BonTerra PSOMAS

Baseline Biological Surveys Technical Report for the Aliso Canyon Property

Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California

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1.0 INTRODUCTION

This Biological Technical Report has been prepared to support California Environmental Quality Act (CEQA) documentation and resource management planning for the Measure M2 Freeway Environmental Mitigation Program (EMP) Acquisition Properties Evaluation Project. The EMP project originally included five separate Orange County Transportation Authority (OCTA) acquisition properties (Hayashi, Ferber Ranch, O'Neill Oaks, Hafen, and Saddle Creek South). Two additional acquisitions were made: the MacPherson property, located in unincorporated Orange County, and the Aliso Canyon property, located in the City of Laguna Beach, California. This report is limited to the Aliso Canyon property; separate reports were previously prepared for the other properties.

This information has been reported in accordance with accepted scientific and technical standards that are consistent with the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW).

1.1 BACKGROUND

1.1.1 Project Description

In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax in the County from April 2011 to March 2041. Renewed Measure M (or Measure M2) will continue to provide funding for transportation projects and programs in the County, including select freeway and roadway improvements, transit programs, and two environmental programs.

The OCTA's M2 Freeway EMP provides comprehensive mitigation measures to offset the environmental impacts of the 13 Measure M2-funded freeway projects. The EMP is spearheaded by the Environmental Oversight Committee (EOC), which is made up of OCTA Board members and representatives from the California Department of Transportation (Caltrans), resource agencies, environmental groups, and the public.

Instead of mitigating the natural resource impacts of Measure M2 freeway projects on a project-by-project basis, the EMP presents a comprehensive mitigation approach that not only replaces habitat, but also provides the opportunity to improve the overall functions and values of sensitive biological resources throughout Orange County. Working collaboratively with the resource and regulatory agencies, the OCTA ultimately decided that creation of a Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) and a programmatic wetland permitting program would best serve as the EMP's main implementation tools.

As one of the key components of the conservation strategy for the NCCP/HCP and wetlands permitting, the OCTA has undertaken a systematic approach to identifying and acquiring habitat preserves to meet the goals and objectives of the NCCP/HCP and wetland mitigation programs. A formal conservation assessment was completed by Conservation Biology Institute (CBI) for Orange County, which resulted in the identification of Priority Conservation Areas (PCAs); these included candidate parcels and properties that could be considered for habitat and wildlife conservation purposes. The OCTA solicited willing sellers and evaluated each property using standardized criteria and a prioritization process to rank properties for purchase. Properties for acquisition were selected based on conservation values, policy considerations, mitigation credits, mitigation plan review, and adoption and real estate value/economics.

The Aliso Canyon property was selected and acquired on April 22, 2015. Baseline biological surveys were completed in 2015 with the following purposes:

- A general biological assessment was completed to establish the baseline biological value of the property and to identify any biological threats that have the potential to reduce the long-term biological value. In addition, information on the overall condition of the property will guide the development of a site-specific Resource Management Plan (RMP).
- Comprehensive surveys of vegetation types were completed to provide detailed knowledge of the natural habitat and a quantification of habitat type credits on the property.
- Focused surveys for OCTA M2 NCCP/HCP Covered Species and their habitats were completed to establish a baseline of the property's status and conditions. Results of future biological monitoring will be compared to the baseline results to evaluate habitat and Covered Species trends.

1.2 PROJECT LOCATION AND PHYSICAL ENVIRONMENTAL SETTING

1.2.1 Property Location and Physical Condition

The approximate 150-acre Aliso Canyon property is located east of Pacific Coast Highway in the City of Laguna Beach in Orange County (Exhibit 1). The northwestern edge of the property is adjacent to residential development along Barracuda Way and Loretta Drive, while the southeastern edge of the property is adjacent to the Aliso Creek Inn and Golf Course. The northern and eastern boundaries abut open space in Aliso and Wood Canyons Wilderness Park. The property is located on the U.S. Geological Survey's (USGS') Laguna Beach and San Juan Capistrano 7.5-minute topographic quadrangle maps in Sections 31 and 32 of Township 7 South, Range 8 West (Exhibit 2).

Topography on the property is hilly, with the main ridgeline running through the middle of the property and canyons draining steep slopes to either side. Elevations range from approximately 40 feet above mean sea level (msl) at the southeastern edge of the property to 840 feet above msl at the northwestern edge. Two unnamed blueline streams occur in the northwestern portion of the property, with smaller drainage features present in the canyon bottoms. Soil types mapped on the property consist of Alo clay (25 to 30 and 30 to 50 percent slopes), Capistrano sandy loam (2 to 9 percent slopes), Chesterton loamy sand (2 to 15 and 15 to 30 percent slopes), Cieneba sandy loam (15 to 30 and 30 to 75 percent slopes, eroded), Cieneba-Rock outcrop complex (30 to 75 percent slopes), Soper loam (30 to 50 percent slopes), and Soper gravelly loam (15 to 30 and 30 to 50 percent slopes) (Exhibit 3).

1.2.2 Regional Environmental Setting

The Aliso Canyon property is located in the steep, coastal hills of South Laguna (Exhibit 4). It is the most coastal of the acquisition properties. The property is part of the "Laguna Greenbelt", which encompasses 10,000 acres of largely undeveloped land surrounding the City. The City of Laguna Beach considers Hobo Canyon, particularly its surrounding ridges, including the Moulton Meadows marine terrace and the continuous south-facing slope of Aliso Canyon down to the golf course, to be the single-most significant habitat block in Laguna (Laguna Beach 2006).

Predominant topographic features of the area are Hobo Canyon and its flanking ridges and the south-facing slopes above Aliso Canyon, which is located just east of the property. These canyons are part of the 498-square-mile Aliso-San Onofre Watershed. The upper reaches of

Aerial Source: Aerials Express 2009

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Project Location

Exhibit 1

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

1,000 500 0 1,000

Feet

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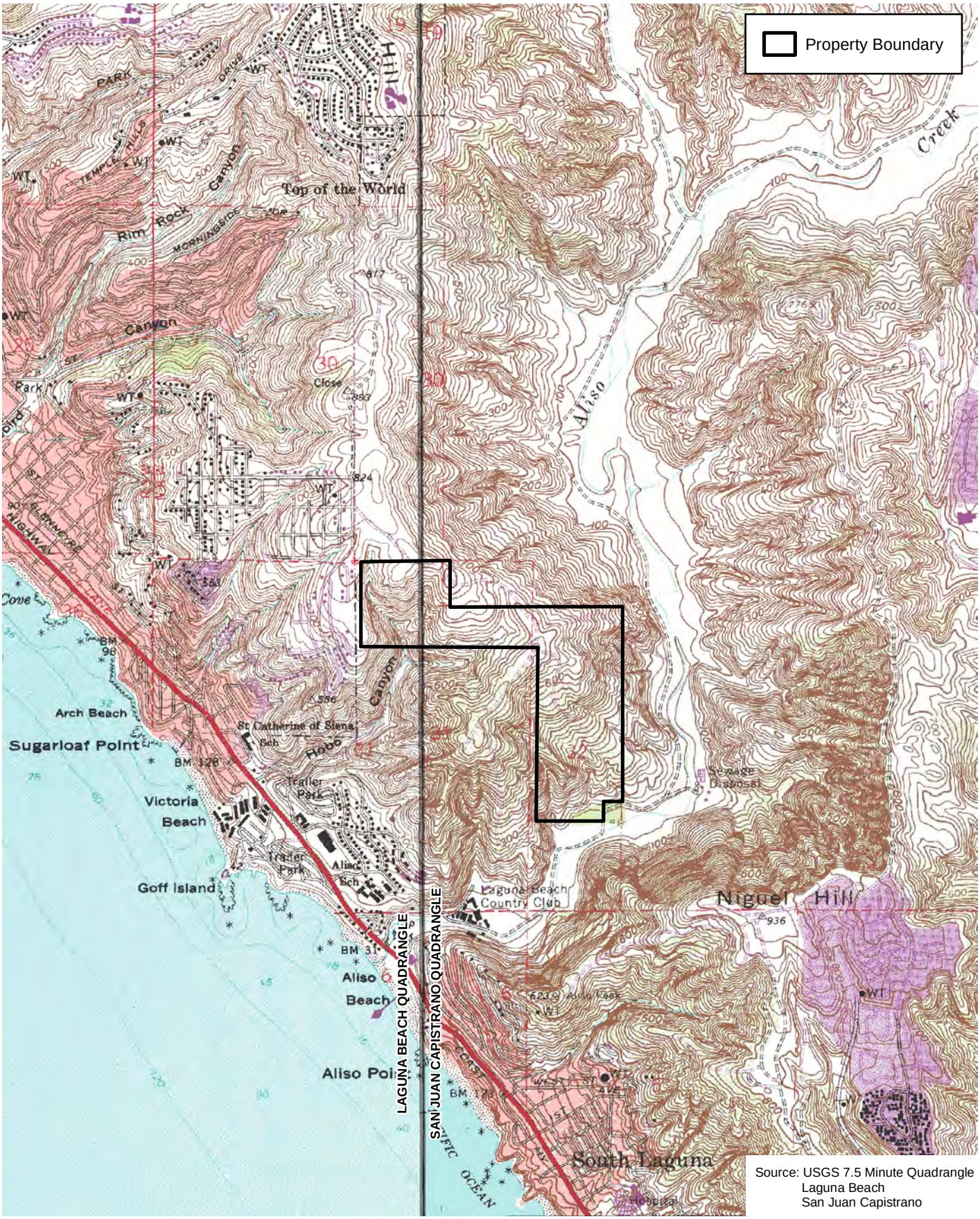

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USGS 7.5-Minute Quadrangle

Exhibit 2

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

2,000 1,000 0 2,000

Feet

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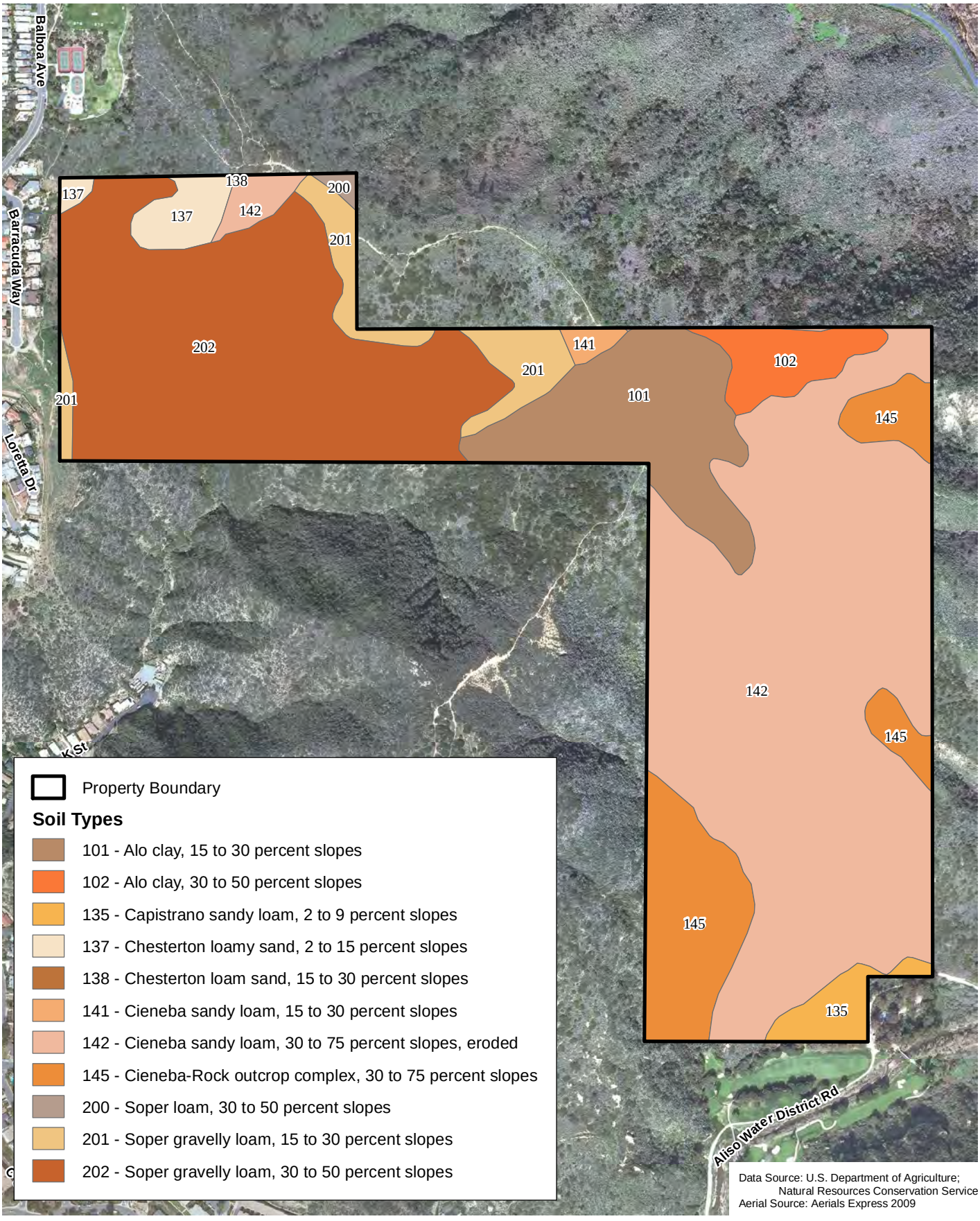

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Soil Types

Exhibit 3

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

600 300 0 600

Feet

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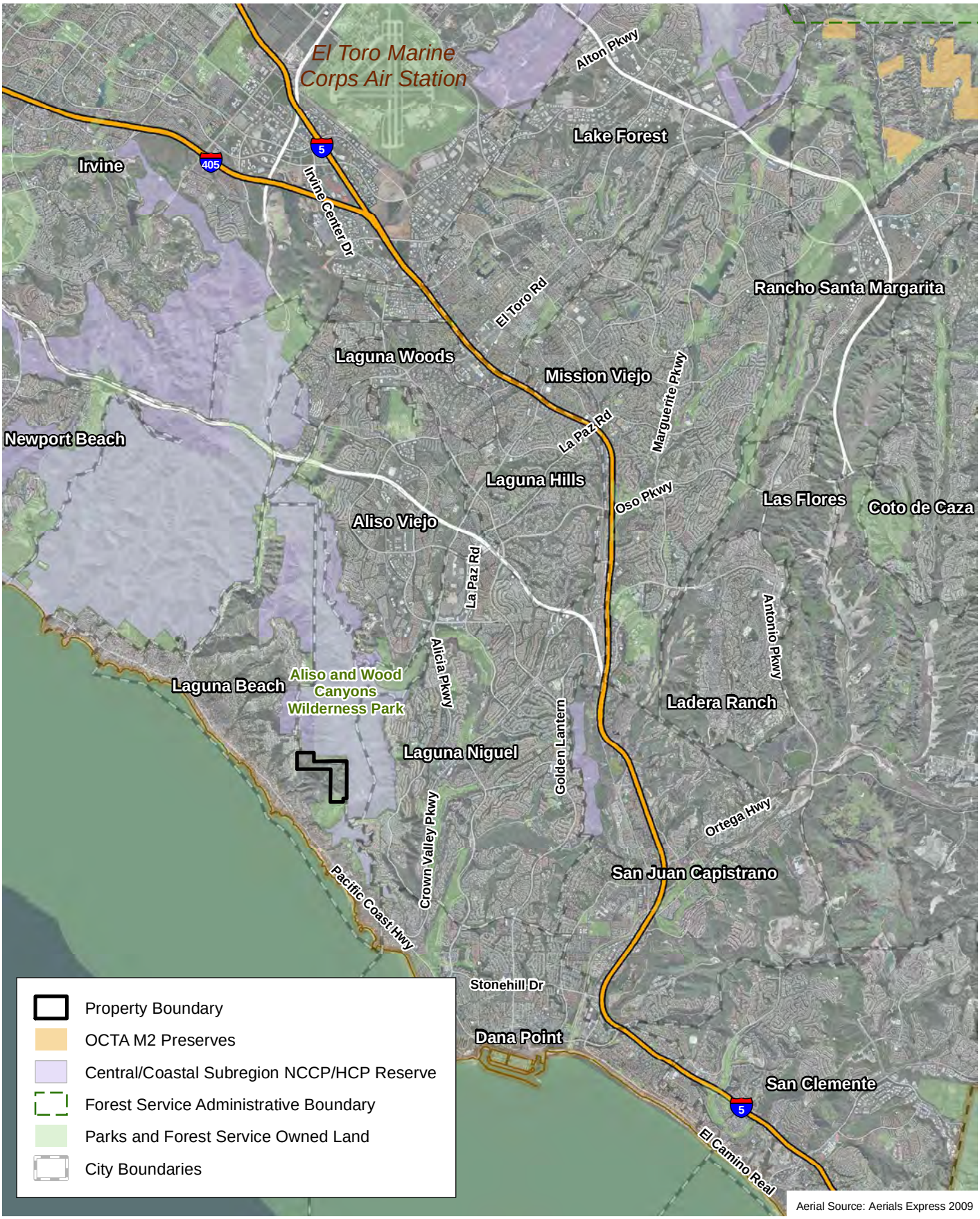

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Regional Environmental Setting

Exhibit 4

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

2 1 0 2 Miles

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Hobo Canyon are mapped by the National Wetlands Inventory as temporarily flooded Riverine and Palustrine wetlands (USFWS 2006). The property is within the Orange County Central-Coastal Subregion NCCP/HCP; the northern and eastern property boundaries abut the NCCP/HCP reserve.

1.2.3 Fire History

There are various hypotheses regarding the fire history of Southern California, what constitutes a "natural" fire regime, and the role of fire for chaparral plant species. Traditionally, the fire season in Southern California is from May through September (OCFA 2007). In the past, fires were started by lightning and typically moved down slopes due to falling brands and coals. According to one school of thought, fires only occasionally formed the hot runs on steep slopes that are typical of today's fires, and large, intense fires were uncommon (Howard 1992). This fire regime resulted in a mosaic of numerous small burns. New fires were limited by recently burned regions with very little fuel; dead wood and other fuels could not accumulate for long. However, an opposing hypothesis is that large, high-intensity chaparral fires were regular occurrences in the 19th century, often driven by severe weather that involved high temperatures, low humidity, and high winds (Keeley and Zedler 2009).

Mediterranean shrub communities, including those types found on the property, are resilient to infrequent wildfires and historically burned at a frequency of every 30 to 150 years (Halsey 2005). Many plant species associated with chaparral and scrub communities exhibit characteristics that constitute adaptations to fire. A new fire will typically burn hot and high into the canopy, killing much of the aboveground biomass. These canopy fires facilitate seed establishment by removing shrub cover and eliminating competing species. In the first few years after a fire, herbs and herbaceous shrubs—such as deerweed (*Acmispon glaber*), lupines (*Lupinus* spp.), paintbrushes (*Castilleja* spp.), and phacelias (*Phacelia* spp.)—are abundant. Because chaparral fires burn nitrogenous compounds in plant tissues and detritus, there is a large loss of nitrogen from the ecosystem. This allows species equipped with nitrogen-fixing bacteria to grow quickly after a fire.

