

2.0 Plan Area Description and Setting



coastal sage scrub, mesic chaparral, and sparse coniferous vegetation. The Agua Tibia Mountains Bioregion has not been heavily disturbed or urbanized.

DESERT TRANSITION BIOREGION. The Desert Transition Bioregion is located in the southeastern portion of the Plan Area and encompasses the Cahuilla Indian Reservation and Lake Riverside area. The Desert Transition Bioregion generally occurs at elevations above 900 m (3,000 ft) and is arid and desert-influenced. This Bioregion supports red shank chaparral, big basin sage scrub, and semi-desert succulent scrub Habitats. This Bioregion has not been heavily disturbed or urbanized.

SAN BERNARDINO MOUNTAINS BIOREGION. The San Bernardino Mountains Bioregion is located in the northeastern portion of the Plan Area and encompasses areas north of I-10 within the Pass Area Plan; it generally occurs at elevations above 900 m (3,000 ft). This Bioregion supports coniferous forests, montane chaparral, and broad-leaved forest. The San Bernardino Mountains Bioregion is floristically distinct from the San Jacinto Mountains Bioregion. This Bioregion has not been heavily disturbed or urbanized.

SAN JACINTO MOUNTAINS BIOREGION. The San Jacinto Mountains Bioregion occurs in the eastern portion of the Plan Area and encompasses the San Bernardino National Forest, Pine Cove, Idyllwild, and upper San Jacinto River and Bautista Canyon Creek. This Bioregion supports coniferous forests, montane chaparral, and broad-leaved forest; it generally occurs at elevations above 900 m (3,000 ft). The San Jacinto Mountains Bioregion is floristically distinct from the San Bernardino Mountains Bioregion. This Bioregion has not been heavily disturbed or urbanized.

2.1.3 Vegetation Communities

The MSHCP vegetation map described in *Section 2.1.1* incorporates 50 Vegetation Community classifications. For purposes of MSHCP planning and analysis, the 50 classifications were collapsed to 14; both categories are summarized in *Table 2-1*.

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**TABLE 2-1
SUMMARY OF COLLAPSED AND UNCOLLAPSED
VEGETATION COMMUNITIES CLASSIFICATIONS**

Collapsed Vegetation Communities Classifications	Uncollapsed Vegetation Communities Classifications
Montane Coniferous Forest	Jeffrey Pine Lodgepole Pine Lower Montane Coniferous Forest Mixed Evergreen Forest Southern California White Fir Subalpine Coniferous
Woodland and Forests	Black Oak Forest Broadleaved Upland Forest Coast Live Oak Woodland Dense Engelmann Oak Woodland Oak Woodland Peninsular Juniper Woodland and Scrub
Coastal Sage Scrub	Coastal Scrub Diegan Coastal Sage Scrub Riversidean Sage Scrub
Riversidean Alluvial Fan Sage Scrub	Disturbed Alluvial Riversidean Alluvial Fan Sage Scrub
Desert Scrub	Big Sagebrush Scrub Colorado Desert Wash Scrub Semi-desert Succulent Scrub Sonoran Desert Scrub
Chaparral	Chamise Chaparral

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TABLE 2-1 (Continued)
SUMMARY OF COLLAPSED AND UNCOLLAPSED
VEGETATION COMMUNITIES CLASSIFICATIONS

Collapsed Vegetation Communities Classifications	Uncollapsed Vegetation Communities Classifications
Playas and Vernal Pools	Chaparral
	Red Shank Chaparral
	Semi-Desert
	Alkali Playa
	Southern Interior Basalt Vernal Pool
	Vernal Pool
Grassland	Non-native Grassland
	Valley and Foothill Grassland
	Arundo/Riparian Forest
Riparian Scrub, Woodland, Forest	Montane Riparian Forest
	Montane Riparian Scrub
	Mulefat Scrub
	Riparian Forest
	Riparian Scrub
	Southern Cottonwood/Willow Riparian
	Southern Sycamore/Alder Riparian Woodland
	Southern Willow Scrub
	Tamarisk Scrub
	Meadow (Montane)
Meadows and Marshes	Wet Montane Meadow
	Coastal and Valley Freshwater Marsh
	Marsh

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TABLE 2-1 (Continued)
SUMMARY OF COLLAPSED AND UNCOLLAPSED
VEGETATION COMMUNITIES CLASSIFICATIONS

