Biological Diversity Baseline Report

for the Furby-North Property

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Summary

The purpose of this report is to document biological baseline data for the County of San Diego's Furby-North Property (Property). The 78.53 acre[1] Property is located in the southwestern portion of San Diego County (see Figure 1-1) south of Otay Mesa Road and east of Interstate 805. The Property is located within the Multiple Habitat Planning Area (MHPA) preserve boundaries of the City of San Diego's Multiple Species Conservation Program (MSCP) Subarea Plan. It is managed by the County of San Diego Department of Parks and Recreation, and the information contained in this report will be used to direct future Property management and monitoring and the development of a Resource Management Plan.

Inventory surveys conducted in 2011 included vegetation communities mapping, rare plant surveys and invasive species identification, butterfly surveys and habitat assessment for the Quino checkerspot butterfly, herpetological surveys using pitfall trap arrays, diurnal and nocturnal avian point count surveys and the identification of potential cactus wren habitat, active and passive bat surveys using Anabat, small mammal trapping, and medium/large mammal surveys using track stations and remote camera stations. Vegetation communities were mapped applying the new Vegetation Classification System for Western San Diego County (AECOM et al. 2011) and then cross-walked to the Oberbauer-modified Holland system (Oberbauer et al. 2008, Holland 1986). Surveys were conducted between the months of April and July 2011.

The Property consists of 11 plant alliances, associations, or semi-natural stands. The vegetation communities on-site are dominated by high quality Diegan coastal sage scrub and maritime succulent scrub, but contain patches of non-native grassland dominated by garland chrysanthemum in the northern portion of the Property, and a relatively dense unauthorized trail system from off-road vehicle use in the southern portion of the Property. Trails and dirt roads traverse the entire Property, some of which are easements across the Property used by the City of San Diego and San Diego Gas and Electric. One potential vernal pool was observed in the northern portion of the Property and another potential vernal pool was observed adjacent to the northern boundary of the Property.

A total of 115 plant taxa were observed on the Property during the 2011 surveys. Approximately 32 percent of these are non-native species, many of which are grasses. The remaining species (about 79 percent) consist of a diverse array of native riparian and upland plants that occur in natural assemblages. Nine of the 115 plants are considered sensitive by state or local governments (e.g., the City of San Diego MSCP).

A total of 15 special status wildlife species were observed on-site which nine (9) are considered City of San Diego MSCP-covered species; the remaining species represent a healthy assemblage of wildlife species typically encountered in upland scrub communities of San Diego County. Notable is the

[1] The assessor's parcel data list the Property to be 83 acres; however, calculations generated from the GIS data show the Property as 78.53 acres. Therefore, this report references the Property as 78.53 acres.

abundance of small mammals on the site, which constitutes a healthy prey base for raptors that frequent the Property, and carnivores, the population of which seem smaller than expected. The latter may be due to frequent trespassing by dog walkers, school children, and off-road vehicle use observed on the Property. Bat habitat is limited on the Property and, therefore, bats are not abundant. Many sensitive, including MSCP-covered, wildlife species occur on the Property such as the coastal California gnatcatcher and coastal cactus wren. An individual least Bell's vireo was observed just outside the Property boundaries along the western boundary. Small amounts of habitat for the Quino checkerspot butterfly occur on the Property, but the species was not found during butterfly surveys. Western spadefoot toads were encountered in the northern portion of the Property in the vicinity of the identified vernal pools. In addition, evidence of an American badger was found in the cactus patch in the westernmost central part of the Property.

While the Property is identified as a core area in the City of San Diego MSCP, the Property is surrounded by development on the northern and western boundaries. Wildlife movement across the Property may occur from open space bordering the Property on the east, but the site itself is not part of a functioning linkage. A possible wildlife movement corridor linking open space on the Otay Mesa is located east of the Property.