While herbaceous species are establishing, the previously dominant chaparral species are also returning. Many chaparral species rely on fire to release and germinate seeds. Others resprout from roots or buds at the base of the stem. As the shrub canopy closes, whether due to resprouting of individuals burned by the fire or due to seedling growth, these herbaceous species decrease in abundance.

Although fires are a natural part of chaparral and scrub communities, both unnatural increases and decreases in fire frequency can have a negative impact. Now, nearly all wildfires are started by humans, either through arson or accidents (Schoenherr 1992). While the fire season traditionally occurred from May through September, in the past 15 years, Orange County has experienced its most devastating wildfires from October through April (OCFA 2008). Drought conditions contribute to an increase in dead fuels, drier and more explosive fuels, and more intense fire behavior. In addition, sustained Santa Ana Winds increase the speed of fire and magnify the effects on the available fuel bed. Santa Ana Winds are strong, warm, and dry and flow down into the valleys when stable; during these conditions, high-pressure air is forced across and then down the lee-side slopes of a mountain range. The descending air is warmed and dried, which produces critical fire weather conditions.

Anthropogenic increases in fire frequency can change the natural resilience of native communities. With a high frequency of fires, plants may not store enough energy between fires to resprout from roots or buds. In general, when an area burns too often for the community to mature, native plants may not be able to maintain dominance, often resulting in a habitat type conversion. Ruderal species, including annual grasses and invasive forbs, often thrive in post-

fire conditions. As a result, fires often promote the spread of non-native species into native habitats. In turn, this high degree of non-native grass and forb cover can lead to more frequent fire return intervals (e.g., intervals of less than eight years have been reported) (Minnich and Dezzani 1998).

A decrease in fire frequency may also hinder reproduction of fire-adapted species. In the past, government agencies tried to prevent and stop the spread of wildfires through a policy of fire suppression. These efforts were found to be unsuccessful, and they occasionally resulted in larger and more catastrophic fires. While they are less frequent, unnaturally large fires may burn so hot and intense that the canopy, roots, and even the seeds of fire-adapted plants are destroyed. Habitat type conversion may occur in scrub and chaparral communities where fire suppression allows oaks to increase in density (McCreary 2004). When fire is not allowed to regenerate the understory of oak savannahs, the shrub component increases and more severe, crown-consuming fires may result.

Over the past 60 years, Orange County has experienced a number of major (i.e., burned greater than 2,000 acres, burned for an extended period or time, and/or resulted in extraordinary property loss) wildland fires, including 20 that burned over 2,000 acres (OCFA 2008). However, no significant fire has been reported in Aliso and Wood Canyons Wilderness Park according to the California Department of Forestry and Fire Protection (CAL FIRE).

1.2.4 Climate

Southern California experiences a Mediterranean climate characterized by mild, rainy winters and hot, dry summers. There can also be dramatic differences in rainfall from year to year. Consequently, the vegetation types in the Southern California area consist of drought-tolerant, woody shrubs and trees and annual, fall/winter-sprouting grasses.

The temperature in Southern California is moderated by the coastal influence of the Pacific Ocean, which creates mild conditions throughout most of the year. The stable atmosphere creates cloudless conditions, producing dry summers and a subtropical climate with many days of sunshine (Ritter 2006). The most distinguishing characteristic of a Mediterranean climate is its seasonal precipitation. In Southern California, precipitation is characterized by brief, intense storms generally between November and March. It is not unusual for a majority of the annual precipitation to fall during a few storms over a close span of time. Rainfall patterns are subject to extreme variations from year to year and longer-term wet and dry cycles.

In the region, the average daily temperature in the summer[1] is approximately 69 degrees Fahrenheit (°F). The average daily temperature in the winter is approximately 56°F. The region receives an average of 13.8 inches of rain per year; the majority of this rain falls in the winter months, which receive an average of 8.5 inches; summer rain is approximately 0.20 inch (WRCC 2015).

1.2.5 Anthropogenic Uses of the Property

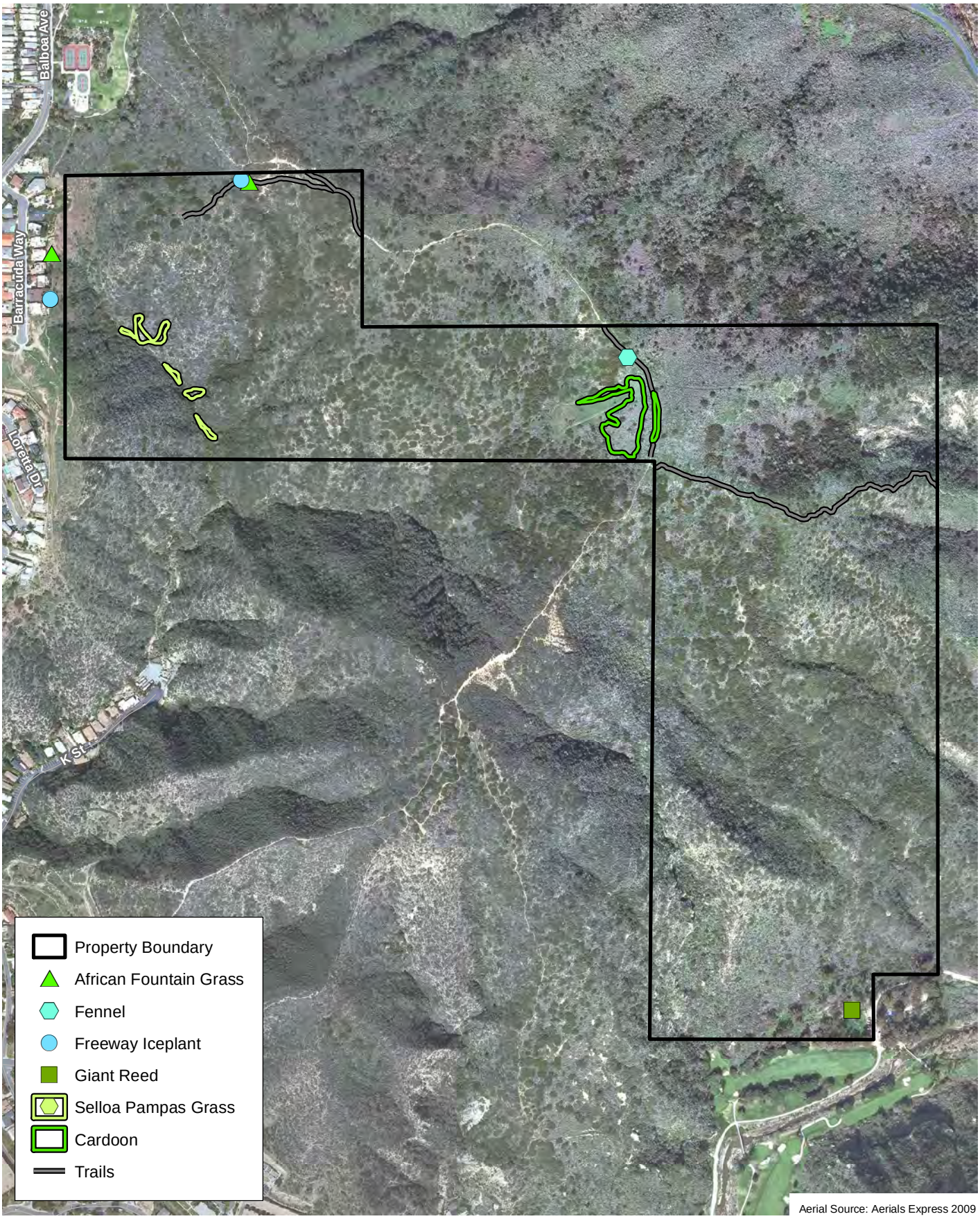
The Tongva Native Americans originally inhabited the Aliso Creek and Laguna Lakes area (LBHS 2015). Juan Rodriguez Cabrillo arrived in 1542, but the land did not undergo significant change until the establishment of the California missions by Junipero Serra and a ranching culture. According to the City of Laguna Beach General Plan Open Space/Conservation Element (Laguna Beach 2006), the city was one of the only coastal Southern California areas excluded from the Mexican land grants of the 1840s, which resulted in it being subject to

[1] Seasons are climatological; winter is considered to be December, January and February, and summer is considered to be June, July, and August.

homestead claims in the 1880s. In the late 1880s and early 1900s, it became popular as a vacation and resort town, and much of the flatter property was subdivided. Development in the late 1950s and mid-1960s primarily occurred in the more accessible ridgelines, hilltops, and hillsides.

A review of historic aerial photographs of the property shows that, in general, vegetation communities have not significantly altered since 1939. The residential development at the northern end of the property is in the process of being built in aerial photographs from 1967. Structures in Aliso Canyon at the southern end of the property are evident in 1963 aerials. Buildings or otherwise significant structures are not identified in the historic aerials on the property.

Anthropogenic features on the property are shown on Exhibit 5. The property is currently used by hikers and mountain bikers; the trails on the property are included in the trail network of the *Laguna Beach General Plan* Open Space/Conservation Element as “trails on private property” (Laguna Beach 2006). Relatively little trash (e.g., cans, bottles, golf balls) was observed during the surveys. Evidence of grazing is not present on this property.



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Anthropogenic Features and Invasive Species

Exhibit 5

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

600 300 0 600

Feet

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2.0 SURVEY METHODS

This section describes the methods used to conduct the literature review; perform general biological surveys, vegetation mapping, focused biological surveys, and a jurisdictional delineation; and assess the property's potential to support special status species. A cumulative list of all plant and wildlife species observed on the property is included as Appendices A-1 and A-2, respectively. Photographs of the property are included as Appendix B.

2.1 LITERATURE REVIEW

BonTerra Psomas conducted a literature search to identify special status plants, wildlife, and habitats reported to occur in the vicinity of the Aliso Canyon property. This search included a review of the USGS' Laguna Beach and San Juan Capistrano 7.5-minute quadrangles in the California Native Plant Society's (CNPS') Locational Inventory of Rare and Endangered Vascular Plants of California (CNPS 2015a) and the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2015a). The *City of Laguna Beach General Plan* was reviewed for species of local concern reported from Hobo and Aliso Canyons. In addition, a species list was obtained from the USFWS' Information, Planning, and Conservation System (IPaC) for the property.

2.2 VEGETATION MAPPING AND GENERAL SURVEYS

BonTerra Psomas Senior Biologist Allison Rudalevige and Biologist Jonathan Aguayo conducted a general survey to describe and map the vegetation types on the property on March 25, 2015; Ms. Rudalevige refined the vegetation mapping for the southern end of the site on April 9, 2015. Nomenclature for vegetation types follows *A Manual of California Vegetation* (Sawyer et al. 2009) for recognized Alliances or Associations.[2] Vegetation was mapped in the field on an aerial photograph at a scale of 1 inch equals 300 feet (1″=300′).

The general surveys included an evaluation of the property's potential to support special status plant and wildlife species, with special focus on M2 NCCP/HCP Covered Species. Covered Species include intermediate mariposa lily (*Calochortus weedii* var*. intermedius*), southern tarplant (*Centromadia parryi* ssp. *australis* [*Hemizonia p.* ssp. *a.*]), many-stemmed dudleya (*Dudleya multicaulis*), arroyo chub (*Gila orcutti*), Blainville's [coast] horned lizard (*Phrynosoma blainvillii*), orange-throated whiptail (*Aspidoscelis hyperythra* [*Cnemidophorus h.*]), Pacific [western] pond turtle (*Actinemys marmorata* [*Emys m.*]), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii pusillus*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), coastal California gnatcatcher (*Polioptila californica californica*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor* [*Felis c.*]). Suitable habitat and/or observed individuals were documented in field notes and with global positioning system (GPS) units, and a CNDDB form was filled out for each occurrence.

During field surveys, natural or physical resources and opportunities were identified (mapped and included in field notes) that "preserve, restore and enhance aquatic, riparian and terrestrial natural communities and ecosystems that support Covered Species" (OCTA 2010). Resources that provide valuable enhancement, restoration, or preservation opportunities were mapped and documented in field notes, such as significant stands of non-native species requiring eradication/control; presence of rock outcroppings that provide niche areas for unusual plants, bats, ringtails (*Bassariscus astutus*), or other species; nesting cavities; large mammal burrows;

[2] Alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover". Association is "a vegetation classification unit defined by a diagnostic species, a characteristic range of species composition, physiognomy, and distinctive habitat conditions" (Sawyer et al. 2009).

avian rookeries/roosts; and dens. This may include significant stands of invasive plant species based on the California Invasive Plant Council (Cal-IPC) Inventory. Anthropogenic influences/structures on the property (e.g., paved and unpaved roads, trails, cell towers, water towers, abandoned vehicles, and/or "dumped" trash or debris) were also documented. GPS devices were utilized for recording all point locations.

Plant species were identified in the field or collected for subsequent identification using keys in Baldwin et al. (2012), Hickman (1993), and Munz (1974). Taxonomy follows the Jepson eFlora (Jepson Herbarium 2014); where the Jepson eFlora does not recognize a taxon, naming conforms to Baldwin et al. (2012), Hickman (1993), or current scientific data (e.g., scientific journals) for scientific and common names. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic sign including scat, footprints, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows Crother (2012) for amphibians and reptiles, the American Ornithologists' Union (AOU 2013) for birds, and the Smithsonian National Museum of Natural History (SNMNH 2011) for mammals. All species observed were recorded in field notes and are included in Appendices A-1 and A-2.

2.3 FOCUSED BIOLOGICAL SURVEYS

Focused biological surveys were conducted in 2015 for special status plant species and the coastal California gnatcatcher. Surveys were conducted in suitable habitat based on the Senior Biologists' best professional judgment.

2.3.1 Special Status Plant Species

Special status plant surveys were floristic in nature and were conducted following the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). Target species included the following Covered Species: intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) and many-stemmed dudleya (*Dudleya multicaulis*).

Rainfall received in the winter and spring determines the germination of many annual and perennial herb species. The region received approximately 4.4 inches of precipitation between March 1, 2014, and February 28, 2015 (data taken from Laguna Beach Station No. 044647) (WRCC 2015). The average annual precipitation for this area is approximately 12.1 inches. In years of low or unusual rainfall patterns, monitoring of reference populations is important in order to ensure that the surveys were comprehensive. Prior to conducting the field surveys, accessible reference populations of target species known in the Orange County area were monitored to ensure that the scheduled surveys were comprehensive and conducted during the appropriate blooming period for these species. Many-stemmed dudleya was confirmed blooming at the University of California, Irvine, Ecological Reserve on March 24, 2014, and intermediate mariposa lily was confirmed blooming in Bee Canyon on May 14, 2015. Rainfall throughout the region was below average for the year. Although reference populations and regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results, as species could possibly be present on a site but may not be detectable at the time of the surveys.

The survey area for special status plant species consisted of the entire property. Botanical data were collected concurrent with vegetation mapping on March 25, 2015; additional surveys were conducted on May 20, 2015, by Ms. Rudalevige and field assistant Matheson Lowe, and on June 7, 2015, by Ms. Rudalevige. Systematic walking surveys were conducted in all areas of suitable special status plant habitat (e.g., sage scrub, openings in chaparral, ridgelines, canyon

bottoms); binoculars were used to search for plants in areas considered inaccessible due to steep terrain or high shrub density. The habitat preferences of target species (see Table 8, below) were compared to the resources on site (e.g., community associations, soil, slope, shade) to determine which portions of the property represented suitable habitat. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they are a special status species using taxonomic keys, descriptions, and illustrations in Baldwin et al. (2012), Hickman (1993), and Munz (1974). Taxonomy and nomenclature follow the CNPS (2015b) for special status species and the Jepson eFlora (Jepson Herbarium 2014) for other species. Any voucher specimens collected would be deposited at the herbarium at Rancho Santa Ana Botanic Gardens in Claremont, California.

2.3.2 Coastal California Gnatcatcher

Surveys for the coastal California gnatcatcher were conducted in accordance with the guidelines issued by the USFWS for areas participating in an NCCP/HCP (USFWS 1997). These guidelines stipulate that three surveys must be conducted in suitable habitats with at least one week between site visits; the surveys can be conducted year-round. All visits must take place during the morning hours, and no more than 100 acres of suitable habitat may be surveyed per visit.

CDFW Environmental Scientist Christine Beck (USFWS Permit No. TE-15544A-2) and OCTA Biologist Lesley Hill conducted all coastal California gnatcatcher surveys on the Aliso Canyon property. Surveys were conducted on May 13, May 20, and June 20, 2015, between the hours of 6:00 AM and 10:30 AM in appropriate weather conditions (i.e., temperature averaged 65°F with a slight wind and 100 percent cloud cover). Surveys were conducted by slowly walking through all appropriate habitats, including the scrub and mixed scrub vegetation; approximately 75 acres was surveyed during each field visit. Surveys in the southern portion of the property were discontinued after the first visit determined that the steep habitat and dense chaparral vegetation were not suitable for the gnatcatcher. Recordings of coastal California gnatcatcher vocalizations were used to attempt to elicit responses for any gnatcatchers that might be present when gnatcatchers were not observed in suitable habitat after waiting/searching for approximately 10 to 15 minutes. All bird species detected during the survey were recorded.

2.4 JURISDICTIONAL DELINEATION

Drainages and waterbodies, which may include wetlands and other “waters of the U.S.”, are protected under Section 404 of the Clean Water Act (CWA) and are under the jurisdiction of the U.S. Army Corps of Engineers (USACE). Non-wetland “waters of the U.S.” are delineated based on the limits of the Ordinary High Water Mark (OHWM), which can be determined by a number of factors including erosion, the deposition of vegetation or debris, and changes in vegetation. The OHWM limits (i.e., active floodplain) occurring on the property were further verified using methodologies contained in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, *A Delineation Manual* (Lichvar and McColley 2008), and in *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) In the Arid West Region of the Western United States* (Curtis and Lichvar 2010).

In September 2008, the USACE issued the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). This regional supplement is designed for use with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland “waters of the U.S.”. A three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. Wetlands generally

include swamps, marshes, bogs, and similar areas. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within the three parameters. However, problem areas may periodically or permanently lack certain indicators due to seasonal or annual variability of the nature of the soils or plant species on site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

Section 401 of the CWA provides the Regional Water Quality Control Board (RWQCB) with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. It should be noted that the RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE's definition of the OHWM and/or the three-parameter wetlands methods pursuant to the 1987 Wetlands Manual.

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to *California Fish and Game Code* Sections 1600 through 1616. The CDFW's jurisdiction is defined as the top of the bank to the top of the bank of the stream, channel, or basin or to the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake or other impoundment.

Waters in the "coastal zone" are regulated by the California Coastal Commission (CCC). Wetlands under Section 30121 of the Coastal Act are defined as "lands within the coastal zone which may be covered periodically or permanently with shallow water and includes salt marshes, freshwater marshes, open and closed brackish water marshes, swamps, mudflats, and fens". The wetland boundary is based on a "one parameter" definition determined by at least one of the following: hydrology, hydric soils, and hydrophytic vegetation. The CCC approved the City of Laguna Beach's Local Coastal Program in 1993; however, the Hobo Canyon Area of Deferred Certification is currently uncertified.