Collapsed Vegetation Communities Classifications	Uncollapsed Vegetation Communities Classifications
Cismontane Alkali Marsh	Cismontane Alkali Marsh
Water	Open Water/Reservoir/Pond
Developed/Disturbed Land	Residential/Urban/Exotic
Agricultural Land	Dairy and Livestock Feedyards
	Field Croplands
	Grove/Orchard

The MSHCP Plan Area encompasses approximately 1.26 million acres with approximately 871,000 acres (69%) supporting natural vegetation. The 14 Vegetation Communities within the Plan Area include chaparral (434,950 acres), cismontane alkali marsh (1,260 acres), coastal (Diegan and Riversidean) sage scrub (156,450 acres), desert scrubs (14,570 acres), native and non-native grassland (154,140 acres), meadows and marshes (1,020 acres), montane coniferous forest (29,910 acres), playas and vernal pools (7,910 acres), riparian scrub/woodland/forests (15,030 acres), Riversidean alluvial fan sage scrub (7,940 acres), open water (12,210 acres), woodlands and forests (34,300 acres), and unknown (1,350 acres). In addition, approximately 169,480 acres are in agriculture, and the remaining 218,260 acres are considered disturbed or developed land. *Section C of the Reference Document, in Volume II of the MSHCP*, contains detailed Habitat accounts describing the biogeography, range and distribution, vegetation characteristics, species composition, physical environment, ecosystem processes, community relationships, and threats for each Vegetation Community within the Plan Area. A brief description of each Vegetation Community is provided below.

AGRICULTURE. Agricultural lands include areas occupied by dairies and livestock feed yards or areas that have been tilled for use as croplands or groves/orchards. Approximately 13.5 percent of the Plan Area (169,480 acres) consists of agricultural lands. The largest areas of dairy and livestock feed yards are located north of San Jacinto and north of Juniper Flats in the communities of Lakeview, Mystic Lake, Nuevo, southeast Perris, Eastvale, Lake

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Norconian off of Bellegrave Avenue, Norco, and in Glen Avon. Field croplands are mapped extensively throughout the Plan Area. The largest areas are around State Route 371 (SR-371) in the vicinity of Anza; in an east-west strip from Murrieta Hot Springs; through French Valley; Antelope Valley; Paloma Valley; Menifee Valley; Winchester; Domenigoni Valley to West Hemet; the Diamond Valley area; and in Eastvale. The largest area of grove/orchard is in Santa Rosa East between Gavilan Mountain and Mesa de Colorado.

CHAPARRAL. Chaparral vegetation is the most abundant and widespread vegetation type in Western Riverside County, covering approximately 35 percent (434,950 acres) of the Plan Area. Large contiguous stands of chaparral occur along the Santa Ana Mountains in the western portion of the Plan Area, and along the San Bernardino, San Jacinto, and Agua Tibia Mountains in the eastern and southern portions. Although chaparral is less common than other vegetation types in the central lowlands of Riverside County, three large chaparral-dominated areas occur on steeper lands near the Gavilan Hills-Gavilan Plateau-Meadowbrook Region, the Lakeview Mountains-Double Butte area, and the Sedco Hills-Hogbacks area.

Chaparral is a shrub-dominated Vegetation Community that is composed largely of evergreen species that range from 1 to 4 m in height (Keeley 2000). The most common and widespread species within chaparral is chamise (*Adenostoma fasciculatum*) (Hanes 1971). Other common shrub species include manzanita (*Arctostaphylos* spp.), wild-lilac (*Ceanothus* spp.), oak (*Quercus* spp.), redberry (*Rhamnus* spp.), laurel sumac (*Malosma laurina*), mountain-mahogany (*Cercocarpus betuloides*), toyon (*Heteromeles arbutifolia*), and mission manzanita (*Xylococcus bicolor*) (Holland 1986). Soft-leaved subshrubs are less common in chaparral than in coastal sage scrub (see below) but occur within canopy gaps of mature stands (Holland 1986; Keeley and Keeley 1988; Sawyer and Keeler-Wolf 1995). Common species include California buckwheat (*Eriogonum fasciculatum*), sages (*Salvia* spp.), California sagebrush (*Artemisia californica*), and monkeyflower (*Mimulus* spp.). In addition, herbaceous species, including deerweed (*Lotus scoparius*), nightshade (*Solanum* spp.), Spanish bayonet (*Yucca whipplei*), rock-rose (*Helianthemum scoparium*), onion (*Allium* spp.), soap plant (*Chlorogalum* spp.), bunch grasses (*Nassella* spp., and *Melica* spp.), wild cucumber (*Marah* spp.), bedstraw (*Galium* spp.), and lupine (*Lupinus* spp.) are also present (Holland 1986; Keeley and Keeley 1988; Sawyer and Keeler-Wolf 1995).

