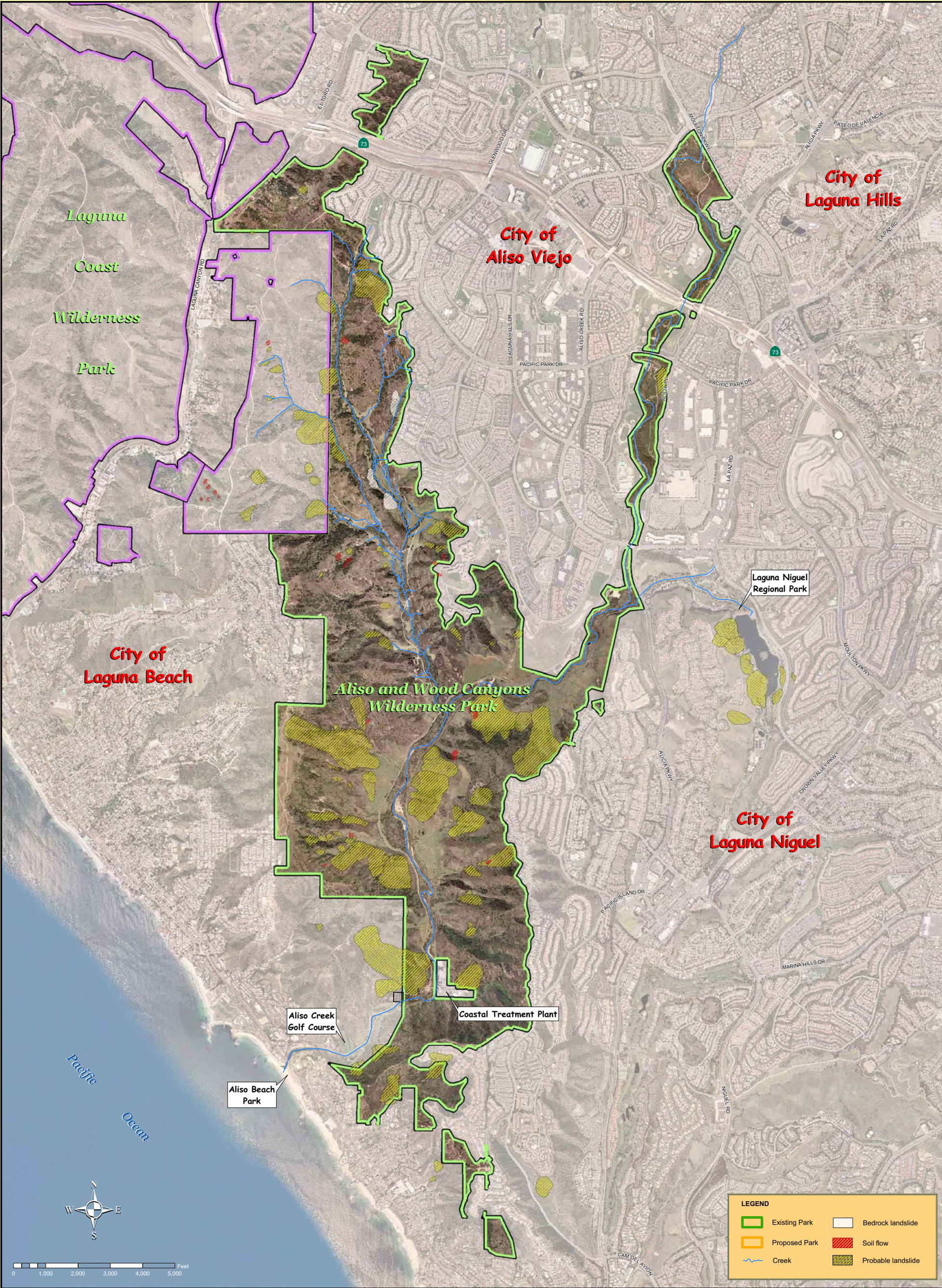
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Figure 8: Soils



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DATA SOURCE:
- Geomatics Land Information Systems Division
- NOAA 3 meter DEM 2002
- Eagle Aerial Image 1 foot resolution, flown April 2004
- California Division of Mines and Geology Special Report 112/1974-Geology of the San Juan Quadrangle, O. C., CA and Special Report 127/1976-Geology of the Laguna Beach Quadrangle, O. C., CA

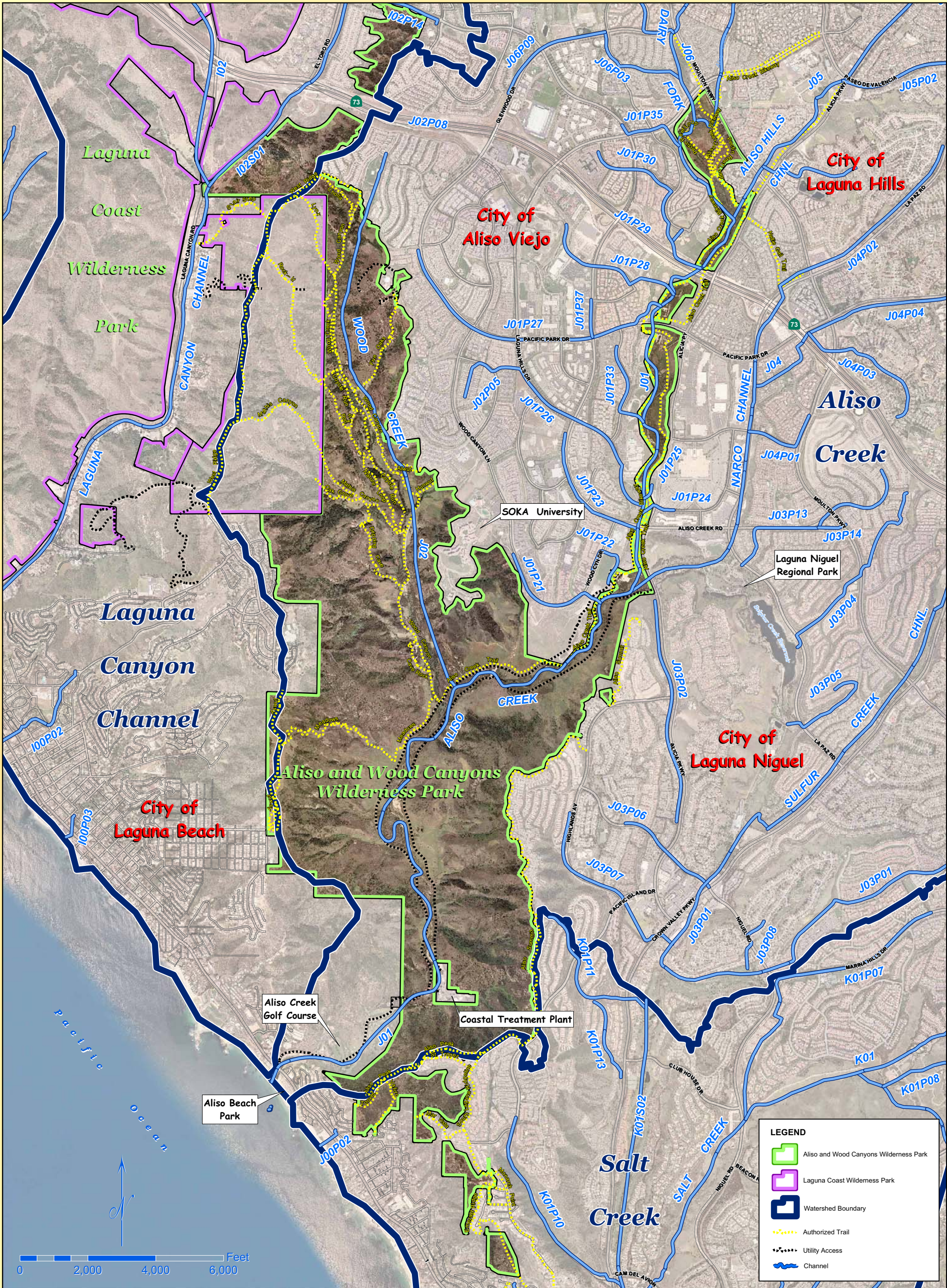
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Figure 9: Landslides



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- Eagle Aerial Image 1 foot resolution, flown 04/2004