Management actions should focus on the removal of invasive species specifically garland chrysanthemum, and restoration of the unauthorized trail system. The Property is specifically identified as a mitigation site, and as such, access to the Property by the public should be limited. Access controls to prevent the currently prolific unauthorized access to the Property should be installed in the form of fencing, gates, and boulders. Active restoration over passive restoration is recommended because garland chrysanthemum is difficult to control and may invade any trails that would be subject to passive restoration. However, minimal access should be maintained for fire/emergency response, management of the Property, and easement holders (including the City of San Diego and San Diego Gas and Electric).

The Property contains habitat for several sensitive and MSCP-covered species that could be enhanced for mitigation purposes. Focused surveys for vernal pools and associated indicator plant and animal species, seaside calandrinia, Quino checkerspot butterfly, California gnatcatcher, and coastal cactus wren are recommended to gather presence and abundance data, identify whether these species are breeding on the site, and to better understand the population dynamics of these species on the Property.

1.0 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to document biological baseline data collected by Technology Associates International (TAIC) biologists in 2011 for the County of San Diego's Furby-North Property (Property). The Property is located in the southwestern portion of San Diego County (Figure 1-1). It is managed by the County of San Diego Department of Parks and Recreation, and the information contained in this report will be used to direct future management and monitoring at the Property and the development of a Resource Management Plan (RMP) including Area Specific Management Directives (ASMDs).

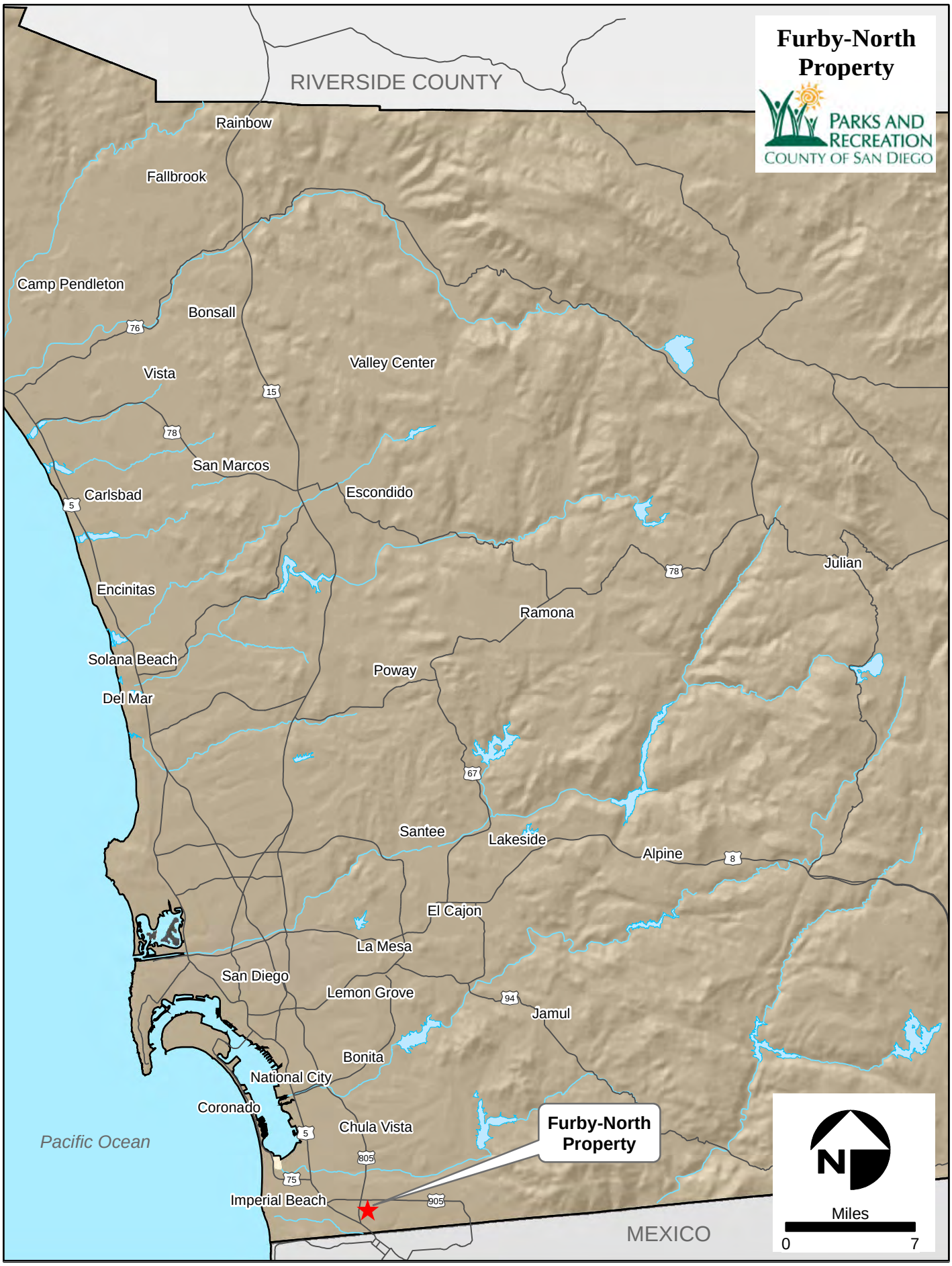
1.2 Multiple Species Conservation Program Context

