4.3 BIOLOGICAL RESOURCES

This section evaluates the biological impacts associated with implementation of the 2007 LRDP. The term "biological resources" refers to both botanical and wildlife communities on the UCI campus. For the purposes of this document, "special status" species includes those species that have been recognized by either federal or state resource management agencies or conservation organizations as having special management needs due to limited distribution, limited numbers, or significant population declines associated with natural or manmade causes. Special-status species include those designated as endangered, threatened, rare, protected, sensitive, or species of special concern according to the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), or applicable regional plans, policies, or regulations.

This section incorporates information and analyses from the *General Biological and Sensitive Species Assessments Update* (Psomas and Associates, 1995), which was prepared for the LRDP Circulation and Open Space Amendment EIR, and biological studies conducted for the North Campus Mixed-Use Development EIR (1991), the East Campus Students Recreation Center EIR (1997), and the East Campus Student Apartments EIR (2001). The update to these previous biological studies, *General Biological Resources and Sensitive Species Update for the UCI Long Range Development Plan* (2007), was prepared by Michael Brandman and Associates (MBA), and is included in Appendix C of this EIR.

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 BIOLOGICAL SURVEY METHODS

For the purpose of this review and update, the individual geographic zones that may contain biological resources are collectively referred to as the Study Area. Since these undeveloped, or partly developed, areas are irregularly distributed around the campus, for convenience, the Study Area is divided into four sub-areas of the UCI campus based on their geographic location as depicted on Figure 4.3-1 and as listed below:

- North Campus Sub-Area
- West Campus Sub-Area
- East Campus–Northern Sub-Area
- East Campus–Southern Sub-Area

The existing resources in each of these areas, including special status species and jurisdictional areas, are discussed below in Section 4.3.1.3.

MBA conducted a review of previous biological studies of the UCI campus and performed reconnaissance level biological surveys of the remaining undeveloped and partially developed areas of the campus that are designated for environmental review as part of the 2007 LRDP. The review provided an updated baseline of the existing biological resources in the Study Area, including updated vegetation maps and descriptions. Updated evaluations of the potential for designated special status wildlife and plant species to occur within the Study Area were also provided.

Field surveys were conducted in May and June 2006 by MBA senior biologist Scott Crawford and resource ecologist Scott Holbrook. Survey efforts focused on mapping plant communities, characterizing general conditions in both disturbed and natural areas, identifying sensitive resources, and evaluating

habitat suitability for special status species within and adjacent to the Study Area. All plant communities and disturbed or developed areas were mapped on aerial photographs taken in 2005.

4.3.1.2 VEGETATION COMMUNITIES

The plant communities and non-habitat areas identified within the Study Area are described below and are arranged and broadly categorized under four general headings or types:

- Natural Upland
- Natural Riparian/Wetland
- Non-native/Disturbed
- Developed

Figure 4.3-2 is a key map for the distribution of natural habitats and existing disturbed or developed areas as they occur within each sub-area of the Study Area: North Campus Sub-Area (Figure 4.3-2A), West Campus Sub-Area (Figure 4.3-2B), East Campus–Northern Sub-Area (Figure 4.3-2C), and East Campus–Southern Sub-Area (Figure 4.3-2D). These figures identify anticipated development footprints ("Planning Areas") that overlay biological resources.

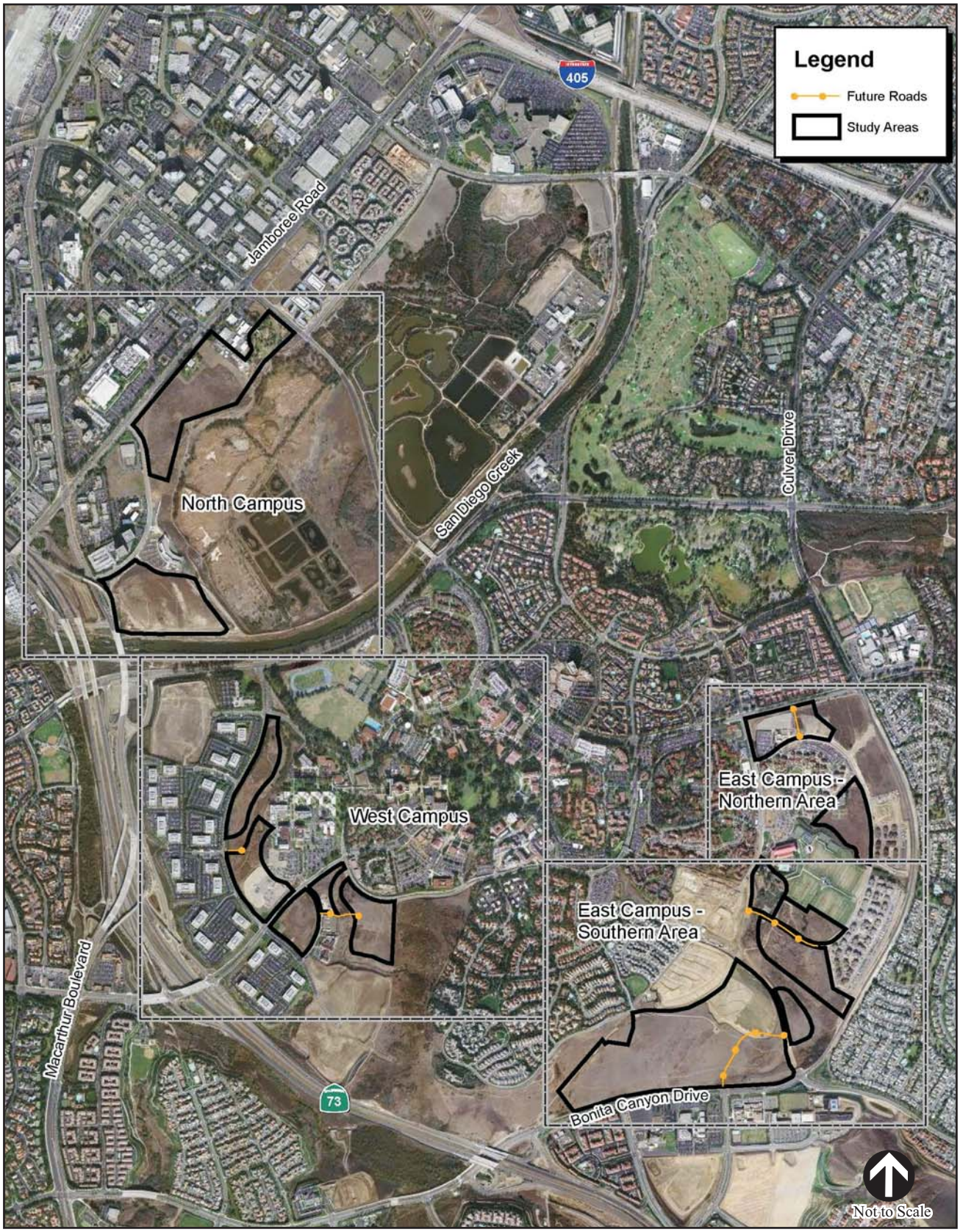
Natural Upland Plant Communities

Coastal Sage Scrub

In southern California, the coastal sage scrub plant community is typically comprised of perennial low-growing, woody, drought-deciduous shrubs, and may also include native cacti and exhibit an understory consisting of native and/or ruderal (weedy) herbaceous elements. This plant community generally occurs on relatively thin or rocky soils. In coastal Orange County, the most common dominant shrub species in this plant community include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), California encelia (*Encelia californica*), goldenbush (*Isocoma menziesii*), monkeyflower (*Mimulus aurantiacus*), coyote bush (*Baccharis pilularis*) and prickly pear cactus (*Opuntia littoralis*).

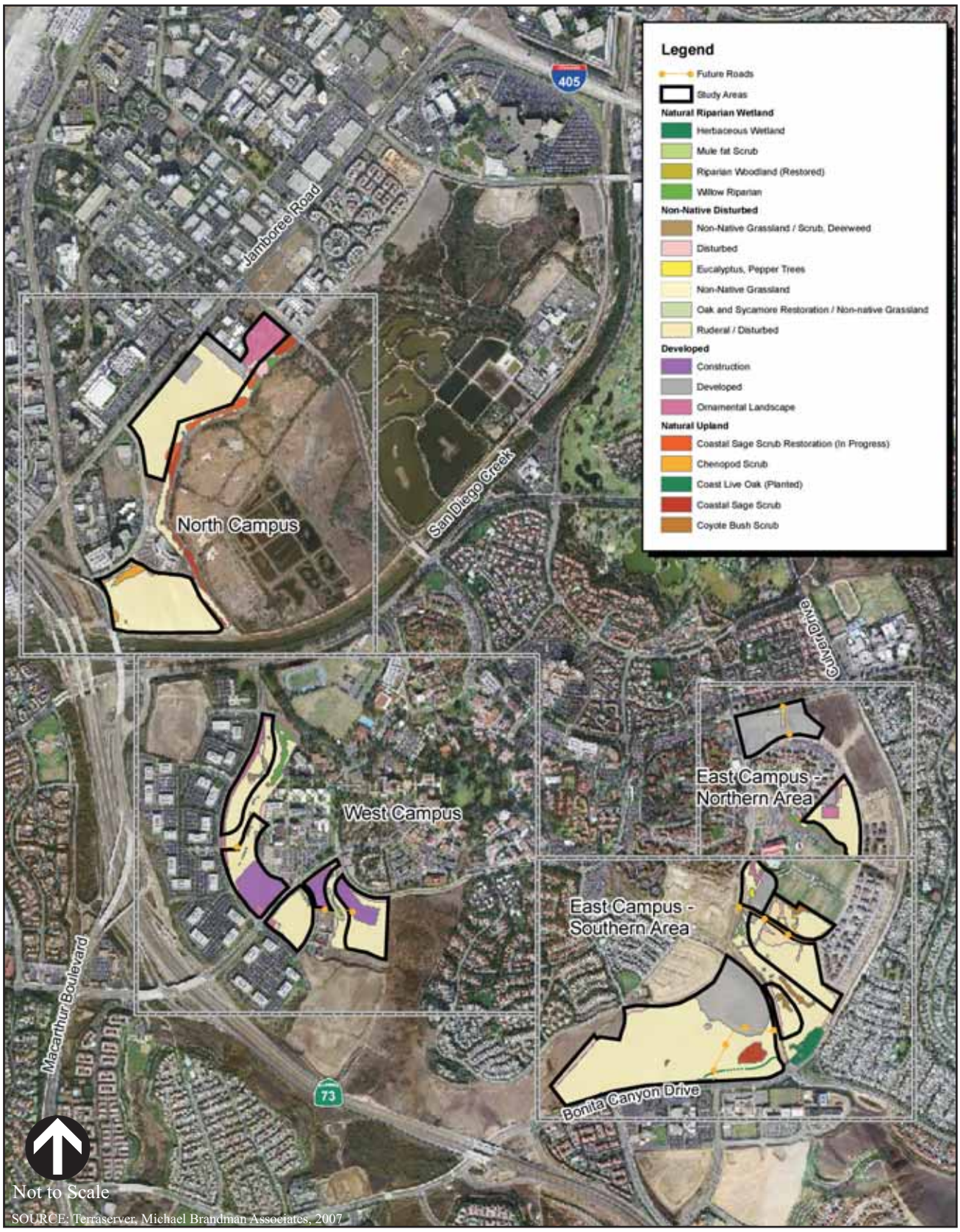
On the UCI campus, several sub-types of the coastal sage scrub plant community occur in a few localities in the Study Area and are distinguished by the presence of one or more particularly dominant shrub species. The largest and most diverse patches of coastal sage scrub occur in the South Campus portion of the UCI Natural Communities Conservation Program (NCCP) Reserve Area, which is part of the subregional NCCP Reserve System and lies outside the Study Area. As depicted in Figure 3-13 in Chapter 2.0 (Project Description) of this EIR, the UCI NCCP Reserve Area consists of: (1) the large open space corridor stretching between SR-73 and East Peltason Drive (also referred to as the “UCI Ecological Reserve”), in the South Campus; (2) the west-facing slopes adjacent to SR-73, in the West Campus; and (3) the closed landfill and a portion of the adjacent San Diego Creek to the south of the closed landfill, in the North Campus. The two distinct sub-types of coastal sage scrub represented in the Study Area are, chenopod (saltbush) scrub and coyote bush scrub. These communities are described below.

Patches of coastal sage scrub vegetation mapped within the buffer zone between the North Campus Sub-Area and the San Joaquin Freshwater Marsh Reserve (SJFMR) have been introduced by faculty affiliated with the University of California Natural Reserve System (UCNRS) as part of research projects. The SJFMR is not part of the UCI NCCP Reserve Area or the subregional NCCP Reserve System. Locations where coastal sage scrub plant materials have been planted in this sub-area are indicated on Figure 4.3-2A.