CISMONTANE ALKALI MARSH. Cismontane alkali marsh Vegetation Communities are scattered sparsely over the Western Riverside County region, occupying approximately 0.1% (1,260

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acres) of the Plan Area. Cismontane alkali marsh was mapped in two general localities along Cahuilla Creek south of Anza and upstream from Lake Mathews along the Colorado River aqueduct.

Typical cismontane alkali marsh species include yerba mansa (*Anemopsis californica*), saltgrass (*Distichlis spicata*), alkali-heath (*Frankenia salina*), cattails (*Typha* spp.), common pickleweed (*Salicornia virginica*), rushes (*Juncus* spp.), marsh flea-bane (*Pluchea odorata*), and sedges (*Carex* spp.) (Holland 1986).

COASTAL SAGE SCRUB. Coastal sage scrub is distributed throughout Western Riverside County, occupying approximately 12% (156,450 acres) of the Plan Area (PSBS 1995). It occurs from the eastern slopes of the Santa Ana Mountains to elevations in the San Jacinto Mountains less than 1,500 m (5,000 ft). Sage scrub often is distributed in patches throughout its range (O’Leary 1992); over a scale of several miles, it can be found in diverse Vegetation Community mosaics with other plant communities, particularly grassland and chaparral, and oak/riparian woodland in wetter areas. In Western Riverside County coastal sage scrub is found both in large contiguous blocks scattered throughout the County as well as integrated with chaparral and grasslands.

Coastal sage scrub is dominated by a characteristic suite of low-statured, aromatic, drought-deciduous shrubs and subshrub species. Composition varies substantially depending on physical circumstances and the successional status of the Vegetation Community; however, characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), California encelia (*Encelia californica*), and several species of sage (e.g., *Salvia mellifera*, *S. apiana*) (Holland 1986; Sawyer-Wolf 1995). Other common species include brittlebush (*E. farinosa*), lemonadeberry (*Rhus integrifolia*), sugarbush (*Rhus ovata*), yellow bush penstemon (*Keckiella antirrhinoides*), Mexican elderberry (*Sambucus mexicana*), sweetbush (*Bebbia juncea*), boxthorn (*Lycium* spp.), shore cactus (*Opuntia littoralis*), coastal cholla (*O. prolifer*), tall prickly-pear (*Opuntia oricola*), and species of *Dudleya*.

DESERT SCRUB. Desert scrub, including big sagebrush scrub and Sonoran desert scrub, occurs mostly in the southeastern portion of the Plan Area. Desert scrub occupies approximately 1.2% (14,570 acres) of the Plan Area. Large acreages of the Vegetation Community occur

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north and south of SR-371 within Tule Valley, Culp Valley, Wilson Creek, Cahuilla, the Ramona Indian Reservation, the community of Anza, and east of Aguanga and Lake Riverside.

Desert scrub is typically composed of shrubs such as big sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), rubber rabbit-bush (*Chrysothamum nauseosus*), yellow rabbitbrush (*C. viscidiflorus*) black bush (*Coleogyne ramosissima*), Mormon-tea (*Ephedra viridis*), horsebrush (*Tetradymia canescens*), plateau gooseberry (*Ribes velutinum*) and hopsage (*Grayia spinosa*), burro weed (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), crucifixion-thorn (*Canotia holacantha*), ocotillo (*Fouquieria splendens*), and creosote scrub (*Larrea tridentata*) (Holland 1986; California Gap Analysis Report 1998). The herbaceous cover generally is dominated by a mixture of perennial bunch grasses, such as ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Stipa comata*), letterman's needlegrass (*S. lettermanii*), needlegrass (*S. occidentalis* and *S. thurberiana*), desert needlegrass (*S. speciosa*), one-sided bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicata*), and Great Basin wild rye (*Leymus cinereus*). Annual grasses and forbs may also occur within big sagebrush scrub. Cheatgrass (*Bromus tectorum*), an introduced annual grass, has become the dominant herbaceous species in many areas.