The Property was acquired by the County of San Diego Department of Parks and Recreation in 2003 for building out the Multiple Species Conservation Program (MSCP) preserve system. In addition, acquisition of the Property allows consistent management with other MSCP preserve areas currently managed by the County and its partners. Currently, DPR is proposing to utilize the Property as mitigation for public and private projects. This is in accordance with the County of San Diego Board of Supervisor's Policy I-138 which states that "lands owned by the County and managed by the Department of Parks and Recreation (DPR) may be used by County departments and other public and private entities to mitigate for impacts to sensitive biological resources." The policy also specifically states that both conservation and restoration within conserved lands can be used as credit towards project mitigation. Although the Property was acquired by the County of San Diego, the Property itself falls under the City of San Diego's Multiple Species Conservation Program (MSCP) and will be managed accordingly.

As stated above, the Property is located within the Multi-Habitat Planning Area (MHPA) as part of the City of San Diego MSCP Subarea plan (City of San Diego 1997) (Figure 1-2). The goal of the MSCP is to maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitats. To further that end, certain open space areas have been identified as priorities for conservation; the Otay Mesa Area was included in this prioritization. The Property contains large swaths of land identified as MHPA within the Otay Mesa Area by the City's MSCP subarea plan and is in close proximity to other conserved and MHPA lands (Figure 1-2).

The Otay Mesa MHPA has very specific management policies and directives identified by the City's MSCP Subarea Plan. These include preserving and maintaining a "network of open and relatively undisturbed canyons containing a full ensemble of native species which provide functional wildlife habitat and movement capability." The purchase of the Property ensured the preservation of a parcel of open space contiguous with conserved lands owned and managed by private groups and the City of San Diego (to the East) and homeowner's associations (to the North) (Figure 1-3).

Other lands to the north and northeast owned by the City of San Diego and private groups contribute to another Otay Mesa Area MHPA objective—maintaining a wildlife linkage from the north to the south. The Property contributes to conservation of core habitat for wildlife, and conserved lands in adjacent areas contribute to core and corridor habitat. The acquisition of the Property by the County of San Diego allows the goals and objectives outlined in the City of San Diego's MSCP Subarea Plan to be furthered, especially those specific to the Otay Mesa Area.