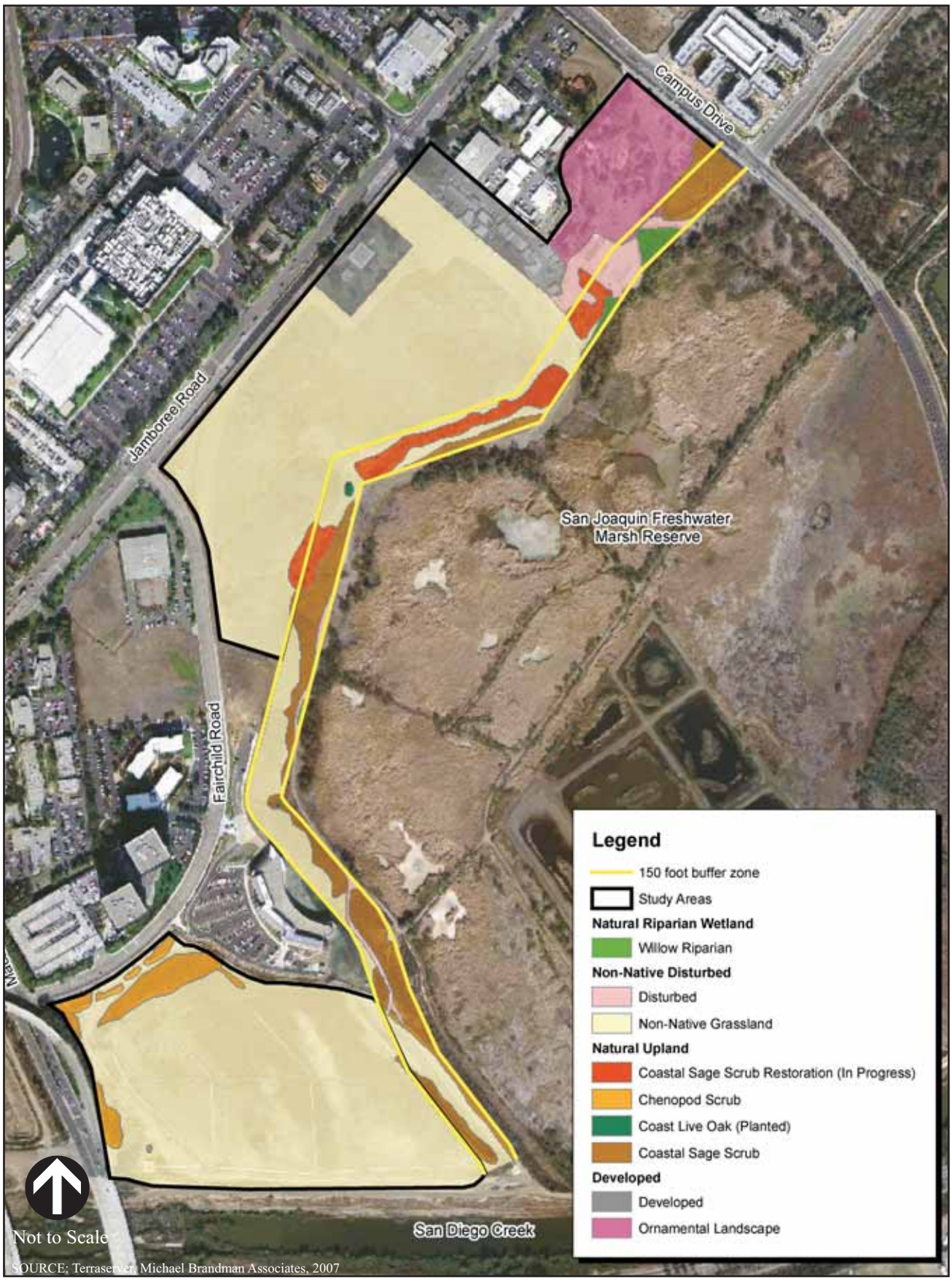


SOURCE: Terraserver, Michael Brandman Associates, 2007

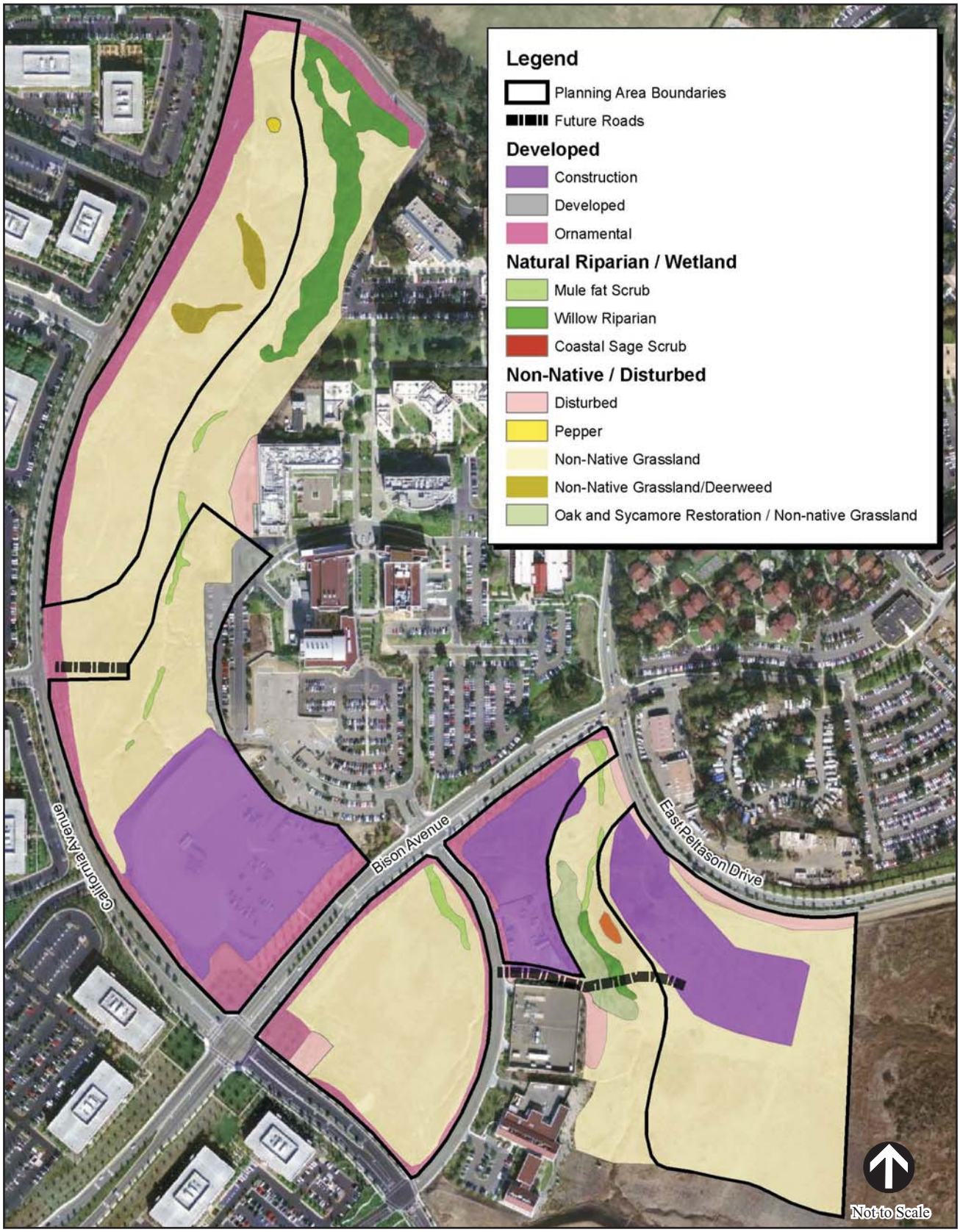
STUDY AREA MAPS **FIGURE 4.3-1**



PLANT COMMUNITIES KEY MAP **FIGURE 4.3-2**

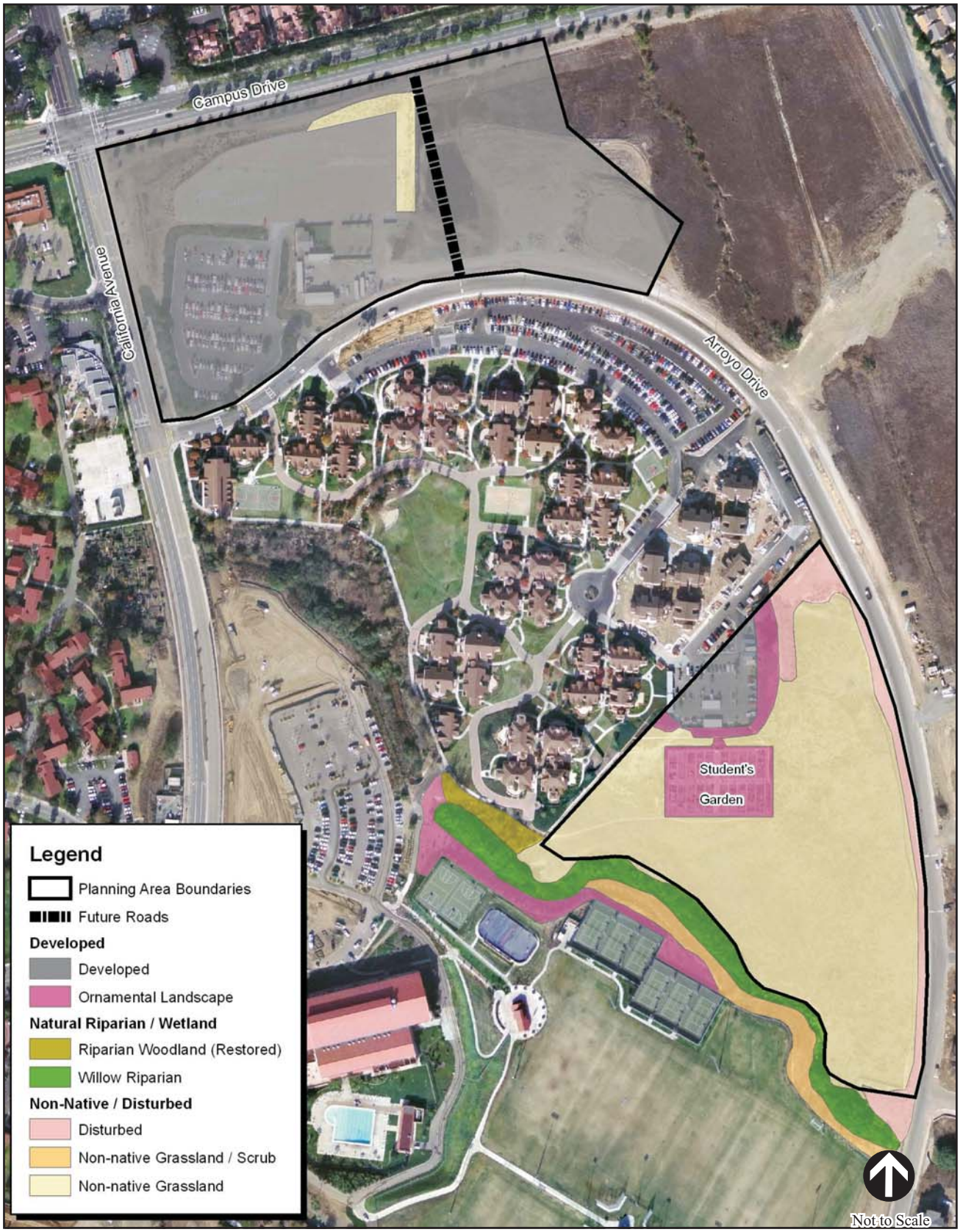


PLANT COMMUNITIES MAP - NORTH CAMPUS **FIGURE 4.3-2A**



SOURCE: Terraserver, Michael Brandman Associates, 2007

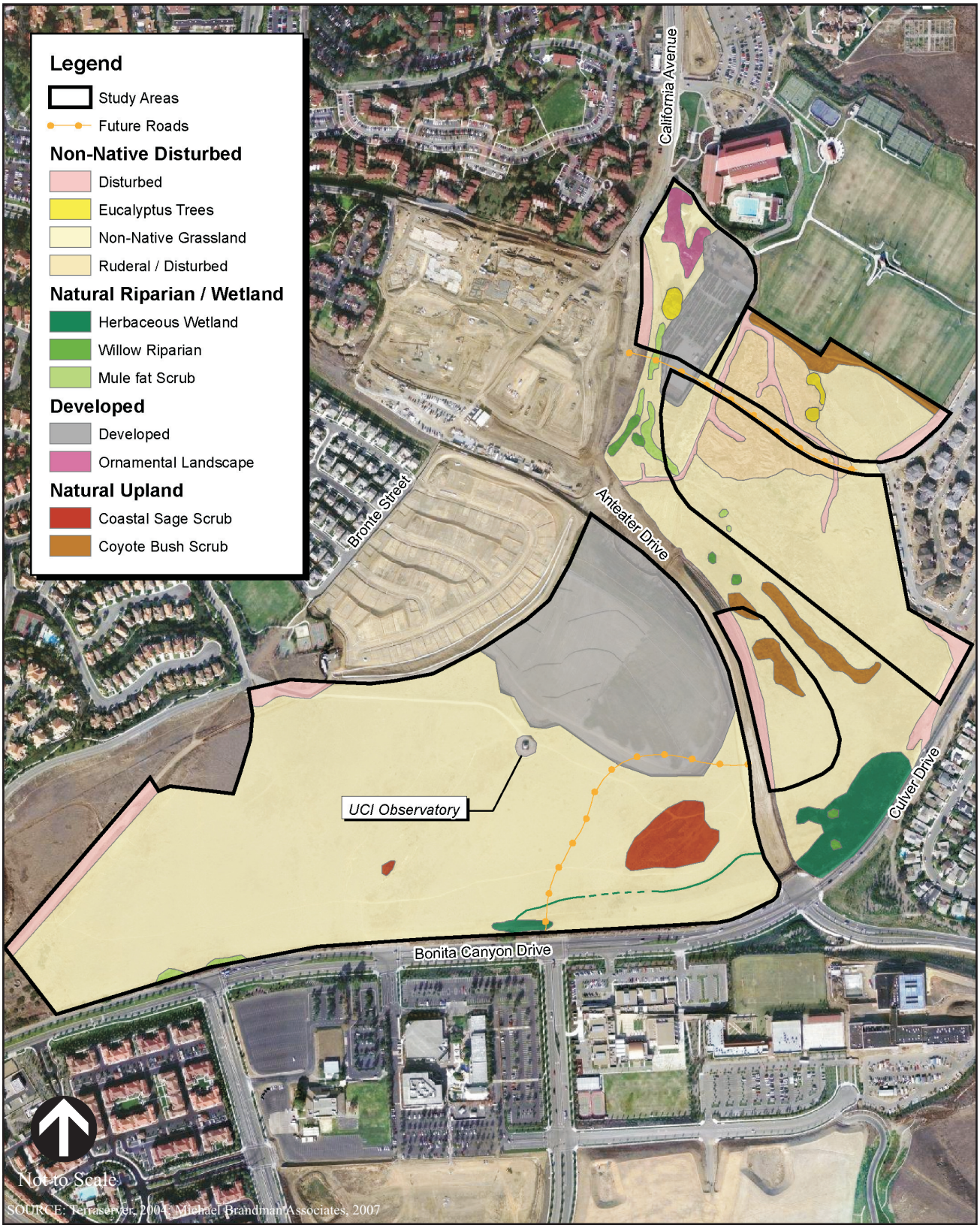
PLANT COMMUNITIES MAP - WEST CAMPUS **FIGURE 4.3-2B**



SOURCE: Terraserver, Michael Brandman Associates, 2006

PLANT COMMUNITIES MAP - EAST CAMPUS, NORTHERN AREA

FIGURE 4.3-2C



PLANT COMMUNITIES MAP -
EAST CAMPUS, SOUTHERN AREA **FIGURE 4.3-2D**

Chenopod Scrub. Small patches of chenopod scrub, or saltbush scrub, occur on the closed landfill site in the western part of the North Campus Sub-Area, adjacent to MacArthur Boulevard and Fairchild Road. This sub-type of coastal sage scrub consists of low to moderately dense patches dominated by Brewer's saltbush (*Atriplex lentiformis* ssp. *breweri*), also known as quailbush. This sub-type of coastal scrub is so named because the dominant shrub species is in the Chenopodiaceae (Goosefoot) Family. This community occurs along the north and west sides of the North Campus Sub-Area.

Coyote Bush Scrub. This sub-type of coastal sage scrub is comprised of a shrub layer of nearly monotypic stands of coyote bush, a native evergreen shrub, exhibiting at least 20 to 30 percent or greater shrub cover. Patches of coyote bush scrub tend to exhibit low diversity in terms of native shrub species and usually contain substantial amounts of non-native grass and ruderal herbs. Coyote bush scrub offers low to moderate habitat value as compared to the moderate to relatively high habitat value associated with more diverse stands of coastal sage scrub. This community occurs northeast of the intersection of California Avenue and Anteater Drive in the East Campus–Southern Sub-Area.

Coast Live Oak (Planted)

Four coast live oaks (*Quercus agrifolia*) are located in the buffer zone in the North Campus Sub-Area. These trees support sparse understory vegetation and are commonly found in moderately moist foothills throughout California. These trees are located in non-native grassland and near coastal sage scrub.

Natural Riparian/Wetland Communities

Riparian and wetland plant communities are generally associated with and are dependent upon streambeds or other water bodies. The representative plant species are typically well adapted to a hydrological regime ranging from permanent or semi-permanent inundation to occasional soil saturation at or near the surface during and after precipitation events. Riparian and wetland habitats occur in several prominent drainage courses or low-lying depressions where natural runoff is carried or contained. These habitats generally provide important habitat values such as foraging areas, water sources, cover, and nesting opportunities for a wide diversity of wildlife species.

Mule Fat Scrub

This community occurs in small patches and narrow ribbons along streambeds and washes that tend to dry out quickly after storm events. This riparian habitat type consists primarily of mule fat (*Baccharis salicifolia*), with scattered willows (*Salix* spp.), and coyote bush, along with occasional Mexican elderberry (*Sambucus mexicana*) forming the shrub canopy. In most areas, the understory contains upland grasses and non-woody herbaceous plants such as wild oats (*Avena* spp.) and mustards (*Brassica* spp. and *Hirschfeldia* spp.). In areas where mule fat is particularly dense or where substantial scouring has occurred, the understory component of this habitat may be sparsely vegetated or absent. This community occurs south of the intersection of Bison Avenue and East Peltason Drive in the West Campus Sub-Area, and east of California Avenue in the East Campus–Southern Sub-Area.

Willow Riparian

Willow trees dominate this densely vegetated riparian woodland plant community. Willow riparian habitats occur in the natural drainages or low-lying depressions on campus, and around ponded areas in the SJFMR. In this riparian habitat, understory vegetation is sparse where the canopy layer is dense, which shades out low-growing herbs. Where the canopy layer is broken or thin, mule fat provides most of the shrub layer. Herbaceous species may include native cattail (*Typha latifolia*) and bulrush (*Scirpus* spp.) in areas subject to frequent or long-term saturation. In some areas, non-native exotic species may be common

to dominant. These species include castor bean (*Ricinis communis*), tamarisk (*Tamarisk ramosissima*), poison hemlock (*Conium maculatum*), watercress (*Nasturtium officinale*), and Spanish daisy (*Pulicaria paludosa*). This community occurs in the North Campus Sub-Area adjacent to the northern boundary of the SJFMR; in the designated open space area south of Academy Way in the West Campus Sub-Area; and northeast and southwest of the Anteater Recreation Center (ARC) in the East Campus–Northern Sub-Area and Southern Sub-Area. Two clusters of willow trees, mapped as Willow Riparian, also occur in the herbaceous wetland (alkali meadow) habitat located northeast of the intersection of Anteater Drive and Culver Drive in the East Campus–Southern Sub-Area (refer to next paragraph for discussion of this habitat).