The jurisdictional delineation was conducted by Ms. Rudalevige and Psomas Biologist Tanessa Hartwig on July 7, 2015, to describe and map the extent of resources under the jurisdiction of the USACE, the RWQCB, and the CDFW. Jurisdictional features were delineated on a 1 inch equlas 300 feet (1"=300') scale aerial photograph either as a drainage centerline with corresponding width measurements or, for riparian vegetation canopy clearly visible on aerial imagry, as a polygon. Inaccessible areas were mapped remotely.

3.0 EXISTING BIOLOGICAL RESOURCES

This section describes the biological resources that occur or potentially occur on the Aliso Canyon property. Vegetation types, wildlife populations and movement patterns, and special status biological resources are discussed below.

3.1 VEGETATION TYPES AND OTHER AREAS

Fourteen vegetation types and other areas occur on the Aliso Canyon property, as shown in Table 1 and Exhibit 6. Descriptions of these vegetation types are provided below. Note that classification follows Gray and Bramlet (1992), which is a regional classification system for Orange County, and these names are grouped according to the general vegetation types used in the NCCP/HCP (i.e., chaparral, scrub, grassland, barren, and developed/non-native). In the vegetation descriptions below, each vegetation type is also cross-walked to *A Manual of California Vegetation* (Sawyer et al. 2009), which is commonly used by the resource agencies.

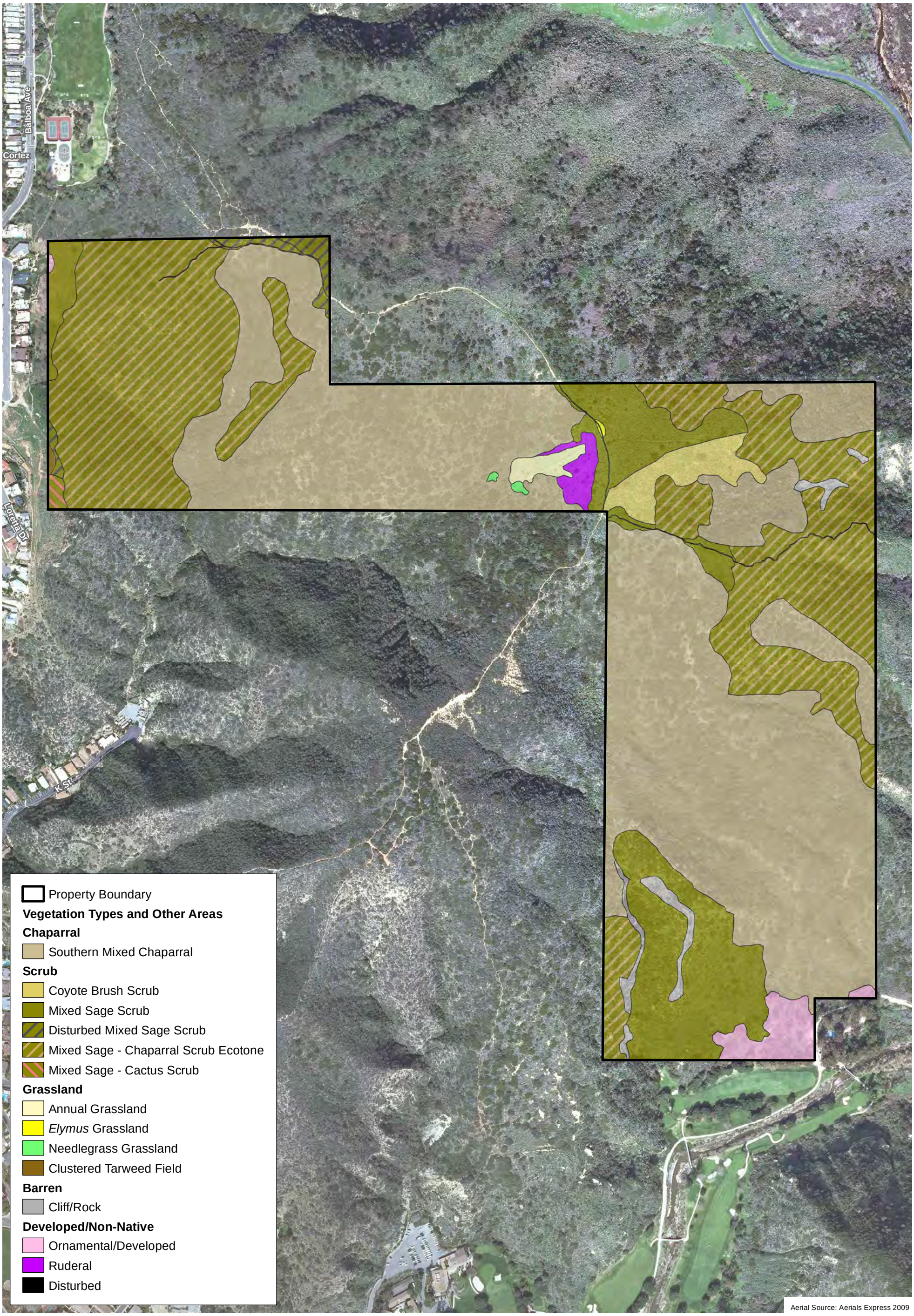
TABLE 1
VEGETATION TYPES AND OTHER AREAS ON
THE ALISO CANYON PROPERTY

General Vegetation Types	Vegetation Types and Other Areas	Amount on Property (Acres)
Chaparral	southern mixed chaparral	78.18
	Chaparral Subtotal	*78.18*
Scrub	coyote brush scrub	2.79
	mixed sage scrub	17.77
	disturbed mixed sage scrub	1.25
	mixed sage–chaparral scrub ecotone	44.59
	mixed sage–cactus scrub	0.29
	Scrub Subtotal	*66.69*
Grassland	annual grassland	0.79
	Elymus grassland	0.05
	needlegrass grassland	0.11
	clustered tarweed field	0.09
	Grassland Subtotal	*1.04*
Barren	cliff/rock	1.56
	Barren Subtotal	*1.56*
Developed/Non-Native	ornamental/developed	2.43
	ruderal	1.00
	disturbed	0.24
	Developed/Non-Native Subtotal	*3.67*
	Total Acreage	***151.14***

Chaparral

Southern Mixed Chaparral

A total of 78.18 acres of southern mixed chaparral occurs on slopes throughout the property and is the predominant vegetation. This vegetation type is dominated by large, evergreen shrubs such as lemonade berry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and spiny redberry



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Vegetation Types and Other Areas

Exhibit 6

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

425 212.5 0 425 Feet

Bonterra PSOMAS

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(*Rhamnus crocea*); vegetative cover is generally very dense. Scattered sage scrub species, such as California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), and coastal prickly pear (*Opuntia littoralis*) are also present. Understory species, where present, include needlegrass (*Stipa* sp.), blue dicks (*Dichelostemma capitatum*), and splendid mariposa lily (*Calochortus splendens*). This vegetation type most closely corresponds to a mix of the *Rhus integrifolia* Shrubland Association and *Malosma laurina* Shrubland Association in Sawyer et al. (2009).

Scrub

Coyote Brush Scrub

A total of 2.79 acres of coyote brush scrub occurs on a southeastern-facing slope near the center of the property. This vegetation type is dominated by coyote brush (*Baccharis pilularis*) with California sagebrush and bush monkeyflower (*Mimulus aurantiacus*) also present. Giant wildrye (*Elymus condensatus*) and cardoon (*Cynara cardunculus*) are present at the top of the slope. This vegetation type most closely corresponds to the *Baccharis pilularis–Artemisia californica* Shrubland Association in Sawyer et al. (2009).

Mixed Sage Scrub

A total of 17.77 acres of mixed sage scrub occurs on slopes throughout the property. This vegetation type is dominated by species such as black sage, California buckwheat (*Eriogonum fasciculatum*), and California sagebrush. Some areas have scattered lemonadeberry and laurel sumac. In some places, the shrub cover is dense while other areas are more open. This vegetation type most closely corresponds to a mix of the *Artemisia californica* Shrubland Association and the *Eriogonum fasciculatum–Salvia mellifera* Shrubland Association in Sawyer et al. (2009).

Disturbed Mixed Sage Scrub

A total of 1.25 acres of disturbed mixed sage scrub occurs along the northern edge of the property. This area has a similar species composition of mixed sage scrub, but has encroaching non-native species such as freeway iceplant (*Carpobrotus edulis*) and Selloa pampas grass (*Cortaderia selloana*). This area is also disturbed by foot-traffic and off-road bicycle use. This vegetation type most closely corresponds to a mix of the *Artemisia californica* Shrubland Association, the *Eriogonum fasciculatum–Salvia mellifera* Shrubland Association, and the *Carpobrotus edulis* Semi-natural Herbaceous Stand in Sawyer et al. (2009).

Mixed Sage–Chaparral Scrub Ecotone

A total of 44.59 acres of mixed sage–chaparral scrub ecotone generally occurs on slopes between the southern mixed chaparral and mixed sage scrub. This vegetation type represents a transition between the two communities instead of an abrupt change in vegetation. It contains a mix of both chaparral and sage scrub species.

Mixed Sage–Cactus Scrub

A total of 0.29 acre of mixed sage–cactus scrub occurs along the ridgeline at the western end of the property. This vegetation type consists of a mix of sage scrub species, such as California sagebrush and California buckwheat, with large patches of coastal prickly pear. There is a discontinuous shrub canopy with bare ground between the shrubs. This vegetation type most closely corresponds to the *Opuntia littoralis*–Mixed Coastal Sage Scrub Association in Sawyer et al. (2009).

Grassland

Annual Grassland

A total of 0.79 acre of annual grassland occurs as a large patch on a western-facing slope in the center of the property. This vegetation type is dominated by wild oat (*Avena fatua*). Towards the bottom of the slope there is an increasing density of native species, such as western blue-eyed-grass (*Sisyrinchium bellum*), blue dicks, needlegrass (*Stipa* sp.), and Catalina mariposa lily (*Calochortus catalinae*). This vegetation type most closely corresponds to the *Avena fatua* Semi-Natural Herbaceous Stand in Sawyer et al. (2009).

Elymus Grassland

A total of 0.05 acre of Elymus grassland occurs on the ridgeline in the center of the property on either side of the trail. This vegetation type is dominated by giant wild rye. California sagebrush is present along the edge of this patch, and non-native grasses grow below the giant wild rye. This vegetation type most closely corresponds to the *Leymus condensatus* Herbaceous Association in Sawyer et al. (2009).

Needlegrass Grassland

A total of 0.11 acre of needlegrass grassland occurs at the bottom of a western-facing slope below the annual grassland. While the dominant species is soft chess (*Bromus hordeaceus*), this vegetation type is characterized by native needlegrass at approximately 15 percent cover. Other species scattered in this area include blue-eyed grass, Catalina mariposa lily, lemonade berry, and bush monkeyflower. This vegetation type most closely corresponds to one of the *Nassella* (spp.) Herbaceous Alliances in Sawyer et al. (2009).

Clustered Tarweed Field

A total of 0.09 acre of clustered tarweed field occurs along the ridgeline at the western end of the property. At the time of the surveys, this vegetation type was dominated by fascicled tarplant (*Deinandra fasciculata*); however, non-native grasses likely grow in this area at other times of the year. This vegetation type most closely corresponds to the *Deinandra fasciculata* Herbaceous Alliance in Sawyer et al. (2009).

Barren

Cliff/Rock

A total of 1.56 acres of cliff/rock occurs on the steep slopes at the southern end of the property. These areas consist of exposed, weathered rock face. Sawyer et al. (2009) does not provide a classification for this mapping unit.

Developed/Non-native

Ornamental/Developed

A total of 2.43 acres of ornamental/developed areas occurs along the northwestern and southern edges of the property. The northwestern area consists of landscaping from the surrounding residential development encroaching within the property boundary. The southern area consists of landscaping associated with the Aliso Creek Golf Course and includes a stand of gum trees (*Eucalyptus* sp.) and turf grass.

Ruderal

A total of 1.00 acre of ruderal vegetation occurs at the ridgeline and down a slope in the center of the property. This vegetation type is dominated by the non-native cardoon. Sawyer et al. (2009) does not provide a corresponding vegetation type for this area, but it may be considered functionally equivalent to *Centaurea* (*solstitialis*, *melitensis*) semi-natural herbaceous stands.

Disturbed

A total of 0.24 acre of disturbed areas occurs throughout the property and consist of dirt trails. These areas lack vegetation and are actively used by hikers and off-road cyclists. There is some erosion evident on the steeper trails. Sawyer et al. (2009) does not provide a classification for this mapping unit.

3.2 WILDLIFE POPULATIONS AND MOVEMENT PATTERNS

Vegetation on and adjacent to the property provides potential habitat for a number of wildlife species. Common wildlife species observed or expected to occur on the property and/or in adjacent off-site areas are discussed below.

3.2.1 Fish

Most creeks and waterways in Southern California are subject to periods of high water flow in winter and spring and little to no flow during the late summer and fall. Most drainages occurring on the property are expected to convey water only following storm events. While fish species are expected to occur in nearby Aliso Creek, no fish species were observed on the property, nor are they expected to occur due to lack of suitable habitat.

3.2.2 Amphibians

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Terrestrial species may or may not require standing water for reproduction; they survive in dry areas by aestivating (i.e., remaining beneath the soil in burrows or under logs and leaf litter, and emerging only when temperatures are low and humidity is high). Many of these species' habitats are associated with water, and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year in some habitat types depending on factors such as amount of vegetation cover, elevation, and slope/aspect.

Marginally suitable habitat for amphibian species occurs in the drainages on the property. No amphibian species were observed on the property. Common amphibian species that may occur on the property include garden slender salamander (*Batrachoseps major*), western toad (*Anaxyrus boreas*), and Pacific treefrog (*Pseudacris* [*Hyla*] *regilla*).

3.2.3 Reptiles

Reptiles are well-adapted to life in arid habitats. They have several physiological adaptations that allow them to conserve water. Reptiles can also become dormant during weather extremes, allowing them to survive prolonged droughts and paucity of food (Ruben and Hillenius 2005). Reptilian diversity and abundance typically varies with vegetation type and character. Many species prefer only one or two vegetation types; however, most species will forage in a variety of habitats. Most reptile species that occur in open areas will excavate a burrow or use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions.

Common reptile species observed or expected to occur on the property include western fence lizard (*Sceloperus occidentalis*), side-blotched lizard (*Uta stansburiana*), and gopher snake (*Pituophis catenifer*).

3.2.4 Birds

A variety of bird species are expected to be residents on the property, using habitats throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) is expected to occur on the property during the winter season, but would not occur in the summer season because it migrates north to its breeding range.

Resident bird species observed on the property include California quail (*Callipepla californica*), western scrub-jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), spotted towhee (*Pipilo maculatus*), and California towhee (*Pipilo crissalis*). Urban-tolerant species that occur in disturbed areas and in natural vegetation types that were also observed on the property include mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Spinus* [*Carduelis*] *psaltria*).

Wintering birds are those species that generally breed outside the region but migrate to the area for the winter season. Wintering species that may occur on the property include white-crowned sparrow and fox sparrow (*Passerella iliaca*). Summer residents are species that migrate into the region to breed, but generally winter south of the region. Summer breeders that may occur on the property include black-chinned hummingbird (*Archilochus alexandri*), western kingbird (*Tyrannus verticalis*), and hooded oriole (*Icterus cucullatus*). During spring and fall migration, the property also provides foraging habitat for a variety of migratory species.

Birds of prey (raptors) observed on the property include northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), and red-tailed hawk (*Buteo jamaicensis*).

3.2.5 Mammals

Burrows provide cover for a number of small mammal species. Small ground-dwelling mammals observed or expected to occur on the property include California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and Bryant's woodrat (*Neotoma bryanti*).

Open grassland communities and the leafy understory of scrub and woodland communities provide excellent foraging habitat for herbivorous mammals. Common herbivores observed or expected to occur on the property include southern mule deer (*Odocoileus hemionus*) and desert cottontail (*Sylvilagus audubonii*).

Medium to larger mammalian predators (both carnivorous and omnivorous species) expected to occur on the property include common striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and mountain lion.

Bat activity on the property may occur in the lower elevation canyons and ravines where the bats are most likely to find more abundant insect food. While there are no buildings or other man-made structures on the property, on-site cliffs would be suitable for roosting. The property also has some potential to support roosting bats in tree snags or under bark; however, the closed nature of the chaparral habitat provides limited open areas suitable for foraging. Species such as the Brazilian free-tailed bat (*Tadarida brasiliensis*) and big brown bat (*Eptesicus fuscus*) may occur on the property.

3.2.6 Wildlife Movement

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967; Soule 1987; Harris and Gallagher 1989; Bennett 1990). Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (e.g., foraging for food or water, defending territories or searching for mates, breeding areas, or cover). A number of terms such as "wildlife corridor", "travel route", "habitat linkage", and "wildlife crossing" have been used in various wildlife movement studies to refer to areas in which wildlife moves from one area to another. To clarify the meaning of these terms and to facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- **Travel Route**—a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas, and it provides a relatively direct link between target habitat areas.

- **Wildlife Corridor**—a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and to facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat linkages" or "landscape linkages") can provide both transitory and residential habitat for a variety of species.

- **Wildlife Crossing**—a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These obstacles often represent "choke points" along a movement corridor, which may impede wildlife movement and increase the risk of predation.

It is important to note that, in a large open space area where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors (as defined

above) may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and to provide a variety of travel routes (e.g., canyons, ridgelines, trails, riverbeds, and others), wildlife will use these "local" routes while searching for food, water, shelter, and mates and will not need to cross into other large open space areas. Based on their size, location, vegetative composition and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles (such as roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food, and water and do not contain obstacles or distractions (e.g., man-made noise or lighting) that would generally hinder wildlife movement.

In general, animals discussed within the context of movement corridors typically include larger, more mobile species (such as southern mule deer, black bear [*Ursus americanus*], mountain lion, fox [*Urocyon* sp.], and coyote) and even some of the mid-sized mammals (such as raccoon [*Procyon lotor*], striped skunk, American badger [*Taxidea taxus*], and Virginia opossum [*Didelphis virginiana*]). Most of these species have relatively large home ranges through which they move to find adequate food, water, and breeding and wintering habitat. It is assumed that corridors that serve larger, more fragile species also serve as corridors for many smaller, less mobile species, such as reptiles, amphibians, and rodents (generally discussed within the context of local movement). Regional movement for these species facilitates gene flow and requires at least some local "stepping stone" movement of individuals between populations.

The availability of open space corridors is generally considered less important for bird species. Most bird species are believed to fly in more or less direct paths to desired locations; however, some habitat-specific species may not move great distances from their preferred habitat types and are believed to be less inclined to travel across unsuitable areas.