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Regional Location Map

Figure 1-1

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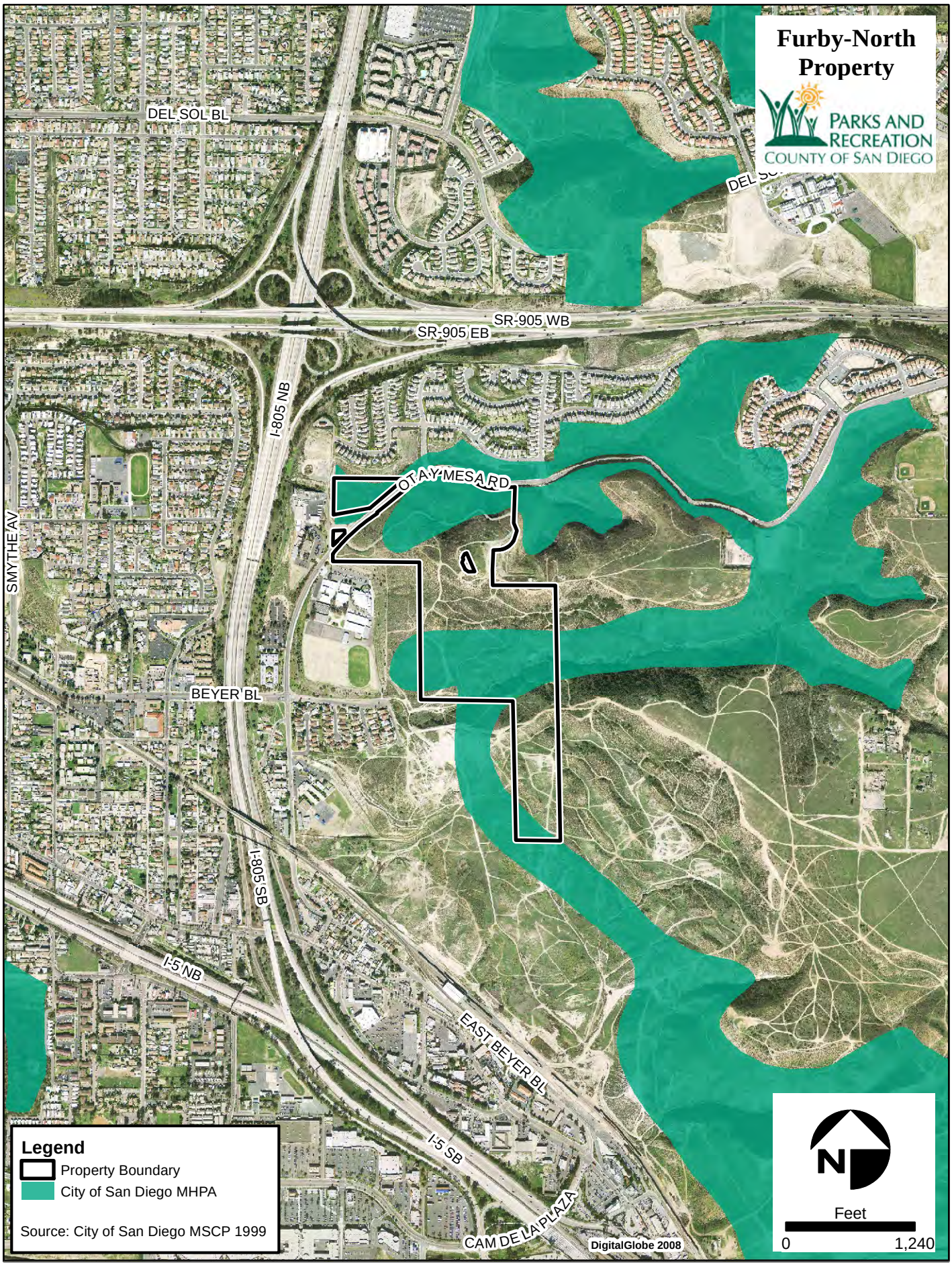

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City of San Diego MSCP Multi-Habitat Planning Area (MHPA)