GRASSLANDS. Grasslands occur throughout most of Western Riverside County and cover approximately 12.2% (154,140 acres) of the Plan Area. Two general types of grasslands occur in Southern California: (1) non-native dominated, primarily annual grassland (“non-native grassland”); and (2) native dominated, perennial grassland (“valley and foothill grassland”) (Heady 1977; Keeley 1989; Sims and Risser 2000). The only valley and foothill grasslands mapped within the Plan Area are distributed over approximately 0.2% (2,700 acres) of the Plan Area on the Santa Rosa Plateau. Non-native grasslands occur throughout the majority of the Plan Area (11.6%), usually within close proximity to urbanized or agricultural land uses. Large patches of non-native grasslands occur in the Riverside Lowlands near March Air Reserve base, Lake Mathews, Lake Perris, Lake Elsinore, near Banning, Cahuilla, and in the Terwilliger Valley south of Anza.

Valley and foothill grasslands typically contain the perennial bunch grasses *Nassella pulchra* and *Nassella lepida*. Lesser amounts of other native grasses, such as *Melica* spp., *Leymus* spp., *Muhlenbergia* spp., and beard grass (*Bothriochloa barbinodis*), may also be present.

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In addition, non-native grasses or forbs may be present to varying degrees. Native herbaceous plants commonly found within valley and foothill grasslands include yellow fiddleneck (*Amsinckia menziesii*), common calyptidium (*Calyptidium monardum*), suncup (*Camissonia* spp.), Chinese houses (*Collinsia heterophylla*), California poppy (*Eschscholzia californica*), tarweed (*Hemizonia* spp.), coast goldfields (*Lasthenia californica*), common tidy-tips (*Layia platyglossa*), *Lupinus* spp., *Plagiobothrys* spp., blue dicks (*Dichelostemma capitata*), *Muilla* spp., blue-eyed grass (*Sisyrinchium bellum*), and *Dudleya* spp. (Holland 1986; Sims and Risser 2000).

Non-native grasslands are likely to be dominated by several species of grasses that have evolved to persist in concert with human agricultural practices: slender oat (*Avena barbata*), wild oat (*A. fatua*), fox tail chess (*Bromus madritensis*), soft chess (*B. hordeaceus*), ripgut grass (*B. diandrus*), barley (*Hordeum* spp.), rye grass (*Lolium multiflorum*), English ryegrass (*L. perrene*), rat-tail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*) (Jackson 1985; Sims and Risser 2000).

MEADOWS AND MARSHES. Approximately 1,020 acres of meadow and marsh Vegetation Communities, including coastal and valley freshwater marsh, undifferentiated marsh, and wet montane meadow, exist within the Plan Area, comprising 0.08% of the Plan Area. Occurrences of this Vegetation Community have been mapped in the Prado Basin in the Santa Ana River Valley, on the Santa Ana River near Pedley, north of Lake Elsinore in Walker Canyon, near San Jacinto, along the shores of Lake Skinner and Vail Lake, and adjacent to the cismontane alkali marsh on Cahuilla Creek. Undifferentiated marsh was mapped in three locations, including the shore of Lake Mathews, near Mystic Lake, and upstream from Vail Lake along Temecula Creek in the Aguanga Valley. Wet montane meadow was mapped in the San Jacinto Mountains in the San Bernardino National Forest, primarily within the vicinity of Hemet Lake.

Meadow and marsh Vegetation Communities occur in both flowing and still water. This Vegetation Community includes cattails (*Typha* spp.), bulrush (*Scirpus* spp.), sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), flatsedges (*Cyperus* spp.), smartweed (*Polygonum* spp.), watercress (*Rorippa* spp.) and yerba mansa (*Anemopsis californica*), and also contains perennial and biennial herbs (e.g., *Oenothera* spp., *Polygonum* spp., *Lupinus* spp., *Potentilla* spp., and *Sidalcea* spp.) and grasses (e.g., *Agrostis* spp., *Deschampsia* spp., and *Muhlenbergia* spp.) (Barbour and Major 1977; Sawyer and Keeler-Wolf 1995; Stephenson

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and Calcarone 1999; Holland and Keil 1995). Rooted aquatic plant species with floating stems and leaves also may be present, such as pennywort (*Hydrocotyle* spp.), water smartweed (*Polygonum amphibium*), pondweeds (*Potamogeton* spp.) and water-parsley (*Oenanthe sarmentosa*) (Holland and Keil 1995). Wet montane meadows that dry out by mid-summer have a higher percentage of perennial grasses than meadows that remain moist during the entire growing season (Holland and Keil 1995).