Ideally, an open space corridor should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a wide variety of resident species in any particular region. Most species typically prefer adequate vegetation cover during movement, which can serve as both a food source and as protection from weather and predators. Drainages, riparian areas, and forested canyon bottoms typically serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. Very few species will move across large expanses of open, uncovered habitat unless it is the only option available to them. For some species, landscape linkages must be able to support animals for sustained periods, not just for travel. Smaller or less mobile animals (such as rodents and reptiles) require long periods to traverse a corridor, so the corridor must contain adequate food and cover for survival.

Local Movement

The Aliso Canyon property contains multiple ridgelines and canyons (such as the upper end of Hobo Canyon) that provide a variety of travel routes for local wildlife movement. The trails on the property may also be used for movement. Movement is expected to occur on the property as well as between the property and contiguous off-site habitat.

Regional Movement

The relatively undeveloped nature of the landscape on and surrounding the Aliso Canyon property is highly conducive to regional wildlife movement. Wildlife moving across the property are not presently confined to a "corridor", as described above. The property is contiguous with

approximately 4,500 acres of undeveloped open space in Aliso and Wood Canyons Wilderness Park to the north and east. The southern boundary of the western half of the property is contiguous with approximately 171 acres of open space as part of the Driftwood Estates and Pacific Triangle dedications. Wildlife movement is relatively unhindered across these areas, with minimal barbed wire fencing and trails along the property boundary and no major roads or development.

To the south, wildlife movement between the property and the wilderness park on the northern-facing slopes of Aliso Canyon is hindered to some extent by the upper portion of the Aliso Canyon Golf Course; however, wildlife is still expected to cross this area, especially at night when the golf course is closed. While there are patches of open space in canyons west of the northern end of the property, these areas are separated by residential development. Wildlife traveling to these canyons would have two options: (1) cross Balboa Avenue in an approximate 150-foot corridor between residences at the northwestern end of the property or (2) move south down Hobo Canyon and across slopes adjacent to residential development to cross Nyes Place.

3.3 SPECIAL STATUS BIOLOGICAL RESOURCES

This section addresses special status biological resources that were observed, reported, or have the potential to occur on the property or in adjacent off-site areas. These resources include plant and wildlife species that have been afforded special status and/or recognition by federal and State resource agencies and private conservation organizations. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitations of its population size, geographic range, and/or distribution resulting in most cases from habitat loss. Tables 3 and 8, respectively, provide a summary of special status plant and wildlife species known to occur in the vicinity of the Aliso Canyon property (i.e., the USGS' Laguna Beach and San Juan Capistrano 7.5-minute quadrangles) and include information on the status, habitat, potential for occurrence, results of focused survey efforts, and definitions for the various status designations. Generally, this list includes species reported by the CNDDB and CNPS, supplemented with species from the author's experience that either occur nearby or could occur based on the presence of suitable habitat. In addition to species, special status biological resources include vegetation types and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the status of biological resources are listed below.

- **Plants**—Taxonomic and Status Inventory of Rare and Endangered Vascular Plants of California (CNPS 2015b); the CNDDB (CDFW 2015a); an official species list provided by the USFWS; various USFWS *Federal Register* notices regarding the listing status of plant species; and the *List of Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2015c).

- **Wildlife**—California Wildlife Habitat Relationships Database System (CDFW BDB 2014); the CNDDB (CDFW 2015a); an official species list provided by the USFWS; various USFWS *Federal Register* notices regarding listing status of wildlife species; and the *List of Special Animals* (CDFW 2015b).

- **Habitats**—the CNDDB (CDFW 2015a) and the *List of Vegetation Alliances and Associations, Vegetation Classification and Mapping Program* (CDFG 2010).

3.3.1 Definitions of Special Status Biological Resources

A **federally Endangered species** is one facing extinction throughout all or a significant portion of its geographic range. A **federally Threatened species** is one likely to become Endangered in the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in "take" of the species or its habitat. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. "Harm", in this sense, can include any disturbance of habitats used by the species during any portion of its life history.

Proposed species or **Candidate species** are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species lists. Because proposed species may soon be listed as Threatened or Endangered, these species could become listed prior to or during implementation of a proposed project. The presence of a Proposed or Candidate species in a project impact area may impose constraints on development if they are listed prior to issuance of project permits, particularly if a project would result in "take" of the species or its habitat.

The State of California considers an **Endangered species** as one whose prospects of survival and reproduction are in immediate jeopardy; a **Threatened species** as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a **Rare species** as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. "Rare species" applies only to California native plants. State-listed Threatened and Endangered species are protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in "take" of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates. This designation does not provide legal protection, but signifies that these species are recognized as special status by the CDFW. Recently, the CDFW downgraded some of these species from Species of Special Concern to the **Watch List.**

Species that are **California Fully Protected** and **Protected** include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite (*Elanus leucurus*). Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, §650, §670.7) or Section 2081 of the *California Fish and Game Code.*

Species of **Local Concern** are those that have no official status with the resource agencies, but are being watched because there is either a unique population in the region or the species is declining in the region. Species listed in the *City of Laguna Beach General Plan* are included here.

Special Animal is a general term that refers to species that the CNDDB is interested in tracking, regardless of legal or protective status. This term includes species designated as any of the above terms, but also includes species that may be considered biologically rare; restricted in distribution; declining throughout their range; have a critical, vulnerable stage in their life cycle that warrants monitoring; are on the periphery of their range and are threatened with extirpation

in California; are associated with special status habitats; or are considered by other State or federal agencies or private organizations to be sensitive or declining.

The California Rare Plant Rank (CRPR), formerly known as CNPS List, is a ranking system by the Rare Plant Status Review group[3] and managed by the CNPS and the CDFW. A ranking is given based on information regarding the distribution, rarity, and endangerment of California's vascular plants. Plants with a CRPR of **1A** are presumed extinct in California because they have not been seen in the wild for many years. Plants with a CRPR of **1B** are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of **2A** are presumed extirpated from California, but are more common elsewhere. Plants with a CRPR of **2B** are considered Rare, Threatened, or Endangered in California, but are more common elsewhere. Plants with a CRPR of **3** require more information before they can be assigned to another rank or rejected; this is a "review" list. Plants with a CRPR of **4** are of limited distribution or infrequent throughout a broader area in California; this is a "watch" list. The CRPR Threat Rank is an extension added onto the CRPR to designate the level of endangerment by a 1 to 3 ranking (CNPS 2014). An extension of **.1** is assigned to plants that are considered to be "seriously threatened" in California (i.e., over 80 percent of the occurrences are threatened or have a high degree and immediacy of threat). Extension **.2** indicates the plant is "fairly threatened" in California (i.e., between 20 and 80 percent of the occurrences are threatened or have a moderate degree and immediacy of threat). Extension **.3** is assigned to plants that are considered "not very threatened" in California (i.e., less than 20 percent of occurrences are threatened or have a low degree and immediacy of threat or no current threats known). The absence of a threat code extension indicates plants lacking any threat information.

In addition to providing an inventory of special status plant and wildlife species, the CNDDB also provides an inventory of vegetation types that are considered special status by the State and federal resource agencies, academic institutions, and various conservation groups (such as the CNPS). Determination of the level of imperilment (i.e., exposure to injury, loss, or destruction) is based on the NatureServe Heritage Program Status Ranks that rank both species and vegetation types on a global (G) and statewide (S) basis according to their rarity; trend in population size or area; and recognized threats (e.g., proposed developments, habitat degradation, and non-native species invasion) (Faber-Langendoen et al. 2009). The ranks are scaled from 1 to 5. NatureServe considers **G1** or **S1** communities to be critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors; **G2** or **S2** communities to be imperiled and at high risk of extinction or elimination due to very restricted range, very few populations or occurrences, steep declines, or other factors; **G3** or **S3** communities to be vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors; **G4** or **S4** communities to be apparently secure and uncommon but not rare with some cause for long-term concern due to declines or other factors; and **G5** or **S5** communities to be secure. A question mark (?) denotes an inexact numeric rank, but existing information points to this rank (Faber-Langendoen et al. 2009). For vegetation alliances[4] that have State ranks of S1–S3, all associations within the alliance are considered to be highly imperiled.

[3] This group consists of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector.

[4] A vegetation alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover" (Sawyer et al. 2009).

3.3.2 Vegetation Types

Special status vegetation types observed on the property are described further below.

Chaparral

The predominant vegetation type on the Aliso Canyon property is southern mixed chaparral (78.18 acres). This vegetation type most closely corresponds to a mix of the *Rhus integrifolia* Shrubland Association and *Malosma laurina* Shrubland Association in Sawyer et al. (2009), which are ranked as G3 S3 and G4 S4, respectively.

Chaparral is a "drought tolerant plant community dominated by sclerophyllous, woody shrubs shaped by a Mediterranean-type climate and naturally recurring wildfires" (Halsey 2007). It is the most extensive vegetation community in California and is not presently considered to have special status by the resource agencies, though its status in the future may be uncertain given continuing drought conditions, increased fire frequencies, and limited understanding of the system. The City of Laguna Beach considers sumac-toyon chaparral to have moderate biological value (Marsh 1992).

Scrub

Coyote brush scrub (2.79 acres) most closely corresponds to the *Baccharis pilularis–Artemisia californica* Shrubland Association in Sawyer et al. (2009), which is ranked as G5 S5. Mixed sage scrub (17.77 acres) most closely corresponds to a mix of the *Artemisia californica* Shrubland Association and the *Eriogonum fasciculatum–Salvia mellifera* Shrubland Association in Sawyer et al. (2009), which are both ranked as G5 S5; disturbed mixed sage scrub (1.25 acres) is also present on the property. Mixed sage–chaparral scrub ecotone (44.59 acres) may be considered G3 S3 or G4 S4 (based on ranking of Associations of lemonade berry, black sage, and California sagebrush versus laurel sumac, California sagebrush, and California buckwheat). Mixed sage–cactus scrub (0.29 acre) most closely corresponds to *Opuntia littoralis*–mixed coastal sage scrub, which is ranked as G4 S3.

While the Global/State rankings of coyote brush scrub, mixed sage scrub, and disturbed mixed sage scrub indicate that they are secure or apparently secure, they are of local concern (Laguna Beach 2006) as part of the larger coastal sage scrub community and because they have potential to support Threatened or Endangered species. Coastal sage scrub had, as a whole, declined approximately 70 to 90 percent in its historic range in California by the mid-1990s (Noss and Peters 1995). Sage scrub has largely been lost to land use changes in Southern California basins and foothills. The ecological function of Southern California's remaining sage scrub is threatened by habitat fragmentation and degradation, which is largely the result of invasive non-native species, livestock grazing, off-highway vehicles, altered fire regime, and air pollution (O'Leary 1995; Allen et al. 2000).

Grassland

Annual grassland (0.79 acre) is considered to be a semi-natural herbaceous stand and therefore is not given a ranking. Elymus grassland (0.05 acre) most closely corresponds to the *Leymus condensatus* Herbaceous Association in Sawyer et al. (2009), which is ranked as G3 S3. Needlegrass grassland (0.11 acre) most closely corresponds to one of the *Nassella* (spp.) Herbaceous Associations in Sawyer et al. (2009), which are ranked as either G4 S3? (for *N. cernua* and *N. pulchra*) or G3? S3? (for *N. lepida*). The clustered tarweed field (0.09 acre) most closely corresponds to the *Deinandra fasciculata* Herbaceous Alliance in Sawyer et al. (2009), which is ranked as G3? S3?.

Native grasslands, which once may have covered nearly $^1/_5$ of the State, have declined by approximately 99 percent in their historic range in California (Barry 1972; Noss and Peters 1995). "Floweriferous native grasslands" are considered to have very high biological value by the City of Laguna Beach while needlegrass grassland is considered to have high biological value (Marsh 1992). Annual grassland is considered to have moderate biological value.

Other Areas

The cliff/rock (1.56 acres), ornamental/developed (2.43 acres), ruderal (1.00 acre), and disturbed (0.24 acre) areas provide limited habitat for plant or wildlife species and would not be considered special status by the resource agencies. However, the City of Laguna Beach considers rock outcrops to have very high biological value in their capacity to support special status plant species (Marsh 1992). Eucalyptus woodlands and other "urban forests" are considered to have moderate biological value.

Jurisdictional Areas

Multiple drainages are present on the Aliso Canyon property (Exhibit 7). These all exhibit evidence of bed, bank, and OHWM and would be considered under the jurisdiction of the RWQCB, the CDFW, and the CCC. Some of the on-site drainage features would be considered tributaries[5] of Hobo Canyon and Aliso Creek, which convey flow into the Pacific Ocean southwest of the property. Therefore, these drainages would be considered under the jurisdiction of the USACE. Five on-site drainage features do not exhibit a connection to Hobo Canyon or Aliso Creek and so would not be considered tributaries (i.e., they dissipate at the canyon bottom and do not cross under the paved road east of the property). These isolated drainage features would not be considered under the jurisdiction of the USACE. No wetlands "waters of the U.S." were observed on the property.

Based on the field observations and data collected, a total of approximately 0.597 acre of non-wetland "waters of the U.S." under the jurisdiction of the USACE, 1.281 acres of "waters of the State" under the jurisdiction of the RWQCB (of which 0.684 acre are isolated waters), 1.281 acres of waters under CDFW jurisdiction, and 1.281 acres of waters under CCC jurisdiction occur on the property (Table 2; Exhibit 7).

Should jurisdictional resources be impacted by management activities on the property, permits/agreements from the regulatory agencies would be required. This would consist of a USACE Section 404 Permit, an RWQCB Section 401 Water Quality Certification, a CDFW Section 1602 Streambed Alteration Agreement, and a CCC Coastal Development Permit.

A California Rapid Assessment Method (CRAM) analysis may be required as part of the permitting procedure. CRAM is a tool for assessing the overall condition[6] of a wetland; it was developed by a consortium of federal, State, and local scientists and managers. The results of a condition assessment can be used to infer the ability to provide various functions or services to which a wetland is most suited. This analysis can be used for a variety of applications, such as evaluating a site to inform regulatory decisions (e.g., Section 401 and 404 permitting) or restoration or mitigation site evaluation.

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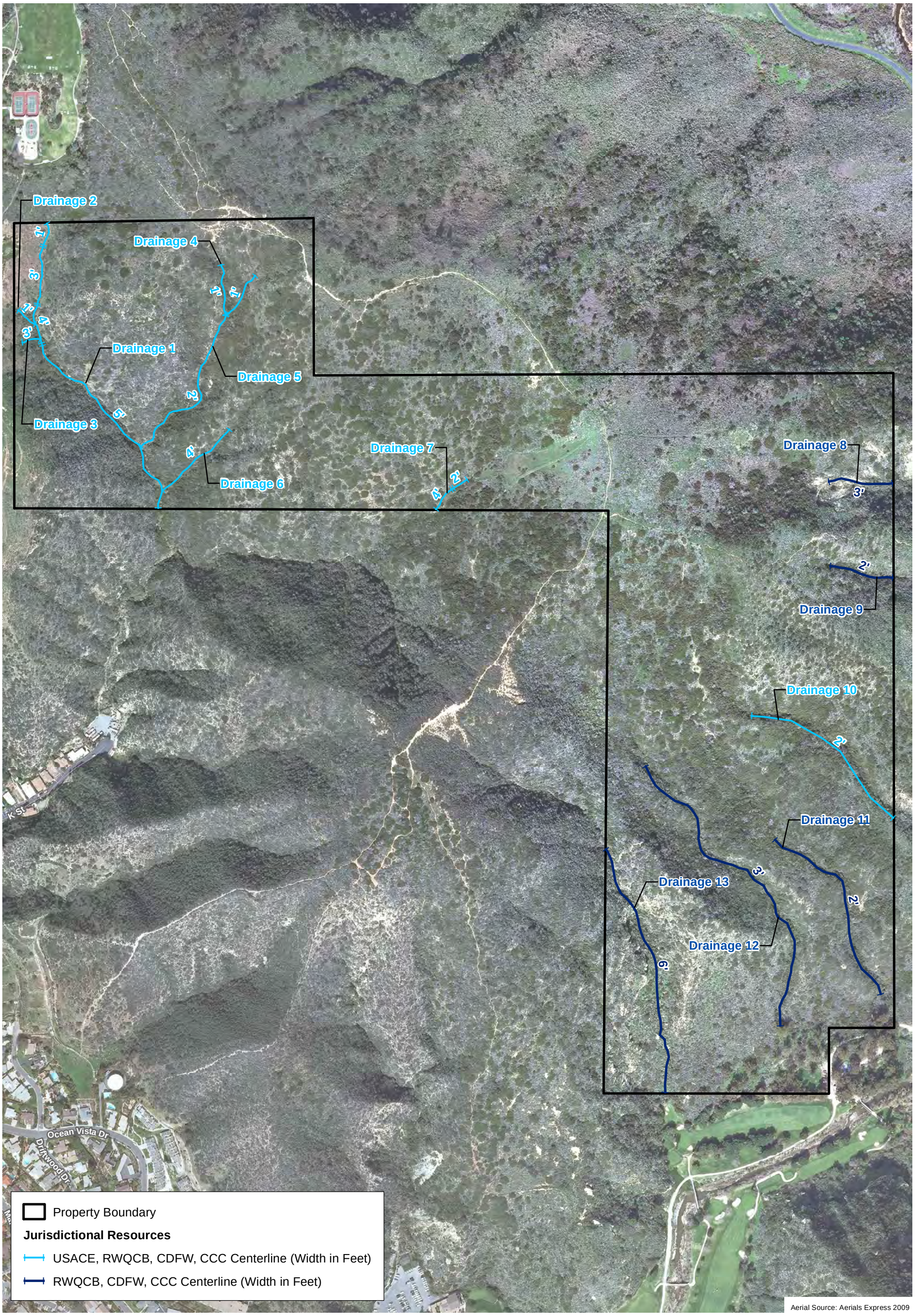
5 "Tributaries" are defined as waters that are characterized by the presence of physical indicators of flow—bed and banks and OHWM—and that contribute flow directly or indirectly to a traditional navigable water, interstate water, or territorial sea.

6 "Condition" is defined as the state of a wetland Assessment Area's (AA's) physical and biological structure, the hydrology, and its buffer and landscape context relative to the best achievable states for the same type of wetland (CWMW 2013).



Jurisdictional Resources

Exhibit 7

Measure M2 Acquisition Properties Evaluation – Aliso Canyon Property

N W E S

400 200 0 400 Feet

BonTerra PSOMAS

(Rev: 09-22-2015 LEW) R:\Projects\OCT_OCTA\J008.01\Graphics\Aliso_Cyn\BioTech\Ex7_JD_Resources_20150917.pdf

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TABLE 2
JURISDICTIONAL RESOURCES ON THE ALISO CANYON PROPERTY

Drainage	Amount of Jurisdictional Resources (Acres)				
	USACE	Isolated	RWQCB[a]	CDFW	CCC
Drainage 1	0.302	–	0.302	0.302	0.302
Drainage 2	0.005	–	0.005	0.005	0.005
Drainage 3	0.013	–	0.013	0.013	0.013
Drainage 4	0.011	–	0.011	0.011	0.011
Drainage 5	0.083	–	0.083	0.083	0.083
Drainage 6	0.077	–	0.077	0.077	0.077
Drainage 7	0.030	–	0.030	0.030	0.030
Drainage 8	–	0.041	0.041	0.041	0.041
Drainage 9	–	0.027	0.027	0.027	0.027
Drainage 10	0.076	–	0.076	0.076	0.076
Drainage 11	–	0.085	0.085	0.085	0.085
Drainage 12	–	0.208	0.208	0.208	0.208
Drainage 13	–	0.323	0.323	0.323	0.323
Total	**0.597**	**0.684**	**1.281**	**1.281**	**1.281**

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife; CCC: California Coastal Commission; –: not present in this drainage.