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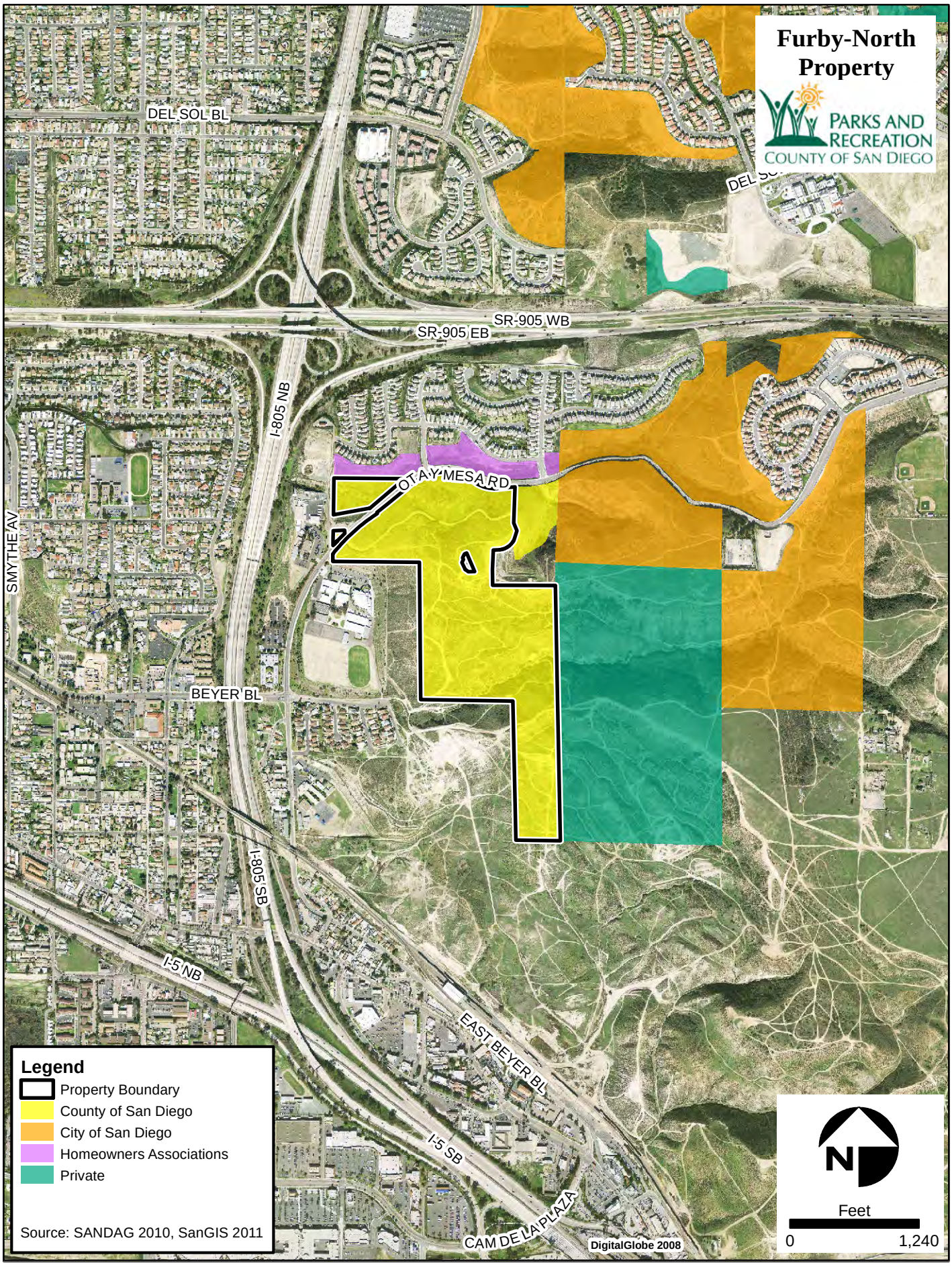

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Conserved Lands by Ownership

Figure 1-3

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2.0 STUDY AREA DESCRIPTION

2.1 Project Location

The 78.53 acre Property is located near the U.S. Mexico border in Otay Mesa, California (Figure 2-1). It is situated along the border of the city of San Ysidro directly south of Highway 905 and east of Interstate 805. The Property is accessed at Otay Mesa Road which runs along the northern border of the Property.