MONTANE CONIFEROUS FOREST. Montane coniferous forest, including Jeffrey pine, lodgepole pine forest, lower montane coniferous forest, mixed evergreen forest, Southern California white fir forest and subalpine coniferous forest, occupies 2.4% (29,910 acres) of the MSHCP Plan Area. It occurs within the San Jacinto Mountains, Agua Tibia, Cleveland National Forest, and Santa Rosa Mountains.

Montane coniferous forest is dominated by Jeffrey pine (*Pinus jeffreyi*), ponderosa pine (*Pinus ponderosa*), Coulter pine (*Pinus coulteri*), lodgepole pine (*Pinus contorta* ssp. *murrayana* ssp. *murrayana*), limber pine (*Pinus flexilis*), bigcone Douglas-fir (*Pseudotsuga macrocarpa*), Pacific madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*), Rocky Mountain white fir (*Abies concolor* var. *concolor*), and sugar pine (*Pinus lambertiana*). Common understory shrubs include manzanita (*Arctostaphylos* spp.), California lilac (*Ceanothus* spp.), chinquapin (*Chrysolepis*), currant (*Ribes*), and dwarf mistletoe (*Arceuthobium campylopodum*). The herbaceous layer is composed of morning-glory (*Calystegia occidentalis* ssp. *fulcrata*), sedge (*Carex multicaulis*), clarkia (*Clarkia rhomboidea*), and mountain-heather (*Phyllodoce breweri*).

PLAYAS AND VERNAL POOLS. These Vegetation Communities comprise 0.6% (7,910 acres) of the Plan Area. Playas and vernal pools are found in Western Riverside County in the San Jacinto Valley/Perris Basin and on the Santa Rosa Plateau.

Vernal pools are ephemeral wetlands that form in shallow depressions underlain by a substrate near the surface that restricts the downward percolation of water. Depressions in the landscape fill with rainwater and runoff from adjacent areas during the winter and may remain inundated until spring or early summer, sometimes drying more than once during the wet season. Smaller pools can fill and dry, and larger pools can hold water longer and may in the deeper portions support species that are more representative of freshwater marshes. Vernal pools are well-known for their high level of endemism (Stone 1990) and abundance

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of rare, Threatened, or Endangered Species (Sawyer and Keeler-Wolf 1995). Many vernal pools are characterized by concentric rings of plants that flower sequentially as the pools dry. Vernal pools are dominated by native annual plants, with low to moderate levels of perennial herbaceous cover. Common vernal pool plant species in Western Riverside County include woolly marbles (*Psilocarphus brevissimus*), toad rush (*Juncus bufonius*), and spike rush (*Eleocharis* spp.). In addition, the following sensitive or listed plant species are found in one or more of these pools: California Orcutt grass (*Orcuttia californica*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), little mouseling (*Myosurus minimus* ssp. *apus*), spreading navarretia (*Navarretia fossalis*), low navarretia (*N. prostrata*), Orcutt's brodiaea (*Brodiaea orcuttii*), thread-leaved brodiaea (*Brodiaea filifolia*), Parish brittlescale (*Atriplex parishii*), Parish meadowfoam (*Limnanthes gracilis* ssp. *parishii*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*), San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), and smooth tarplant (*Hemizonia pungens* ssp. *laevis*) (Sawyer and Keeler-Wolf 1995). The Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*) occurs only in Western Riverside County, which is also the location of the southernmost record for the vernal pool fairy shrimp (*Branchinecta lynchi*) (Eriksen and Belk 1999).