[a] RWQCB jurisdictional boundaries are defined as those determined for the USACE under "waters of the U.S."; however, the RWQCB also takes jurisdiction over isolated waters.

CRAM scores range from 25 to 100. The maximum score possible represents how a wetland is doing relative to the best achievable conditions for that wetland type in the state. It is assumed that the same scores for different wetlands of the same type represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type. Enhancement of the property, such as through targeted removal of weed species, may result in higher CRAM scores.

3.3.3 Special Status Plants

Based on the results of the literature review, 44 special status plant species have been reported in the vicinity of the Aliso Canyon property. These species, survey results, and their potential for occurrence (which is based on the presence of suitable habitat) are summarized in Table 3. Note that these species are listed alphabetically according to their scientific name. One federally and State-listed Threatened species, five non-listed special status plant species with a CRPR, and two species of local concern were observed on the property; two additional species of local concern were tentatively observed on the property. These species are discussed after the table. Note that detailed information and mapping of special status plant species populations were only recorded for listed species and those with a CRPR; species of local concern are discussed generally below.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Adenostoma fasciculatum var. *obtusifolium* San Diego chamise	–	–	–	ND	Between May and June	Dry slopes, ridges, chaparral.	Southern South Coast, southwest Peninsular Ranges, and Baja California, Mexico; between sea level and 2,625 feet above msl.	Suitable habitat, but not observed during surveys.
Adiantum jordanii California maidenhair	–	–	–	LI	–	Shaded hillsides, moist woodland.	California, Oregon, and Baja California, Mexico; between sea level and 3,940 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Anemopsis californica yerba mansa	–	–	–	LI	Between March and September	Saline or alkaline soil in wet or moist areas, seeps, and springs.	High Cascade Range, southern Sierra Nevada, possibly Tehachapi Mountain Area, southwestern Sacramento Valley, San Joaquin Valley, Central Western California, South Coast, Channel Islands, Western Transverse Ranges, possibly San Gabriel Mountains and San Bernardino Mountains, Peninsular Ranges, east of Sierra Nevada, Mojave Desert, possibly Sonoran Desert to Oregon, Kansas, Texas, and northwestern Mexico; between sea level and 6,560 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Aphanisma blitoides aphanisma	–	–	1B.2	–	Between June and September	Saline sand, coastal scrub, and bluffs.	Central Coast, South Coast, Channel Islands, and Baja California, Mexico; between sea level and 655 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Atriplex coulteri Coulter's saltbush	–	–	1B.2	–	Between March and October.	Alkaline soils in open sites, coastal bluffs, and dry hillsides; often on clay barrens in native perennial grasslands, coastal sage scrub, and coastal bluff scrub.	South Coast, Channel Islands, and Baja California, Mexico; between sea level and 1,640 feet above msl.	Suitable habitat, but not observed during surveys.
Atriplex pacifica South Coast saltscale	–	–	1B.2	–	Between March and October.	Coastal bluff scrub and dunes.	South Coast, Channel Islands, and Baja California, Mexico; between sea level and 985 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Atriplex parishii Parish's brittlescale	–	–	1B.1	–	Between June and October.	Alkaline or clay soils in chenopod scrub, playas, and vernal pools.	South Coast, Peninsular Ranges, and Baja California, Mexico; between sea level and 1,540 feet above msl.	No suitable habitat, considered extirpated from Orange County (Roberts 2008), and not observed during surveys; not expected to occur.
Atriplex serenana var. *davidsonii* Davidson's saltscale	–	–	1B.2	–	Between April and October	Alkaline soils in coastal bluffs, coastal scrub, and borders of cultivated fields.	South Coast; between sea level and 655 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Brodiaea filifolia thread-leaved brodiaea	FT	SE	1B.1	–	Between March and June.	Clay soils, especially Alo clays, in grasslands, openings in coastal sage scrub, and vernal pools.	South Coast (Los Angeles and San Diego Counties.), San Bernardino Mountains (San Bernardino County.), western Peninsular Ranges (Orange, Riverside, and San Diego Counties.); between 80 and 2,820 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Calochortus catalinae **Catalina mariposa lily**	**–**	**–**	**4.2**	–	**Between March and May.**	**Heavy soil on ridges and slopes in native grassland and openings in coastal sage scrub and chaparral; can be locally common following fire.**	**Southern South Coast, southern Outer South Coast Ranges, western South Coast, Channel Islands, western edge of Western Transverse Ranges, San Gabriel Mountains, and northern Peninsular Ranges; between sea level and 2,300 feet above msl.**	**Suitable habitat; observed during surveys.**
Calochortus weedii **var. *intermedius*[a] intermediate mariposa lily**	**–**	**–**	**1B.2**	–	**Between June and July.**	**Rocky soils on dry, open ridges and slopes in coastal sage scrub and chaparral; can be locally common following fire.**	**South Coast and northern Peninsular Ranges; between sea level and 2,230 feet above msl.**	**Suitable habitat; observed during surveys.**
Ceanothus spinosus var. *nov.* [b] non-spined greenbark ceanothus	–	–	–	LI	Between January and May.	Slopes, canyons, and chaparral.	Southern Outer South Coast Ranges, Western Transverse Ranges, Peninsular Ranges, and northern Baja California, Mexico; between sea level and 3,940 feet above msl.	Suitable habitat, but not observed during surveys.
Centromadia parryi ssp. *australis*[a] southern tarplant	–	–	1B.1	–	Between June and October.	Salt marshes, grassland, vernal pools, and coastal scrub.	South Coast to northwestern Baja California, Mexico; between sea level and 655 feet above msl.	Suitable habitat, but not observed during surveys.
Cercocarpus minutiflorus San Diego mountain mahogany	–	–	–	ND	Between March and May.	Chaparral.	Peninsular Ranges (Riverside, San Diego Counties) and northern Baja California, Mexico; between sea level and 4,595 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Chaenactis glabriuscula var. *orcuttiana* Orcutt's pincushion	–	–	1B.1	–	Between April and July.	Sandy coastal bluffs, dunes, and beaches.	South Coast to northern Baja California, Mexico; between sea level and 330 feet above msl.	No suitable habitat, considered extirpated from Orange County (Roberts 2008), and not observed during surveys; not expected to occur.
***Chorizanthe staticoides* var. *chrysacantha*[c] Orange County Turkish rugging**	**–**	**–**	**–**	**OCE**	**Between April and July.**	**Sand, gravel, or rocks.**	**Central and southern South Coast, Outer South Coast Ranges, Southwestern California (except eastern Peninsular Ranges); between 985 and 5,580 feet above msl.**	**Suitable habitat; full species observed during surveys.**
***Cneoridium dumosum* bushrue**	**–**	**–**	**–**	**NRE**	**Between February and May.**	**Mesas and coastal bluffs.**	**Southern South Coast, southern Channel Islands (San Clemente Island) and Baja California, Mexico; between sea level and 3,280 feet above msl.**	**Suitable habitat; observed during surveys.**
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	–	–	1B.2	–	Between May and June.	On somewhat mesic slopes and occasionally along sandstone ridges in chaparral.	South Coast and Peninsular Ranges to northern Baja California, Mexico; between 330 and1,805 feet above msl.	Suitable habitat, but not observed during surveys.
***Deinandra paniculata* paniculate tarplant**	**–**	**–**	**4.2**	**–**	**Between May and November.**	**Often in sandy soils of grasslands, open chaparral and woodlands, and disturbed areas.**	**Southern Central Coast/Outer South Coast Ranges, southern Outer South Coast Ranges, South Coast, Western Transverse Ranges (eastern Santa Ynez Mountains), Peninsular Ranges, and northern Baja California, Mexico; between sea level and 4,330 feet above msl.**	**Suitable habitat; observed during surveys.**

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Dichondra occidentalis **western dichondra**	**–**	**–**	**4.2**	**–**	**Between March and June.**	**Among rocks and shrubs in coastal scrub, chaparral, and oak woodland.**	**Southern Central Coast, South Coast, Channel Islands, Peninsular Ranges, and Baja California, Mexico; between sea level and 1,705 feet above msl.**	**Suitable habitat; observed during surveys.**
Dudleya edulis ladies fingers dudleya	–	–	–	LI	Between May and July.	On soil, rocky slopes, and ledges.	South Coast, Peninsular Ranges, and northern Baja California, Mexico; between sea level and 4,265 feet above msl.	Suitable habitat, but not observed during surveys.
Dudleya lanceolata **lance-leaved dudleya**	**–**	**–**	**–**	**RUGF (octoploid segregate)**	**Between April and July.**	**On soil or slopes with broken rocks.**	**Central Coast (southern Santa Cruz County), San Francisco Bay Area, South Coast Ranges, Transverse Ranges, Peninsular Ranges, Desert Mountains, and northern Baja California, Mexico; between 100 and 4,100 feet above msl.**	**Suitable habitat; undetermined genetic form observed during surveys.**
Dudleya multicaulis[a] **many-stemmed dudleya**	**–**	**–**	**1B.2**	**–**	**Between May and June.**	**In heavy, often clayey or cobbly soils or on sandstone outcrops in coastal plains, coastal sage scrub, or native grassland.**	**South Coast; between sea level and 1,970 feet above msl.**	**Suitable habitat; observed during surveys.**
Dudleya stolonifera Laguna Beach dudleya	FT	ST	1B.1	–	Between May and July	On rocky, northern-facing cliffs and outcrops. May hybridize with *Dudleya edulis*.	Central South Coast (San Joaquin Hills, Orange County.); between sea level and 820 feet above msl.	Suitable habitat, but not observed during surveys. Observed in immediate vicinity during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Euphorbia misera cliff spurge	–	–	2B.1	–	Between January and August.	Rocky slopes and coastal bluffs in coastal bluff scrub and Mojavean desert scrub.	South Coast, southern Channel Islands, western Sonoran Desert; and Baja California, Mexico; sea level to 1,640 feet above msl.	Suitable habitat, but not observed during surveys.
Ferocactus viridescens San Diego barrel cactus	–	–	2B.1	–	Between May and June.	Sandy to rocky areas.	South Coast (San Diego County) and Baja California, Mexico; between 35 and 490 feet above msl.	Suitable habitat, but not observed during surveys.
Harpagonella palmeri Palmer's grappling hook	–	–	4.2	–	Between March and April	Dry, semi-barren sites in chaparral, coastal scrub, and grassland.	South Coast, Peninsular Ranges, southwestern Sonoran Desert, southwestern Arizona, and northwestern Mexico; between sea level and 3,280 feet above msl.	Suitable habitat, but not observed during surveys.
Hordeum intercedens vernal barley	–	–	3.2	–	Between March and June.	Vernal pools; mesic grasslands; dry, saline streambeds; and alkaline flats.	San Joaquin Valley, Outer South Coast Ranges, South Coast, Channel Islands, Peninsular Ranges, and northwestern Baja California, Mexico; between sea level and 1,640 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Horkelia cuneata var. *puberula* mesa horkelia	–	–	1B.1	–	Between March and July.	Dry, sandy, coastal chaparral and openings of oak woodlands.	Outer South Coast Ranges, South Coast (especially foothill edge of Los Angeles Basin), and Peninsular Ranges; between 230 feet and 2,855 feet above msl.	Suitable habitat, but not observed during surveys.
Isocoma menziesii var. *decumbens* decumbent goldenbush	–	–	1B.2	–	Between July and November.	Sandy soil in chaparral, coastal scrub, the landward side of dunes, hillsides, and arroyos.	Southern South Coast, southern Channel Islands, southern Peninsular Ranges, and Baja California, Mexico; between sea level and 655 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Juncus textilis basket rush	–	–	–	LI	Between July and November.	Slong stream courses in riparian woodland and rarely on mesic slopes.	Southern Outer South Coast Ranges, southwestern California (except Channel Islands); between sea level and 5,905 feet above msl.	Marginally suitable habitat, but not observed during surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	–	–	1B.1	–	Between April and May.	Saline places, vernal pools, coastal salt marshes.	Inner North Coast Ranges, southern Sierra Nevada Foothills, Tehachapi Mountain area, Great Central Valley, Central Western California, South Coast, northern Channel Islands (Santa Rosa Island), Peninsular Ranges, and western Mojave Desert; between sea level and 3,280 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Nama stenocarpum mud nama	–	–	2B.2	–	Between March and October.	Intermittently wet areas such as drying vernal pools and ponds.	San Joaquin Valley, South Coast, southern Channel Islands, western Peninsular Ranges, southeastern Sonoran Desert to Texas, and northern Mexico; between sea level and 2,655 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Navarretia prostrata prostrate vernal pool navarretia	–	–	1B.1	–	Between April and July.	Alkaline floodplains and vernal pools.	Western San Joaquin Valley (Merced County), Central Coast (western Alameda County), San Francisco Bay Area (Alameda County), South Coast Ranges, central South Coast (Los Angeles County), and Peninsular Ranges (Santa Rosa Plateau); between sea level and 2,300 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Nolina cismontana chaparral nolina	–	–	1B.2	–	Between May and July.	Dry chaparral and coastal sage scrub.	South Coast, Western Transverse Ranges, and Peninsular Ranges; between 655 and 4,265 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Pentachaeta aurea ssp. *allenii* Allen's pentachaeta	–	–	1B.1	–	Between March and May.	Dry slopes and flats in open, grassy, coastal sage scrub.	Southern South Coast and Peninsular Ranges (Orange County); between sea level and 1,640 feet above msl.	Suitable habitat, but not observed during surveys.
Phacelia ramosissima var. *austrolitoralis*[b] south coast branching phacelia	–	–	3.2	–	Between March and August	Sandy soils near the coast in sand dunes, salt marshes, and coastal bluffs.	Central Coast, South Coast, and northern Channel Islands; between sea level and 985 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Pseudognaphalium leucocephalum white rabbit-tobacco	–	–	2B.2	–	Between July and October.	Sandy and gravelly benches, dry stream bottoms, and canyon bottoms in alluvial scrub and mulefat scrub.	South Coast, San Bernardino Mountains, Peninsular Ranges, Arizona, New Mexico, and Mexico; between sea level and 1,640 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Quercus dumosa Nuttall's scrub oak	–	–	1B.1	–	Between March and May.	Sandy and sandstone-derived soils near the coast in chaparral and coastal sage scrub.	South Coast, Peninsular Ranges, and Baja California, Mexico; between sea level and 655 feet above msl.	Suitable habitat, but not observed during surveys.
Quercus engelmanii Engelmann oak	–	–	4.2	–	Between April and May.	Slopes, foothills, and woodland.	South Coast, southern Channel Islands, San Gabriel Mountains, Peninsular Ranges, and Baja California, Mexico; between sea level and 4,265 feet above msl.	Suitable habitat, but not observed during surveys.

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				
Rhamnus crocea **spiny redberry**	–	–	–	**RR**	**Between January and April.**	**Coastal sage scrub, chaparral, and woodland.**	**Klamath Ranges, Outer North Coast Ranges, High Sierra Nevada, Central Western California, Southwestern California, and Baja California, Mexico; between sea level and 3,775 feet above msl.**	**Suitable habitat; observed during surveys.**
Suaeda esteroa estuary seablite	–	–	1B.2	–	Between May and October.	Mid-level coastal salt marshes.	South Coast and northern Mexico; between sea level and 15 feet above msl.	No suitable habitat and not observed during surveys; not expected to occur.
Symphoricarpos mollis creeping snowberry	–	–	–	LI	Between April and May.	Ridges, slopes, and open places in woodland.	Northwestern California, Cascade Range, Sierra Nevada, Central Western California, Southwestern California, Modoc Plateau, to British Columbia, Idaho, and New Mexico; between 30 and 9,845 feet above msl.	Suitable habitat, but not observed during surveys.
Verbesina dissita **big-leaved crownbeard**	**FT**	**ST**	**1B.1**	–	**Between May and August.**	**Dry slopes and canyons in southern maritime chaparral and Diegan coastal sage scrub.**	**Southern South Coast (Orange County), naturalized in San Bernardino Mountains, and Baja California, Mexico; between sea level and 655 feet above msl.**	**Suitable habitat; observed during surveys.**

TABLE 3
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status				Blooming Period	Habitat	Range	Potential to Occur on the Property; Results of Survey
	USFWS	CDFW	CRPR	Local Concern				

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; msl: mean sea level; –: No status designation.

Species observed on site are denoted in **boldface type.**

Federal (USFWS)		State (CDFW)		Local	
FE	Endangered	SE	Endangered	LI	Local Interest
FT	Threatened	ST	Threatened	OCE	Orange County Endemic
FC	Candidate			RR	Regionally Rare
				RUC	Regionally Unique Cline
				RUGF	Regionally Unique Genetic Form
				ND	Northern Disjunct
				NRE	Northern Range Edge Species

CRPR

1B	Plants Rare, Threatened, or Endangered Throughout Their Range
2B	Plants Rare, Threatened, or Endangered in California But More Common Elsewhere
3	Plants that require more information before they can be assigned to another rank or rejected
4	Plants of Limited Distribution – A Watch List

CRPR Threat Rank Extensions

None	Plants lacking any threat information
.1	Seriously Endangered in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2	Fairly Endangered in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3	Not very Threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

[a] A Covered Species

[b] The variety is not recognized in Jepson Herbarium (2014), Hickman (1993) or Munz (1947); information on blooming, habitat, and range is for the full species.

[c] The variety is not recognized in Jepson Herbarium (2014); Hickman (1993) states that the "ssp. *chrysacantha*" is a form apparently environmentally induced. Information on blooming, habitat, and range is for the full species.

Catalina Mariposa Lily

Catalina mariposa lily has a CRPR of 4.2. It typically blooms between March and May. This perennial bulbiferous herb occurs in heavy soil on ridges and slopes in native grasslands and openings in coastal sage scrub and chaparral (Roberts 2008; Baldwin et al. 2012). This species is known from the southern South Coast, southern Outer South Coast Ranges, western South Coast, Channel Islands, western edge of the Western Transverse Ranges, San Gabriel Mountains, and northern Peninsular Ranges at elevations between sea level and approximately 2,300 feet above msl.

A total of 393 Catalina mariposa lily individuals were observed in 4 locations at the center of the property (Table 4; Exhibit 8). Most of these plants (Population 1) were observed in the annual grassland on the property; associated species include wild oat, western blue-eyed-grass, blue dicks, needlegrass, and cardoon. A voucher specimen (ADR11) was collected from this population and deposited at the herbarium at Rancho Santa Ana Botanic Garden. Populations 2 and 3 were observed in openings in southern mixed chaparral; associated species include black sage and dot seed plantain (*Plantago erecta*). Population 4 was observed in openings of mixed sage scrub along the trail; associated species include needlegrass, California sagebrush, and bush monkeyflower.