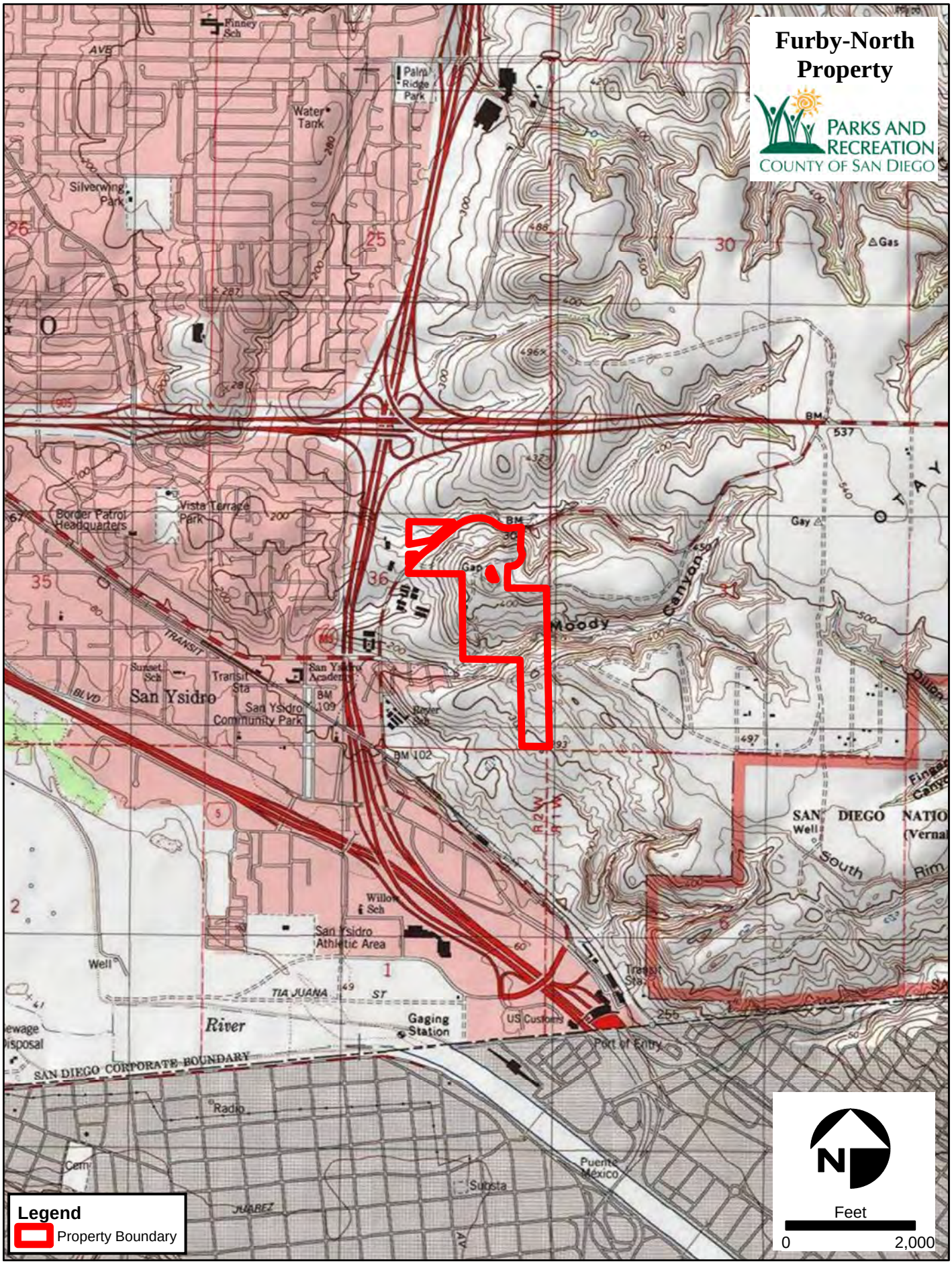
The entire Property is comprised of a single parcel, Assessor's Parcel Number (APN) 63807074 (Figure 2-2). The Property is currently closed to the public but contains an easement maintained by the City of San Diego for access to and maintenance of a communications tower located near the northern boundary (Figure 2-2). An additional easement is held by San Diego Gas and Electric (SDG&E) for the purpose of servicing a 68kV power line that runs through the eastern portion of the Property. Public access may be planned in the future at the discretion of the County of San Diego Department of Parks and Recreation (DPR). Gated access to the Property is located on Otay Mesa Road near the intersection of Otay Mesa Place on the north side.