Herbaceous Wetland

An oval-shaped patch of natural herbaceous wetland habitat occurs within designated open space in the East Campus–Southern Sub-Area, northeast of the intersection of Anteater Drive and Culver Drive. In addition, a narrow strip of alkali meadow habitat extends west from Anteater Drive though a low depressional feature characterized as a drainage swale that crosses the southeast corner of the large southernmost Planning Area. These wetland areas are classified as alkali meadow habitat because they are ephemeral (i.e., existing only after precipitation events, rather than being continually saturated), and because of the dominant vegetation present. Two of the most common species present, alkali heath (*Frankenia salina*) and saltgrass (*Distichlis spicata*), are characteristic of alkali meadows. Other common to dominant species present include yerba mansa (*Anemopsis californica*) and non-native Spanish daisy, as well as several native and non-native annual grasses and ruderal herbs, such as bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), rabbit's foot grass (*Polypogon monspeliensis*), and Harding grass (*Phalaris aquatica*).

Riparian Woodland (Restored)

Riparian woodlands occur near streambeds and water courses. Soils are moist to wet and vary seasonally. At lower elevations, the dominant trees are western sycamore (*Platanus racemosa*), mule fat, and assorted willow species. The understory is composed of deciduous shrubs and vines. An area of riparian woodland that had been restored is mapped in the East Campus–Northern Sub-Area and is located adjacent to willow riparian vegetation.

Non-Native/Disturbed Areas

This broad category includes habitats that are primarily composed of introduced species, particularly annual grasses and other ruderal (weedy) herbs. Areas that have been disturbed, either by past agricultural practices or by other activities, typically exhibit vegetation dominated by non-native species or may lack vegetation. However, it is important to note that non-native grassland and recently cleared areas may contain scattered patches of native vegetation. In grassland communities, native species include native perennial grasses and occasional specimens and clusters of native shrubs and sub-shrubs.

In general, as noted in the previous campus-wide update of biological resources prepared by Psomas (1995), "much of the existing open space on the UCI campus has been extensively disturbed by past grazing, grading, and/or disking activities. These past disturbances have stimulated the establishment and spread of non-native flora which has displaced native vegetation." The grassland areas throughout the campus are indicative of the disturbance due to historic land uses.

Non-Native Grassland

Non-native grassland is a prevalent community throughout California and is generally characterized by a dense to sparse cover of non-native, annual grasses. This community is often associated with numerous weedy species, as well as some native annual wildflowers, especially in years of plentiful rain. Seed germination occurs with the onset of winter rains. While some plant growth occurs in winter, most growth and flowering occurs in the spring. Plants then die in the summer, and persist as seeds in the uppermost layers of soil until the next rainy season. Dominant plant genera typically found in the non-native grassland community include bromes (*Bromus* spp.), wild oats, fescues (*Vulpia* spp.), and barleys (*Hordeum* spp.)

The non-native grassland community is the most common vegetation type throughout the Study Area and exhibits considerable variation in characteristic vegetation. Occasional patches of native perennial grasses such as purple needlegrass (*Nassella pulchra*), and/or shrub species indicative of early stages in the successional development of coastal sage scrub habitat also occur through the matrix of non-native grasses and ruderal forbs. Several species that may indicate an early successional stage of coastal sage scrub development that occur in scattered areas through less disturbed grassland areas include deerweed (*Lotus scoparius*), gumplant (*Grindelia* spp.), fascicled tarweed (*Deinandra fasciculata*), coyote bush, and goldenbush. In certain non-native grassland areas, particularly in the West Campus Sub-Area, native grasses may become reestablished over time.

Non-Native Grassland/Scrub, Deerweed

The grassland/scrub community occurs in the transition area between non-native grassland and upland scrub communities. This vegetation type is an ecotonal sub-type or plant assemblage characterized by an open (i.e., relatively sparse) cover of shrubs within a grassland matrix where the shrub components typically contribute less than about 20 percent of the total vegetative cover. The dominant vegetation consists of non-native annual grasses, along with some native bunchgrasses, ruderal forbs, and small subshrubs such as fascicled tarweed, deerweed, and big gumplant (*Grindelia robusta*). Representative shrub species such as coyote bush, goldenbush, buckwheat, and sagebrush comprise the less common shrub elements of this plant community. Small patches of this ecotonal vegetation occur in the East Campus–Southern Sub-Area and West Campus Sub-Area. In the West Campus Sub-Area, this community is characterized by the presence of relatively dense patches of deerweed, and is thus classified as Non-native Grassland/Deerweed. In the East Campus–Southern Sub-Area, this vegetation occurs in preserved open space.

Oak and Sycamore Restoration/Non-Native Grassland

Native oak (*Quercus* spp.) and sycamore trees have been planted within non-native grassland habitat for restoration. This vegetation category is mapped in the open space area south of the intersection of Bison Avenue and East Peltason Drive in the West Campus Sub-Area.

Ruderal/Disturbed

Areas classified as ruderal or "disturbed" are generally barren or exhibit sparse vegetative cover consisting mainly of ruderal species that typically appear after severe disturbance or clearing. Typical opportunistic weeds that occur in disturbed areas include Russian thistle or "tumbleweed" (*Salsola tragus*), tocalote (*Centaurea melitensis*), and some native weedy forbs such as telegraph weed (*Heterotheca grandiflora*), fascicled tarweed, and non-native annual grasses. Disturbed areas include dirt roads and other recently graded areas and provide little or no habitat value to most wildlife species.

Eucalyptus and Pepper Trees

This classification is used to describe single large specimens or clusters of mature non-native eucalyptus trees (*Eucalyptus* spp.) or pepper trees (*Schinus* spp.). Eucalyptus trees, introduced mainly from Australia, and pepper trees are commonly used for ornamental landscaping. In southern California, both species of trees can spread into natural areas and may be considered exotic invasive elements because they may displace native vegetation. Yet tall eucalyptus trees provide cover and perching and nesting opportunities for hawks, owls, and other raptors (birds of prey). Therefore, while eucalyptus trees and stands are not considered to be biologically significant in terms of the overall habitat value associated with them, their potential use by nesting birds must be considered.

Developed Areas

This classification generally includes areas that contain existing buildings, roadways, and related infrastructure improvements.

Developed

These areas typically lack vegetation because of grading and impermeable surfaces. Areas mapped as "Developed" may also include strips of ornamental landscaping and recently graded areas, and sites that are under construction.

Construction

Locations within the Study Area that are graded or were used for equipment staging at the time of the surveys are indicated as "Construction".

Ornamental Landscape

Areas identified as ornamental landscape occur along roadsides, on graded slopes, and around the perimeter of existing developed areas. Typically, ornamental species include a wide variety of exotic trees, shrubs, and flowering plants that are installed and maintained to provide a desired function, such as erosion control, ground cover, or shade, or to be aesthetically appealing.

However, areas on campus that have been recently landscaped intentionally incorporate native trees, such as western sycamore and coast live oak, and drought-tolerant species, such as coyote bush, to reduce water use and increase biological values. Ornamental landscaping typically provides only limited habitat value, primarily as cover and perching opportunities for birds and common terrestrial wildlife that are normally found in and associated with developed areas. While wildlife values are still limited on campus, the use of native species provides somewhat greater value to local wildlife in terms of foraging opportunities, and may function as a buffer between active use areas and areas preserved as natural open space.

4.3.1.3 SUB-AREA RESOURCES

Figure 4.3-2 is a key map for the distribution of existing natural habitats and disturbed or developed areas within each sub-area of the Study Area: North Campus Sub-Area, West Campus Sub-Area, East Campus–Northern Sub-Area, and East Campus–Southern Sub-Area. The existing resources in each of these sub-areas, including special status species and jurisdictional areas, are discussed below.

North Campus Sub-Area

Biological studies of the North Campus Sub-Area conducted in 1991, or earlier, are contained or referenced in the North Campus Mixed-Use Development EIR (1991). Much of the North Campus Area was also reexamined as part of the update of biological studies prepared for the LRDP Circulation and Open Space Amendment EIR (1995).

The North Campus Sub-Area is adjacent to the SJFMR, which is managed jointly by UCI and UCNRS. The SJFMR is not included in the UCI LRDP. The 1989 Memorandum of Understanding between UCI and UCNRS identified planning parameters for development of the North Campus Sub-Area with the goal of limiting impacts on habitat values and research within the SJFMR. The planning parameters included the establishment of a 150-foot-wide buffer zone between North Campus Sub-Area and the SJFMR. The buffer zone would be restricted from building development and would contain native plantings.

Conditions have changed little since 1991 within the North Campus Sub-Area outlined on Figure 4.3-2A. The limits of the 150 foot-wide buffer zone between development in the North Campus Sub-Area and the SJFMR are outlined in yellow. The remaining undeveloped property in the North Campus Sub-Area is still appropriately characterized as non-native grassland with limited native vegetation. However, faculty working with UCNRS has introduced patches of coastal sage scrub as research plots adjacent to the 150-foot-wide buffer zone, which has increased the distribution of some coastal sage scrub plant species within the buffer zone.

The grassland community in the North Campus Sub-Area, east of Jamboree Road, exhibits relatively low diversity and is primarily dominated by non-native annual grasses such as wild oats, bromes, barley, as well as a prevalence of ruderal (weedy) herbs and forbs, particularly mustard, fennel, and artichoke thistle (*Cynara cardunculus*). Previous studies conducted for the North Campus Sub-Area describe the grassland community as the least diverse grassland habitat on the campus in terms of its value to wildlife but also recognized that the area provides foraging and potential breeding habitat for various common mammals, birds, and reptiles.

Mammals recorded to occur or are expected on site include desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), and harvest mouse (*Reithrodontomys megalotis*). Common grassland birds observed were western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), lesser goldfinch (*Carduelis psaltria*), white-crowned sparrow (*Zonotrichia leucophrys*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), and brown-headed cowbird (*Molothrus ater*). Reptiles noted as present include gopher snake (*Pituophis melanoleucus*), western fence lizard (*Sceloporus occidentalis*), common kingsnake (*Lampropeltis getula*), coachwhip (*Masticophis flagellum*), side-blotched lizard (*Uta stansburiana*), and western skink (*Eumeces skiltonianus*).

The area is reportedly utilized for foraging by raptors, such as red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and American kestrel (*Falco sparverius*), and provides a foraging area for large mammals such as coyote (*Canis latrans*) and bobcat (*Lynx rufus*) that may occasionally traverse the adjacent open space associated with the SJFMR and San Diego Creek.

The northeast corner of the North Campus Sub-Area is occupied by planted areas within the UCI Arboretum and is mapped as ornamental landscape. As with many landscaped areas, although not considered a biologically significant resource, this artificially maintained area offers cover and foraging

opportunities to birds, small mammals, and reptiles, specifically those species that are common in urban developed areas.

A small patch of intact natural coastal sage scrub habitat lies next to the southeast edge of the Arboretum mostly within the 150 foot-wide buffer zone. This mapped area extends into a corner of the ornamental landscape area to include a planted area of the Arboretum. The coastal sage scrub habitat appears to have been established as a part of UCNRS habitat restoration projects.

Coastal sage scrub also occurs naturally in linear patches on south and east-facing slopes within the buffer zone between the North Campus Sub-Area and the SJFMR. UCNRS plantings of coastal sage scrub within the buffer zone are indicated on Figure 4.3-2A in dark orange. Four planted coast live oak trees are shown in dark green in the buffer zone.

The grassland habitat on the southerly section of the North Campus Sub-Area, between Fairchild Road and the SJFMR, occupies a closed landfill site. This habitat exhibits less dense coverage by grasses, ruderal herbs, and occasional low-growing shrubs and includes large patch areas that are sparsely vegetated or relatively barren. Several patches of chenopod scrub, consisting of open to moderately dense cover by Brewer's saltbush, also occur on the closed landfill site.

Special Status Species

No special status plant species have been observed or are considered potentially present within the North Campus Sub-Area. However, several special status animals have been observed or may be expected to occur in the immediate vicinity of the North Campus Sub-Area. These species include those that are primarily associated with the extensive wetland and riparian habitat in the SJFMR, species that may use the adjacent buffer zone, and species that may occasionally forage within the grassland vegetation in the North Campus Sub-Area. Due to the degraded and disturbed condition of the grasslands in the North Campus Sub-Area, it is considered unlikely that the area provides nesting habitat for any special status animals. However, the possibility that special status bird species, including burrowing owl (*Athene cunicularia*), northern harrier (*Circus cyaneus*), and horned lark (*Eremophila alpestris*), could nest and breed within the North Campus Sub-Area cannot be entirely ruled out in the absence of focused surveys. It is also possible that a few special status species associated with coastal sage scrub habitat in the region including California gnatcatcher (*Polioptila californica*), orange-throated whiptail (*Aspidoscelis hyperythra*), and rufous-crowned sparrow (*Aimophila ruficeps*), may forage or breed within the buffer zone.

In addition, several species of sensitive raptors may occasionally forage in the grasslands in the North Campus Sub-Area, including white-tailed kite (*Elanus leucurus*) and Cooper's hawk (*Accipiter cooperi*). Swainson's hawk (*Buteo swainsoni*) and golden eagle (*Aquila chrysaetos*) have also been reported as infrequent visitors foraging in the general area including the North Campus Sub-Area.

Jurisdictional Areas

Jurisdictional areas are considered to be "wetland habitats" and may be under the regulation and jurisdiction of the U.S. Army Corps of Engineers (USACE), the CDFG, or the Regional Water Quality Control Board (RWQCB). Any development in areas determined to be wetland habitats and under the jurisdiction of one of the above agencies may require permits from the agencies prior to development. The California Coastal Commission (CCC) has its own criteria for identifying wetland habitat. There is only one small area of the North Campus Sub-Area that is within the Coastal Zone, but this area has not been identified as containing jurisdictional wetlands.

Several small drainage features leading from the upland areas within the North Campus Sub-Area through the buffer zone toward the SJFMR were depicted as non-jurisdictional features or upland swales by Psomas in 1995. The 2006 field observations confirm that these indistinct features are properly characterized as swales that conduct overland sheet flow, and do not constitute jurisdictional "waters," due to the absence of any observable bed or banks.

West Campus Sub-Area

Figure 4.3-2B depicts plant communities and areas that are graded and under construction within several Planning Areas in the West Campus Sub-Area. Strips of ornamental landscaping occur along the perimeter of the Planning Areas along existing roadways. As required by the campus since 1989, landscape plantings emphasize California native drought-tolerant species.

It is evident that most of the remaining grassland vegetation in the West Campus Sub-Area has not been subject to disturbance for some time, based on the relatively common presence of native forbs, particularly deerweed and gumplant and occasional patches of native perennial grasses such as purple needlegrass. A few individual specimens and very small clusters of native California buckwheat and California sagebrush occur in widely scattered locations within the non-native grassland plant community, but these elements do not represent a distinct plant community. However, two stands of low-growing native shrubs occur on the low hill west of California Avenue that may be classified separately due to the presence of at least 20 to 40 percent cover by native forbs and sub-shrubs. Although non-native grasses and ruderal herbs are still prevalent in these two patches, deerweed is co-dominant along with occasional goldenbush and fascicled tarweed and several small patches of native saltgrass. This plant assemblage is classified as Non-native Grassland/Deerweed, to indicate this as an early successional form of upland scrub habitat. However, at the existing stage of development, these patches do not represent coastal sage scrub since the larger woody shrub species or cacti typically associated with that sensitive native community are completely lacking. Two stands of pepper trees are also located within the non-native grassland community.

Segments of three natural drainage courses occur in the West Campus Sub-Area, and each supports patches of mule fat scrub. Willow riparian woodland also occurs in an area designated for preserved open space in segments of the two larger drainages. Native oak and sycamore trees have been planted for habitat restoration within the open space south of the intersection of Bison Avenue and East Peltason Drive.