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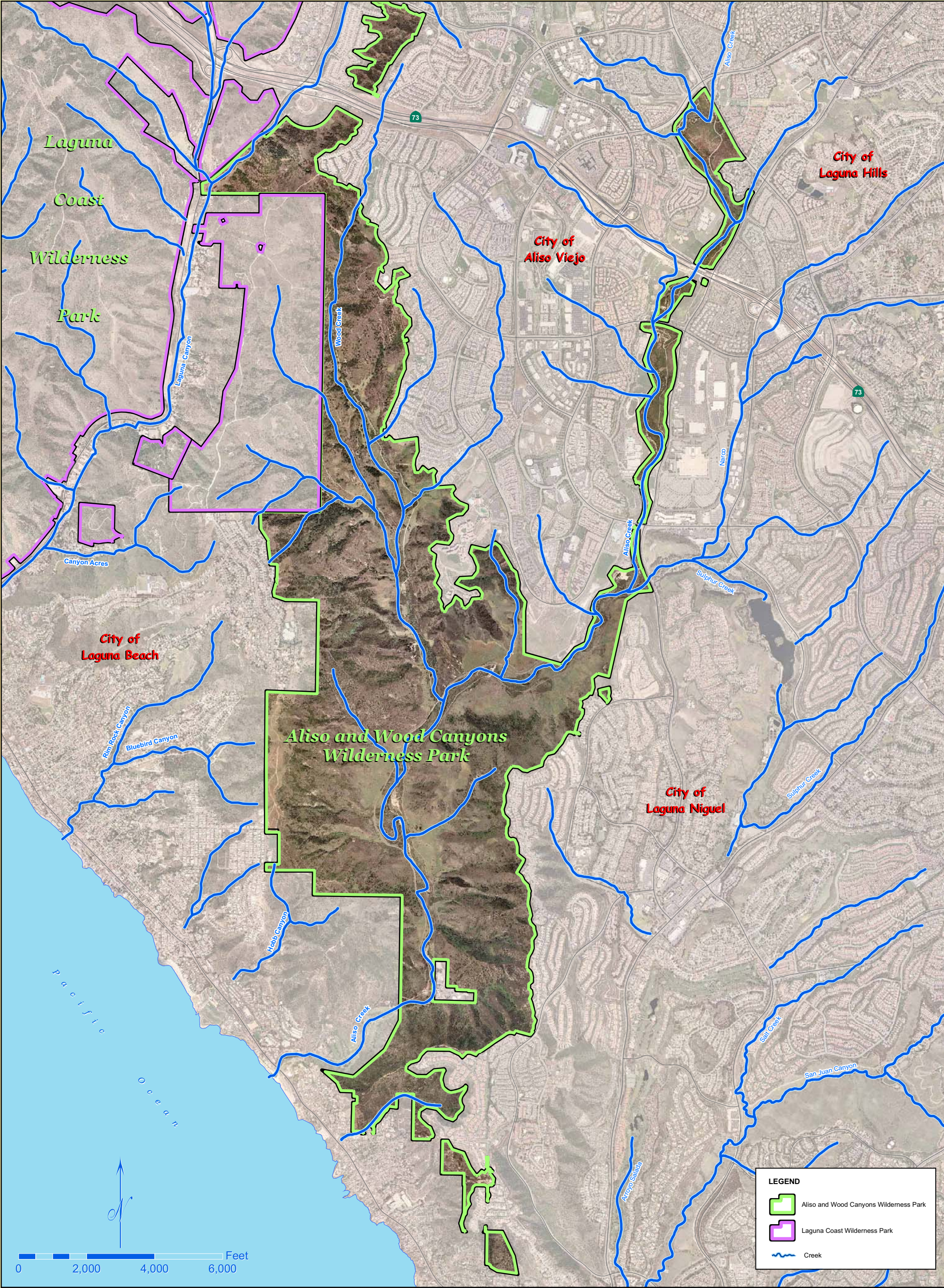
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Aliso and Wood Canyons Wilderness Park Resource Management Plan Figure 10: Watersheds



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DATA SOURCE:
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- Eagle Aerial Image 1 foot resolution, flown 04/2004

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Aliso and Wood Canyons Wilderness Park
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Figure 11: Hydrology



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warm, dry summers and mild, moist winters. The warmest month of the year is July, and the coldest is January. Average daily temperatures range from a minimum of 35 - 48 degrees Fahrenheit to a maximum of 80 - 84 degrees Fahrenheit. Although the climate is considered semi-arid, the marine layer keeps the air near the land surface moist on most days. Annual average relative humidity is 71 percent along the coast and 59 percent inland.

More than 90 percent of rainfall in the SCAB occurs from November through April. The majority of precipitation is in the form of rain. Monthly and yearly precipitation is extremely variable. Average annual rainfall along the San Gabriel River corridor varies from approximately 28 inches in the San Gabriel Mountains, to 18 inches in the San Gabriel Valley, to approximately 14 inches on the coastal plain. Average annual precipitation in the San Joaquin Hills usually ranges from 14 to 18 inches. Due to the location and climate of the San Joaquin Hills, streams that can be found in the region during the cooler months go dry during the warm summer months.

The flora and fauna of AWCWP are uniquely adapted to the specific climatic conditions of the region. Annual and bulbiferous plants, many of which are considered rare by the California Native Plant Society (CNPS), take advantage of late winter and early spring rains to complete their growth cycle. Perennial plants exhibit most of their growth during this same period and many adapt to the dry summers by going dormant in the summer, reducing water loss by having dark green leaves with waxy cuticles, and/or by having deep roots that capture ground water or deep soil moisture. Differences in these strategies can be observed on south facing slopes (hot and dry), north facing (cooler and moister), and canyon bottoms (where perennial groundwater is present). Animals, such as the western spadefoot toad are also adapted to completing breeding activities during the relatively brief rainy season, while withstanding the hot, dry season, for example by burrowing into the ground. Other animals, such as the federally-listed (under the Endangered Species Act) California gnatcatcher are uniquely adapted to the various habitat types present, such as coastal sage scrub, with its insect fauna.

4.3.5 Fire History

Southern California's Mediterranean climate presents the ideal conditions for fire. The wet, mild winters and dry, hot summers provide a long growing season that produces an abundance of plant fuel. Fire suppression, heavy rains, and seasonal or prolonged drought all result in excessive plant fuel accumulation and the potential for catastrophic wildfire.

Throughout history, the San Joaquin Hills have been subjected to repeat burning. The most recent firestorms occurred in October and November of 1993, in which more than 1,000 structures were destroyed or damaged in three major fires: the Stagecoach fire (October 26, 1993), the Laguna Canyon fire (October 27, 1993), and the El Toro fire (November 2, 1993). The Laguna Canyon fire burned more than 16,500 acres and 366 structures (Firewise 2005). The fire burned over 10,000 acres of open space, including 90 percent of the Laguna Coast Wilderness Park (County of Orange Environmental Management Agency 1996). (No portion of AWCWP burned at that time). Figure 12, Fire History, shows historic fires in the vicinity of AWCWP.

Major portions of AWCWP have been designated as high fire classification areas in the Orange County General Plan and Aliso Creek Corridor Specific Plan. Areas most susceptible to fire have three common characteristics: 1) thirty percent slopes or greater; 2) medium to heavy fuel loading, predominantly coastal sage scrub; and 3) frequent critical fire hazard weather conditions. Canyon slopes meeting these three criteria appear on east facing Laguna Canyon slopes, both sides of lower Aliso Canyon, upper Wood Canyon, portions of Sheep Hills and Upper Aliso Canyon. The greatest potential for fire damage exists at the interface between AWCWP and adjacent residential development.

4.4 NATURAL RESOURCES

4.4.1 Vegetation Communities

The distribution of vegetation types and subtypes within AWCWP is influenced by a variety of abiotic factors, including soils, slope steepness and aspect, elevation, and microclimate. These, in turn, are influenced significantly by the combination of the geology of the region and local climatic influences (e.g., coastal fog). AWCWP is in a region that represents a transition between two coastal sage scrub habitat types, Venturan and Diegan, as classified state-wide by Holland (1986). When combined with other habitat types in the park, such as chaparral and oak/sycamore woodland, the vegetation provides habitat for a unique assemblage of plants and animals. Biologically, the NCCP/HCP Habitat Reserve preserves a microcosm of the California Floristic Province, an identified biodiversity hot spot in North America and a genetic reserve for the continent. The Reserve, of which AWCWP is a part, is therefore regionally and nationally significant as a prime example of this unique habitat web, yet it occurs in an area that nearly surrounded by existing development, with the attendant human influences.

AWCWP contains seven unique habitat types: coastal scrub; chaparral; grassland; vernal pools, seeps, and meadow habitats; marsh; riparian; and woodland habitats (Figure 13: Vegetation Communities). Rock and cliff habitat also comprises a limited portion of the park, and disturbed habitat – characterized by non-native plant species – is also present in areas. The approximate acreages of each habitat type are shown in Table B.