RIPARIAN FOREST/WOODLAND/SCRUB. Riparian vegetation, including forest, woodland, and scrub subtypes, is distributed in waterways and drainages throughout much of Western Riverside County, covering approximately 1.2 percent (15,030 acres) of the Plan Area. Southern cottonwood/willow forest makes up the largest proportion of the riparian vegetation in the Plan Area, comprising nearly one-half (6,610 acres) of the acreage. Most of the southern cottonwood/willow forest Vegetation Community occurs along the Santa Ana River drainage from Lake Evans to beyond the Prado Basin, along the San Gorgonio River north of Banning and along Temecula Creek east of Vail Lake. Additional types of riparian vegetation can be found along the San Gorgonio River north of Banning (montane riparian forest), Temescal Canyon Wash and its tributaries (riparian scrub and mulefat scrub), the stream channels within the San Mateo Canyon watershed (riparian forest, southern sycamore/alder riparian woodland and riparian scrub), and Vail Lake (tamarisk scrub).

Riparian communities typically consist of one or more deciduous tree species with an assorted understory of shrubs and herbs (Holland and Keil 1995). Depending on community type, a riparian community may be dominated by any of several trees/shrubs, including box elder (*Acer negundo*), big-leaf maple (*A. macrophyllum*), coast live oak (*Q. agrifolia*), white

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alder (*Alnus rhombifolia*), sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), California walnut (*Juglans californica*), Mexican elderberry (*Sambucus mexicana*), wild grape (*Vitis girdiana*) giant reed (*Arundo donax*), mulefat (*Baccharis salicifolia*), tamarisk (*Tamarix* spp.), or any of several species of willow (*Salix* spp.). In addition, various understory herbs may be present, such as salt grass (*Distichlis spicata*), wild cucumber (*Marah macrocarpus*), mugwort (*Artemisia douglasiana*), stinging nettle (*Urtica dioica*), and poison oak (*Toxicodendron diversilobum*).

RIVERSIDEAN ALLUVIAL FAN SAGE SCRUB. Riversidean alluvial fan sage scrub occurs throughout many drainages in the Plan Area and comprises approximately 0.6% (7,940 acres) of the Plan Area. Large acreages of the vegetation occur on the Santa Ana River near Lake Evans in the City of Riverside; along the San Gorgonio River and tributaries near Banning; on the San Jacinto River from the National Forest to the Soboba Indian Reservation; near Temecula along Temecula Creek; the Aguanga area; Bautista Creek south of Hemet; and near Murrieta and Glen Ivy in the Temescal Valley.

Riversidean alluvial fan sage scrub is a Mediterranean shrubland type that occurs in washes and on gently sloping alluvial fans. Alluvial scrub is made up predominantly of drought-deciduous soft-leaved shrubs, but with significant cover of larger perennial species typically found in chaparral (Kirkpatrick and Hutchinson 1977). Scalebroom generally is regarded as an indicator of Riversidean alluvial scrub (Smith 1980; Hanes *et al.* 1989). In addition to scalebroom, alluvial scrub typically is composed of white sage (*Salvia apiana*), redberry (*Rhamnus crocea*), flat-top buckwheat (*Eriogonum fasciculatum*), our lord's candle (*Yucca whipplei*), California croton (*Croton californicus*), cholla (*Opuntia* spp.), tarragon (*Artemisia dracunculus*), yerba santa (*Eriodictyon* spp.), mule fat (*Baccharis salicifolia*), and mountain-mahogany (*Cercocarpus betuloides*) (Hanes *et al.* 1989; Smith 1980). Annual species composition has not been studied but is probably similar to that found in understories of neighboring shrubland vegetation. Two sensitive annual species are endemic to alluvial scrub vegetation in the Plan Area: slender-horned spine lower (*Dodecahema leptocerus*) and Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*).

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WATER. Approximately 1.0% (12,210 acres) of the Plan Area consists of open water. Open water was mapped at Vail Lake, Lake Skinner, Diamond Valley Lake, Lake Perris, Mystic Lake, Canyon Lake, Lake Elsinore, Lee Lake, Lake Mathews, Hemet Lake, portions of the San Jacinto River, and portions of the Santa Ana River, as well as various small ponds, private reservoirs, and portions of stream channels.

Open water typically is unvegetated due to a lack of light penetration. However, open water may contain suspended organisms such as filamentous green algae, phytoplankton (including diatoms), and desmids (Grenfell 1988). Floating plants such as duckweed (*Lemna* spp.), water buttercup (*Ranunculus aquatilis*), and mosquito fern (*Azolla filiculoides*) also may be present (Holland and Keil 1995). Open water includes inland depressions, ponds, lakes, reservoirs, stream channels containing standing water and often occur in conjunction with riparian and upland Vegetation Communities. Depth may vary from hundreds of meters to a few centimeters.