Special Status Species

The limited size and the relatively isolated and disturbed condition of the undeveloped portion of the West Campus Sub-Area reduces the likelihood that special status species may occur therein. Sensitive species known from the vicinity include southern tarplant (*Centromadia parryi* ssp. *australis*), California gnatcatcher, grasshopper sparrow, burrowing owl, and rufous crowned sparrow. None of these species are known or expected to occur in the West Campus Sub-Area. A burrowing owl was briefly observed in the West Campus Sub-Area near the UCI NCCP Reserve Area in 1998 but abandoned the area soon after initial observation.

Jurisdictional Areas

Most of the lengths of the two larger natural drainage courses in this area occur primarily in the designated open space between Planning Areas. Each of these streambed areas is expected to fall under the regulatory jurisdiction of the USACE, CDFG, and the RWQCB.

East Campus–Northern Sub-Area

The East Campus–Northern Sub-Area includes two separate Planning Areas being considered for development in the 2007 LRDP as shown in Figure 4.3-2C. The northernmost Planning Area, adjacent to Campus Drive and California Avenue, was addressed in the East Campus Student Apartments EIR, while the Planning Area to the south, just west of Arroyo Drive, was addressed in the East Campus Student Recreation Center EIR. The northern Planning Area is almost entirely developed or recently graded for development and is entirely surrounded by existing developed areas. A very limited patch of ruderal (weedy) grassland remains near the center of this Planning Area. Although some evidence of ground squirrel activity is present, this area contains no significant biological resources.

The southern Planning Area includes a small developed area on the north side bordered by ornamental landscaping and an area used for gardening by campus residents. The rest of this Planning Area supports a non-native grassland community. The grassland area is dominated by annual grasses and ruderal herbaceous species along with widely scattered clumps of remnant native shrubs such as coyote bush and sagebrush. Similar habitat identified within the East Campus Student Apartments EIR was classified as "disturbed/ruderal." This definition is also appropriate for the area mapped as non-native grassland on Figure 4.3-2C, since non-native ruderal vegetation is prevalent and the area appears to be disturbed, due to periodic mowing for weed abatement and fire suppression.

A paved bikeway/walkway separates a serpentine strip of willow riparian habitat from the southwest side of the southern Planning Area. This willow riparian community occurs along a natural drainage course within a preserved open space corridor which has undergone habitat restoration and enhancement by UCI. Existing active recreational areas occur to the south. This drainage course and associated riparian woodland vegetation meets both state and federal definitions for jurisdictional waters.

Special Status Species

The limited size, relative isolation, and disturbed condition of undeveloped portions of East Campus–Northern Sub-Area reduces the likelihood that special status species may occur therein. However, burrowing owl and southern tarplant could still occur within the disturbed grassland area. A few southern tarplant specimens were found during the 2001 study in an area that has since been developed. Substantial populations of this plant were also observed further south in the East Campus–Southern Sub-Area as discussed in the next section. Due to the known presence of this plant species in the immediate vicinity, it is considered potentially present within the grassland area in the southern Planning Area. Impacts to this species, if any, may not be considered significant if substantial viable populations are preserved elsewhere on campus.

Burrowing owls have not been observed in the East Campus–Northern Sub-Area since 1990. However, the remnant patch of disturbed grassland may still provide suitable habitat for this species. Moreover, previous observations of burrowing owl and their nests in the immediate vicinity indicate that their potential presence in remaining undeveloped areas this part of the East Campus may not be ruled out without conducting focused surveys.

Also, the grassland community may afford limited foraging opportunities to raptor species, including those noted above as potential foragers over the North Campus Sub-Area. Notably, an occupied white-tailed kite nest was observed in 1995 within a narrow riparian strip just east of the northern Planning Area and outside the current Study Area. This nest site was not noted during the subsequent 2001 study. The area containing the nest site has since been developed and, although the riparian strip was retained, the nest it not likely to be active.

East Campus–Southern Sub-Area

Figure 4.3-2D depicts developed areas and plant communities within the East Campus–Southern Sub-Area. The biological study for the East Campus Student Recreation Center EIR included part of this area. Construction of Anteater Road, referred to as the "southern radial road" in previous documents, has been completed since the aerial photograph used as the base map for Figure 4.3-2D was taken in early 2005, as have the residential developments which appear as graded area. Areas mapped as disturbed on Figure 4.3-2D represent dirt roads, graded slopes, and cleared areas adjacent to recently constructed roadways.

The most northerly Planning Area is substantially developed, containing several small structures, an active nursery, and parking areas. This Planning Area also contains ornamental landscaped areas, including several large pine and eucalyptus trees, and a patch of mulefat scrub east of California Avenue. A large Planning Area to the southeast of the northernmost Planning Area is mapped primarily as ruderal/disturbed and non-native grassland; this Planning Area straddles a future road alignment that would connect Arroyo Drive from its terminus to California Avenue. This Planning Area supports a variety of exotic weeds such as mustard, tocalote, castor bean, tree tobacco, and Russian thistle, but also contains a sparse cover of native shrubs including mulefat scrub, coyote bush, goldenbush, deerweed, and fascicled tarweed.

The Planning Area east of Anteater Drive is mapped as disturbed, non-native grassland and coyote bush scrub, surrounded by an "S-shaped" band of preserved open space. Non-native grassland habitat in this area varies from dense stands of mustard to open grassland with occasional native shrubs and other exotic species such as artichoke thistle, tree tobacco (*Nicotiana glauca*), and patches of castor bean. A broad-bottomed drainage swale occurs within the preserved open space, starting from high ground about 400 feet west of Culver Drive, and trending downward to the northwest into a few patches of mule fat scrub and willow trees to the west of California Avenue. The southern portion of the preserved open space, along Culver Drive, contains a large patch of herbaceous wetland characterized as an alkali meadow habitat, as discussed above in Section 4.3.1.2.

A large area in the northeast corner of the southernmost Planning Area, just west of Anteater Drive, has been graded for construction and is mapped as developed. Most of the remaining undeveloped land in this Planning Area is comprised of non-native grassland, including stands of ruderal forbs dominated by mustard or artichoke thistle, as well as areas dominated by annual grasses and scattered patches of native grasses and occasional native shrubs. A single patch of coastal sage scrub occurs on the south-facing hillside overlooking Bonita Canyon Drive just west of Anteater Drive. This habitat area contains a single stand of prickly pear cactus within a larger patch of open shrub cover consisting of relatively low-growing sagebrush, with occasional buckwheat, coyote bush, goldenbush, and fascicled tarweed. In addition, a narrow strip of alkali meadow habitat extends west from Anteater Drive through a low depressional feature characterized as a drainage swale that crosses the southeast corner of this Planning Area.

Special Status Species

The Planning Areas east of Anteater Drive are highly disturbed and appear to have been used for stockpiling of dirt and storage of green waste. However, populations of southern tarplant, a California Native Plant Society (CNPS) list 1B plant species, were observed in this area during the 2006 mapping effort for this update, particularly along the unpaved access roads through the stockpile site.

It is unlikely that special status species may occur in the large Planning Area west of Anteater Drive due to the disturbed condition of the area. California gnatcatcher, grasshopper sparrow, burrowing owl, and rufous-crowned sparrow are not known to occur in this Planning Area and are not likely to occupy this

portion of the campus, although these species could occasionally forge or disperse throughout this area. Southern tarplant is considered potentially present in areas subject to recent disturbance.

Jurisdictional Areas

A narrow, artificially constructed, earthen-bottomed drainage course lies just inside the entire northern edge of the designated open space east of Anteater Drive. It appears that this drainage course was intentionally planted with coyote bush, and is mapped as coyote bush scrub, since this shrub species dominates the drainage area, along with occasional mule fat.

A remnant swale also extends west of Anteater Road, near its intersection with Bonita Canyon Drive, across the southeast corner of the large southernmost Planning Area. This feature may occasionally conduct flows from the adjacent herbaceous wetland (alkali meadow habitat) located further to the east. There are several additional upland swales further to the west. All upland swales within this Planning Area convey flows into storm drains along Bonita Canyon Drive. None of the drainage swales in this Planning Area exhibit sufficient evidence of flow, such as bed, bank, and ordinary high water mark, to be considered jurisdictional by USACE or CDFG.

4.3.1.4 SENSITIVE PLANT AND ANIMAL SPECIES

Sensitive plant and animal species which have the potential to be observed on campus are identified and discussed in the following section. Sensitive resources may be those defined by a qualified biologist as: (1) habitat areas of vegetation communities that are unique, are of relatively limited distribution, or are of particular values to wildlife; and (2) species that have been given special recognition by federal or state agencies, or are included in regional plans due to limited, declining or threatened populations.

Sensitivity Designations

Federal listing of endangered and threatened wildlife and plants is administered by the USFWS. The USFWS also recognizes species of special concern that are candidates for listing. Before a plant or animal species can receive protection under the federal Endangered Species Act (FESA), it must first be placed on the federal list. The program follows a strict legal process to determine whether to list a species. An “endangered” species is one that is in danger of extinction throughout all or a significant portion of its range. A “threatened” species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of plant and animals species native to the United States that are species of special concern for possible addition to the federal list but not regulated. In general, “take” of federally listed plant species is only prohibited on federal property.

CDFG's implementation of the California Endangered Species Act (CESA) has created a program that is similar in structure to, but different in detail from, the USFWS program implementing the FESA. The CDFG maintains a list of designated endangered, threatened, and rare plant and animal species. Listed species are either designated under the Native Plant Protection Act or designated by the Fish and Game Commission. In addition to recognizing three levels of endangerment, the CDFG affords interim protection to candidate species while they are reviewed by the Fish and Game Commission.

The CDFG also maintains a list of animal “Species of Special Concern,” most of which are species whose breeding populations in California may face extirpation. Although these species have no legal status, the CDFG recommends consideration of them during analysis of the impacts of proposed projects to protect declining populations and avoid the need to list them as endangered in the future.

Under the provisions of Section 15380(d) of CEQA, the lead agency, in making a determination of significance, must treat rare non-listed plant and animal species as equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, the CDFG considers species on Lists 1A, 1B, or 2 of the *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994) as qualifying for consideration under this CEQA provision. Species on the CNPS List 3 or 4 may, but generally do not, qualify for protection under this provision. Species on the CNPS 1A List are "presumed extinct in California." Species on List 1B are "rare or endangered in California and elsewhere." Species on List 2 are "rare or endangered in California and are more common elsewhere." List 3 is a review list which indicates those species where more information is needed to determine species' ranking on the CNPS list. List 4 is a watch list which lists those plants with a limited distribution.

Sensitive Plant Species

Based on a review of the California Natural Diversity Database (CNDDB) and CNPS sensitive species lists for the *Irvine, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangle and review of previous studies, information regarding sensitive plants and wildlife species that may occur within the Study Area was complied and updated. Tables 4.3-1 lists the plant species with the potential to occur on campus, their federal and state status, required habitat, and conclusions regarding the degree of each species' potential to occur on campus based on the literature review and existing conditions in the Study Area. Four sensitive plant species were considered for analysis: mesa brodiaea (*Brodiaea jolonensis*), many-stemmed dudleya (*Dudleya multicaulis*), southern tarplant (*Centromadia parryi* ssp. *australis*), and Palmer's grappling hook (*Harpagonella parmeri*).

Sensitive Animal Species

Sensitive wildlife species documented on or within the vicinity of the Study Area are presented in Table 4.3-2. The potential for each species to occur within the Study Area was based on the presence and quality of required habitat components within the Study Area. No federal or state listed species were observed during the surveys conducted in May and June of 2006.

There are nine California species of concern (CSC) that have been recorded to occur within the Study Area or have a high potential to occur within the Study Area, including Cooper's hawk, rufous-crowned sparrow, Bell's sage sparrow, western burrowing owl, northern harrier, California horned lark, loggerhead shrike, San Diego black-tailed jackrabbit, and San Diego desert woodrat. These species are typically associated with disturbed grassland habitats, which occur within all of the sub-areas. There are nine CSC that have a low potential to occur within the Study Area: orange-throated whiptail, red diamond rattlesnake, coast patch-noised snake, San Diego horned lizard, sharp-shinned hawk, golden eagle, ferruginous hawk, coastal cactus wren, and merlin. These species are not legally protected under the FESA or CESA. However, based on CEQA guidelines, these species require a project specific evaluation in order to determine if project impacts are considered significant. Therefore, impacts to individuals of these species may be considered adverse and significant under CEQA guidelines on a case-by-base basis.

Table 4.3-1. Sensitive Plant Species Observed or with the Potential to Occur on Campus

Scientific Name / Common Name	Status				Preferred Habitat	Life Form	Blooming Period	Potential to Occur / Known Occurrence / Suitable Habitat[3]
	USFWS	CDFG	CNPS[1]	NCCP[2]				
*Brodiaea jolonensis** mesa brodiaea	–	–	–	N/A	Grassland, coastal scrub,	Herbaceous perennial from bulb.	April - June	**Invalid taxon -** Taxonomic classification of Southern California specimens are deemed invalid and are no longer designated as a sensitive element. Documented occurrence near the West Campus Sub-Area extirpated by previous construction.
Dudleya multicaulis many-stemmed dudleya	–	–	1B	CC	Coastal sage scrub, rock outcrops.	Succulent perennial from corm	May - June	**Low to Moderate –** Known from UCI NCCP Reserve Area, and a single isolated population on Main Campus. Low potentially to occur in coastal sage scrub and coastal sage scrub/non-native grassland.
Centromadia parryi ssp. australis southern tarplant	–	–	1B	NC	Grassland, Alkali Meadow, Disturbed Areas, and periphery of salt marsh.	Large shrub-like annual herb.	June - Sept.	**Present -** Population identified on the East Campus–Southern Sub-Area.
Harpagonella palmeri Palmer's grappling hook	–	–	4	NC	Clay and cobbly clay soils in open coastal sage scrub, chaparral, and grasslands.	Diminutive annual herb	Mar. - May	**Low Potential to Occur -** Marginally suitable habitat in East Campus Sub-Area and West Campus Sub-Area and in the buffer zone between the North Campus Sub-Area and the SJFMR.

[1] California Native Plant Society (CNPS): 1A = Plants presumed extinct in California; 1B = Plants rare, threatened, or endangered in California and elsewhere; 2 = Plants rare, threatened, or endangered in California, but more common elsewhere; 3 = Plants about which we need more information; 4 = Plants of limited distribution.

[2] Natural Communities Conservation Program (NCCP): C = Covered; CC = Conditionally Covered; NC = Not Covered; N/A = Not Applicable (taxon invalid)

[3] Potential to Occur/Known Occurrence/Suitable Habitat:

Not Likely to Occur - There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site.

Low Potential to Occur - There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur. The Site is above or below the recognized elevation limits for this species.

Moderate Potential to Occur - The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.

High Potential to Occur - There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).

Species Present - The species was observed on the Project Site at the time of the survey or during a previous biological survey.

Table 4.3-2. Sensitive Wildlife Species Observed or With the Potential to Occur on Campus

Scientific Name / Common Name	Status			Required Habitat	Potential to Occur / Known Occurrence / Suitable Habitat[4]
	Federal[1]	State[2]	NCCP[3]		
Invertebrates					
Danaus plexippus Monarch butterfly	–	CNNDB	NC	(Wintering sites) Eucalyptus, Monterey pine, cypress groves.	**Moderate Potential to Occur -** to utilize patches of eucalyptus in East Campus–Southern Sub-Area.
Reptiles					
Aspidoscelis hyperythra Orange-throated whiptail	–	CSC	C	May be found in low-elevation coastal scrub, chaparral, and valley-foothill hardwood; prefers sandy washes with patches of brush and rocks.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Aspidoscelis tigris stejnegeri Coastal western whiptail	–	CNDDB	C	Inhabits deserts and semiarid areas with sparse vegetation and open areas.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Crotalus ruber rubber Red-diamond rattlesnake	–	CSC	C	Coastal sage scrub, rocky hillsides, and outcrops.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Diadophis punctatus modestus San Bernardino ringneck snake	–	CNDDB	C	Scrub, chaparral, native grassland, and woodland communities.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Phrynosoma coronatum (*blainvillei* population) San Diego horned lizard	–	CSC	C	Sandy soil with low vegetation coastal sage scrub and chaparral with friable, rocky or shallow sandy soils that support native harvester ants.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Salvadora hexalepis virgultea Coast patch-nosed snake	–	CSC	NC	Scrub (desert), coastal chaparral, washes, sandy flats, and rocky areas.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of coastal sage scrub and coastal sage scrub/non-native grassland in West Campus Sub-Area and both East Campus Sub-Areas.
Birds					
Accipiter cooperi Cooper's hawk	–	CSC	NC	(Nesting) Dense canopied evergreen and deciduous forests or in riparian woodlands.	**High Potential to Occur -** Suitable habitat present within the Study Area. Although this species is typically found in woodlands, it has been known to occur in residential developments with plenty of ornamental trees.