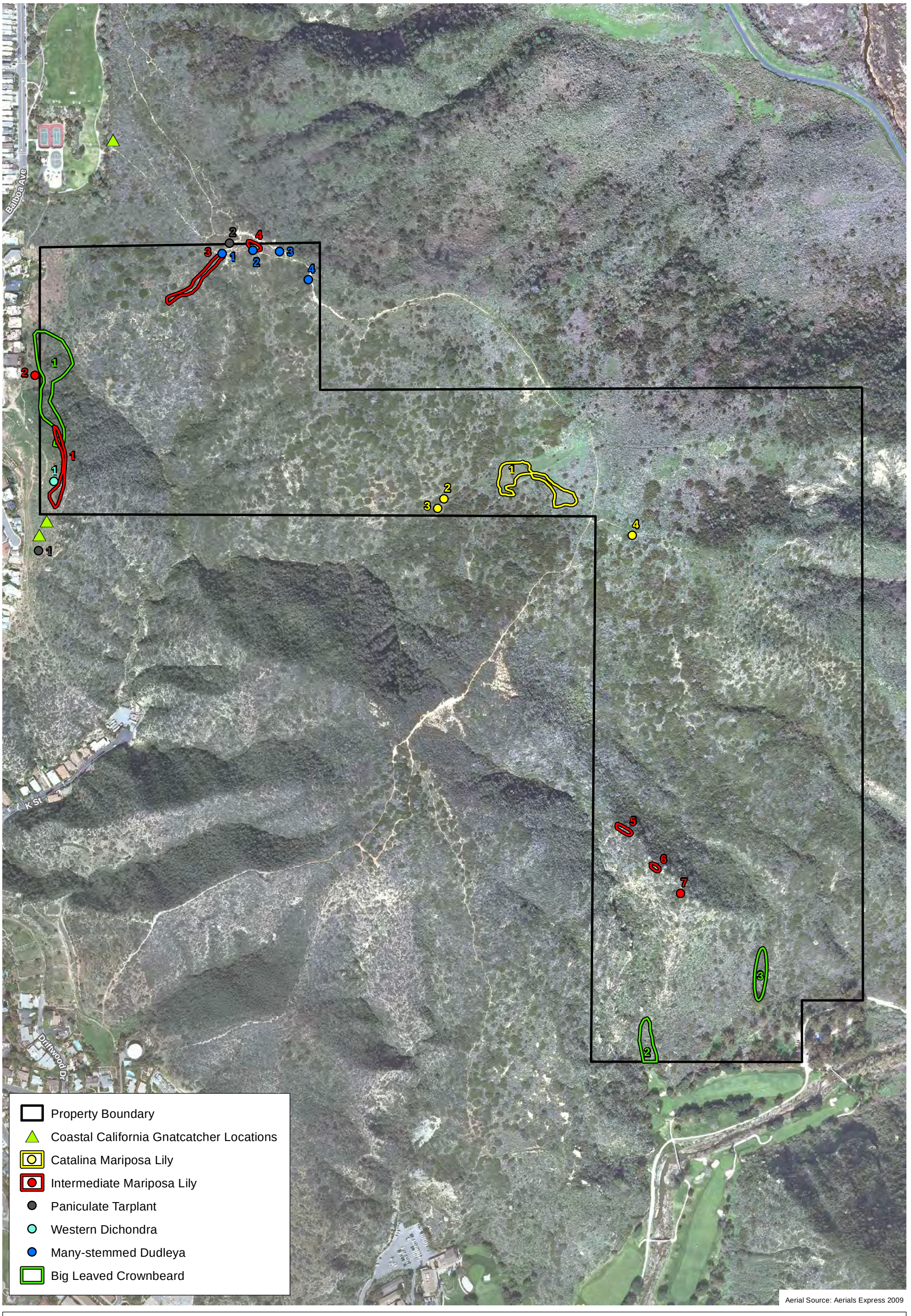
TABLE 4
CATALINA MARIPOSA LILY POPULATIONS OBSERVED ON THE ALISO CANYON PROPERTY

Population	Number of Individuals	Phenology		
		Vegetative	Flowering	Fruiting
1	360	0%	96%	4%
2	1	0%	100%	0%
3	1	0%	100%	0%
4	31	0%	52%	48%
Total/Average	**393**	**0%**	**87%**	**13%**

Intermediate Mariposa Lily

Intermediate mariposa lily has a CRPR of 1B.2. It typically blooms between June and July (Baldwin et al. 2012). This perennial bulbiferous herb occurs on dry, rocky, open slopes in chaparral and coastal sage scrub at elevations between sea level and approximately 2,230 feet above msl (Roberts 2008; Baldwin et al. 2012). This species is known from the South Coast and northern Peninsular Ranges (Baldwin et al. 2012).

A total of 144 intermediate mariposa lily individuals were observed in 7 locations on the property (Table 5; Exhibit 8). These plants were observed primarily on ridgelines and southern-facing slopes in mixed sage scrub and mixed sage–chaparral scrub ecotone. The species generally associated with these populations includes California sagebrush, California buckwheat, black sage, lemonade berry, coastal prickly pear, red brome (*Bromus madritensis* ssp. *rubens*), and needlegrass. A voucher specimen was not collected.



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Special Status Species

Exhibit 8

Measure M2 Acquisition Properties Evaluation - Aliso Canyon Property

N W E S

425 212.5 0 425 Feet

BonTerra PSOMAS

(Rev: 10-02-2015 LEW) R:\Projects\OCT_OCTA\J008.01\Graphics\Aliso_Cyn\BioTech\Ex8_SSSpecies_20150917.pdf

TABLE 5
INTERMEDIATE MARIPOSA LILY POPULATIONS OBSERVED ON THE ALISO CANYON PROPERTY

Population	Number of Individuals	Phenology		
		Vegetative	Flowering	Fruiting
1	64	12%	52%	36%
2	2	0%	100%	0%
3	27	37%	59%	4%
4	3	0%	100%	0%
5	8	0%	75%	25%
6	12	0%	100%	0%
7	28	57%	39%	4%
Total/Average	**144**	**15%**	**75%**	**10%**

Paniculate Tarplant

Paniculate tarplant (*Deinandra paniculata*) has a CRPR of 4.2. It typically blooms between May and November (Baldwin et al. 2012). This annual herb occurs in sandy soils of grassland, open chaparral, and woodland and disturbed areas at elevations between sea level and approximately 4,330 feet above msl (Baldwin et al. 2012). This species is known from the southern Central Coast/Outer South Coast Ranges, southern Outer South Coast Ranges, South Coast, eastern Santa Ynez Mountains of the Western Transverse Ranges, Peninsular Ranges, and northern Baja California, Mexico (Baldwin et al. 2012).

A total of four paniculate tarplant individuals were observed; one location was immediately south of the property and the other was on a ridgeline on the property (Table 6; Exhibit 8). Population 1 was observed in mixed sage–cactus scrub and associated with California buckwheat, coastal prickly pear, California sagebrush, needlegrass, fascicled tarplant (*Deinandra fasciculata*), and red brome. Population 2 was observed in disturbed mixed sage scrub and associated with California sagebrush, freeway iceplant, osmadenia (*Osmadenia tenella*), soft chess, and French cottonrose. A voucher specimen was not collected due to the small population size.

TABLE 6
PANICULATE TARPLANT POPULATIONS OBSERVED ON THE ALISO CANYON PROPERTY

Population	Number of Individuals	Phenology		
		Vegetative	Flowering	Fruiting
1	1	0%	100%	0%
2	3	66%	34%	0%
Total/Average	**4**	**33%**	**67%**	**0%**

Western Dichondra

Western dichondra has a CRPR of 4.2. It typically blooms between March and June. This perennial, stoloniferous herb occurs among rocks and shrubs in coastal scrub, chaparral, and oak woodland (Baldwin et al. 2012). It is known from the southern Central Coast, South Coast, Channel Islands, Peninsular Ranges, and Baja California, Mexico, at elevations between sea level and approximately 1,705 feet above msl (Baldwin et al. 2012).

One western dichondra individual was observed along the western boundary of the property at the edge of mixed sage–chaparral scrub ecotone. This individual was growing under deerweed and was not in bloom. A voucher specimen was not collected due to the small population size.

Many-Stemmed Dudleya

Many-stemmed dudleya has a CRPR of 1B.2. It typically blooms between May and June (Baldwin et al. 2012). This fleshy, perennial herb occurs in heavy, often clayey or cobbly soils or on sandstone outcrops in coastal plains, coastal sage scrub, or native grassland (Baldwin et al. 2012; Roberts 2008). This species is known from the South Coast at elevations between sea level and approximately 1,970 feet above msl (Baldwin et al. 2012).

A total of 60 many-stemmed dudleya individuals were observed at 4 locations on the property (Table 7, Exhibit 8). These plants occur in disturbed mixed sage scrub immediately adjacent to the trail. The species generally associated with these populations include California buckwheat, California sagebrush, black sage, lemonade berry, coastal prickly pear, needlegrass, red brome, freeway iceplant, and intermediate mariposa lily. A voucher specimen was not collected due to the small population size.

TABLE 7
MANY-STEMMED DUDLEYA POPULATIONS OBSERVED ON THE ALISO CANYON PROPERTY

Population	Number of Individuals	Phenology		
		Vegetative	Flowering	Fruiting
1	1	0%	100%	0%
2	13	8%	92%	0%
3	20	0%	100%	0%
4	26	62%	38%	0%
Total/Average	**60**	**18%**	**82%**	**0%**

Big-Leaved Crownbeard

Big-leaved crownbead is a federally and State-listed Threatened species and has a CRPR of 1B.1. It typically blooms between May and August (Baldwin et al. 2012). This perennial shrub occurs on dry slopes and in canyons in southern maritime chaparral and Diegan coastal sage scrub at elevations between sea level and approximately 656 feet above msl (Baldwin et al. 2012; Roberts 2008). This species is known from the southern South Coast in Orange County and Baja California, Mexico; it is naturalized in the San Bernardino Mountains (Baldwin et al. 2012).

Big-leaved crownbeard was observed at three locations on the property (Exhibit 8). This species may be clonal and spread out over a large area (Marsh 1992); therefore, an accurate population count could not be made. However, almost 1,000 individual shrub stems were observed, and the populations are each estimated to contain 100s of individuals. These plants occur on steep slopes in mixed sage scrub, mixed sage–chaparral scrub ecotone, and southern mixed chaparral. The species generally associated with these populations include black sage, California buckwheat, toyon, and lemonade berry. A voucher specimen was not collected due to the listed status of the species.

Species of Local Concern

Two species of local concern were observed on the property: bushrue (*Cneoridium dumosum*) and spiny redberry. Turkish rugging (*Chorizanthe staticoides*) was observed on the property and is assumed to be Orange County Turkish rugging (*Chorizanthe staticoides* var. *chrysacantha*) based on range. Lance-leaved dudleya (*Dudleya lanceolata*) was observed on the property, but it is undetermined whether it is the octoploid segregate (i.e., having twice the number of typical chromosomes).

3.3.4 Special Status Wildlife

Based on the results of the literature review, 42 special status wildlife species have been reported in the vicinity of the Aliso Canyon property. These species and their potential for occurrence (which is based on the presence of suitable habitat) are summarized in Table 8. Note that these species are listed taxonomically. Three special status wildlife species were observed on the property; two species of local concern were also observed on the property. These species are discussed after the table. Note that detailed information and mapping of special status wildlife species populations were only recorded for those considered special status by the USFWS and/or the CDFW; species of local concern are discussed generally below.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Invertebrates						
Danaus plexippus pop. 1 monarch (California overwintering population)	–	SA	–	Primarily occurs in coastal, lowland, and foothill areas with milkweed (*Ascelpias* spp.), though also in deserts and mountains; overwinters in large numbers on trees.	South Argentina and the Bahamas and Antilles; established in Bermuda, Hawaii, the Solomon's, New Caledonia, New Zealand, Australia, New Guinea, Ceylon, India, the Azores, and the Canary Islands.	Limited suitable wintering habitat; limited potential to occur.
Branchinecta sandiegonensis San Diego fairy shrimp	FE	–	–	Vernal pools and ephemeral ponds in San Diego Mesa hardpan and claypan basins, typically in chamise chaparral but also coastal sage scrub and annual grassland.	Coastal Orange County and San Diego County; a disjunct population reported from Santa Barbara.	No suitable habitat; not expected to occur.
Streptocephalus woottoni Riverside fairy shrimp	FE	–	–	Deep vernal pools and ephemeral ponds.	Coastal Ventura County south to Baja California, Mexico.	No suitable habitat; not expected to occur.
Fish						
Oncorhynchus mykiss irideus southern steelhead (southern California DPS)	FE	SSC	–	Cool water streams; spawns in areas of gravelly substrate in riffles or pool tails.	From the Santa Maria River, San Luis Obispo County to U.S./Mexico border.	No suitable habitat; not expected to occur.
Oncorhynchus mykiss irideus steelhead (Central Valley DPS)	FT	–	–	Cool water streams; spawns in areas of gravelly substrate in riffles or pool tails.	The Sacramento and San Joaquin Rivers and their tributaries, excluding the San Francisco and San Pablo Bays and their tributaries. Also included are artificial propagation programs in the Coleman National Fish Hatchery and the Feather River Hatchery.	No suitable habitat; not expected to occur.
Gila orcuttii[a] arroyo chub	–	SSC	–	Coastal freshwater streams and rivers with steady current and emergent vegetation.	Currently found at three native locations: Santa Margarita and De Luz Creeks in San Diego County, Trabuco and San Juan Creeks in Orange County, and Malibu Creek in Los Angeles County; introduced elsewhere.	No suitable habitat; not expected to occur.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Eucyclogobius newberryi tidewater goby	FE	SSC	–	Brackish, fairly still but not stagnant water primarily in shallow coastal lagoons, estuaries, marshes, and lower stream reaches.	From Tillas Slough (mouth of the Smith River, Del Norte County) to Agua Hedionda Lagoon (northern San Diego County).	No suitable habitat; not expected to occur.
Amphibians						
Spea hammondii western spadefoot	–	SSC	–	Quiet streams, vernal pools, and temporary ponds.	Great Valley and bordering foothills and Coast Ranges from Monterey Bay south to Baja California, Mexico.	No suitable habitat; not expected to occur.
Anaxyrus californicus arroyo toad	FE	SSC	–	Semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	Southern California and northwestern Baja California, Mexico.	No suitable habitat; not expected to occur.
Reptiles						
Emys marmorata[a] western pond turtle	–	SSC	–	In ponds, lakes, marshes, rivers, streams, and irrigation ditches with a rocky or muddy bottom and aquatic vegetation.	Pacific slope drainages from Washington south to northern Baja California, Mexico.	No suitable habitat; not expected to occur.
Phrynosoma blainvillii[a] coast horned lizard	–	SSC	–	Scrubland, grassland, coniferous forests, and broadleaf woodland with friable soil for burrowing.	Northern California south to northern Baja California, Mexico.	Suitable habitat; may occur.
Aspidoscelis hyperytha[a] orange-throated whiptail	–	SSC	–	Washes and open areas of sage scrub and chaparral in friable, gravelly soil.	Western Peninsular Ranges from Orange and San Bernardino Counties south to Baja California, Mexico.	Suitable habitat; may occur.
Aspidoscelis tigris stejnegeri San Diegan tiger whiptail	–	SA	–	Hot and dry open areas with sparse foliage (e.g., chaparral, woodland).	Coastal Southern California, mostly west of the Peninsular Ranges, south of the Transverse Ranges, and north into Ventura County.	Suitable habitat; may occur.
Anniella pulchra pulchra silvery legless lizard	–	SSC	LI	In loose sandy soil of chaparral, pine-oak woodland, beach, and riparian areas.	Coast, Transverse, and Peninsular Ranges from Contra Costa County south to Baja California, Mexico.	Suitable habitat; may occur.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Thamnophis hammondii two-striped garter snake	–	SSC	–	Perennial or intermittent freshwater streams with rocky beds bordered by willows or other dense vegetation.	From Monterey County south to El Rosario in Baja California, Mexico.	No suitable habitat; not expected to occur.
Crotalus ruber red-diamond rattlesnake	–	SSC	–	Open scrub, chaparral, woodland, and grassland.	Orange County and San Bernardino County south to Baja California, Mexico.	Suitable habitat; may occur.
Birds						
Accipiter cooperii **Cooper's hawk (nesting)**	**–**	**WL**	–	**Prefers to nest in oak woodlands and riparian woodlands; forages primarily in forest habitats.**	**Breeds from southern Canada into northwestern and north-central Mexico; wintering range extends south.**	**Suitable foraging and nesting habitat; observed foraging and may occur for nesting.**
Accipiter striatus sharp-shinned hawk (nesting)	–	WL	–	Nests and forages in forest habitats.	Breeds in Alaska and Canada, portions of the U.S., in the West Indies, and south through Mexico, Central America, and South America. Migrant and winter visitor in Orange County.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.
Buteo jamaicensis **red-tailed hawk**	–	–	**LI**	**Open country with high perches, including woodlands, prairie groves, mountains, plains, and roadsides. Nests in trees, on cliff ledges, among arms of giant cactus, or on artificial structures such as towers and buildings.**	**Widespread throughout North America; northern populations migrate south.**	**Suitable foraging and nesting habitat; observed foraging and may occur for nesting.**
Aquila chrysaetos golden eagle (nesting and wintering)	–	FP, WL	–	Breeds in open and semi-open habitats, such as tundra, shrublands, grasslands, woodland-brushlands, coniferous forests, farmland, and riparian habitats. Broad expanses of open country required for foraging; nesting primarily in mountainous areas with large trees or cliffs.	Resident throughout Southern California, except in the Colorado Desert and Colorado River, where it is a casual winter visitor.	Suitable foraging habitat; may occur for foraging. No suitable nesting habitat; not expected to occur for nesting.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Circus cyaneus **northern harrier (nesting)**	**–**	**SSC**	–	**Occurs in open habitats, nesting on the ground in dense vegetation.**	**Breeds throughout North American from northern Alaska and Canada south to northern Baja California, Mexico. Some populations migrate to Central America.**	**Suitable foraging and nesting habitat; observed foraging and may occur for nesting.**
Elanus leucurus white-tailed kite (nesting)	–	FP	–	Low elevation grassland, agricultural areas, wetlands, oak woodlands, savannahs, and riparian habitat adjacent to open areas.	Resident in coastal Southern California and a visitor and local breeder on the western edge of the deserts.	Suitable foraging and nesting habitat; may occur for foraging and nesting.
Charadrius alexandrines nivosus western snowy plover (nesting)	FT	SSC	–	Breeds primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches and creek and river mouths, and salt pans in at lagoons and estuaries. Winters in breeding habitat and man-made salt ponds and estuarine sand and mud flats.	Breeds from Damon Point, Washington south to Bahia Magdalena, Baja California, Mexico. Winters primarily in coastal areas from southern Washington to Central America.	No suitable foraging or nesting habitat; not expected to occur for foraging or nesting.
Sterna antillarum browni California least tern (nesting colony)	FE	SE, FP	–	Nests on sandy beaches or mud and sand flats near a lagoon or estuary, where they forage. Winters along marine coasts in littoral zone, bays, and estuaries; little is known of their wintering habitat.	Breeds along the Pacific coast primarily from Santa Barbara to San Diego County; however, reported from the San Francisco Bay to southern Baja California, Mexico; winters from Mexico south.	No suitable foraging or nesting habitat; not expected to occur for foraging or nesting.
Geococcyx californianus greater roadrunner	–	–	LI	Deserts and open country with scattered brush, including chaparral. Nests in dense brush, low trees, or cactus.	U.S. southwest.	Suitable habitat; may occur.
Empidonax traillii extimus[a] southwestern willow flycatcher (nesting)	FE	SE	–	Semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	Southern California and northwestern Baja California, Mexico.	No suitable foraging or nesting habitat; not expected to occur for foraging or nesting.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Lanius ludovicianus loggerhead shrike (nesting)	–	SSC	–	Grasslands and other dry, open habitats.	Throughout North America; a year-round resident in Southern California.	Limited suitable foraging and nesting habitat; limited potential to occur for foraging and nesting.
Vireo bellii pusillus[a] least Bell's vireo (nesting)	FE	SE	–	Riparian habitat dominated by willows with dense understory vegetation.	Breeds throughout the Central Valley and other low-elevation river systems in California and Baja California, Mexico.	No suitable foraging or nesting habitat; not expected to occur for foraging or nesting.
Campylorhynchus brunneicapillus sandiegensis[a] coastal cactus wren (San Diego and Orange Counties)	–	SSC	–	Coastal sage scrub and alluvial sage scrub with prickly pear cactus and/or cholla.	Southern Orange County and San Diego County to northwestern Baja California, Mexico.	Limited suitable habitat; limited potential to occur.
***Polioptila californica californica*[a] coastal California gnatcatcher**	**FT**	**SSC**	–	**Coastal sage scrub vegetation.**	**Los Angeles, Orange, Riverside, and San Diego Counties south to Baja California, Mexico.**	**Suitable habitat; observed during focused surveys.**
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	–	WL	–	Steep, dry, rocky, southern- or western-facing slopes in scrub vegetation interspersed with grasses and forbs or rock outcrops.	Year-round in Southern California.	Suitable habitat; may occur.
Ammodramus savannarum grasshopper sparrow (nesting)	–	SSC	–	Dense, dry, or well-drained grassland.	Across North America from southern Canada south to Ecuador. Summer resident along the coastal slope of Southern California.	No suitable habitat; not expected to occur.
Mammals						
Antrozous pallidus pallid bat	–	SSC	–	Low elevation grasslands, shrublands, woodlands, and forests. Roosts in caves, crevices, mines, bridges, and occasionally in hollow trees.	Throughout California except the high Sierra Nevada from Shasta County to Kern County and in the northwestern portion of the state.	Suitable foraging and roosting habitat; may occur for foraging and roosting.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Myotis yumanensis Yuma bat	–	SA	–	Open forests and woodlands, closely associated with water bodies. Roosts in buildings, mines, caves, crevices, swallow nests, and under bridges.	Southwestern British Columbia through the western U.S., and into central Mexico.	Suitable foraging habitat adjacent to property; limited potential to occur for foraging. Suitable roosting habitat; may occur for roosting.
Eumops perotis californicus western bonneted bat	–	SSC	–	Open, semi-arid to arid habitats including conifer and deciduous woodland, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban. Roosts in crevices in cliffs, high buildings, trees, and tunnels.	Southeastern San Joaquin Valley and Coastal Ranges from Monterey County south through Southern California, and from the coast eastward to the Colorado Desert.	Suitable foraging and roosting habitat; may occur for foraging and roosting.
Nyctinomops femorosaccus pocketed free-tailed bat	–	SSC	–	Pinyon-juniper woodland, desert scrub, desert succulent scrub, desert riparian, desert. Roosts in crevices in cliffs, caverns, or buildings.	Southwestern U.S. to south-central Mexico.	No suitable habitat; not expected to occur for foraging or roosting.
Nyctinomops macrotis big free-tailed bat	–	SSC	–	Rugged, rocky habitats in arid landscapes. Found in a variety of plant associations, including desert shrub, woodlands, and evergreen forests. Roosts in crevices in high cliffs and rocky outcrops.	Most of South America northward to include Mexico, Arizona, New Mexico, southern and western Texas, southern California and southeastern Nevada, southern Utah, and north to central Colorado; near sea level to about 8,500 feet above msl.	Suitable foraging and roosting habitat; may occur for foraging and roosting.
Perognathus longimembris pacificus Pacific pocket mouse	FE	SSC	–	Occurs on fine-grained, sandy substrates in open coastal sage scrub, coastal strand, coastal dune, and river alluvium.	Historically occurred on the coast from Marina del Rey and El Segundo in Los Angeles County to the vicinity of the U.S./Mexican border. Currently known from the Dana Point Headlands in Orange County and two locations at Camp Pendleton in San Diego County.	No suitable habitat; not expected to occur.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROPERTY VICINITY