Table B: Habitat Types within AWCWP

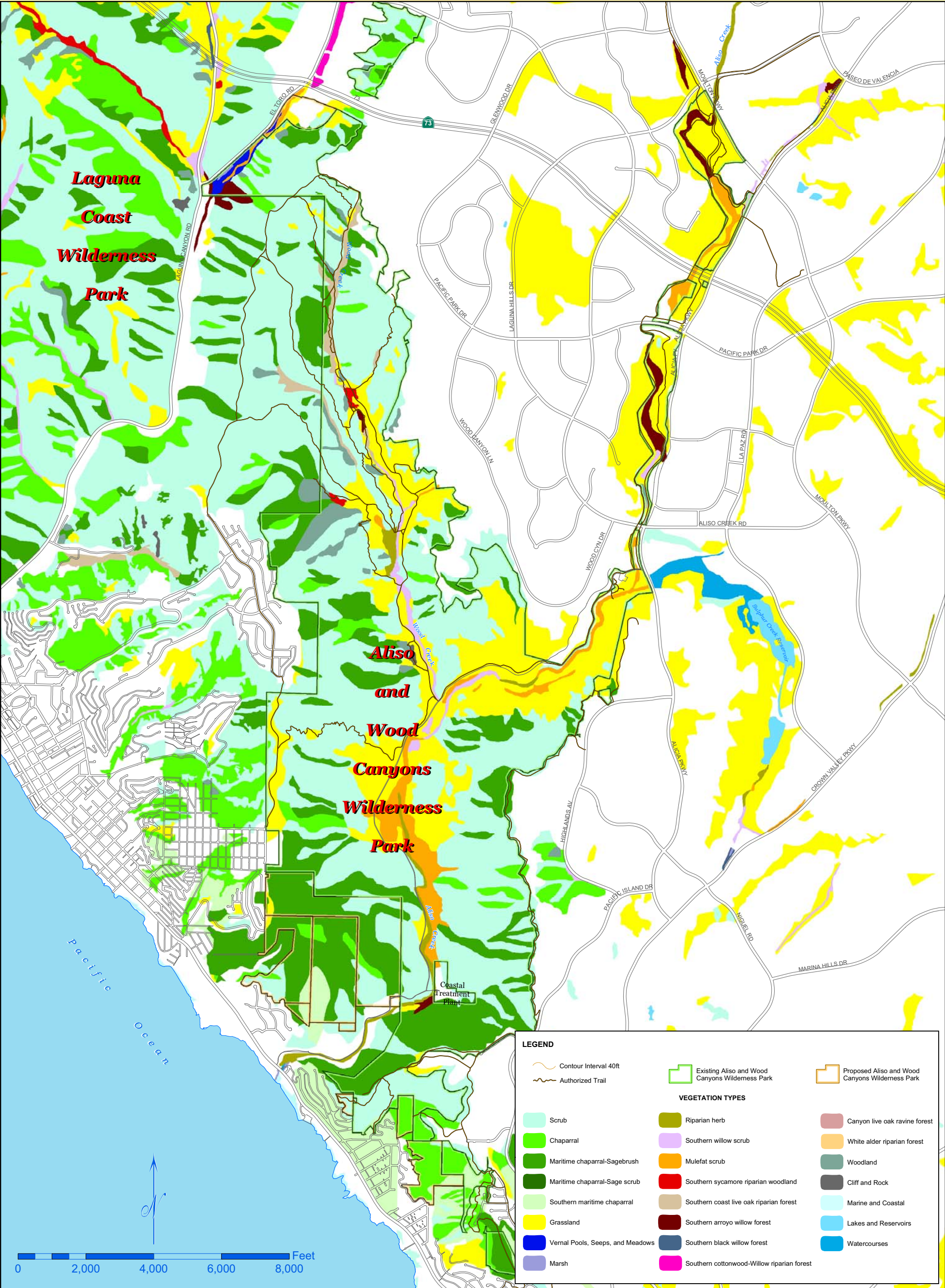
Habitat Type	Acreage
Coastal Scrub	1825
Chaparral	725
Grassland	886
Vernal Pools, Seeps, and Meadow	7
Marsh	(no acreage value reported)
Riparian	247
Woodland	133
Rock and Cliff	2
Disturbed	41



Aliso and Wood Canyons Wilderness Park
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Figure 12: Fire History



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DATA SOURCE:

- Geomatics Land Information Systems Division
- Eagle Aerial Image 1 meter resolution, flown June 2001
- The vegetation was identified using the Orange County
Habitat Classification System (developed by Dames &
Moore and David Bramlet) and partially rectified true-
color aerial images flown in 1991 where 1" = 500'.

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**Aliso and Wood Canyons Wilderness Park
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Figure 13: Vegetation Communities**



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Coastal Scrub Habitats. Coastal scrub habitats account for the largest plant community in AWCWP. Coastal scrub habitat generally describes a mosaic of native plant communities that occur on hillside slopes and lowland bluffs from Southern Oregon to northwestern Baja California, including offshore islands from the Channel Islands to Cedros Island. The coastal scrub vegetation type found in AWCWP consists of sparsely to densely spaced, low-growing, aromatic, drought deciduous shrubs. Coastal scrub habitats grow primarily on slopes and ridges below approximately 3,300 feet (1,000 meters) in elevation where rainfall, drainage, soil type, and exposure to sun provide suitable growing conditions.

Vegetation growing on north-facing slopes is different than vegetation growing on south-facing slopes. On south-facing slopes, the vegetation is typically Coastal Sage Scrub (CSS), including California sagebrush (*Artemisia californica*), California encelia (*Encelia californica*), white (*Salvia apiana*), purple (*S. leucophylla*), and black (*S. mellifera*) sages, California buckwheat (*Eriogonum fasciculatum*), coyote bush (*Baccharis pilularis*), coastal goldenbush (*Isocoma menziesii* var. *vernonioides*), and golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*). On north-facing slopes, lemonade berry (*Rhus integrifolia*) and other large shrubs such as toyon (*Heteromeles arbutifolia*) and laurel sumac (*Malosma laurina*) intermingle with drought-tolerant chaparral.

Large CSS patches grow on the upper slopes within Wood Canyon, around the confluence of Aliso and Wood Canyons, and continue south into lower Aliso Canyon. Drier slopes often contain black sage scrub, mixed sage scrub, buckwheat scrub, and cactus scrub. On the whole, CSS occurs in extensive patches throughout AWCWP, but is not well represented north of Aliso Creek Road. This increasingly rare plant community, with high biological value, is thought to be one of the most endangered vegetation types in California (Atwood 1993). A total of five associations of CSS are known to occur in the AWCWP: southern coastal bluff scrub, Venturan-Diegan transitional CSS, southern cactus scrub, chenopod scrub, and sage scrub-grassland ecotone. Up to eight subassociations of the Venturan-Diegan transitional CSS may exist within AWCWP: California sagebrush/California buckwheat scrub, California sagebrush/orangebush monkey flower scrub, black sage scrub, sagebrush scrub, buckwheat scrub, coyote bush scrub, mixed sage scrub, and California sagebrush/coyote bush scrub.

Chaparral Habitats. Chaparral is the second most extensive vegetation community in the AWCWP. Chaparral is made up of woody shrubs with small, leathery, evergreen leaves (i.e., sclerophyllous) that are adapted to prevent wilting during dry periods. Like CSS, chaparral is both drought- and fire-adapted. Fire is a healthy and necessary component of its life cycle. Shrubs respond to recurrent fires in several ways; they resprout from both crown and roots, and produce seeds that are both fire resistant and dependent on fire for germination and growth. Fire helps create a healthy plant mosaic of different ages and species and as a result increases the diversity of habitats (Horton et al. 1955).

Chaparral is found on north- and west-facing shaded slopes where soil moisture persists and shrubs grow about 5 to 10 feet tall and form dense, woody stands with a canopy that shades a nearly bare understory. Chaparral is the dominant community in the southernmost portion of the park, and is most prominent within Wood Canyon, near the confluence of Aliso and Wood Creeks; it continues, in dense patches mixed with sage scrub, south toward the

Pacific Ocean. Chaparral is not considered as sensitive as CSS, since it is more widespread in Southern California and does not support as many sensitive species. Of the twelve chaparral associations identified as occurring in the County, four have been known to occur in AWCWP: maritime chaparral-sagebrush, southern mixed chaparral, southern maritime chaparral, and toyon-sumac chaparral. Not only do many of the chaparral communities contain several sensitive plant species (i.e., summer holly [*Comerostaphylis diversifolia* ssp. *diversifolia*], Nuttall's scrub oak [*Quercus dumosa*]), but maritime chaparral is itself a rare habitat community.

Grassland Habitats. Grasslands are found extensively throughout AWCWP, particularly along Aliso Creek, north of its confluence with Wood Creek. This habitat is characterized by low herbaceous vegetation dominated by annual and perennial grasses and forbs, which typically occur on deep, fine-textured, usually clayey soils from flat plains to gently rolling hills. The assemblage of species within the grasslands are influenced by several environmental, climatic, and edaphic factors including soil structure, texture, parent material, chemistry, slope aspect, slope angle, and level of disturbance (Jones and Stokes 1993). Portions of AWCWP were grazed by cattle until the latter part of the 20th century, which reduced the native grasses and favored the exotic annual species that are more tolerant of trampling and grazing. Currently, nonnative annual grassland habitats occupy what was once native vegetation. Native grasslands likely consisted of climax stands of perennial needle grass and melic grass species on wetter sites, with annual species existing as climax communities on drier alluvial plains (Webster 1981). Native grass cover within AWCWP has improved since grazing and farming have ceased.

Annual grasses will germinate with the first fall rains that exceed 0.5 inch (15 mm), growing slowly during winter and more rapidly in spring (Heady 1977). Most annuals mature between April and June (Heady 1977), although some species, such as fascicled tarweed (*Deinandra fasciculata*) and doveweed (*Croton setigerus*), continue to grow into summer. Fall rains that encourage germination, followed by an extended dry period, favor the growth of deep-rooted forbs (Duncan and Woodmansee 1975). Annual grasslands are found along all reaches of Aliso Creek just north of the confluence with Wood Creek and in stretches along the western border of AWCWP.