WOODLANDS AND FORESTS. The Plan Area supports approximately 34,300 acres (2.7% of Plan Area) of woodlands and forests composed of black oak forest, broad-leaved upland forest, oak woodlands and peninsular juniper woodland Vegetation Communities. Woodland and forest Vegetation Communities are dominated by Englemann oak (*Quercus englemannii*), coast live oak (*Q. agrifolia*), canyon live oak (*Q. chrysolepis*), interior live oak (*Q. wislizenii*), and black oak (*Q. kelloggii*) in the canopy, which may be continuous to intermittent or savannah-like. Four-needle pinyon (*Pinus quadrifolia*), single-leaf pinyon pine (*Pinus monophylla*) and California juniper (*Juniperus californica*) are the canopy species of peninsular juniper woodland which most commonly occur in Southern California, forming a scattered canopy from 3 to 15 m tall (Sawyer and Keller-Wolf 1995; Holland and Keil 1995).

Many understory plants in oak woodlands are shade tolerant and include wild blackberry (*Rubus ursinus*), snowberry (*Symphoricarpos mollis*), California walnut (*Juglans californica*), California-lilac (*Ceanothus* spp.), *Rhus* spp., currant (*Ribes* spp.), toyon (*Heteromeles arbutifolia*), California bay (*Umbellularia californica*), Engelmann oak, manzanita (*Arctostaphylos* spp.), laurel sumac (*Malosma laurina*), poison-oak (*Toxicodendron diversilobum*) and herbaceous plants including bracken fern (*Pteridium*

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aquilinum), polypody fern (*Polypodium californicum*), fiesta flower (*Pholistorma auritum*) and miner's lettuce (*Claytonia perfoliata*) (Holland and Keil 1995, Sawyer and Keeler-Wolf 1995, Thorne 1976, Brown 1982). Munz and Keck (1968) identify similar species for this Vegetation Community and include that a variety of grasses and soft shrubs also are commonly found. This Vegetation Community can occur on all aspects, on stream sides, canyon bottoms and flat to very steep topography. Woodlands and forests are known to occur throughout the Plan Area.

DEVELOPED OR DISTURBED LAND. Approximately 218,260 acres (17.3%) of developed or disturbed lands occur within the Plan Area. Developed or disturbed lands consist of areas that have been disced, cleared, or otherwise altered. Developed lands may include roadways, existing buildings, and structures. The largest areas of developed land are in the Cities (and surrounding unincorporated communities) of Temecula, Murrieta, Lake Elsinore, Canyon Lake, (Meadowbrook, Alberhill, El Cariso and Lakeland Village), Hemet (East Hemet and Valle Vista), in Moreno Valley, and along the SR-91 corridor from Riverside through Corona and Norco. More medium-sized tracts of developed land are located in the communities of Canyon Lake, (Quail Valley, Sun City, Homeland), in Perris along I-215, (Mead Valley, Gavilan Hills, Woodcrest), Beaumont, Banning, (Cherry Valley), and Calimesa. Small and scattered occurrences include in the southeast portion of the Plan Area along SR-371 in the unincorporated communities of Terwilliger Valley, Sage, Aguanga and Anza, east of the city of Temecula, and in (Sedco Hills). Disturbed lands may include ornamental plantings for landscaping, escaped exotics, or ruderal vegetation dominated by non-native, weedy species such as mustard (*Brassica* sp.), fennel (*Foeniculum vulgare*), tocalote (*Centaurea melitensis*), and Russian thistle (*Salsola tragus*).

UNKNOWN. Approximately 1,350 acres within the Plan Area were not classified into a Vegetation Community during the 1995 PSBS and KTU+A mapping effort.

2.1.4 Species Considered for Conservation in the MSHCP

The species considered for Conservation during the MSHCP planning process are summarized in *Table 2-2*. As shown in *Table 2-2*, the initial list of species considered for Conservation included 247 species identified for consideration by the MSHCP Advisory Committee in collaboration with the Wildlife Agencies. Early in the planning process, it was determined that sufficient information was not available for many of these species to proceed with Conservation planning. The initial list of 247 species was reduced to 165 species as part of the *August 9, 1999 Draft MSHCP Proposal*