Species	Status			Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	Local Concern			
Mustela frenata long-tailed weasel	–	–	LI	Found in most habitats, especially near water.	From southern Canada, throughout most of the U.S. (excluding southwestern deserts), to northern South America.	Suitable habitat; may occur.
Puma concolor[a] mountain lion	–	–	LI	Broad variety of habitats in range except shrubless deserts and agricultural areas.	Latitudinal range of 110 degrees in North and South America.	Suitable habitat; may occur.
Lynx rufus[a] bobcat	–	–	LI	Broad variety of habitats.	Throughout contiguous U.S. and Mexico south to Rio Mescale, and Canada.	Suitable habitat; may occur.
***Odocoileus hemionus* southern mule deer**	**–**	**–**	**LI**	**Prefers mixed habitat with both open areas for feeding and forest or brushy areas for protection; common in western mountain forests, deserts, and brushlands.**	**From western Canada and Alaskan panhandle, to the western U.S. to Minnesota, and to Baja California and Sonora to northern Tamaulipas, Mexico.**	**Suitable habitat; observed during surveys.**

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; DPS: Distinct Population Segment; –: No status designation.

Species observed on site are denoted in **boldface type.**

LEGEND

Federal (USFWS)		**State (CDFW)**		**Local**	
FE	Endangered	SE	Endangered	LI	Local Interest
FT	Threatened	SSC	Species of Special Concern		
		WL	Watch List		
		FP	Fully Protected		
		SA	Special Animal		

[a] Proposed Covered Species in the NCCP/HCP.

Cooper's Hawk

Cooper's hawk is a Watch List species; nesting individuals are protected. Preferred nesting habitats are oak woodlands and riparian woodlands (Hamilton and Willick 1996). This species preys on medium-sized birds and small mammals, foraging primarily in forest habitats (Curtis and Rosenfield 2006). Cooper's hawks breed from southern Canada, throughout the conterminous U.S., and into northwestern and northern-central Mexico (Curtis and Rosenfield 2006). The wintering range is similar to the breeding range except the northernmost populations are migratory or partially migratory, and the winter range extends throughout Mexico and possibly as far south as Panama (Curtis and Rosenfield 2006). Both resident and migratory populations exist in Orange County. Breeding populations have increased in recent years as they have expanded into urban areas (Shuford and Gardali 2008). This species is relatively tolerant of man-altered landscapes; however, threats to this species include the loss of appropriate woodlands for breeding and foraging, collisions with man-made objects, and possibly pesticides (Curtis and Rosenfield 2006).

This species was incidentally observed flying over the property during focused surveys for coastal California gnatcatcher; suitable nesting habitat is also present.

Northern Harrier

Northern harrier is a California Species of Special Concern; nesting individuals are protected. It is a regular winter migrant in marshes and fields throughout Southern California, but is very scarce as a local breeder (Garrett and Dunn 1981). Some breeding populations may be resident, though the species appears to be nomadic, both between years and within the breeding season (Shuford and Gardali 2008). This raptor occurs year-round over open habitats, nesting on the ground within dense vegetation (Shuford and Gardali 2008). While once a relatively common species during fall, winter, and spring in undeveloped areas of the County, the northern harrier population is now greatly reduced and localized in distribution. This species is threatened by loss of habitat, pesticides (Ehrlich et al. 1988), and loss of suitable breeding habitat (MacWhirter and Bildstein 1996).

This species was incidentally observed flying over the property during focused surveys for coastal California gnatcatcher; suitable nesting habitat is also present.

Coastal California Gnatcatcher

Coastal California gnatcatcher is a federally listed Threatened species and a California Species of Special Concern. In California, this subspecies is an obligate resident of coastal sage scrub vegetation types. It occurs in most of Baja California, Mexico's arid regions, but this subspecies is extremely localized in the United States, where it predominantly occurs in coastal regions of highly urbanized Los Angeles, Orange, Riverside, and San Diego Counties (Atwood 1992). Brood parasitism by brown-headed cowbirds (*Molothrus ater*) and loss of habitat to urban development have been cited as causes of coastal California gnatcatcher population decline (Unitt 1984; Atwood 1990).

One male coastal California gnatcatcher was observed on the western edge of the property during focused surveys (Exhibit 8). A pair of gnatcatchers, and later the pair and fledglings, were observed to the north of the property.

Species of Local Concern

Two species of local concern were observed on the property: red-tailed hawk and southern mule deer. Red-tailed hawk was observed flying over the property and may nest on the property. Multiple deer were observed throughout the property.

3.3.5 Critical Habitat

The Federal Endangered Species Act defines critical habitat as follows:

> (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of this [Endangered Species] Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of this [Endangered Species] Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

The Aliso Canyon property is not located in proposed or final critical habitat for any federally listed species.

3.4 COVERED SPECIES SUMMARY

The baseline surveys described in this document were focused towards establishing baseline knowledge of the set of species covered by the OCTA M2 NCCP/HCP. The OCTA M2 NCCP/HCP includes requirements to understand and document the status of Covered Species and their habitats within the Preserves. Table 9 provides the following: (1) a summary of the OCTA M2 NCCP/HCP Covered Species; (2) whether they were observed during the baseline surveys; (3) other information documenting the potential for the Covered Species to occur on site; and (4) a description of the threats and opportunities for management of the Preserve to benefit Covered Species.

Potential threats to Covered Species and their habitats on the property include habitat destruction by hikers and mountain bikers; illegal hunting; the spread of non-native plants and wildlife (e.g., freeway iceplant, Selloa pampas grass, and non-native ants); and wildland fires. An RMP may incorporate restricting unauthorized access on portions of the property; relocating public trails to avoid impacts on special status plant species; restoring native habitat by removing invasive plants; and maintaining movement opportunities through the property. A grant from the Wildlife Conservation Board (WCB), which provides funding for watershed-wide habitat enhancement, may be available to assist with restoration activities.

The disturbed mixed sage scrub, annual grassland, and ruderal vegetation on the property represent the primary candidate areas for habitat restoration to native grassland, scrub, or woodland communities depending on the slope, aspect, and soils present. Control of species such as ripgut brome (*Bromus diandrus*), wild oat, and tocalote (*Centaurea melitensis*) presents a challenge given their prevalence throughout the wildlands of Orange County. However, the African fountain grass (*Pennisetum cetaceum*), fennel (*Foeniculum vulgare*), freeway iceplant, giant reed (*Arundo donax*), Selloa pampas grass, and cardoon observed on the property (see Exhibit 5) should be targeted for removal. Removal of gum trees in the southeastern corner of the property would require coordination with the Aliso Canyon Golf Course.

TABLE 9
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Property	Threats, Opportunities, and Management
Plants			
Calochortus weedii* var. *intermedius **intermediate mariposa lily**	**Observed on site.**	**Suitable habitat; additional individuals/populations may be present.**	**Potential threats include hikers and mountain bikers.** **Opportunities occur to establish the species in areas with suitable conditions (e.g., soils) that are currently degraded.** **An RMP may restrict unauthorized access on portions of the site, relocate public trails to avoid adjacent populations, and allow for transplantation and/or seeding of this variety in suitable areas on site.**
Centromadia parryi ssp. *australis* southern tarplant	Not observed on site.	No suitable habitat; not expected to occur.	No opportunities available because suitable habitat does not occur on the property.
Dudleya multicaulis **many-stemmed dudleya**	**Observed on site.**	**Suitable habitat; additional individuals/populations may be present.**	**Potential threats include hikers and mountain bikers. Note that observed populations of this species were in close vicinity to actively used trails.** **Opportunities occur to establish the species in areas with suitable conditions (e.g., soils) that are currently degraded.** **An RMP may restrict unauthorized access on portions of the site, relocate public trails to avoid adjacent populations, and allow for transplantation and/or seeding of this variety in suitable areas on site.**
Fish			
Gila orcuttii arroyo chub	Not observed on site.	No suitable habitat; not expected to occur.	No opportunities available because suitable habitat does not occur on the property. Best Management Practices should be utilized to ensure that water quality in nearby habitat (i.e., Aliso Creek) is protected.

TABLE 9
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Property	Threats, Opportunities, and Management
Reptiles			
Emys marmorata western pond turtle	Not observed on site.	No suitable habitat; not expected to occur.	No opportunities available because suitable habitat does not occur on the property. Best Management Practices should be utilized to ensure that water quality in nearby habitat (i.e., Aliso Creek) is protected.
Phrynosoma blainvillii coast horned lizard	Not observed on site.	Suitable habitat present.	**Potential threats include mortality and habitat destruction due to hikers and mountain bikers, intense fire events, and the spread of non-native ant species.** **Habitat restoration opportunities for coastal sage scrub and other suitable habitat occurs on site.** **An RMP may incorporate restoration opportunities for coasal sage scrub and other native habitats utilized by this species and ensure any plant/soil material brought on site is free of non-native ant species.**
Aspidoscelis hyperytha orange-throated whiptail	Not observed on site.	Suitable habitat present.	**Potential threats include mortality and habitat destruction due to hikers and mountain bikers and intense fire events.** **Habitat restoration opportunities for coastal sage scrub and other suitable habitat occurs on site.** **An RMP may incorporate restoration opportunities for coastal sage scrub and other native habitats utilized by this species.**
Birds			
Empidonax traillii extimus southwestern willow flycatcher (nesting)	Not observed on site.	No suitable habitat; not expected to occur.	No opportunities available because suitable habitat does not occur on the property.
Vireo bellii pusillus least Bell's vireo (nesting)	Not observed on site.	No suitable habitat; not expected to occur.	No opportunities available because suitable habitat does not occur on the property.

TABLE 9
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Property	Threats, Opportunities, and Management
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren (San Diego and Orange Counties)	Not observed on site.	Limited amounts of marginally suitable habitat present.	Potential threats include mortality and habitat destruction due to hikers and mountain bikers and intense fire events. Protection of coastal sage scrub habitat that contains cactus is crucial for the preservation of this subspecies. Habitat restoration opportunities for coastal sage scrub with cactus species occur on site.
Polioptila californica californica **coastal California gnatcatcher**	**Observed on site.**	**Suitable habitat; additional individuals/populations may be present.**	**Potential threats include mortality and habitat destruction due to hikers and mountain bikers and intense fire events.** **Protection of coastal sage scrub habitat is crucial for the preservation of this subspecies.** **There are limited opportunities to provide habitat for this subspecies on site because coastal sage scrub is a component of the chaparral vegetation. However, areas of disturbed mixed sage scrub may be enhanced and sage scrub may be established in suitable semi-natural herbaceous stands on site.**
Mammals			
Puma concolor mountain lion	Not observed on site.	Suitable habitat present.	Potential threats include illegal hunting and intense fire events. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintenance of movement opportunities through the site.
Lynx rufus bobcat	Not observed on site.	Suitable habitat present.	Potential threats include illegal hunting and intense fire events. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintenance of movement opportunities through the site.
Species observed on site are denoted in **boldface type.**			

4.0 REFERENCES

Allen, E.B, S.A. Eliason, V.J. Marquez, G.P. Schultz, N.K. Storms, C.D. Stylinski, T.A. Zink, and M.F. Allen. 2000. What are the Limits to Restoration of Coastal Sage Scrub in Southern California (pp. 253–262). *2nd Interface Between Ecology and Land Development in California* (J.E. Keeley, M. Baer-Keeley, and C.J. Fotheringham, Eds.). Sacramento, CA: U.S. Geological Survey.

American Ornithologists' Union (AOU). 2013 (September). *Check-list of North American Birds* (7th ed., as revised through 54th Supplement). Washington, D.C.: AOU. http://www.aou.org/checklist/north/index.php.

Atwood, J.L. 1992. Rare, Local, Little-Known, and Declining North American Breeders – A Closer Look. *Birding* 25: 228–233. Colorado Springs, CO: American Birding Association.

———. 1990. *Status Review of the California Gnatcatcher (*Polioptila californica*)*. Manomet, MA: Manomet Bird Observatory.

Baldwin, B.G., D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (Eds.). 2012. *The Jepson Manual: Vascular Plants of California* (Second ed.). Berkeley, CA: University of California Press.

Barry, W.J. 1972. *California Prairie Ecosystems*. *Vol. 1: The Central Valley Prairie.* Sacramento, CA: State of California Resources Agency, Department of Parks and Recreation.

Bennett, A.F. 1990. Habitat Corridors and the Conservation of Small Mammals in the Fragmented Forest Environment. *Landscape Ecology* 4(2–3):109–122. New York, NY: International Association for Landscape Ecology.

California Department of Fish and Game (CDFG). 2010 (September). *List of Vegetation Alliances and Associations, Vegetation Classification and Mapping Program.* Sacramento, CA: CDFG.

———. 2009 (November 24). *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Sacramento, CA: CDFG.

California Department of Fish and Wildlife (CDFW). 2015a. California Natural Diversity Database. Records of Occurrence for the USGS Laguna Beach and San Juan Capistrano 7.5-minute quadrangles. Sacramento, CA: CDFW, Natural Heritage Division.

———. 2015b (July). *Special Animals.* Sacramento, CA: CDFW, Natural Heritage Division.

———. 2015c (July). *Special Vascular Plants, Bryophytes, and Lichens List.* Sacramento, CA: CDFW, Natural Heritage Division.

California Department of Fish and Wildlife, Biogeographic Data Branch (CDFW BDB). 2014. Wildlife Habitats — California Wildlife Habitat Relationships System. Sacramento, CA: CDFW BDB. http://www.dfg.ca.gov/bdb/html/wildlife_habitats.html.

California Native Plant Society (CNPS). 2015a. Locational Inventory of Rare and Endangered Vascular Plants of California (online edition, v8-02). Records of Occurrence for the USGS Laguna Beach and San Juan Capistrano 7.5-minute quadrangles. Sacramento, CA: CNPS. http://www.rareplants.cnps.org/advanced.html.

California Native Plant Society (CNPS). 2015b. Taxonomic and Status Inventory of Rare and Endangered Vascular Plants of California (online edition, v8-02). Sacramento, CA: CNPS. http://www.rareplants.cnps.org/.