Concentrations of native grasses occur within many of the annual grasslands, often forming an ecotone with CSS on slopes. One native and two nonnative associations of grassland habitat have been known to occur in AWCWP: annual grassland, southern coastal needlegrass grassland, and ruderal grassland.

Vernal Pools, Seeps, and Meadow Habitats. Vernal pools, seeps, and meadow habitats account for a very small portion of AWCWP. These habitats are seasonal or perennial wetlands found in some of the low-lying slopes and canyon bottoms. Wetland vegetation takes several forms depending on substrate, water regime, disturbance, and other biotic and abiotic factors. These areas contain herbaceous-dominated communities when inundated with water. These types of habitats are very limited in distribution in Southern California because of their dependence on surface or near-surface water during most of the year. In addition, past flood control and other development projects have resulted in a relatively massive loss of this habitat and a drastic reduction in the species that depend on it. Meadow

communities at all elevations generally have a simple structure consisting of a layer of herbaceous plants. Shrub or tree layers are usually absent or very sparse; however, they may be an important feature of the wetland edge. Some species reach heights of less than 1 inch, while others may grow 3 feet tall or more (greater than 1 meter). Vernal pools, seeps, and meadow habitats occur with a great variety of plant species; therefore, it is not possible to generalize species composition. Species may differ, but several genera are common to these wetland habitats such as: bentgrasses, sedges (*Carex* sp.), rushes (*Juncus* sp.), willows (*Salix* sp.), and cat-tails (*Typha* sp.). Invasive species such as giant reed (*Arundo donax*) and pampas grass (*Cortaderia selloana*) dominate the vegetation in some locations, particularly along Aliso Creek. There is one association that has been known to occur within AWCWP: freshwater seep.

Marsh Habitats. Marsh habitats are extremely limited and account for a remnant amount in AWCWP. Brackish and freshwater marshes are flooded for a majority of the year and are characterized by perennial, emergent species including: umbrella sedges (*Cyperus* sp.), Olney's bulrush (*S. americanus*), California bulrush (*Scirpus californicus*), alkali bulrush (*S. maritimus*), and narrow-leaved cat-tail (*Typha angustifolia*). Marsh habitats are associated with Aliso Creek, El Toro Creek, and some portions of Wood Creek. Mallard Marsh has historically provided some open water habitat and still supports some emergent wetland species. However, currently no surface water is evident, and the plant species are dominated by coastal goldenbush and a variety of weedy forms. One association of marsh habitat is known to occur in AWCWP: coastal freshwater marsh.

Riparian Habitats. Riparian communities account for the third largest vegetation type within AWCWP. Riparian habitats are associated with stream channels, lakes, or ponds or are dependent upon the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage. In AWCWP, riparian habitats are associated with the perennial streams and floodplains of Aliso Creek and Wood Creek and range from herbaceous plants to multilayered tree species. Riparian communities are dominated by one or several species of anemophilous (wind-pollinated), winter-deciduous trees adapted to periodic or continuous soil saturation during all or part of the growing season. Riparian vegetation is found along the length of Aliso Creek and in the lower portions of Wood and Mathis Canyons. The majority of this habitat is composed of mulefat (*Baccharis salicifolia*), willow, and giant reed. A good portion of Aliso Creek is inundated with large patches of giant reed (*Arundo donax*), a highly invasive nonnative plant. Giant reed forms impenetrable stands of highly flammable vegetation that crowds out native plant species and reduces habitat for wildlife. The California Invasive Plant Council (Cal-IPC) includes giant reed on its "Exotic Pest Plants of Greatest Ecological Concern in California" list (www.cal-ipc.org).

The overall riparian community in AWCWP contains as many as eight associations: riparian herb, southern willow scrub, mulefat scrub, southern sycamore riparian woodland, southern coast live oak riparian forest, southern arroyo willow forest, southern black willow forest, and bramble thicket.

Woodland Habitats. Woodland habitats comprise a considerable amount of the northwest portion of AWCWP. Coastal oak woodlands are extremely variable multi-layered vegetation communities dominated by trees with an open, mosaic canopy. Woodlands typically occur

on or near the base of north-facing slopes and in moist ravines. The overstory consists of deciduous and evergreen hardwoods that are dense and form a closed canopy. The understory is equally variable. In some instances, it is composed of shrubs from adjacent chaparral or CSS that form a dense, almost impenetrable understory, while in other instances, the understory vegetation is poorly developed and dominated by grasses and forbs. Oak woodland is a prominent feature in Wood Canyon, where it intermingles with maturing southern willow scrub and southern sycamore riparian forest. However, in upper Wood Canyon, oak woodland is mixed with scattered oak trees, chaparral, and sage scrub. AWCWP has been known to contain two woodland habitat associations: coast live oak woodland and Mexican elderberry woodland.

Rock and Cliff Habitats. Rock and cliff habitats occur regularly within AWCWP. Rocks and cliffs are more common in canyons with steep, clay, or sandy slopes and/or erosion-prone soil types. These elements provide a variety of microhabitats for a number of plant and animal species in the area, including rare plants such as Laguna Beach dudleya (*Dudleya stolonifera*). These microhabitats include geographic features such as limestone outcrops, cliffs, crevices, and small caves. The rock and cliff community in AWCWP is represented by two associations: cliff faces and rock outcrops.

Disturbed Habitat. This community accounts for any type of disruption from past grazing and agriculture to current urban impacts such as roadsides, trails, or clearing for fuel management zones. These communities are dominated by introduced weedy species, especially forbs and grasses.

Exotic Plant Species. California has become the adopted home of over 1,000 plant species from other parts of the world. Most of these originated in the Mediterranean region, where the climate is similar to Southern California's. Most of California's exotic species are fast-growing annuals that prefer disturbed habitats and are prodigious seed producers (Barbour et al. 1993). Exotic or nonnative plant species often change the landscape and the natural relationships between native plant cover, soil, hydrology, and wildlife by outcompeting native plants. Not all nonnative species are invasive and harmful, but many (e.g., giant reed, nonnative grasses) can completely take over and change entire established ecosystems. The consequences of the invasion, including alteration of habitat and disruption of natural ecosystem processes, can be catastrophic for native species.

The most abundant dominant exotic species occurring within grassland areas of AWCWP are exotic annual grasses, black mustard (*Brassica nigra*), poison hemlock (*Conium maculatum*), artichoke thistle (*Cynara cardunculus*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), and bristly ox-tongue (*Picris echinoides*). Within the drainages and other areas, giant reed, tree tobacco (*Nicotiana glauca*), poison hemlock, and pampas grass are of concern (LSA 2003). Eucalyptus (*Eucalyptus* sp.) and other ornamental shrubs and groundcover are planted at the Coastal Treatment Plant, and the eucalyptus continues downstream to the 9-hole Aliso Creek Golf Club just outside of AWCWP. Many of the ornamental plants are not invasive in southern California. Clearly, nonnative grasses, thistles, and giant reed are the major obstacles to restoration in both distribution and density.

4.4.2 Sensitive Habitats and Special Status Plant Species

Sensitive Habitats. Habitats are considered to be sensitive biological resources based on (1) federal, State, or local laws (e.g., NCCP/HCP) regulating their development; (2) limited distributions; and/or (3) the habitat requirements of sensitive plants or animals occurring on site. There have been 19 identified primary plant communities considered sensitive by State and/or local agencies. In addition, both wetlands and waters of the United States are considered sensitive by federal and State agencies.

The sensitive habitats identified in the project boundary include all of the associations and subassociations of CSS and chaparral in the coastal subarea, coastal freshwater marsh, southern willow scrub, mulefat scrub, southern arroyo willow forest, southern black willow forest, oak woodlands, and cliff and rock outcrops. All of the sensitive habitats are described in detail in the Existing Conditions Report (Appendix C).

Special Status Plant Species. The NCCP/HCP identified federally listed (under the Endangered Species Act – ESA), State listed (under the California Endangered Species Act – CESA), and proposed endangered or threatened plant species that have been observed in AWCWP based on researched literature records. Listed plant species that were identified in the literature review as potentially occurring on site or in the study area are listed in the Existing Conditions Report (Appendix C) and shown on Figure 14: Sensitive Plant Species. The listing status, plant community, and habitat characteristics concerning these and other special interest plant species are provided in the Existing Conditions Report (Appendix C).

4.4.3 General Wildlife

AWCWP is known to have high species diversity and numbers of wildlife due to the quality native habitat associated with the undisturbed slopes and canyons, diverse habitat types (such as sage scrub, chaparral, and woodland habitats, including areas with water, such as riparian and pond habitat). In addition, the connectivity and continuity of habitat with adjacent native lands (i.e., LCWP, Laguna Niguel Regional Park, Laguna Laurel Ecological Reserve, Coastal Reserve, City of Laguna Beach Open Space, City of Irvine Open Space) (VST 1991; Almanza 1992; County 1998; County map 2002) promotes, protects, and enhances the survival of a variety of wildlife species.