2.2 Geographical Setting

The Property is located within the southeast portion of Section 36 in Township 18 South, Range 2 West; shown on the Imperial Beach USGS 7.5' Quadrangle (Figure 2-1). The Property is just south of the Otay River Valley and directly west of Pacific Gateway Park, west of Brown Field Municipal Airport. The Property rests just inland of the Tijuana River Valley National Estuarine Research Reserve along the United States-Mexico border. Moody Canyon terminates in the southern portion of the Property (Figure 2-1).

2.3 Geology and Soils

The Property is located just south of the Otay River Valley, sandwiched between the Elsinore Fault Zone and the Rose Canyon Fault Zone. The Property is situated at the base of the Peninsular Range, one of three distinct geomorphic regions in San Diego County. During the Jurassic and late Cretaceous (more than 100 million years ago) a series of volcanic islands ran parallel to the current coastline in the San Diego region. After the ocean receded, the remnants of these volcanic islands became mountain ranges such as the Santa Ana, San Jacinto, and Laguna Mountains. At about the same time, a granitic and gabbroic batholith was being formed under and east of these Jurassic and late Cretaceous-age volcanoes. This batholith was uplifted and forms the granitic rocks and outcrops of the Peninsular Range (California Division of Mines and Geology 1975). Shorty after this period, during the Tertiary (65-2.6 million years ago), the San Diego and Otay Formations were deposited in the Otay Mesa and Imperial Beach areas.



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USGS 7.5 Minute Imperial Beach Quadrangle