Table 4.3-2. Continued

Scientific Name / Common Name	Status			Required Habitat	Potential to Occur / Known Occurrence / Suitable Habitat
	Federal	State	NCCP		
Accipiter striatus Sharp-shinned hawk	–	CSC	C	(Nesting) Boreal coniferous and mixed deciduous forests, and open woodlands near bushy and riparian areas, tropical cloud forests, mountainous pine forests, savanna woodlands, and urban areas.	**Low Potential to Occur -** Marginally suitable habitat present over limited areas of riparian habitat in West Campus Sub-Area and both East Campus Sub-Areas.
Aimophila ruficeps canescens Southern California. rufous-crowned sparrow	–	CSC	C	Open coastal sage scrub, open chaparral, and in other dry habitats.	**High Potential to Occur -** Expected to occur in suitable coastal sage scrub/non-native grassland habitat on site.
Amphispiza belli belli Bell's sage sparrow	–	CSC	NC	Chaparral and coastal sage scrub, prefers relatively open cover.	**High Potential to Occur -** Expected to occur occasionally in suitable coastal sage scrub/non-native grassland habitat on site.
Ammodramus savannarum Grasshopper sparrow	–	CNDDB	C	Dense, dry or well-drained grasslands, especially native grassland with a mix of grasses and forbs for foraging and nesting.	**Low Potential to Occur -** Marginally suitable habitat present in limited areas. No direct habitat connectivity to occupied areas. Not known to occur on site.
Aquila chrysaetos Golden eagle	–	CSC, FP	CC	Open terrain of deserts, mountains, plateaus and steppes cut by canyons, gullies or outcrops.	**Low Potential to Occur -** Marginally suitable nesting habitat present over limited areas of the West Campus Sub-Area and both East Campus Sub-Areas. Possible foraging habitat.
Athene cunicularia hypugaea Western burrowing owl	–	CSC	NC	(Burrows) Open, dry grasslands, deserts and scrublands with low growing vegetation.	**High Potential to Occur -** Previously observed within the West Campus Sub-Area and both East Campus Sub-Areas. There has been no recent recorded occurrence, and all previously occupied habitat has been developed.
Buteo regalis Ferruginous hawk	FSC	CSC	NC	(Wintering) Arid to semiarid regions, as well as grasslands and agricultural areas.	**Low Potential to Occur -** Expected to occur occasionally in fall and winter, foraging in grasslands and coastal sage scrub/non-native grasslands; does not nest in Orange County. No recent recorded occurrences.
Buteo swainsoni Swainson's hawk	–	ST	NC	(Nesting) Open grasslands, prairies, farmlands, and deserts.	**High Potential to Occur -** Previously observed over North Campus Sub-Area. Expected to occur occasionally during migration; does not nest in Orange County.
Campylorhynchus brunneicapillus sandiegensis Coastal cactus wren	–	CSC	C	Coastal sage scrub containing cactus.	**Low Potential to Occur -** A single cactus patch in East Campus–Southern Sub-Area, west of Anteater Drive. No habitat connectivity to occupied habitats. Observed within the UCI NCCP Reserve Area.
Circus cyaneus Northern harrier	–	CSC	C	(Nesting) Winter resident. Inhabits marshlands and often forages over grasslands and fields.	**Present** - Observed foraging in UCI NCCP Reserve Area and SJFMR.
Elanus leucurus White-tailed kite	–	FP	NC	(Nesting) Grassland, open woodland, marshes, partially cleared lands, cultivated fields, mostly lowland situations. Nests in trees, often near marshes.	**Present** - Observed foraging over grasslands and SJFMR. Nest site reported (1995), outside Study Area in East Campus–Northern Sub-Area. Area since developed.

Table 4.3-2. Continued

Scientific Name / Common Name	Status			Required Habitat	Potential to Occur / Known Occurrence / Suitable Habitat
	Federal	State	NCCP		
Eremophila alpestris actia California horned lark	–	CSC	C	Grassland, agricultural areas and in open areas of scrub and chaparral.	**Present** - Observed in the West Campus Sub-Area (1995). Moderate to high potential to occur in grasslands throughout Study Area.
Falco columbarius Merlin	–	CSC	NC	(Wintering) Wide variety of habitats including marshes, deserts, seacoasts, near coastal lakes and lagoons, open woodlands.	**Low Potential to Occur** - Marginally suitable foraging habitat present over limited portions of the West Campus Sub-Area and both East Campus Sub-Areas. Not known to occur in the area.
Lanius ludovicianus Loggerhead shrike	–	CSC	NC	Grassland, sage scrub.	**Present** - Observed in SJFMR buffer zone (Holbrook 1988). Moderate potential to occur in grasslands, scrub, and riparian patches throughout the Study Area.
Polioptila californica californica Coastal California gnatcatcher	FT	CSC	C	Requires sage scrub habitat for nesting, uses and adjacent non-sage scrub, such as grassland, chaparral, riparian scrub, for foraging and dispersal.	**Moderate Potential to Occur** - Suitable habitat present in limited areas, West Campus Sub-Area enclosed by development and exposed to noise and activity. No direct habitat connectivity to occupied areas.
Mammals					
Lepus californicus bennettii San Diego black-tailed jackrabbit	–	CSC	NC	Grasslands and scrub areas.	**Present** - Observed in both East Campus Sub-Areas. Moderate to high potential to occur in grasslands throughout the Study Area.
Neotoma lepida intermedia San Diego desert woodrat	–	CSC	C	Coastal sage scrub, chaparral, woodlands, and desert areas	**High Potential to Occur** - Expected to occur in suitable coastal sage scrub/non-native grassland habitat on site.

(1) Federal: FE = Federal Endangered; FT = Federal Threatened; FSC = Federal Species of Concern; PFT = Proposed Federal Threatened; C = Candidate for Federal Listing; D = Delisted.

(2) State: SE = State Endangered; ST = State Threatened; FP = Fully Protected; CSC = California Species of Concern; = CNDDB = Tracked within the California Natural Diversity Database.

(3) Natural Communities Conservation Program (NCCP): C = Covered; CC = Conditionally Covered; NC = Not Covered

(4) Potential to Occur/Known Occurrence/Suitable Habitat:

Not Likely to Occur - There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site.

Low Potential to Occur - There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur. The Site is above or below the recognized elevation limits for this species.

Moderate Potential to Occur - The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.

High Potential to Occur - There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).

Species Present - The species was observed on the Project Site at the time of the survey or during a previous biological survey.

Below is a description of the federally or state listed species with potential to occur either on campus or in the vicinity of the campus.

Coastal California gnatcatcher (*Polioptila californica californica*). The coastal California gnatcatcher is a federally threatened and CSC species primarily found in coastal sage scrub habitat. This species is covered under the NCCP which mitigates "take" on lands outside the NCCP Reserve System. A substantial area of coastal California gnatcatcher occupied lies within the UCI NCCP Reserve Area. Only small patches of marginally suitable coastal sage scrub habitat remain in the North Campus Sub-Area.

White-tailed kite (*Elanus leucurus*). The white-tailed kite is a “fully protected species”, which is a state designation that pre-dates the FESA. This species was not considered for federal or state listing as threatened or endangered, but still remains on the original fully protected species list. As a fully protected species, there are no incidental take permits issued for impacts to this species. This species has been observed foraging over grasslands and the SJFMR. In 1995, a nest site was reported in the East Campus Sub-Area. The area has since been developed.

Golden eagle (*Aquila chrysaetos*). The golden eagle is a fully protected species, which is a state-list that pre-dates the ESA. This species was not considered for federal or state listing as threatened or endangered, but still remains on the original fully protected species list. As a fully protected species, there are no incidental take permits issued for impacts to this species. This species has a low potential to occur on campus. There is marginally suitable nesting habitat present over limited areas of the West Sub-Area and East Campus Sub-Area.

Swainson’s hawk (*Buteo swainsoni*). Swainson’s hawk is a state threatened species recorded to occur within the North Campus Sub-Area. The species is commonly found in open grasslands, prairies, farmlands, and deserts. Although this species is not known to nest in Orange County, the potential for this species to nest within the Study Area can not be completely ruled out.

Western burrowing owl (*Athene cunicularia hypugaea*). The burrowing owl is a CSC and is being considered for listing with the state and federal agencies due to their alarming decline in the past 30 years. This species is not covered under the NCCP. Burrowing owls are small crepuscular owls, which use rodent burrows for nesting and roosting. They inhabit grasslands and prairies and often prefer areas with some disturbance and/or berms or drainages. These open space areas are required for clear visibility surrounding active burrows. The Study Area contains a number of features that provide suitable burrowing owl habitat: flat, open, areas occupied by non-native grassland, ruderal areas, and scrub habitat. This species was previously observed within both the West Sub-Area and East Campus Sub-Area. However, there have been no recent recorded observations and all previously occupied habitats have been developed. No burrowing owls were observed during the 2006 field visit.

Sensitive Reptiles. The Study Area contains marginally suitable habitat for a number of sensitive reptile species. Orange-throated whiptail (*Aspidoscelis hyperythra*), San Diego horned lizard (*Phrynosoma coronatum blainvillei*), and red-diamond rattlesnake (*Crotalus ruber ruber*) are all considered California species of concern, have a low potential to occur on site, and are all covered under the NCCP. Coastal western whiptail (*Aspidoscelis tigris stejnegeri*) and San Bernardino ringneck snake (*Diadophis punctatus modestus*) are also covered under the NCCP, but are not listed on any formal sensitive species list. Coast patch-nosed snake (*Salvadora hexalepis virgultea*) and California mountain kingsnake (*Lampropeltis zonata*) are CSC and are not covered under the NCCP. As part of the NCCP reserve-wide management programs and other research projects, USGS scientists are studying reptile populations within the UCI NCCP Reserve Area through the use of pitfall traps. These sensitive reptile species all have a low

potential to occur or are not likely to occur within the Study Area due to the relatively low habitat suitablility and the lack of connectivity with more suitable habitat in the vicinity.

Sensitive Birds. The Study Area contains marginally suitable habitat for a number of sensitive avian species. Sharp-shinned hawk (*Accipiter striatus*) is considered a CSC, has a low potential to occur on site, and is covered under the NCCP. Grasshopper sparrow (*Ammodramus savannarum*) is also covered under the NCCP, but is not listed on any formal sensitive species list. Ferruginous hawk (*Buteo regalis*) and merlin (*Falco columbarius*) are CSC and are not covered under the NCCP. These sensitive bird species have a low potential to occur due to the relatively low habitat suitablility and the lack of connectivity with more suitable habitat in the vicinity. Also there are no recorded occurrences of these species within the Study Area and/or immediate vicinity.

4.3.2 REGULATORY FRAMEWORK

Biological resources on campus are subject to regulatory administration by the federal government and the State of California. The federal government administers non-marine plant and wildlife-related issues through the USFWS, while Waters of the U.S. issues are administered through the USACE and the California RWQCBs. California law relating to wildlife issues is administered by the CDFG, while CDFG and the California RWQCBs both administer laws relating to Waters of the State.

4.3.2.1 FEDERAL

Endangered Species Act

The FESA, administered by the USFWS, provides the legal framework for the listing and protection of species (and their habitats) which is identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a 'take' under the FESA. Section 9(a) of the FESA defines take as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." 'Harm' and 'harass' are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species' behavioral patterns.

Sections 10(a) and 7 of the FESA allows actions that could adversely affect endangered or threatened species to move forward, provided certain requirements are met. Section 10(a) allows issuance of permits for 'incidental' take of endangered or threatened species. The term 'incidental' applies if the taking of a listed species is incidental to, and not the purpose of, an otherwise lawful activity. A habitat conservation plan, demonstrating how the taking will be minimized, what steps would be taken to ensure the species' survival, and several other criteria must be submitted to USFWS for issuance of Section 10(a) permits. These permits are discretionary. Section 7 describes a process of federal inter-agency consultation for use when federal actions may adversely affect listed species. Private or state/local government activities are considered "federal action" if they require federal permits or will use federal funding. A biological assessment is required for any major activity if it may affect listed species. In this case, take can be authorized via a "biological opinion," issued by the USFWS for non-marine listed species issues.

Section 4(d) of the FESA authorizes take of certain protected species under an approved NCCP, which is administered by the states. As of 1996, UCI has been a participant in the NCCP, therefore, the special rule applies to development on campus. A brief discussion of the NCCP is provided below in Section 4.3.2.3.

Clean Water Act

Under Section 404 of the Clean Water Act (CWA), USACE regulates the disposal of dredged and fill materials into "waters of the United States." Waters of the U.S. include intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, and wetlands adjacent to any water of the U.S. (CFR 33 Part 328). Generally, USACE jurisdiction extends to the ordinary high water mark of such waters. In areas subject to tidal influence, Section 404 jurisdiction extends to the high tide line. Certain waters of the U.S. are considered "special aquatic sites" because they are generally recognized as having particular ecological value. Such sites include sanctuaries and refuges, mudflats, wetlands, vegetated shallows, coral reefs, and riffle and pool complexes. Special aquatic sites are defined by the U.S. Environmental Protection Agency (EPA) and may be afforded additional consideration in the permit process for a project. The USACE also regulates navigable waters under Section 10 of the Rivers and Harbors Act. These are defined as "…those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce" (33 CFR Part 322.2).

A permit from the USACE must be obtained for any dredge or fill activities within jurisdictional waters of the U.S. During the permit review process the USACE determines the type of permit appropriate for the proposed project based on the extent of impacts and type of fill activities. There are two types of permits issued by the USACE:

- General Permits issued on a state, regional and nationwide basis, which cover a variety of activities including minimal individual and cumulative adverse affects. These permits fit into specific categories established by the USACE.
- Individual Permits issued for a case-specific activity.

In addition to the Section 404 permit, Section 401 of the CWA requires that a 404 permit applicant obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to grant certification or waive the requirement for permits under Section 401 is delegated by the State Water Resources Control Board to the RWQCBs. Pursuant to the Porter-Cologne Act, each of California's nine regional boards must prepare and periodically update basin plans that set forth water quality standards for surface and groundwater, as well as actions to control point and non-point sources of pollution. Basin plans offer an opportunity to achieve wetlands protection through enforcement of water quality standards. The RWQCB with jurisdiction in Orange County, including UCI, is Region 8, the Santa Ana Region.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code 703-711) implements an international treaty for the conservation and management of bird species that may migrate through more than one country. It is enforced in the United States by the USFWS, and makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered a "take" and is potentially punishable by fines and/or imprisonment. In 1972, the MBTA was amended to include protection for migratory birds of prey (raptors). Generally, applicants who obtain an ESA Section 10(a) permit simultaneously receive a three-year MBTA permit for FESA and CESA listed migratory birds.

4.3.2.2 STATE

California Endangered Species Act

The CESA authorizes the California Fish and Game Commission to designate endangered, threatened, and rare species and to regulate the taking of these species (Sections 2050-2098, Fish and Game Code). CESA defines "endangered" species as those whose continued existence in California is jeopardized. State listed "threatened" species are those not presently threatened with extinction, but which may become endangered in the foreseeable future. Protection of special-status species is detailed in Sections 2050 et seq. of the Fish and Game Code. The California Code of Regulations (Title 14, Section 670.5) lists animal species considered endangered and threatened by the state. Formal consultation must be initiated with the CDFG for projects that may have an adverse effect on a state-listed species.