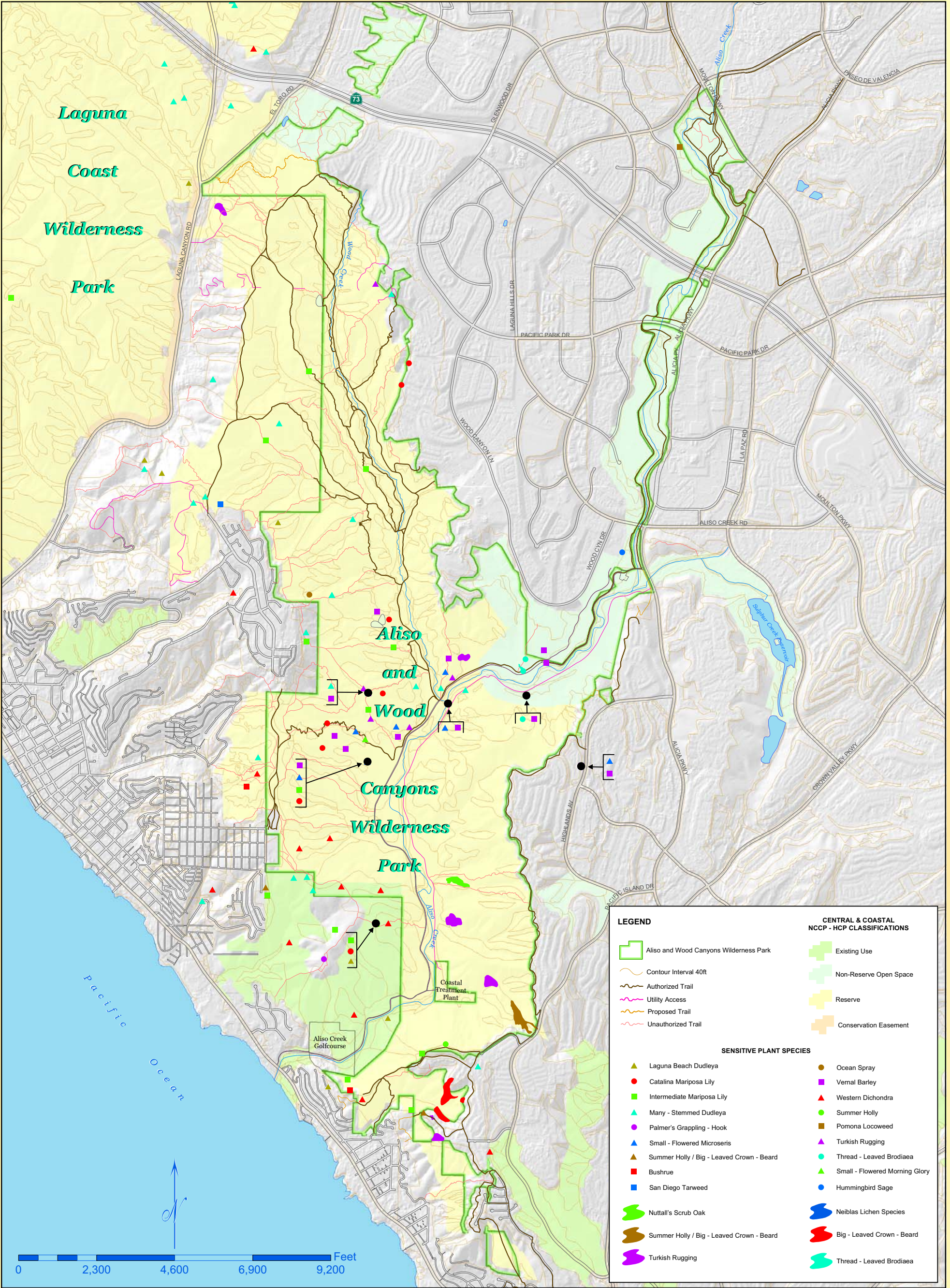
Invertebrates. Native plant communities within AWCWP provide habitat and food for many invertebrate species. Common species that would be expected in lowlands and on hilltops include anise swallowtail, checkered and cabbage white, gray hairstreak, Acmon blue, Mormon metalmark, mourning cloak, painted and west coast ladies, red admiral, common buckeye, and funereal duskywing (Almanza 1992, LSA review). Riverside fairy shrimp, a federally listed endangered invertebrate and a NCCP/HCP Conditionally Covered Species, are known to occur within the Aliso Creek watershed (Nowak 1999). The Quino checkerspot butterfly (*Euphydryas editha quino*), a federally listed endangered butterfly and a NCCP/HCP Conditionally Covered Species, has not been recently documented within AWCWP; this species is no longer likely to occur, but habitat does exist within AWCWP for this species.

Fish and Other Aquatic Species. Currently, waters within AWCWP are expected to have low fish diversity due to predatory aquatic and bird species, degradation of water quality and natural hydrologic conditions, and geomorphic changes to the creek channels. Fish species known to occur in the AWCWP in recent history include native species such as tidewater goby (*Eucyclogobius newberryi*) and steelhead (*Oncorhynchus mykiss*), as well as nonnative species such as mosquito fish (*Gambusia affinis*), largemouth bass (*Micropterus salmoides*), minnow species, and common carp (*Cyprinus carpio*) (LSA observation 2006). Tidewater goby (*Eucyclogobius newberryi*), a State and federally listed endangered fish, is known to occur at the mouth of Aliso Creek. Tidewater gobies have been observed in recent years, but are not currently expected, in Aliso Creek from the mouth to 1.5 miles upstream.

Amphibians and Reptiles. Many native amphibian and reptile species have been observed on or adjacent to AWCWP. Most of these species occur in more than one habitat type or are associated with the ecotones between habitats. Several species are considered rare according to the NCCP/HCP and are known or expected to occur within AWCWP; these species are the arboreal salamander (*Aneides lugubris*), garden slender salamander (*Batrachoseps major*), western spadefoot (toad) (*Spea hammondi*), southwestern pond turtle (*Actinemys marmorata*), San Diego horned lizard (*Phrynosoma coronatum blainvillei*), orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), coastal western whiptail (*A. tigris multiscutatus*), coastal rosy boa (*Charina trivirgata rosafusca*), San Bernardino ringneck snake (*Diadophis punctatus modestus*), two-striped garter snake (*Thamnophis hammondi*), and red-diamond rattlesnake (*Crotalus ruber*). Several non-native species occur in this area including the African clawed frog, American bullfrog, and red-eared slider.

Raptors and Other Birds. Raptors are the most conspicuous wildlife in AWCWP. Raptors observed within the biological study area include turkey vulture (*Cathartes aura*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*B. jamaicensis*), American kestrel (*Falco sparverius*), merlin (*F. columbarius*), barn owl (*Tyto alba*), and great horned owl (*Bubo virginianus*) (Dore and Dougan 1989; VST 1991; Bloom; Hamilton). In terms of habitats, grassland, and other open habitats are most important to foraging raptors, as well as, CSS and chaparral, especially in the more open areas. Although few of them nest there, all of the known and expected species forage in grasslands and other open habitats. Within AWCWP, the white-tailed kite, northern harrier, and burrowing owl (rare occurrences) are not expected to be found regularly in any other habitat except grassland.

Many carnivorous bird species also inhabit the extensive oak woodland and stands of sycamores in both Aliso Canyon and Wood Canyon. The large woodland trees are essential sites for roosting and nesting raptors. The snags and cavities that characteristically develop in these trees are also used by a variety of cavity nesting species such as flickers and woodpeckers. The western screech-owl (*Megascops kennicottii*) as well as the sharp-shinned, Cooper's, and red-shouldered hawks primarily forage in the woodland habitats. The following breeding raptors have been confirmed nesting in Aliso and/or Wood Canyons: turkey vulture, Cooper's hawk, red-tailed hawk, northern harrier, and barn owl. White-tailed kites had unconfirmed nests in both canyons as well (VST 1991; Bloom).