———. 2014. *The CNPS Ranking System*. Sacramento, CA: CNPS. http://www.cnps.org/cnps/rareplants/ranking.php.

California Wetlands Monitoring Workgroup (CWMW). 2013 (April). *California Rapid Assessment Method (CRAM) for Wetlands User's Manual* (Version 6.1). http://www.cramwetlands.org/ sites/default/files/2013-04-22_CRAM_manual_6.1%20all.pdf.

Crother, B.I. 2012. *Scientific and Standard English Names of Amphibians and Reptiles of North American North of Mexico, with Comments Regarding Confidence in our Understanding* (Seventh ed.). Shoreview, MN: Society for the Study of Amphibians and Reptiles. http://ssarherps.org/wp-content/uploads/2014/07/HC_39_7thEd.pdf.

Curtis, K.E. and R.W. Lichvar. 2010 (July). *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Curtis, O.E. and R.N. Rosenfield. 2006. Cooper's Hawk (Accipiter cooperii). *The Birds of North America, No. 75* (A. Poole, Ed.). Ithaca, NY: Cornell Lab of Ornithology.

Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. *The Birder's Handbook: A Field Guide to the Natural History of North American Birds*. New York, NY: Simon and Schuster.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1). Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Faber-Langendoen, D., L. Master, J. Nichols, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, and B. Young. 2009. *NatureServe Conservation Status Assessments: Methodology for Assigning Ranks.* Arlington, VA: NatureServe. http://www.natureserve.org/publications/ConsStatusAssess_RankMethodology.pdf.

Fahrig, L. and G. Merriam. 1985. Habitat Patch Connectivity and Population Survival. *Ecology* 66(6): 1762–1768. Tempe, AZ: Ecological Society of America.

Garrett, K. and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: Audubon Press.

Gray, J. and D. Bramlet. 1992. *Habitat Classification System Natural Resources Geographic Information System (GIS) Project* (Prepared for the County of Orange Environmental Management Agency). Santa Ana, CA: Gray and Bramlet.

Halsey, R.W. 2007. Chaparral: Pure California. *Fremontia* 35(4): 2–7. Sacramento, CA: CNPS.

———. 2005. *Fire, Chaparral, and Survival in Southern California*. San Diego, CA: Sunbelt Publications, Inc.

Hamilton, R.A. and D.R. Willick. 1996. *The Birds of Orange County, California: Status and Distribution*. Irvine, CA: Sea and Sage Audubon Society.

Harris, L.D. and P.B. Gallagher. 1989. New Initiatives for Wildlife Conservation: The Need for Movement Corridors (pp. 11–34). *Preserving Communities and Corridors* (G. Mackintosh, Ed.). Washington, D.C.: Defenders of Wildlife.

Hickman, J.C., Ed. 1993. *The Jepson Manual of Higher Plants of California*. Berkeley, CA: University of California Press.

Howard, J.L. 1992. Malomsa laurina. In: Fire Effects Information System, [Online]. Golden, CO: U.S., Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.fs.fed.us/database/feis/.

Jepson Herbarium. 2014 (December 19, Revision 2). Jepson eFlora. Berkeley, CA: Jepson Herbarium. http://ucjeps.berkeley.edu/IJM.html.

Keeley, J.E. and P.H. Zedler. 2009. Large, High-intensity Fire Events in Southern California Shrublands: Debunking the Fine-grain Age Patch Model. *Ecological Applications* 19(1): 69-94. Tempe, AZ: Ecological Society of America.

Laguna Beach, City of. 2006. *Laguna Beach General Plan Open Space/Conservation Element*. Laguna Beach, CA: the City. http://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?BlobID=2688.

Laguna Beach Historical Society (LBHS). 2015 (August 7, last accessed). Chronology of Laguna Beach. Laguna Beach, CA: LBHS. http://www.lagunabeachhistory.org/chronology/.

Lichvar, R.W. and S.M. McColley. 2008 (August). *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

MacArthur, R.H. and E.O. Wilson. 1967. *The Theory of Island Biogeography*. Princeton, NJ: Princeton University Press.

Marsh, K.G. 1992 (January 20). *South Laguna Biological Resources Inventory* (prepared for the City of Laguna Beach). Silverado, CA: Marsh.

MacWhirter, R.B., and K.L. Bildstein. 1996. Northern Harrier (*Circus cyaneus*). *The Birds of North America, No. 210* (A. Poole and F. Gill, Eds.). Philadelphia, PA and Washington, D.C.: The Academy of Natural Sciences and the AOU (respectively).

McCreary, D.D. 2004. *Fire in California's Oak Woodlands*. University of California Integrated Hardwood Range Management Program. Davis, CA: University of California, Agricultural Issues Center, Integrated Hardwood Range Management Program. http://ucanr.org/faqs/filegroups/faqs14-sep-09-1109/16808.pdf.

Minnich, R.A. and R.J. Dezzani. 1998. Historic Decline of Coastal Sage Scrub in the Riverside – Perris Plain, California. *Western Birds.* 29(4): 366–391. San Diego, CA: Western Field Ornithologists.

Munz, P.A. 1974. *A Flora of Southern California*. Berkeley, CA: University of California Press.

Noss, R.F. 1983. A Regional Landscape Approach to Maintain Diversity. *BioScience.* 33(11): 700–706. Washington, D.C.: American Institute of Biological Sciences.

Noss, R.F. and R.L. Peters. 1995. *Endangered Ecosystems: a Status Report on America's Vanishing Habitat and Wildlife.* Washington, D.C.: Defenders of Wildlife.

O'Leary, J. 1995. Coastal Sage Scrub: Threats and Current Status. *Fremontia.* 23(4): 27–31. Sacramento, CA: California Native Plant Society.

Orange County Fire Authority (OCFA). 2008 (November 15). *After Action Report: Freeway Complex Fire*. Irvine, CA: OCFA.

———. 2007 (October). *After Action Report: Santiago Fire*. Irvine, CA: OCFA.

Orange County Transportation Authority (OCTA). 2010 (December 3). Notice of Preparation to Prepare an Environmental Impact Report. Orange, CA: OCTA.

Ritter, M.E. 2006. The Physical Environment: Mediterranean or Dry Summer Subtropical Climate. Stevens Point, WI: University of Wisconsin. http://www.uwsp.edu/geo/faculty/ritter/geog101/textbook/climate_systems/mediterranean.html.

Roberts, F.M. 2008. *The Vascular Plants of Orange County, California: An Annotated Checklist*. San Luis Rey, CA: F.M. Roberts Publications.

Ruben, J.A. and W.J. Hillenius. 2005 (May). Cold Blooded. *Natural History*. New York, NY: American Museum of Natural History.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation* (2nd ed.). Sacramento, CA: CNPS.

Schoenherr, A.A. 1992. *A Natural History of California.* Berkeley, CA: University of California Press.

Shuford, W.D. and T. Gardali (Eds.). 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. *Studies of Western Birds 1*. Camarillo, CA and Sacramento, CA: Western Field Ornithologists and CDFG (respectively).

Simberloff, D. and J. Cox. 1987. Consequences and Costs of Conservation Corridors*. Conservation Biology* 1(1): 63–71. Boston, MA: Blackwell Scientific Publications.

Smithsonian National Museum of Natural History (SNMNH). 2011. Mammal Species of the World (3rd ed.) (a database based on Wilson, D.E. and D.M. Reeder's 2005 publication entitled *Mammal Species of the World, A Taxonomic and Geographic Reference, 3rd ed*). Washington, D.C.: SNMNH. http://www.vertebrates.si.edu/msw/mswcfapp/msw/index.cfm.

Soule, M.E. 1987. *Viable Populations for Conservation*. New York, NY: Cambridge University Press.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Fish and Wildlife Service (USFWS). 2006 (March 24). Wetland Mapper [Information for the Aliso Canyon Property]. Washington D.C.: USFWS, National Wetlands Inventory. http://www.fws.gov/wetlands/Data/Mapper.html.

———. 1997 (February 28). *Coastal California Gnatcatcher (*Polioptila californica californica*). Presence/Absence Survey Guidelines.* Washington, D.C.: USFWS.

Unitt, P. 1984. *The Birds of San Diego County* (Memoir 13). San Diego, CA: San Diego Society of Natural History.

Western Regional Climate Center (WRCC). 2015. Monthly Climate Summary for Laguna Beach Station No. 044647. Reno, NV: WRCC.

APPENDIX A

PLANT AND WILDLIFE COMPENDIA

A-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
LYCOPHYTES	
SELAGINELLACEAE - SPIKE-MOSS FAMILY	
Selaginella bigelovii	bushy spike-moss
FERNS	
PTERIDACEAE - BRAKE FAMILY	
Pentagramma triangularis	goldback fern
GYMNOSPERMS	
PINACEAE - PINE FAMILY	
Pinus sp.	pine
EUDICOTS	
ADOXACEAE - MUSKROOT FAMILY	
Sambucus nigra ssp. *caerulea*	blue elderberry
AIZOACEAE - FIG-MARIGOLD FAMILY	
*Carpobrotus edulis**	freeway iceplant
*Mesembryanthemum crystallinum**	crystalline iceplant
AMARANTHACEAE - AMARANTH FAMILY	
Amaranthus sp.	amaranth
ANACARDIACEAE - SUMAC FAMILY	
Malosma laurina	laurel sumac
Rhus integrifolia	lemonade berry
Toxicodendron diversilobum	western poison oak
APIACEAE - CARROT FAMILY	
*Conium maculatum**	poison hemlock
*Foeniculum vulgare**	fennel
Sanicula crassicaulis	Pacific sanicle
ASTERACEAE - SUNFLOWER FAMILY	
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Artemisia dracunculus	tarragon sagebrush
Baccharis pilularis ssp. *consanguinea*	coyote brush
Brickellia californica	California brickellbush
*Centaurea melitensis**	tocalote
Corethrogyne filaginifolia	common sand aster
*Cynara cardunculus**	cardoon
Deinandra fasciculata	fascicled tarplant
Deinandra paniculata	paniculate tarplant
Encelia californica	California brittlebush
Grindelia camporum	field gumplant
Hazardia squarrosa	saw toothed goldenbush
Isocoma menziesii var. *menziesii*	coastal goldenbush
*Lactuca serriola**	prickly lettuce
Logfia filaginoides	California cottonrose
*Logfia gallica**	french cottonrose
Osmadenia tenella	osmadenia

A-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
Pseudognaphalium californicum	California everlasting
Sonchus asper ssp. *asper**	prickly sow thistle
Stylocline gnaphaloides	everlasting neststraw
Uropappus lindleyi	silver puffs
Verbesina dissita	big-leaved crownbeard
BORAGINACEAE - BORAGE FAMILY	
Cryptantha sp.	cryptantha
*Echium candicans**	pride of madeira
Eucrypta chrysanthemifolia	spotted hideseed
Phacelia cicutaria	caterpillar phacelia
Phacelia parryi	Parry's phacelia
BRASSICACEAE - MUSTARD FAMILY	
*Raphanus sativus**	radish
CACTACEAE - CACTUS FAMILY	
Cylindropuntia prolifera	coast cholla
Opuntia littoralis	coastal prickly pear
CARYOPHYLLACEAE - PINK FAMILY	
Silene laciniata	cardinal catchfly
CHENOPODIACEAE - GOOSEFOOT FAMILY	
Chenopodium californicum	California goosefoot
*Salsola tragus**	prickly Russian thistle
CLEOMACEAE - SPIDERFLOWER FAMILY	
Peritoma arborea	bladderpod
CONVOLVULACEAE - MORNING-GLORY FAMILY	
Calystegia macrostegia	coast morning-glory
Dichondra occidentalis	western dichondra
CRASSULACEAE - STONECROP FAMILY	
Crassula connata	pygmyweed
Dudleya lanceolata	lance-leaved dudleya
Dudleya multicaulis	many-stemmed dudleya
Dudleya pulverulenta	chalk dudleya
CUCURBITACEAE - GOURD FAMILY	
Marah macrocarpa	large fruit wild cucumber
FABACEAE - LEGUME FAMILY	
Acmispon glaber	deerweed
Lupinus sp.	lupine
*Melilotus indicus**	indian sweetclover
GERANIACEAE - GERANIUM FAMILY	
*Erodium cicutarium**	redstem filaree
GROSSULARIACEAE - GOOSEBERRY FAMILY	
Ribes speciosum	fuchsia-flowered gooseberry
LAMIACEAE - MINT FAMILY	
Salvia mellifera	black sage
Stachys ajugoides	bugle hedgenettle

A-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
MALVACEAE - MALLOW FAMILY	
*Malva parviflora**	cheeseweed
MYRSINACEAE - MYRSINE FAMILY	
*Lysimachia arvensis**	scarlet pimpernel
MYRTACEAE - MYRTLE FAMILY	
Eucalyptus sp.*	gum
NYCTAGINACEAE - FOUR O'CLOCK FAMILY	
Mirabilis laevis var. *crassifolia*	coastal wishbone plant
ONAGRACEAE - EVENING PRIMROSE FAMILY	
Camissoniopsis cheiranthifolia	beach evening-primrose
OROBANCHACEAE - BROOM-RAPE FAMILY	
Castilleja cf. *affinis* ssp. *affinis*	coast indian paintbrush
PHRYMACEAE - LOPSEED FAMILY	
Mimulus aurantiacus	bush monkeyflower
PLANTAGINACEAE - PLANTAIN FAMILY	
Antirrhinum nuttallianum	Nuttall's snapdragon
Plantago erecta	dot seed plantain
POLEMONIACEAE - PHLOX FAMILY	
Eriastrum sapphirinum	sapphire woollystar
POLYGONACEAE - BUCKWHEAT FAMILY	
Chorizanthe staticoides	Turkish rugging
Eriogonum fasciculatum	California buckwheat
PRIMULACEAE - PRIMROSE FAMILY	
Primula clevelandii ssp. *clevelandii*	padre's shooting star
RANUNCULACEAE - BUTTERCUP FAMILY	
Ranunculus californicus	California buttercup
RHAMNACEAE - BUCKTHORN FAMILY	
Ceanothus megacarpus	bigpod ceanothus
Rhamnus crocea	spiny redberry
ROSACEAE - ROSE FAMILY	
Heteromeles arbutifolia	toyon
RUBIACEAE - COFFEE FAMILY	
Galium angustifolium ssp. *angustifolium*	narrow leaved bedstraw
Galium aparine	common bedstraw
RUTACEAE - CITRUS FAMILY	
Cneoridium dumosum	bushrue
SOLANACEAE - NIGHTSHADE FAMILY	
Solanum douglasii	Douglas' nightshade
MONOCOTS	
AGAVACEAE - AGAVE FAMILY	
Chlorogalum pomeridianum	wavyleaf soap plant
IRIDACEAE - IRIS FAMILY	
Sisyrinchium bellum	western blue-eyed-grass

A-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
JUNCACEAE - RUSH FAMILY	
Juncus cf. *effusus*	soft rush
Juncus sp.	rush
LILIACEAE - LILY FAMILY	
Calochortus catalinae	Catalina mariposa lily
Calochortus splendens	splendid mariposa lily
Calochortus weedii var. *intermedius*	intermediate mariposa lily
POACEAE - GRASS FAMILY	
*Arundo donax**	giant reed
*Avena barbata**	slender wild oat
*Avena fatua**	wild oat
Bothriochloa barbinodis	cane bluestem
*Bromus diandrus**	ripgut brome
*Bromus hordeaceus**	soft chess
Bromus madritensis ssp. *rubens**	red brome
*Cortaderia selloana**	Selloa pampas grass
*Cynodon dactylon**	Bermuda grass
Distichlis spicata	salt grass
Elymus condensatus	giant wildrye
*Festuca myuros**	rattail fescue
*Hordeum murinum**	wall barley
*Lamarckia aurea**	goldentop grass
*Pennisetum setaceum**	African fountain grass
*Schismus barbatus**	Mediterranean schismus
Stipa cernua	nodding needle grass
Stipa sp.	needle grass
THEMIDACEAE - BRODIAEA FAMILY	
Bloomeria crocea	common goldenstar
Dichelostemma capitatum	blue dicks

* Non-native species

cf. = appears similar to, species can not be confirmed 100% due to phenological condition

A-2
WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
LIZARDS	
PHRYNOSOMATIDAE - SPINY LIZARD FAMILY	
Sceloporus occidentalis	western fence lizard
BIRDS	
ODONTOPHORIDAE - NEW WORLD QUAIL FAMILY	
Callipepla californica	California quail
ACCIPITRIDAE - HAWK FAMILY	
Circus cyaneus	northern harrier
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
COLUMBIDAE - PIGEON AND DOVE FAMILY	
Zenaida macroura	mourning dove
TROCHILIDAE - HUMMINGBIRD FAMILY	
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
TYRANNIDAE - TYRANT FLYCATCHER FAMILY	
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
CORVIDAE - JAY AND CROW FAMILY	
Aphelocoma californica	western scrub-jay
HIRUNDINIDAE - SWALLOW FAMILY	
Petrochelidon pyrrhonota	cliff swallow
AEGITHALIDAE - BUSHTIT FAMILY	
Psaltriparus minimus	bushtit
TROGLODYTIDAE - WREN FAMILY	
Thryomanes bewickii	Bewick's wren
POLIOPTILIDAE - GNATCATCHER FAMILY	
Polioptila californica californica	coastal California gnatcatcher
SYLVIIDAE - SILVIID WARBLERS FAMILY	
Chamaea fasciata	wrentit
MIMIDAE - MOCKINGBIRD AND THRASHER FAMILY	
Toxostoma redivivum	California thrasher
Mimus polyglottos	northern mockingbird
PARULIDAE - WOOD-WARBLER FAMILY	
Oreothypis celata	orange-crowned warbler
Geothlypis trichas	common yellowthroat
Setophaga townsendi	Townsend's warbler
EMBERIZIDAE - SPARROW FAMILY	
Pipilo maculatus	spotted towhee
Melozone crissalis	California towhee
FRINGILLIDAE - FINCH FAMILY	
Haemorhous mexicanus	house finch
Carduelis psaltria	lesser goldfinch

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WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
MAMMALS	
SCIURIDAE - SQUIRREL FAMILY	
Otospermophilus beecheyi	California ground squirrel
CERVIDAE - CERVID FAMILY	
Odocoileus hemionus	southern mule deer

APPENDIX B

SITE PHOTOGRAPHS

Overlooking the upper reaches of Hobo Canyon from the northwest portion of the property, facing east.

Southern mixed chaparral (background) and annual grassland (foreground) in the center of the property.

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Site Photographs

Appendix B-1

Measure M2 Acquisition Properties Evaluation – Aliso Canyon Property

BonTerra PSOMAS

Mixed sage scrub and cliff/rock in the southern portion of the property.

Mixed sage – chaparral scrub ecotone in the western portion of the property.

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Mixed sage – cactus scrub on the property.

Disturbed mixed sage scrub at the north end of the property.

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Annual grassland in the center of the property.

Ruderal vegetation (i.e. cardoon) in the center of the property.

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