Section 2080 of the California Fish and Game Code prohibits the taking of state listed plant and animals. The CDFG also designates "fully protected" or "protected" species as those that may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFG. Species designated as fully protected or protected may or may not be listed as endangered or threatened.

California Fish and Game Code Section 1600 et seq.

California has adopted regulations to address impacts to many of the resources subject to Section 404 of the CWA. Although not entirely overlapping, these programs intersect frequently. Project proponents are required to obtain separate authorizations from the USACE and the CDFG.

Section 1602 of the California Fish and Game Code requires any person, state or local governmental agency to provide advance written notification to CDFG prior to initiating any activity that would: (1) divert or obstruct the natural flow of, or substantially change or remove material from the bed, channel, or bank of any river, stream, or lake; (2) result in the disposal or deposition of debris, waste, or other material into any river, stream, or lake (Fish & Game Code § 1602). The State definition of "lake, rivers, and streams" includes all rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life, and watercourses with surface or subsurface flows that support or have supported riparian vegetation (14 C.C.R. § 1.72).

Under the Section 1602 Streambed Alteration Agreement process, applicants provide written notification to CDFG of a potential streambed alteration, and CDFG determines within 30 days if the notification is complete. Once a notification is deemed complete, CDFG reviews the proposed project's impacts on the existing fish and wildlife resources that are directly dependent on the waterway. If CDFG determines that the proposed activity will not substantially adversely affect an existing fish and wildlife resource, it notifies the applicant that no Streambed Alteration Agreement is required and the project may proceed (Fish & Game Code § 1602(a)(4)(A)(i)). If CDFG determines that the project may substantially adversely affect an existing fish and wildlife resource, it will require, as part of a Streambed Alteration Agreement, reasonable measures necessary to protect the fish and wildlife resource (Fish & Game Code § 1603(a)). CDFG will provide an applicant with a draft agreement within 60 days of receipt of a complete notification package. The applicant then has 30 days to either accept the recommendations or request further negotiation. If negotiations fail, the dispute must be resolved by binding arbitration.

California Coastal Act

Development in the coastal zone in California is governed by the California Coastal Act of 1976 (Public Resources Code, Division 20). The Act arose out of Proposition 20, the California Coastal Conservation Initiative, and responds to the public concern for protecting and enhancing coastal resources. The primary

purpose of the California Coastal Act is to "protect, maintain, and enhance the quality of the coastal environment." A principal goal is to maintain public access to and along the coast and to maintain public recreational opportunities consistent with resource conservation and rights of private property owners. The Coastal Act contains strong access policies and programs that are implemented by the CCC, the regulatory agency established to implement the provisions of the Coastal Act. The CCC regulates development in the coastal zone through the issuance of individual coastal development permits (CDPs). The CCC delegates the issuance of CDPs to local jurisdictions that have certified Local Coastal Plan (LCPs) conforming to the provisions of Chapter 3 of the Coastal Act.

A portion of the North Campus Sub-Area located along MacArthur Boulevard between Fairchild Drive and the San Diego Creek is located in the coastal zone. Any development within this area would require compliance with the Coastal Act and the receipt of a CDP.

4.3.2.3 REGIONAL

Natural Communities Conservation Program

The purpose of the NCCP is to provide long-term, regional protection of natural vegetation and wildlife diversity, while allowing compatible land uses and appropriate development and growth for those agencies and private organizations that are enrolled in the program. NCCP participants may enroll their habitat in the program, and, by mutual consent, habitat areas with high conservation value are set aside and may not be developed. Participants also agree to study, monitor, and develop management plans for those habitat areas within the subregional NCCP Reserve System. Parcels with lower conservation values within the enrolled areas, but outside the NCCP Reserve System, are then available for possible development.

In 1991, the State of California passed the NCCP Act, providing for the long-term, regional conservation of natural vegetation and wildlife diversity. The County of Orange Environmental Management Agency prepared an NCCP/HCP for the County of Orange Central and Coastal sub-region. The USFWS and CDFG jointly adopted the NCCP/HCP in 1996. The NCCP is administered by the CDFG under the direction of the California Resources Agency. As part of that approval process, a Joint EIR/EIS was prepared which addressed the cumulative impacts to biological resources from growth in Orange County. The NCCP/HCP (County of Orange 1996) and its associated Joint EIR/EIS (County of Orange and USFWS 1996) are summarized below.

Geographically, the NCCP study area covers approximately 208,000 acres that include the central portion of Orange County. The sub-region extends along the coast from the mouth of the Santa Ana River in Costa Mesa to the mouth of San Juan Creek in Dana Point. The inland boundaries of the sub-region follow along SR 91 to El Toro Road to the west and I-5 to San Juan Creek to the east.

As part of the NCCP/HCP planning process, lands were identified for assembly into the subregional NCCP Reserve System for the conservation of biological resources. The subregional NCCP Reserve System was cooperatively designed by the participating jurisdictions and special districts in the study area in partnership with the wildlife agencies (CDFG and USFWS), property owners, and representatives from private industry and environmental groups. The subregional NCCP Reserve System is 37,378 acres in size and protects more than 18,500 acres of coastal sage scrub habitat, 6,950 acres of chaparral habitat, 5,700 acres of grassland habitat, 1,750 of riparian habitat, and 950 acres of woodland habitat.

UCI enrolled in the NCCP in 1996 as a "participating landowner." Participating landowners are those public and private landowners contributing significant land and/or funding toward implementation of the

subregional NCCP Reserve System and adaptive management program. For these landowners, development activities and uses that are addressed by the NCCP for areas outside the Reserve System, and associated impacts to habitat occupied by listed and other species "identified" by the NCCP, are considered fully mitigated under the NCCP Act and the FESA and CESA. Satisfactory implementation of the NCCP under the terms of an Implementation Agreement (IA) means that no additional mitigation will be required of "participating landowners" for impacts to "identified" species and their habitat, or for species residing in specified non–coastal sage scrub habitats, in areas outside the subregional NCCP Reserve System.

The NCCP provides regulatory coverage for a total of 39 individual species. The 39 species receiving regulatory coverage include three "target species," six additional federally listed species, and 30 other "identified" species that are not listed under either the FESA or CESA, but are found within the sub-regional costal sage scrub habitat mosaic. All of the "target and identified" species covered in the NCCP are treated as if they were listed on either the state or federal lists. Under the NCCP, regulatory coverage means that future Incidental Take of "target and identified" species would be permitted for new development addressed by the NCCP in areas outside the subregional Reserve System, and that no additional habitat mitigation for such Incidental Take under the FESA and CESA would be required over and above the mitigation provided for by the NCCP.

The NCCP Reserve boundaries were mapped at a general level in 1996 during the establishment of the NCCP Reserve. As a result, the Nature Reserve of Orange County (NROC), the non-profit entity that manages the NCCP Reserve System, has approved a series of minor NCCP Boundary Adjustments as more detailed planning information has been reviewed for specific areas managed by various participating landowners within the NCCP Reserve System. These Boundary Adjustments have been approved by the NROC Board following the review and concurrence of USFWS staff and CDFG staff. Consistent with the NCCP IA, all Boundary Adjustments approved by NROC have resulted in no net loss in acreage or habitat value to the NCCP Reserve System.

4.3.3 PROJECT IMPACTS AND MITIGATION

The following sections describe impacts to biological resources anticipated to occur as a result of the implementation of the 2007 LRDP. Sensitive species or vegetation communities impacts associated with the implementation of the LRDP can be direct and indirect. Direct impacts are those associated with direct destruction or displacement of natural habitats during construction and typically occur during the site preparation stage when grading, clearing, grubbing, and other initial land disturbance activities take place. Indirect impacts are those that are not a result of direct land disturbance activities. Indirect impacts include impacts such as decreased water quality, fugitive dust, and introduction of non-native plant species, edge effects, increased human activity, animal behavioral changes, roadkill, night lighting, and noise. Indirect impacts can occur during all stages of construction and can also occur after construction is complete as a result of increased human activity or from operation of the development itself, such as impacts from the development's lighting or noise.

In order to estimate direct impacts, areas anticipated for development under the 2007 LRDP were compared to mapped biological resources, as shown in Figure 4.3-2A through 4.3-2D. These figures identify Planning Areas that overlay biological resource areas to analyze the impacts that may occur from implementation of the 2007 LRDP. Future growth anticipated in developed or urbanized portions of the campus is not depicted on Figures 4.3-2A through 4.3-2D as there would be no direct biological resource impacts. Subsequent project-specific environmental review pursuant to CEQA will be conducted for future projects proposed under the 2007 LRDP to ensure full analysis and disclosure of project impacts at the time the design details are available.

4.3.3.1 ISSUE 1 – CANDIDATE, SENSITIVE, OR SPECIAL STATUS PLANT SPECIES

Biological Resources Issue 1 Summary

Would implementation of the 2007 LRDP result in a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special status species?

Impact: Implementation of the 2007 LRDP could result in indirect impacts to existing or potentially occurring candidate, sensitive, or special status plant species within the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM (Bio-1).

Mitigation: Implement construction and post-construction measures if a biological survey identifies sensitive plants adjacent to construction sites (Bio-1A).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2007 LRDP may have a significant adverse impact if it would result in a substantial adverse effect, either directly or indirectly (through habitat modifications), on any plant species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.

Impact Analysis

Direct Impacts

Sensitive plant species observed or with the potential to occur in the Study Area are described in Section 4.3.1 above. Below is a discussion of direct impacts to these species from implementation of the 2007 LRDP.

Mesa brodiaea. This species was documented within the West Campus Sub-Area by Chambers Group in 1993. However, the classification of southern California populations of this plant as a distinct species was recently deemed invalid. Therefore, this element is no longer designated or considered a sensitive species. Moreover, the population previously identified within the West Campus Sub-Area is believed to have been removed by development. This plant has no legal status and does not require any consideration under CEQA.

Many-stemmed dudleya. This species, a CNPS List 1B species, which means that this plant species is rare, threatened, or endangered in California and elsewhere, is well documented within the UCI NCCP Reserve Area located on the western portion of the South Campus Sub-Area. A few isolated individuals have been observed within the developed portions of the Study Area. Based on the many years of focused botanical surveys conducted within the Study Area, it is considered unlikely that this species is present outside the documented sites. However, the possibility that many-stemmed dudleya could occur in association with the small patch of coastal sage scrub habitat in the East Campus–Southern Sub-Area cannot be entirely ruled out in the absence of focused surveys.

Any incidental take of this species would constitute a significant impact. However, this species is conditionally covered under the NCCP. Therefore, because UCI has set aside land within the subregional

NCCP Reserve System (including land that supports this species), any direct impacts to individuals found outside of the NCCP Reserve System would be less than significant, and mitigation would not be required for incidental take of individuals outside of the NCCP Reserve System.

Southern tarplant. Only one population of southern tarplant in the East Campus–Southern Sub-Area, east of Anteater Drive, was observed during the 2006 surveys. This species may occur elsewhere in the Study Area in isolated locations, but it has no legal protection and is not covered under the NCCP. This species is known to occur in large numbers within the local vicinity. Although the permanent loss of southern tarplants associated with future development in the Study Area would be considered adverse, it would not reduce regional populations to less than a self-sustaining level. Therefore, direct impacts to this species would be less than significant.

Palmer's grappling hook. This species has not been recorded to occur within the Study Area and there is only marginally suitable habitat in both East Campus Sub-Areas, the West Campus Sub-Area, and the SJFMR buffer zone. If present, impacts to remnant populations would be considered adverse, but would not reduce regional populations to less than a self-sustaining level. Therefore, any direct impacts to this species would be less than significant.

Indirect Impacts

The indirect impacts that could occur to sensitive plants due to 2007 LRDP implementation are described below. All of these impacts would be significant.

- Inadvertent construction activity outside of pre-approved disturbance limits could result in indirect impacts to sensitive plants. Such impacts would be of particular concern where sensitive habitat areas abut planned development areas.
- Water quality in riparian areas can be adversely affected by pollutants in runoff and sedimentation during construction. Decreased water quality may adversely affect sensitive plants in riparian areas.
- Fugitive dust from construction activities could disperse onto adjacent sensitive plants. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease.
- Non-native plants could colonize sites disturbed by construction and could potentially spread into adjacent native habitats. Many non-native plants common to the Orange County region are highly invasive and can displace sensitive plants in these habitats, reducing native species diversity.
- Edge effects occur when blocks of habitat are fragmented. These edges make it easier for non-native plant species to invade native habitats and displace sensitive plants in these habitats, reducing native species diversity.
- Increases in human activity adjacent to the UCI NCCP Reserve Area and the SJFMR could result in impacts to sensitive plants resulting in more fragmented habitat and formation of edges through the creation of unauthorized trails, as well as other impacts such as increased erosion. The increase in human activity would occur as campus development increases.

Impact Bio-1 Implementation of the 2007 LRDP could result in significant indirect impacts to existing or potentially occurring candidate, sensitive, or special status plant species within the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM.

Mitigation Measures

The following mitigation measures would reduce the indirect impacts to sensitive plants to a level of Less than Significant:

Bio-1A Prior to initiating on-site construction for future projects that implement the 2007 LRDP and involve land clearing, grading, or similar land development activities adjacent to designated habitat areas including the UCI NCCP Reserve Area, and San Joaquin Freshwater Marsh Reserve (SJFM), UCI shall retain a qualified biologist to conduct a sensitive plant survey of the respective areas within 150 feet of the approved limits of disturbance. If sensitive plant species are detected from the survey, then UCI shall approve contractor specifications that include measures to reduce indirect construction and post-construction impacts to the identified species, to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. A pre-construction meeting shall be held to ensure that construction crews are informed of the sensitive plants in the vicinity of the construction site. Prior to commencement of clearing or grading activities, a biologist (or other qualified person) shall supervise the installation of temporary construction fencing along the approved limits of disturbance to discourage errant intrusions into the identified sensitive plants by construction vehicles or personnel. All construction access and circulation shall be limited to designated construction zones. This fencing shall be removed upon completion of construction activities.

ii. Storm water treatment and erosion control measures or facilities shall be maintained in a manner that avoids the discharge of polluted runoff and erosion impacts to the identified sensitive plants. In areas that have been set aside as mitigation for project impacts or are known to support species listed as threatened or endangered, the work shall be overseen by a qualified biologist.

iii. Refer to mitigation measure Air-2B for dust control measures during construction.

iv. Staging areas for equipment and materials shall be located at least 50 feet from the identified sensitive plants. During and after construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, and other toxic substances shall be enforced.

v. Equipment to extinguish small brush fires (such as from trucks or other vehicles) shall be present on-site during all construction phases, along with personnel trained in the use of such equipment. Smoking shall be prohibited in construction areas adjacent to flammable vegetation.

vi. A biological monitor shall be present on-site on at least a weekly basis during rough grading to ensure that the fenced construction limits are not exceeded.

vii. Irrigation for project landscaping shall be minimized and controlled in areas adjacent to the identified sensitive plants through measures such as designing irrigation systems to match landscaping water needs, satellite-controlled timers, water management systems, and automatic flow reducers/shut-off valves that are triggered by a drop in water pressure from broken sprinkler heads or pipes. To the extent practicable, drainage from development areas shall be directed away the identified sensitive plants. If this is not feasible, then energy dissipation measures shall be installed at the drainage outlets in the vicinity of the identified sensitive plants to prevent erosive flow velocities.

viii. Invasive species shall not be used in landscaped areas in the immediate vicinity of the identified sensitive plants.

ix. Integrated Pest Management principles shall be implemented in landscaped and revegetation areas adjacent to the identified sensitive plants for chemical pesticides, herbicides and fertilizers, through alternative weed/pest control measures (e.g., hand removal) and proper application techniques (e.g., conformance to manufacturer specifications and legal requirements).

4.3.3.2 ISSUE 2 – CANDIDATE, SENSITIVE, OR SPECIAL STATUS ANIMAL SPECIES

Biological Resources Issue 2 Summary

Would implementation of the 2007 LRDP result in a substantial adverse effect, either directly or through habitat modifications, on any animal species identified as a candidate, sensitive, or special status species?