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DATA SOURCE:
- Geomatics Land Information Systems Division
- NOAA 3 meter DEM 2002
- Eagle Aerial Image 1 foot resolution, flown April 2004
- Draft Aliso and Wood Canyons Wilderness Park Resource Management Plan Dated July 1991
- California Natural Diversity Data Base, April 12, 1999
- Field Surveys conducted by Harmsworth and Associates between March and July, 1998
- Supervising Park Ranger Tom Maloney, February 10, 2006

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DATE: June 3, 2006

Aliso and Wood Canyons Wilderness Park
Resource Management Plan
Figure 14: Sensitive Plant Species



Back of Figure 14

AWCWP is unique due to the local geography with two distinct canyons that provide quality habitat for many bird species. Upland native plant communities form a mosaic throughout AWCWP, which creates high bird diversity within limited areas. Throughout the year and during the spring and summer breeding seasons, common resident and migrant bird species in these grassland, scrub, chaparral, woodland, and forest areas include California quail (*Callipepla californica*), mourning dove (*Zenaidura macroura*), greater roadrunner (*Geococcyx californianus*), white-throated swift (*Aeronautes saxatilis*), black-chinned (*Archilochus alexandri*) and Anna's (*Calypte anna*) hummingbirds, downy woodpecker (*Picoides pubescens*), northern flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), ash-throated flycatcher (*Myiarchus cinerascens*), Cassin's (*Tyrannus vociferans*) and western (*T. verticalis*) kingbirds, western scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), common raven (*C. corax*), northern rough-winged (*Stelgidopteryx serripennis*) and cliff (*Petrochelidon pyrrhonota*) swallows, bushtit (*Psaltiriparus minimus*), canyon wren (*Catherpes mexicanus*), Bewick's wren (*Thryomanes bewickii*), ruby-crowned kinglet (*Regulus calendula*), wrentit (*Chamaea fasciata*), northern mockingbird (*Mimus polyglottos*), phainopepla (*Phainopepla nitens*), yellow-rumped warbler (*Dendroica coronata*), California towhee (*Pipilo crissalis*), western meadowlark (*Sturnella neglecta*), and lesser goldfinch (*Carduelis psaltria*). In addition, upland habitats provide important foraging and nesting habitat for special-interest species such as coastal cactus wren (*Campylorhynchus brunneicapillus*), coastal California gnatcatcher (*Poliophtila californica californica*), California thrasher (*Toxostoma redivivum*), grasshopper sparrow (*Ammodramus savannarum*), and Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). All of these bird species are known from AWCWP (Dore and Dougan 1989; VST 1991; Almanza 1992; LSA 2003; Corps 2003; DeSante; Hamilton).

Many land birds are closely tied to the riparian vegetation and perennial nature of the water in Aliso and Wood Canyons. These drainages provide suitable habitat for a number of water-dependent and aquatic bird species. Throughout the year and during the spring and summer breeding seasons, common resident and migrant bird species in these marsh, shrub, creek, and ponded areas include mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), great egret (*A. alba*), snowy egret (*Egretta thula*), green heron (*Butorides striatus*), black-crowned night heron (*Nycticorax nycticorax*), American coot (*Fulica americana*), belted kingfisher (*Ceryle alcyon*), Anna's hummingbird, warbling vireo (*Vireo gilvus*), marsh wren (*Cistothorus palustris*), orange-crowned warbler (*Vermivora celata*), common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), black-headed grosbeak (*Pheucticus melanocephalus*), blue grosbeak (*Passerina caerulea*), red-winged blackbird (*Agelaius phoeniceus*), hooded (*Icterus cucullatus*) and Bullock's (*I. bullockii*) orioles, and lesser goldfinches. In addition, riparian habitat provides foraging and important (potential) nesting habitat for special-interest species such as yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), and endangered least Bell's vireo (*Vireo bellii pusillus*). All of these bird species are known from AWCWP (Dore and Dougan 1989; VST 1991; Almanza 1992; LSA 2003; County map; Harmsworth 2002; Corps 2003).

The brown-headed cowbird (*Molothrus ater*) is a parasitic bird species that takes advantage of many of the above-mentioned species of passerines (songbirds). This species is known from AWCWP (Dore and Dougan 1989) in limited numbers due to the lack of agricultural

fields and equestrian areas adjacent to the study area. Trapping efforts in the past at AWCWP have removed large numbers of this species.

Mammals. Mammal species diversity is relatively high within AWCWP. Coyote, grey fox, raccoon, striped skunk, bobcat, and mule deer can be detected in AWCWP (Crooks et al. 1999). Mountain lions (*Puma concolor*) have not been detected in the coastal subregion study area (i.e., San Joaquin Hills North and South and Aliso and Wood Canyons), although they could occur, at least occasionally, in AWCWP.

The riparian and woodland communities as well as the bridge structures, palms, rock outcrops, and natural caves provide foraging and roosting opportunities for bats. Several species of bat are known or expected to use the area. Most of the bats that could potentially occur in the survey area are less active during the winter and most either hibernate or migrate, depending on the species.

Exotic Animal Species. Exotic organisms with the potential to do serious ecological harm observed within AWCWP include crayfish (Family Astacidae), African clawed frog (*Xenopus laevis*), and American bullfrog (*Rana catesbeiana*). In addition, several nonnative fish have been documented in Aliso Creek. The presence of nonnative species often reduces the potential for viable populations of native and sensitive species that could be present, due to competition for resources and because many exotic animal species directly prey upon native species or reduce breeding success (e.g., American bullfrog, brown-headed cowbird).

4.4.4 Special Status Wildlife Species

Listed Species. Several California Endangered Species Act (CESA) and federal Endangered Species Act (ESA) listed animal species are known to occur in AWCWP: the State listed endangered willow flycatcher (*Empidonax traillii*) (during migration; breeding not confirmed for the federally endangered southwestern willow flycatcher [*E. t. extimus*]), least Bell's vireo, and the federally listed threatened coastal California gnatcatcher. The willow flycatcher occurs throughout most of California during its migrations between wintering and breeding grounds. The breeding subspecies in southwestern California (*E. t. extimus*) is federally listed as endangered and nests in numbers in riparian (e.g., willow riparian forest) vegetation at the Prado Basin in southern San Bernardino County. The endangered least Bell's vireo is a migratory bird that also nests in riparian vegetation communities along the creeks in AWCWP. The coastal California gnatcatcher is the species most closely associated with conservation efforts in Southern California's CSS community and was the focus of the local NCCP/HCP. California gnatcatchers are most often found in sagebrush-dominated habitat and occur throughout AWCWP in suitable habitat.

Nonlisted Species. A number of the nonlisted sensitive species⁴ of AWCWP are found in a range of habitats. Amphibians and reptiles such as the western spadefoot, southwestern pond turtle, San Diego horned lizard, coastal western whiptail, San Bernardino ringneck

⁴ The NCCP/HCP has a list of identified species that are notable for their rarity or as indicator species of the health of the vegetation community in which they occur. These species are managed for in the NCCP/HCP and are addressed as if they were listed as endangered species under the FESA and CESA. These species are described under nonlisted species in this report and associated appendices.

snake, and northern red-diamond rattlesnake are most common in chaparral and CSS but also range into grassland and woodland. Raptors and other birds known from AWCWP include the white-tailed kite, Cooper's hawk, coastal cactus wren, oak titmouse (*Baeolophus inornatus*), loggerhead shrike (*Lanius ludovicianus*) (at least historically), and yellow-breasted chat. A number of sensitive bat species potentially occur in AWCWP; most are confined to woodlands, cliffs, or structures for roosting but range more widely when foraging. Larger, nonlisted sensitive mammals also occur within AWCWP, including the coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and mule deer (*Odocoileus hemionus*).

The Existing Conditions Report (Appendix C) identifies the sensitive animal species known or potentially occurring within AWCWP. Species provided in this table are listed alphabetically by scientific name, with their common names following. Additional specific information with references to focused monitoring and research studies for many of these species is provided in the Existing Conditions Report (Appendix C).

4.4.5 Wildlife Movement Corridors

Large areas of continuous habitat or narrower linkages between expanses of open space provide movement corridors for wildlife and dispersal corridors for plants. A wildlife corridor is typically a linear habitat feature that connects large patches of natural open space and/or provides avenues for frequent movement, dispersal, or migration of animals and any associated plant material. Corridors, particularly those of significant size, can be used for transit by both large (e.g., coyote, bobcat [*Felis rufus*],) and small (e.g., insects, birds) species. Corridors may be less regularly used by sedentary species that occur in localized habitat; however, many of these species still benefit when offspring use corridors for dispersal to other open space patches. Aliso and Wood Canyons are known to provide wildlife corridors and habitat for medium (e.g., Virginia opossum [*Didelphia virginiana*; a nonnative species], gray fox) and large-sized (e.g., coyote, bobcat) mammal species, including domestic animals (Crooks 1999).

The NCCP/HCP identifies several important linkage functions for the AWCWP that unify locally established open space and wilderness areas, including the Laguna Coast Wilderness Park (LCWP) and James Dilley Greenbelt Reserve to the northwest and north, respectively; Laguna Niguel Regional Park to the northeast; and Salt Creek Corridor Regional Park to the east (Figure 15: Wildlife Corridors). The northwestern portion of the AWCWP is contiguous with natural habitat in the LCWP lands while the southern part of AWCWP terminates near the southern end of the City of Laguna Beach near South Coast Highway (State Highway 1) and the Pacific Ocean.

Overall the largest wildlife corridor connects AWCWP to the open space areas to the north and west across El Toro Road and Laguna Canyon Road. While these relatively busy roads compromise the function of the corridors, the species that utilize these areas are generally quite mobile and the native habitat that is contiguous throughout these corridors provides significant benefit to wildlife movement. Movement to the north and east of the northeastern arm of AWCWP is more constrained by busy roadways and surrounding development, but in these areas highly mobile species, such as birds, coyotes, and bobcats, can utilize the drainage corridors that either lead to other open space areas or act as "stepping stones."