Impact: Implementation of the 2007 LRDP could result in direct impacts to the western burrowing owl, a California Species of Special Concern (Bio-2A); and indirect impacts to existing or potentially occurring candidate, sensitive, or special status wildlife species within the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM (Bio-2B).

Mitigation: Conduct pre-construction surveys for active burrowing owl burrows and a relocation program, if applicable (Bio-2A); and implement construction and post-construction measures if a biological survey identifies sensitive wildlife adjacent to construction sites (Bio-2B).

Significance Before Mitigation: Significant.

Significance After Mitigation: Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2007 LRDP may have a significant adverse impact if it would result in a substantial adverse effect, either directly or indirectly (through habitat modifications), on any animal species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.

Impact Analysis

Direct Impacts

Sensitive wildlife species observed or with the potential to occur in the Study Area are described in Section 4.3.1 above. Below is a discussion of direct impacts to these species from implementation of the 2007 LRDP.

Sensitive Reptiles. The sensitive reptile species listed in Table 4.3-2 all have a low potential to occur or are not likely to occur within the Study Area due to the relatively low habitat suitablility within the remaining undeveloped portions of the campus and the lack of connectivity with more suitable habitat in the vicinity. Therefore, any direct impacts to the sensitive reptile species listed in Table 4.3-2 would be less than significant.

Coastal California gnatcatcher. Only small, isolated patches of marginally suitable habitat for this species (chenopod [saltbush] scrub and coyote bush scrub) remain in the Study Area, and any impacts to

these areas would be addressed by UCI's continued participation in the NCCP. The coastal California gnatcatcher is a "covered" species in the NCCP. Any incidental take of this species outside of the UCI NCCP Reserve Area would be mitigated by the fact that UCI has set aside this land for inclusion in the subregional NCCP Reserve System. Furthermore, removal of the small, isolated patches of chenopod (saltbush) scrub and coyote bush scrub habitats would not substantially reduce the local population of California gnatcatchers to less than self-sustaining levels because these on-campus patches offer low to moderate habitat value as compared to the moderate to relatively high habitat value associated with more diverse stands of coastal sage scrub. Therefore, impacts to coastal California gnatcatcher would be less than significant.

Western burrowing owl. As discussed in Section 4.3.1.4 above, the Study Area contains a number of features that provide suitable burrowing owl habitat. No burrowing owls were observed during the 2006 field visit; however, burrowing owls have been recorded in both the East Campus Sub-Area and West Campus Sub-Area. Therefore, the potential for this species to nest within the Study Area cannot be completely ruled out. This species is not covered under the NCCP; therefore, any direct impacts to this species would be significant.

Other Sensitive and Nesting Birds. In addition to the sensitive birds listed above, the remaining sensitive and nesting birds listed in Table 4.3-2 are either present or have a high potential to occur in the Study Area. The sharp-shinned hawk, rufous-crowned sparrow, grasshopper sparrow, coastal cactus wren, northern harrier, and the California horned lark are covered under the NCCP. Cooper's hawk, Bell's sage sparrow, golden eagle, ferruginous hawk, Swainson's hawk, white-tailed kite, merlin and loggerhead shrike are not covered under the NCCP. For Bell's sage sparrow and loggerhead shrike, removal of the small, isolated patches of chenopod (saltbush) scrub and coyote bush scrub habitats would not substantially reduce the local population of these species to less than self-sustaining levels because these on-campus patches offer low to moderate habitat value as compared to the moderate to relatively high habitat value associated with more diverse stands of coastal sage scrub. For Cooper's hawk, golden eagle, ferruginous hawk, Swainson's hawk, white-tailed kite and merlin, trees with inactive nests can be removed outside the raptor breeding season (generally February through July) without causing a direct impact to these species. Therefore, any direct impacts to the sensitive and nesting birds listed in Table 4.3-2 (with the exception of western burrowing owl, as discussed above) would be less than significant.

Indirect Impacts

The indirect impacts that could occur to sensitive wildlife due to 2007 LRDP implementation are described below. All of these impacts would be significant.

- Inadvertent construction activity outside of pre-approved disturbance limits could result in indirect impacts to sensitive wildlife. Such impacts would be of particular concern where sensitive habitat areas abut planned development areas.
- If construction would occur during the raptor nesting season (generally February through July), any construction activity within 500 feet of an active raptor nest could disturb the adults causing them to abandon the nest, leading to nest failure and death of fledgling birds.
- Noise associated with construction activity could disturb foraging and breeding activities of sensitive wildlife within adjacent occupied habitat. To avoid the noise associated with construction activities, breeding birds and mammals may temporarily or permanently leave their territories, which could lead to reduced reproductive success and increased mortality.

- Water quality in riparian areas can be adversely affected by pollutants in runoff and sedimentation during construction. Decreased water quality may adversely affect sensitive aquatic and terrestrial wildlife that depend upon these resources.
- Fugitive dust from construction activities could disperse onto adjacent native vegetation. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. In turn, this could affect sensitive wildlife dependent on these native plants.
- Construction night lighting adjacent to native habitats can provide nocturnal predators with an unnatural advantage over their prey. This could cause an increased loss in sensitive wildlife.
- Edge effects occur when blocks of habitat are fragmented. These edges make it easier for native and non-native predators to access prey that may have otherwise been protected within large, contiguous blocks of habitat.
- Increases in human activity adjacent to the UCI NCCP Reserve Area and the SJFMR could result in more fragmented habitat and formation of edges through the creation of unauthorized trails, as well as other impacts such as increased predation of native species by domesticated animals. The increase in human activity would occur as campus development increases.
- Increases in wildlife roadkill could occur from the increase in the number of vehicles traveling on campus roads through and in the vicinity of natural habitat areas.
- Permanent night lighting adjacent to native habitats can provide nocturnal predators with an unnatural advantage over their prey. This could cause an increased loss in sensitive wildlife.

Impact Bio-2A Implementation of the 2007 LRDP could result in significant direct impacts to the western burrowing owl, a California Species of Special Concern.

Impact Bio-2B Implementation of the 2007 LRDP could result in significant indirect impacts to existing or potentially occurring candidate, sensitive, or special status wildlife species within the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM.

Mitigation Measures

The following mitigation measure would reduce direct impacts to the western burrowing owl to a level of Less than Significant:

Bio-2A Prior to initiating on-site construction for future projects in the east campus and west campus that implement the 2007 LRDP and that involve land clearing, grading, or similar land development activities adjacent to suitable habitat for the western burrowing owl (i.e., large open areas of non-native grassland, ruderal (weedy) areas, and scrub habitat), UCI shall retain a qualified biologist to conduct a burrowing owl survey of the respective habitat areas within 300 feet of the approved limits of disturbance. If occupied burrows are detected from the survey, then they shall not be disturbed during the nesting season (February 1 through August 31) until the biologist verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If owls must be moved away from the disturbance area, passive relocation is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows. When destruction of occupied burrows is unavoidable, relocation burrows shall be created (by

installing artificial burrows) at a ratio of 1:1 in suitable foraging habitat. The biologist shall document all findings and results in a report submitted to UCI.

The following mitigation measures would reduce indirect impacts to sensitive wildlife to a level of Less than Significant:

Bio-2B Prior to initiating on-site construction for future projects that implement the 2007 LRDP and that involve land clearing, grading, or similar land development activities adjacent to habitat areas identified as suitable for sensitive wildlife species, UCI shall retain a qualified biologist to conduct a sensitive wildlife survey of the respective areas within 150 feet of the approved limits of disturbance. If sensitive wildlife species are detected from the survey, then UCI shall approve contractor specifications that include measures to reduce indirect construction and post-construction impacts to the identified species, to the maximum extent feasible. These measures shall include, but are not limited to, the following:

i. A pre-construction meeting shall be held to ensure that construction crews are informed of the sensitive wildlife and habitats in the vicinity of the construction site. Prior to commencement of clearing or grading activities, a biologist (or other qualified person) shall supervise the installation of temporary construction fencing along the approved limits of disturbance to discourage errant intrusions into the identified sensitive wildlife habitats by construction vehicles or personnel. All construction access and circulation shall be limited to designated construction zones. This fencing shall be removed upon completion of construction activities.

ii. If suitable habitat for raptors or protected bird species is present and raptors or protected bird species are observed in the vicinity, the pre-construction surveys for active nests shall be performed within 30 calendar days prior to commencement of clearing or grading activities during the breeding season for raptors and protected bird species (generally February 1 through August 31) at locations where suitable nesting habitat exists within 500 feet of the approved limits of disturbance. Construction activities within 500 feet of active raptor nests (300 feet for protected bird species) shall be monitored by the biologist and modified as directed by the biologist until the biologist determines that the nest is no longer active. Construction activity may encroach into the 500-foot buffer area only at the discretion of the biologist.

iii. Refer to mitigation measure Noi-2A for noise abatement measures during construction.

iv. Storm water treatment and erosion control measures or facilities shall be maintained in a manner that avoids the discharge of polluted runoff and erosion impacts to the identified sensitive plants.

v. Refer to mitigation measure Air-2B for dust control measures during construction.

vi. Night lighting shall be avoided during construction. Any necessary lighting shall be shielded to minimize temporary lighting of the surrounding habitat.

vii. A biological monitor shall be present on-site on at least a weekly basis during rough grading to ensure that the fenced construction limits are not exceeded.

viii. Permanent lighting adjacent to natural habitat areas shall be selectively placed, shielded, and directed to minimize impacts to sensitive wildlife.

4.3.3.3 ISSUE 3 – RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES

Biological Resources Issue 3 Summary

Would implementation of the 2007 LRDP have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS?

Impact: Implementation of the 2007 LRDP would result in direct impacts to mule fat scrub and herbaceous wetland (Bio-3A); and indirect impacts to a variety of sensitive vegetation communities within dedicated open space areas in the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM (Bio-3B).

Mitigation: Survey sites (Bio-3A); avoidance and minimization during project design (Bio-3B); on-campus and/or off-campus habitat creation, restoration, and/or enhancement (Bio-3C); wetland buffers (Bio-3D); and implement construction and post-construction measures if a biological survey identifies sensitive habitats adjacent to construction sites (Bio-1A).

Significance Before Mitigation: Significant

Significance After Mitigation: Less than significant

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2007 LRDP may have a significant adverse impact if it would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS. Impacts to coastal sage scrub and other NCCP-covered habitats that occur outside of the UCI NCCP Reserve Area are not considered significant due to UCI's continued participation in the NCCP (refer to Section 4.3.2.3 above). Impacts to greater than 0.1 acre of sensitive vegetation communities not covered in the NCCP (e.g., riparian habitats, wetlands, vernal pools) are considered significant.

Impact Analysis

Direct Impacts

Direct impacts would be the result of construction activities associated with project implementation,, infrastructure development, and other development activities associated with implementation of the 2007 LRDP. Natural vegetation communities that occur in the Study Area are described in Section 4.3.1 above and mapped in Figures 4.3-2A through 4.3-2D. Implementation of the 2007 LRDP would result in development of approximately 160 acres of previously undeveloped land. The vast majority of the impacted vegetation would consist of non-native grasslands (including the mapped grasslands dominated by scrub, deerweed and oak/sycamore restoration) which are not considered sensitive vegetation communities. Impacts to sensitive species that use or have the potential to occur in the non-native grasslands on campus would be significant, and these impacts are addressed in Sections 4.3.3.1 and 4.3.3.2 above. However, impacts to the non-native grassland vegetation communities, as well as to other disturbed habitats and disturbed areas, shown in Figure 4.3-2 would be less than significant.

Small remnants of the following sensitive vegetation communities would also be directly impacted by implementation of the 2007 LRDP: chenopod scrub, coyote brush scrub, coastal sage scrub, mule fat scrub, and herbaceous wetland (alkali meadow). Due to UCI's continued participation in the NCCP, direct impacts to chenopod scrub, coyote brush scrub, and coastal sage scrub outside the UCI NCCP Reserve Area would be less than significant, as these sensitive vegetation communities are covered by the

NCCP. Mule fat scrub and herbaceous wetland are not covered by the NCCP; therefore, direct impacts to these sensitive vegetation communities would be significant.

Within certain areas of non-native grassland, there is a possibility that native grasses may become reestablished over time if left undisturbed. Since the range of native grassland has been significantly reduced in the state, this vegetation community is typically considered a sensitive resource in southern California. Any direct impact to native grassland, if reestablished on-campus, would be significant; however, such impacts are considered speculative at this time.

Indirect Impacts

The indirect impacts that could occur to sensitive vegetation communities due to 2007 LRDP implementation are described below. All of these impacts would be significant.

- Inadvertent construction activity outside of pre-approved disturbance limits could result in indirect impacts to sensitive vegetation communities that abut planned development areas.
- Water quality in sensitive riparian areas can be adversely affected by pollutants in runoff and sedimentation during construction.
- Fugitive dust from construction activities could disperse onto adjacent sensitive vegetation communities. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. In turn, this could affect animals dependent on these plants.
- Non-native plants could colonize sites disturbed by construction and could potentially spread into adjacent sensitive habitats. Many non-native plants common to the Orange County region are highly invasive and can displace sensitive vegetation communities reducing native species diversity.
- Edge effects occur when blocks of habitat are fragmented. These edges make it easier for non-native plant species to invade sensitive habitats.
- Increases in human activity adjacent to the UCI NCCP Reserve Area and the SJFMR could result in degradation of sensitive vegetation communities resulting in more fragmented habitat and formation of edges through the creation of unauthorized trails, as well as other impacts such as increased erosion. The increase in human activity would occur as campus development increases.

Impact Bio-3A Implementation of the 2007 LRDP would result in significant direct impacts to the following sensitive vegetation communities: mule fat scrub and herbaceous wetland.

Impact Bio-3B Implementation of the 2007 LRDP could result in significant indirect impacts to a variety of sensitive vegetation communities within dedicated open space areas in the campus Planning Areas or in adjacent areas within the UCI NCCP Reserve Area and the SJFM.

Mitigation Measures

As stated above, continued UCI participation in the NCCP would mitigate impacts to patches of coastal sage scrub and other NCCP-covered habitats outside of the UCI NCCP Reserve Area to a level of Less than Significant. The following mitigation measures would reduce the direct impacts to sensitive vegetation communities not covered in the NCCP, mule fat scrub and herbaceous wetland habitats, to a level of Less than Significant:

Bio-3A For future projects that implement the 2007 LRDP and are located on sites containing mule fat scrub or herbaceous wetland habitats, UCI shall retain a qualified biologist to conduct a survey of these habitats. If project-level surveys determine that mule fat scrub riparian habitat and/or herbaceous wetland habitat may be impacted by the project, then mitigation measures Bio-3B and 3C shall be implemented.

Bio-3B For future projects that implement the 2007 LRDP and could impact mule fat scrub riparian habitat and/or herbaceous wetland habitats as determined by mitigation measure Bio-3A, design features shall be considered to avoid and/or minimize direct impacts to these sensitive vegetation communities, to the extent feasible. If it is not feasible to avoid these impacts, then mitigation measure Bio-3C shall be implemented.

Bio-3C For future projects that implement the 2007 LRDP and would impact mule fat scrub riparian habitat and/or herbaceous wetland habitat, if these areas contain jurisdictional wetlands, all necessary regulatory permits shall be obtained and impacts shall be mitigated through implementation of Mitigation Measure Bio 4A. If no jurisdictional wetlands are present, impacts to mule fat scrub riparian habitat and/or herbaceous wetland habitat of greater than 0.1 acre shall be mitigated at ratios of 1:1 through habitat creation, restoration, or enhancement. Mitigation shall occur within dedicated campus open space areas where feasible, or at off-campus locations if on-site mitigation is not feasible. A qualified biologist shall assist in preparation, implementation, and monitoring of a habitat restoration plan, identifying the site preparation and installation requirements, establishment, monitoring, and long term management of the mitigation areas. Impacts to less than 0.1 acre of these habitat types, where no jurisdictional wetlands are present, would not require mitigation.

Bio-3D As early as possible in the planning process for future projects that implement the 2007 LRDP and are adjacent to designated campus open space areas containing riparian or wetland vegetation, UCI shall ensure that the projects include a 50-foot setback from the flow line, to the extent practicable.

Implementation of mitigation measure Bio-1A would reduce the indirect impacts to sensitive vegetation communities to a level of Less than Significant.

4.3.3.4 ISSUE 4 – WETLANDS

Biological Resources Issue 4 Summary

Would implementation of the 2007 LRDP have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act?

Impact: Implementation of the 2007 LRDP would result in direct and indirect impacts to federal protected wetlands and other areas that could be subject to USACE, CDFG, or RWQCB jurisdiction (Bio-4).	**Mitigation:** Wetland delineation (Bio-4A) and implementation of mitigation measures as applicable (Bio-3B through 3D); and implement construction and post-construction measures if a biological survey identifies sensitive habitats adjacent to construction sites (Bio-1A).
Significance Before Mitigation: Significant.	**Significance After Mitigation:** Less than significant.

Standards of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2007 LRDP may have a significant adverse impact if it would have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. Impacts to greater than 0.1 acre of wetlands are considered significant.

Impact Analysis

Portions of two natural drainage areas that could be subject to USACE, CDFG, or RWQCB jurisdiction are located within future development areas in the West Campus Sub-Area. In addition, future development areas in the East Campus–Southern Sub-Area would include portions of a seasonal drainage course that contains scattered patches of mule fat scrub, and a remnant swale extending west of Anteater Road that contains alkali meadow. Jurisdictional delineations would be required for future projects that would directly impact jurisdictional areas. Direct impacts to jurisdictional areas would require permits from the USACE, as well as the CDFG and RWQCB. In addition to direct impacts, all future development on campus that would be adjacent to these areas or to the SJFMR could result in indirect impacts to jurisdictional resources. Indirect impacts to jurisdictional areas would be the same as described in Sections 4.3.3.1 (Issue 1) and 4.3.3.3 (Issue 2) for indirect impacts to sensitive plants and vegetation communities, respectively. Therefore, direct and indirect impacts to jurisdictional areas on campus would be significant.

Impact Bio-4 Implementation of the 2007 LRDP would result in significant direct and indirect impacts to federally protected wetlands and other areas that could be subject to USACE, CDFG, or RWQCB jurisdiction.

Mitigation Measures

The following mitigation measure would reduce direct impacts to federally protected wetlands and other jurisdictional areas to a level of Less than Significant.

Bio-4A For future projects that implement the 2007 LRDP and are located on sites containing (or within 50 feet of) wetlands or other jurisdictional areas, or on sites containing (or within 25 feet of) a natural drainage course, UCI shall retain a qualified biologist to prepare a jurisdictional delineation. The jurisdictional delineation shall identify the presence of any

areas that are subject to USACE, CDFG, or RWQCB jurisdiction, and the potential for the project to adversely affect these jurisdictional areas. If there is potential for the project to adversely affect jurisdictional areas all necessary regulatory permits shall be obtained and impacts shall be avoided or mitigated through implementation of mitigation measures established through consultation with regulatory agencies and as specified in the final regulatory permits and conditions.

Implementation of mitigation measure Bio-1A would reduce the indirect impacts to jurisdictional areas to a level of Less than Significant.

4.3.3.5 ISSUE 5 — WILDLIFE MOVEMENT CORRIDORS

Biological Resources Issue 5 Summary

Would the implementation of the 2007 LRDP interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory corridors, or impede the uses of native wildlife nursery sites?

Impact: Implementation of the 2007 LRDP would not interfere with wildlife movement corridors or impede movement by native species.

Mitigation: No mitigation required.

Significance Before Mitigation: None.

Significance After Mitigation: Not applicable.

Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, implementation of the 2007 LRDP may have a significant adverse impact if it would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory corridors, or impede the uses of native wildlife nursery sites.

Impact Analysis

Habitat linkages, or wildlife corridors, are areas of natural habitat that function to join two larger areas of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects).

UCI in cooperation with other regional participating landowners has designated large contiguous natural open space areas on campus as part of the subregional NCCP Reserve System. Consistent with the terms of the 75-year NCCP IA, UCI conservation and open space areas are managed for the preservation of habitat resources, with connection to adjacent habitat areas off campus. The UCI NCCP Reserve Area provides habitat for a number of plant and animal species and serve as a network for wildlife corridors that connect to off-site areas of the subregional NCCP Reserve System. Land disturbance and development is prohibited within the UCI NCCP Reserve Area.

As shown in Figures 4.2-2A through 4.3-2D, the LRDP Open Space Element identifies designated open space corridors between the Planning Areas, including the UCI NCCP Reserve Area. These corridors

facilitate wildlife movement between the campus and the SJFWM. However, because the campus is surrounded by the SR-73 toll road to the west and mixed use and residential areas to the north, east, and south, there are limited wildlife movement corridors in the vicinity of the campus. Drainage culverts under the SR-73 Toll Road were designed to support some wildlife movement between the Bonita Canyon Wetland areas, San Joaquin Hills and the UCI NCCP Reserve System. In addition, there is movement of bird species between off-campus habitat areas south and west of SR-73. These corridors would not be impacted by campus development. Implementation of the 2007 LRDP would not interfere with wildlife corridors or impede movement by native species.

NCCP/HCP Boundary Impacts

UCI NCCP Reserve Area boundaries include land areas on the closed landfill site in the North Campus. The LRDP identifies future development of Campus Support Services on the edge of the North Campus closed landfill site adjacent to MacArthur Boulevard and Fairchild Road. A project proposing development in this area would require a NCCP Boundary Adjustment consistent with the terms of the NCCP IA to address any areas where there is an overlap between project boundaries and NCCP boundaries. Prior to the approval of any development project on or adjacent to the North Campus closed landfill site, UCI would conduct a site analysis, establish proposed project boundaries, confirm any overlap with existing NCCP Reserve boundaries, and process any required NCCP Boundary Adjustment or amendment in consultation with the USFWS, CDFG and NROC. Consistent with the terms of the NCCP IA, any Boundary Adjustment must result in no negative impact to the UCI NCCP Reserve Area including no net loss in acreage or loss of habitat value. Candidate land areas for replacement acreage include existing habitat and open space areas on the UCI main campus. Conformance to these IA requirements would result in no impacts resulting from a NCCP Boundary Adjustment. If a Boundary Adjustment is not approved, only areas outside the UCI NCCP Reserve Area would be used for Campus Support Services. Additional information on the NCCP is available in Section 4.3.2.3, Regional Regulatory Framework.

Mitigation Measures

Because implementation of the 2007 LRDP would not interfere with wildlife corridors or impede movement by native species, no mitigation measures are required.

4.3.4 CUMULATIVE IMPACTS AND MITIGATION

Biological Resources Cumulative Issue Summary

Would implementation of the 2007 LRDP have a cumulatively considerable contribution to a cumulative biological resources impact considering past, present, and probable future projects?

Cumulative Impact	Significance	LRDP Contribution
Candidate, Sensitive, or Special Status Plant Species: Regional loss of sensitive plant species.		Not cumulatively considerable with implementation of mitigation measure Bio-1A.
Candidate, Sensitive, or Special Status Animal Species: Regional loss of sensitive animal species.	Significant.	Not cumulatively considerable with implementation of mitigation measures Bio-1A, Bio-2A, and Bio-2B.
Riparian Habitat and Other Sensitive Natural Communities: Regional loss of sensitive habitats.	Significant.	Not cumulatively considerable with implementation of mitigation measures Bio-1A, Bio-3A, Bio-3B, Bio-3C, and Bio-3D.
Wetlands: Regional loss of wetlands.	Significant.	Not cumulatively considerable with implementation of mitigation measure Bio-4A.
Wildlife Movement Corridors: Because the project would not impact wildlife corridors, there is no analysis of the cumulative impact.	N/A	N/A

4.3.4.1 CANDIDATE, SENSITIVE, OR SPECIAL STATUS PLANT SPECIES

The geographic context for the analysis of cumulative impacts to sensitive plant species associated with the 2007 LRDP implementation (see Table 4.3-1) includes (1) the subregional NCCP Reserve System for the sensitive plant species "covered" under the NCCP/HCP for the County of Orange Central and Coastal sub-region and (2) the Orange County "region" for the sensitive plant species that are not covered under the NCCP. The plant species listed in Table 4.3-1 are considered sensitive in part because they are subject to significant cumulative impacts on a regional basis.

As discussed in Section 4.3.2.3 above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to certain sensitive biological resources within the County of Orange Central and Coastal sub-region. Therefore, any impact to biological resources, including sensitive plant species, within the UCI NCCP Reserve Area would result in a cumulatively considerable contribution to a significant cumulative impact. The 2007 LRDP Planning Areas are designed to avoid direct impacts to the UCI NCCP Reserve Area. In addition, implementation of mitigation measure Bio-1A would avoid indirect impacts to any sensitive plant species protected by the UCI NCCP Reserve Area from construction activities and development associated with the 2007 LRDP. Therefore, with implementation of mitigation measure Bio-1A, the 2007 LRDP would not contribute to a cumulatively considerable impact to any sensitive plant species protected by the UCI NCCP Reserve Area.

As stated above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to covered species within the County of Orange Central and Coastal sub-region. Due

to UCI's continued participation in the NCCP, any impact to sensitive plant species covered by the NCCP, but located outside the UCI NCCP Reserve Area, would not result in a cumulatively considerable contribution to a significant cumulative impact. Therefore, impacts to the NCCP-covered plant species many-stemmed dudleya (see Table 4.3-1) due to implementation of the 2007 LRDP would not be cumulatively considerable. Implementation of the 2007 LRDP would impact two sensitive plant species that are located outside the UCI NCCP Reserve Area, but are not covered by the NCCP: southern tarplant and Palmer's grappling hook (see Table 4.3-1). As evaluated in Section 4.3.3.1 above, because these species occur in large numbers within the local vicinity, the permanent loss of plants associated with the 2007 LRDP Planning Areas would not reduce regional populations to less than a self-sustaining level. Therefore, the 2007 LRDP would not result in a cumulatively considerable contribution to a significant cumulative impact to southern tarplant and Palmer's grappling hook.

4.3.4.2 CANDIDATE, SENSITIVE, OR SPECIAL STATUS ANIMAL SPECIES

The geographic context for the analysis of cumulative impacts to sensitive animal species associated with the 2007 LRDP implementation (see Table 4.3-2) includes: (1) the subregional NCCP Reserve System for the sensitive animal species "covered" under the NCCP/HCP for the County of Orange Central and Coastal sub-region; and (2) the Orange County "region" for the sensitive animal species that are not covered under the NCCP. The animal species listed in Table 4.3-2 are considered sensitive in part because they are subject to significant cumulative impacts on a regional basis.

As discussed in Section 4.3.2.3 above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to certain sensitive biological resources within the County of Orange Central and Coastal sub-region. Therefore, any impact to biological resources, including sensitive animal species, within the UCI NCCP Reserve Area would result in a cumulatively considerable contribution to a significant cumulative impact. The 2007 LRDP Planning Areas are designed to avoid direct impacts to the UCI NCCP Reserve Area. In addition, implementation of mitigation measure Bio-2B would avoid indirect impacts to any sensitive animal species protected by the UCI NCCP Reserve Area from construction activities and development associated with the 2007 LRDP. Therefore, with implementation of mitigation measure Bio-2B, the 2007 LRDP would not contribute to a cumulatively considerable impact to any sensitive animal species protected by the UCI NCCP Reserve Area.

As stated above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to covered species within the County of Orange Central and Coastal sub-region. Due to UCI's continued participation in the NCCP, any impact to sensitive animal species covered by the NCCP, but located outside the UCI NCCP Reserve Area, would not result in a cumulatively considerable contribution to a significant cumulative impact. Therefore, impacts to the NCCP-covered animal species listed in Table 4.3-2 due to implementation of the 2007 LRDP would not be cumulatively considerable.

Implementation of the 2007 LRDP would impact 11 sensitive animal species (i.e., monarch butterfly, coast patch-nosed snake, eight sensitive bird species, and San Diego black-tailed jackrabbit) that are located outside the UCI NCCP Reserve Area, but are not covered by the NCCP (see Table 4.3-2). The monarch butterfly and San Diego black-tailed jackrabbit occur in large numbers within the local vicinity; therefore, impacts to these species would not reduce their regional populations to less than a self-sustaining level. As evaluated in Section 4.3.3.2 above, the coast patch-nosed snake has a low potential to occur within the 2007 LRDP Planning Areas due to the relatively low habitat suitablility and the lack of connectivity with more suitable habitat in the vicinity. With regard to sensitive birds, as evaluated in Section 4.3.3.2 above, any trees with inactive raptor nests can be removed outside the breeding season and the removal of small, isolated patches of chenopod (saltbush) scrub and coyote bush scrub habitats

within the 2007 LRDP Planning Areas would not reduce the regional populations of Bell's sage sparrow and loggerhead shrike to less than self-sustaining levels. Therefore, the 2007 LRDP would not result in a cumulatively considerable contribution to a significant cumulative impact to these sensitive animal species that are not covered by the NCCP.

However, the western burrowing owl (which is also not covered by the NCCP) could be impacted if this species is determined to be present within any of the 2007 LRDP Planning Areas, resulting in a cumulatively considerable contribution to a significant cumulative impact. This significant cumulative impact would be mitigated via implementation of mitigation measure Bio-2A.

4.3.4.3 RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES

The geographic context for the analysis of cumulative impacts to the following riparian habitats associated with the 2007 LRDP implementation includes the Orange County "region": mule fat scrub and herbaceous wetland (alkali meadow). The geographic context for the analysis of cumulative impacts to the following sensitive natural communities associated with the 2007 LRDP implementation includes the subregional NCCP Reserve System: chenopod scrub, coyote brush scrub, and coastal sage scrub. The habitats listed above are considered sensitive in part because they are subject to significant cumulative impacts.

As discussed in Section 4.3.3.3 above, mule fat scrub and herbaceous wetland (alkali meadow) are not "covered" habitats under the NCCP/HCP for the County of Orange Central and Coastal sub-region. Therefore, direct impacts to these sensitive riparian habitats due to implementation of the 2007 LRDP would result in a cumulatively considerable contribution to a significant cumulative impact. This significant cumulative impact would be mitigated via implementation of mitigation measures Bio-3A through Bio-3C and Bio-4A.

As discussed in Section 4.3.3.3 above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to certain "covered" habitats within the County of Orange Central and Coastal sub-region, including chenopod scrub, coyote brush scrub, and coastal sage scrub. Due to UCI's continued participation in the NCCP, any impact to these sensitive habitats covered by the NCCP, but located outside the UCI NCCP Reserve Area, would not result in a cumulatively considerable contribution to a significant cumulative impact. Therefore, impacts to the NCCP-covered chenopod scrub, coyote brush scrub, and coastal sage scrub habitats due to implementation of the 2007 LRDP would not be cumulatively considerable.

As discussed in Section 4.3.2.3 above, the subregional NCCP Reserve System was established to mitigate significant cumulative impacts to certain sensitive biological resources within the County of Orange Central and Coastal sub-region. Therefore, any impact to biological resources, including sensitive habitats, within the UCI NCCP Reserve Area would result in a cumulatively considerable contribution to a significant cumulative impact. The 2007 LRDP Planning Areas are designed to avoid direct impacts to the UCI NCCP Reserve Area. In addition, implementation of mitigation measure Bio-1A would avoid indirect impacts to any sensitive habitats protected by the UCI NCCP Reserve Area from construction activities and development associated with the 2007 LRDP. Therefore, with implementation of mitigation measures Bio-1A and Bio-3D, the 2007 LRDP would not contribute to a cumulatively considerable impact to any sensitive vegetation communities protected by the UCI NCCP Reserve Area.

4.3.4.4 WETLANDS

Please refer to the discussion of riparian habitats (i.e., mulefat scrub and herbaceous wetland) in Section 4.3.4.3 above.

4.3.4.5 WILDLIFE MOVEMENT CORRIDORS

Section 4.3.3.5 above concluded that the 2007 LRDP would not interfere with wildlife corridors or impede movement by native species. Therefore, this issue is not addressed in this cumulative analysis pursuant to Section 15130(a)(1) of the CEQA Guidelines, which states that "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."

4.3.5 REFERENCES

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