Several narrow wildlife corridors still exist immediately west and east of lower AWCWP, although they have been significantly reduced in width and continuity due to dense residential developments. The value of wildlife corridors has also been diminished due to habitat degradation associated with mis-management of fuel modification zones.

4.5 PALEONTOLOGICAL RESOURCES

Paleontological resources represent a significant feature of AWCWP. Six geological formations and four nonformational units are exposed within AWCWP (see Figure 7, Geology). All formations and nonformational units except for the Holocene alluvium/colluvium have produced fossils. Table C lists the paleontological sensitivity of each formation/unit (listed from oldest to youngest) (Eisentraut and Cooper 2002).

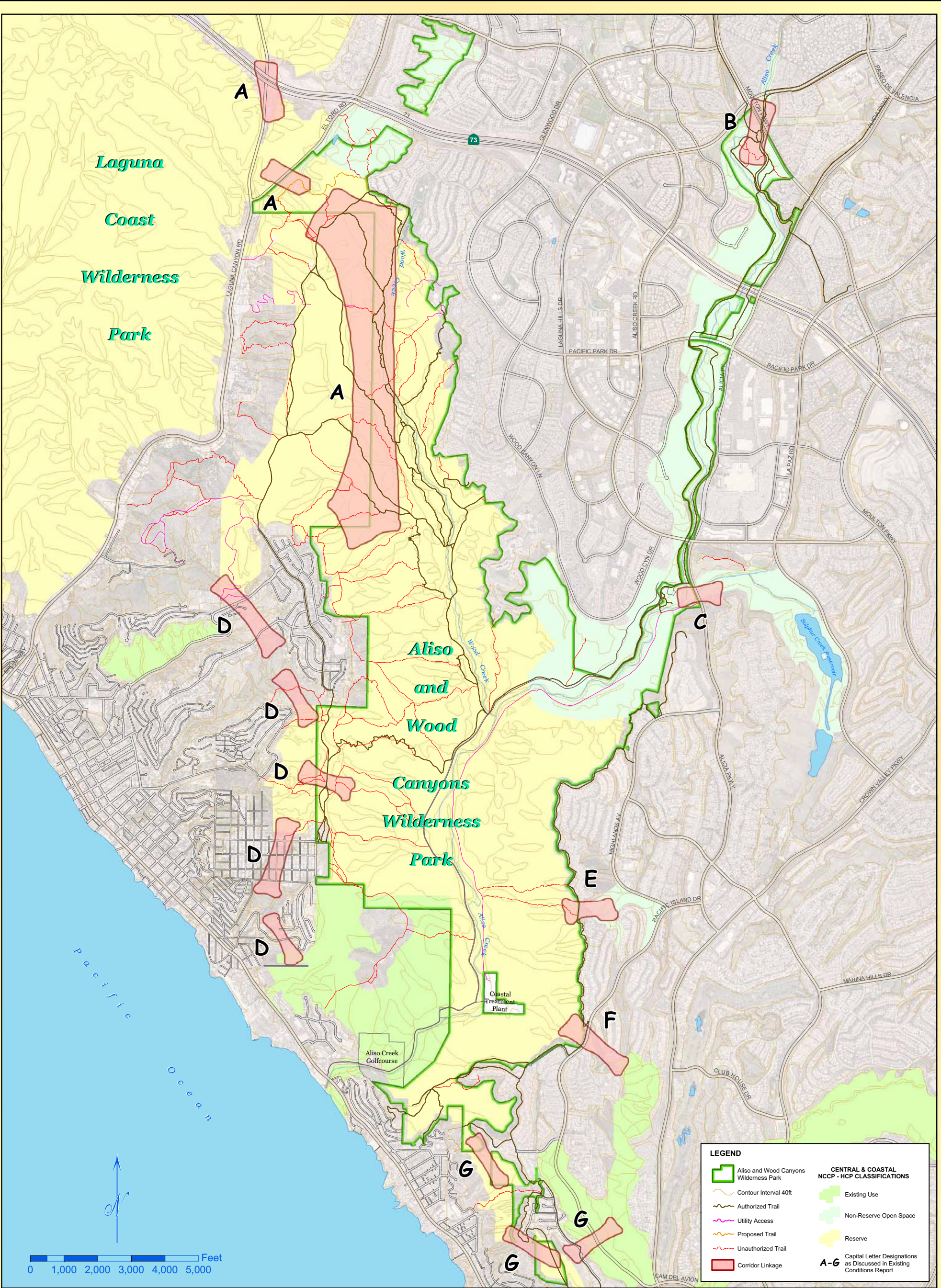
Table C: Paleontological Sensitivity of the Geologic Units within AWCWP

Geologic Unit	Sensitivity
Undifferentiated Sespe/Vaqueros	Very high
San Onofre Breccia	Low
Topanga Formation	Very high
Monterey Formation	Very high
Capistrano Formation	Very high
Niguel Formation	Moderate
Marine Terrace Deposits (Older Alluvium)	High
Landslide Deposits	Dependent on source of slide material
Recent Colluvium	None
Recent Alluvium	None

The rating system employed by Eisentraut and Cooper (2002) is as follows:

Very high: Scientifically very significant fossils and fossils from critical geological time periods; very important for scientific study. Within AWCWP four Formation are listed as having “very high” sensitivity. These are, from oldest to youngest, the Undifferentiated Sespe/Vaqueros, Topanga, Monterey, and Capistrano Formations. The Undifferentiated Sespe/Vaqueros represents both terrestrial and marine facies tracing the landscape evolution of southern California prior to the activation of the San Andreas Fault system. The Formation is time-transgressive, spanning from the Late Eocene to the Earliest Miocene. Fossils of important marine and terrestrial vertebrates are found within these sediments. The Topanga, Monterey and Capistrano Formations are all Miocene Marine deposits. Fossils of important invertebrates and vertebrates are common in these Formations and often are found as articulated individuals or bone beds of mixed species. The Niguel Formation, a Pliocene unit, is not well exposed within the County and has not produced extensive fossil assemblages. Rocks of this age are important in Orange County because they help illustrate the flora and fauna present during this period of time.

High: Quality preservation and scientifically significant fossils; important for research and/or very important for public display. There is one unit, Marine Terrace Deposits (Older Alluvium) that is classified as having a “high” paleontological significance. Marine Terrace



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DATA SOURCE:
- Geomatics Land Information Systems Division
- Eagle Aerial Image 1 foot resolution, flown 04/2004
- Draft Aliso and Wood Canyons Wilderness Park Resource Management Plan Dated July 1991
- California Natural Diversity Data Base, April 12, 1999
- Field Surveys conducted by Hammeworth and Associates between March and July, 1998

The degree of accuracy of these data sets may differ. In addition, the source of the data, as well as its intended use, may also influence the precision. Therefore, Geomatics/LIS/GIS disclaims any responsibility for the accuracy of the data.

DATE: June 3, 2008

Aliso and Wood Canyons Wilderness Park Resource Management Plan Figure 15: Wildlife Corridors



Back of Figure 15

Deposits are Pleistocene to earliest Holocene in age. Both marine and terrestrial invertebrates, vertebrates and plants are abundant in these sediments. These sediments also have the potential to produce evidence of early human habitation in the County (if such evidence exists).

Moderate: Abundant fossils of good quality; important for education and public display. The Niguel Formation, a Pliocene unit, is not well exposed within the County and has not produced extensive fossil assemblages. Rocks of this age are important in Orange County because they help illustrate the flora and fauna present during this period of time.

Low: Poorly preserved fossils; only useful for educational purposes.

None: Contains no fossils; either too young or nondepositional rock units. Although landslide deposits are generally too young to contain fossils, the underlying bedrock unit from which the landslide deposit originated often does contain fossils, and often landslide deposits are shallow and the underlying bedrock will have fossils. Therefore, the sensitivity of landslide deposits is dependent on the underlying strata.

AWCWP contains one of the world's best paleontological resources spanning approximately 37 million years of the history of the earth. With the exception of rock units considered too young to contain fossils, all geological units within AWCWP have the potential to yield important, significant fossils. These nonrenewable resources provide evidence of past environments, climate, and lifeways as well as providing a window into the development of species.

4.6 CULTURAL RESOURCES

4.6.1 Ethnography

AWCWP spans the border of Gabrielino, and Juaneño territories as described by Kroeber (1925). The Juaneño are considered to be a linguistically related subgroup of the Luiseño and occupy the area near San Juan Capistrano. Juaneño words were used to name several of the parks trails.

The name "Gabrielino" describes those native groups living in what is now the Los Angeles and Orange County areas and was given due to the affiliation of these groups with Mission San Gabriel Arcángel. Gabrielino villages generally contained populations of 50–100 inhabitants, although larger communities may have existed. The name Luiseño has been applied to those native people living within the "ecclesiastical jurisdiction of Mission San Luis Rey" (Oxendine 1983:8). The term Juaneño describes those native people who were missionized into Mission San Juan Capistrano and who inhabited the northernmost portion of Camp Pendleton. Luiseño and Juaneño villages are thought to have numbered approximately 200 individuals, while as many as 250 individuals may have inhabited some large Luiseño villages (White 1963:104, 117–119).

The Gabrielino, Luiseño, and Juaneño were hunters and gatherers who used both inland and coastal food resources. They hunted and collected seasonally available food resources

and led a semisedentary lifestyle, often living in permanent communities along watercourses and near coastal estuaries. The presence of water, a stable food supply, and some measure of protection from flooding were the most important factors relating to the location of habitation sites. Gabrielino and Luiseño communities located in the interior regions maintained permanent geographical territories or use areas that averaged 30 square miles, although it is likely that coastal settlements occupied less acreage, where food resources may have been more plentiful and more easily available throughout the entire year (White 1963:117, 119; Oxendine 1983:44).

In addition to permanent settlements, native groups occupied temporary campsites used seasonally for hunting, fishing, and gathering plant foods and shellfish (White 1963:120–124; McCawley 1996:25). Rabbit and deer were the most commonly hunted animals, while acorns, buckwheat, chía, berries, and fruits were some of the more commonly collected plant foods. Acorns were the staple food of most indigenous Californians (Kroeber 1925:84) and were the most characteristic feature of the domestic economy of native California (Gifford 1936:87). The economy of coastal groups is thought to have focused on marine rather than land resources (White 1963:119).

4.6.2 Prehistory

Researchers have divided regional prehistory into a four-stage chronology describing changing artifact assemblages and evolving ecological adaptations. The principal chronology proposed by Wallace (1955) divides the area prehistory by major cultural changes within general prehistoric time periods. Wallace defined four cultural horizons, or periods, for Southern California. These include the Early Period, the Millingstone Period, the Intermediate Period, and the Late Prehistoric Period, which are discussed briefly below.

Early Period. The Early Period covers a period between approximately 10,000 and approximately 5,500 BC. Artifacts and cultural activities from this time period represent a predominantly hunting culture (Wallace 1955), including atlatl, dart, and an array of specialized cobble, core, flake and blade implements. Early Period artifacts have seldom been identified in Orange County.

Millingstone Period. The Early Period is followed in time by the Millingstone Period. Sites from the Millingstone Period (post-5500 BC) typically contain groundstone artifacts such as manos, metates, and clogged stones, as well as soapstone objects. Several Millingstone Period sites have been identified in Orange County. The best known is ORA-64, which dates to ca. 6000 BC (Erlandson 1994:219-221). Drover et al. (1983) suggest that early Millingstone Period sites represent refuse from mobile hunters and gatherers who utilized coastal resources during the winter and inland resources throughout the remainder of the year. By the late portion of the Millingstone Period, faunal remains suggest relatively permanent settlements in the Newport Bay area.

Intermediate Period. By 3000 BC, coastal populations began greater reliance on marine resources. In coastal areas, there was an increased use of the mortar and pestle, which marked a technological change in the manner in which seeds were processed and indicated a diversification in seed collection. The use of the mortar and pestle marks Wallace's

Intermediate Period. Additional artifacts found predominantly within the Intermediate Period include discoidals and crescentics (crescentically shaped flaked stone artifacts). Orange County researchers have had difficulty identifying the Intermediate Period, since tool categories, even the mortar and pestle, occur in both earlier and later periods. As a result, few Orange County sites have been placed in this Period.

Late Prehistoric Period. The Late Prehistoric Period begins approximately AD 500 (Bean and Smith 1978). During this period, artifact changes and new cultural practices occur. Smaller projectile points, representing bow and arrow hunting, appear on Late Period sites. This period is also marked by steatite effigies and by cremation as an interment practice. By AD 1000, smoking pipes and ceramic pottery occur, although ceramic smoking pipes may occur somewhat earlier, within the later portion of the Intermediate Period. Sites within the Orange County region occasionally contain the vitreous lithic (glassy stone) called Grimes Canyon fused shale, which originates from Ventura County (Demcak 1981; Hall 1988).

McKinney and Knight (1979:17-24) discuss a rock art area within El Toro Canyon. The site (CA-ORA-13) was first reported by Romero in 1935, and was designated as CA-ORA-13 in 1941. According to Meadows (1966) there was also an adobe in this area that was occupied in 1861 by Hyman Tischler. The site was relocated in 2007 and has been heavily impacted by erosion, fires, and human contact.

4.6.3 History

The lands within the park boundaries were historically part of the Rancho Niguel, granted to Juan Avila in 1842. Rancho Niguel spanned an area totaling 13,361 acres, covering an area three miles east of San Juan Capistrano and north to El Camino Real and west toward Rancho San Joaquin, encompassing most of Laguna Niguel, Aliso Viejo, and Laguna Beach and portions of Laguna Hills. Although Avila continued to reside in San Juan Capistrano, he built an adobe house near Aliso Creek and El Camino Real that served as an administration building and a place to host many parties. Avila was well known and liked throughout the region; his hospitality earned him the nickname "El Rico" the rich one (Decker and Decker 2004).

The early settlers used these large land grants for herding cattle as grazing land was abundant. The trade of hides and tallow began in the early 1800s and by the 1840s livestock ranching was the primary economic resource of California (Cleland 1975). The cattle boom continued throughout the 1840s and 1850s, largely due to the tremendous immigration that accompanied the Gold Rush. However, this demand began to decline as early as 1855, due largely to the importation of sheep from New Mexico and cattle from the Mississippi and Missouri Valleys and the development of stock breeding farms (Cleland 1941: 108). A series of disastrous floods and severe droughts sealed the fate of the early cattle ranchers.

As cattle ranching declined, sheep raising grew in importance. The industry reached its greatest prosperity during the Civil War, when the disruption of the national cotton trade created a huge demand for wool (Cleland 1941: 139-141). Southern California's economic transition continued through the 1870s. During this time, many of the large landholdings

were subdivided and a diversified agriculture centered on citrus fruits, grapes, and grains appeared.

In 1884 Lewis Fenno Moulton leased Rancho Niguel for the purpose of sheep and cattle raising. In 1895, after leasing the land for 11 years, Moulton eventually purchased the entire Rancho Niguel and entered into partnership with Jean Pierre Daguerre. Collectively, their business was known as the "Lewis F. Moulton (Moulton) and Company Ranch" (Decker and Decker 2005). Under the direction of Moulton and Daguerre, the ranch developed a diversified economy based on cattle ranching, agriculture (including dry farming) and tenant farming. Following the deaths of Daguerre (1911) and Moulton (1938), maintenance of the ranch passed on to their wives and children, who continued to successfully raise cattle and farm the land until the 1950s (Decker and Decker 2005).

Following World War II, pressure for urbanization came from the rapid Orange County housing expansion that was occurring in nearby cities. The Moulton-Daguerre partnership was dissolved in 1951. The Moulton family received the northern portion of the ranch, comprised of what eventually developed into Aliso Viejo, Laguna Woods, and Laguna Hills. The Daguerre family received the southern ranch lands, comprised of most of the original Rancho Niguel, in what developed into the community of Laguna Niguel (Decker and Decker 2005). The close proximity of the El Toro Marine Corps Air Base (ETMCAB) (now closed) resulted in two aircraft crashlanding within the park's boundaries.

4.6.4 Cultural Resource Sensitivity

The records search of the South Central Coastal Information Center (SCCIC) records for documented historic and prehistoric resources within AWCWP identified 51 resources. These can be grouped into four broad categories as shown in Table D below.

Table D: Documented Historic and Prehistoric Resources within AWCWP

Category	# of Sites
Habitation Site (includes rockshelters and midden sites)	33
Native American Heritage Value Site (includes rock art, rock alignments and burials)	4
Lithic/Artifact Scatters	6
Historic Sites (includes structures associated with ranching the lands, now AWCWP)	8
TOTAL SITES	51

In addition, based on the geology and geomorphology of the area, it is likely that undiscovered archaeological sites may exist within portions of the AWCWP. Sites may be buried beneath alluvial sediments within the stream drainages or beneath colluvium below hill and ridge landforms. It is also possible that some sites have been destroyed or adversely impacted over the years through the process of erosion in many of the river valleys. Due to the steep terrain of portions of the park, some areas of AWCWP may not have been adequately surveyed. However, it is likely that landforms exhibiting steep slopes would not have been favorable for occupation by Native Americans.

The entire area of AWCWP was previously surveyed during planning of the Aliso Viejo residential and commercial development. In addition, focused surveys of specific areas planned for trails or other improvements, and surveys of adjacent land have occurred. However, these surveys were conducted more than 20 years ago. Continuing use and erosion within AWCWP has likely exposed new resources, and some known resources may no longer exist. The entire park area should be resurveyed on a systematic basis to document sites within the park and to develop site specific management plans for those resources.

AWCWP preserves a relatively complete cross section of the human history of settlement and use of the San Joaquin Hills. Sites within the Park are considered highly significant and have contributed greatly to research into the prehistory of Orange County. Some of the sites within the park are unique in that they are relatively undisturbed and deeply buried. Additional background information on the cultural resources within AWCWP is located in the Existing Conditions Report (Appendix C) and Section 9.0 of the RMP.

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