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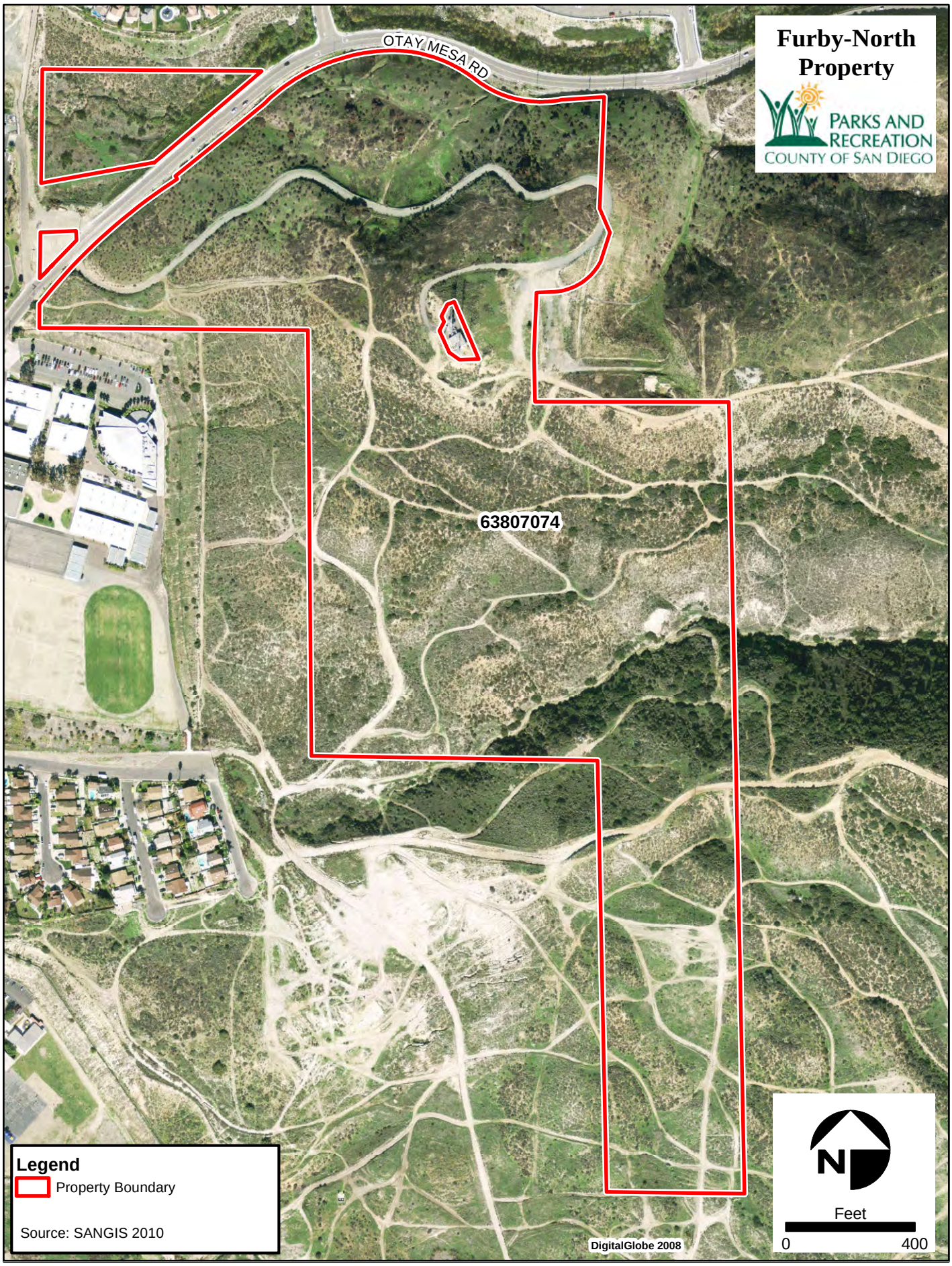

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Study Area with Assessor's Parcel Number

Figure 2-2

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As a consequence of marine inundation in the Jurassic and Cretaceous and the subsequent receding waters during Tertiary (and the more recent Pleistocene), the soils formed on the Property are of moderate to high clay content and support vernal pools, coastal sage scrub, and maritime succulent scrub. Three different soil series are represented on the Property (Figure 2-3): Huerhuero, Olivenhain, and Diablo (Table 1). Both the Huerhuero and Olivenhain series have been called out by Bauder and McMillan (1998) as two of the five soil series known to support vernal pools in San Diego County.

Table 1. Soil Types Present on the Property

Soil Series	Detailed	Abbreviation
Diablo	Clay, 30 to 50 percent slopes	DaF
Huerhuero	Loam, 2 to 9 percent slopes	HrC
	Loam, 9 to 15 percent slopes, eroded	HrD2
Olivenhain	Cobbly loam, 30 to 50 percent slopes	OhF
	Cobbly loam, 9 to 30 percent slopes	OhE

Diablo Series: Soils are found on complex undulating, rolling to steep uplands with slopes of 5 to 50 percent at elevations of 25 to 3,000 feet. These soils are well drained with slow runoff when soil is dry and medium to rapid runoff when soils are wet. Soil permeability is slow (USDA Soil Survey 1973).

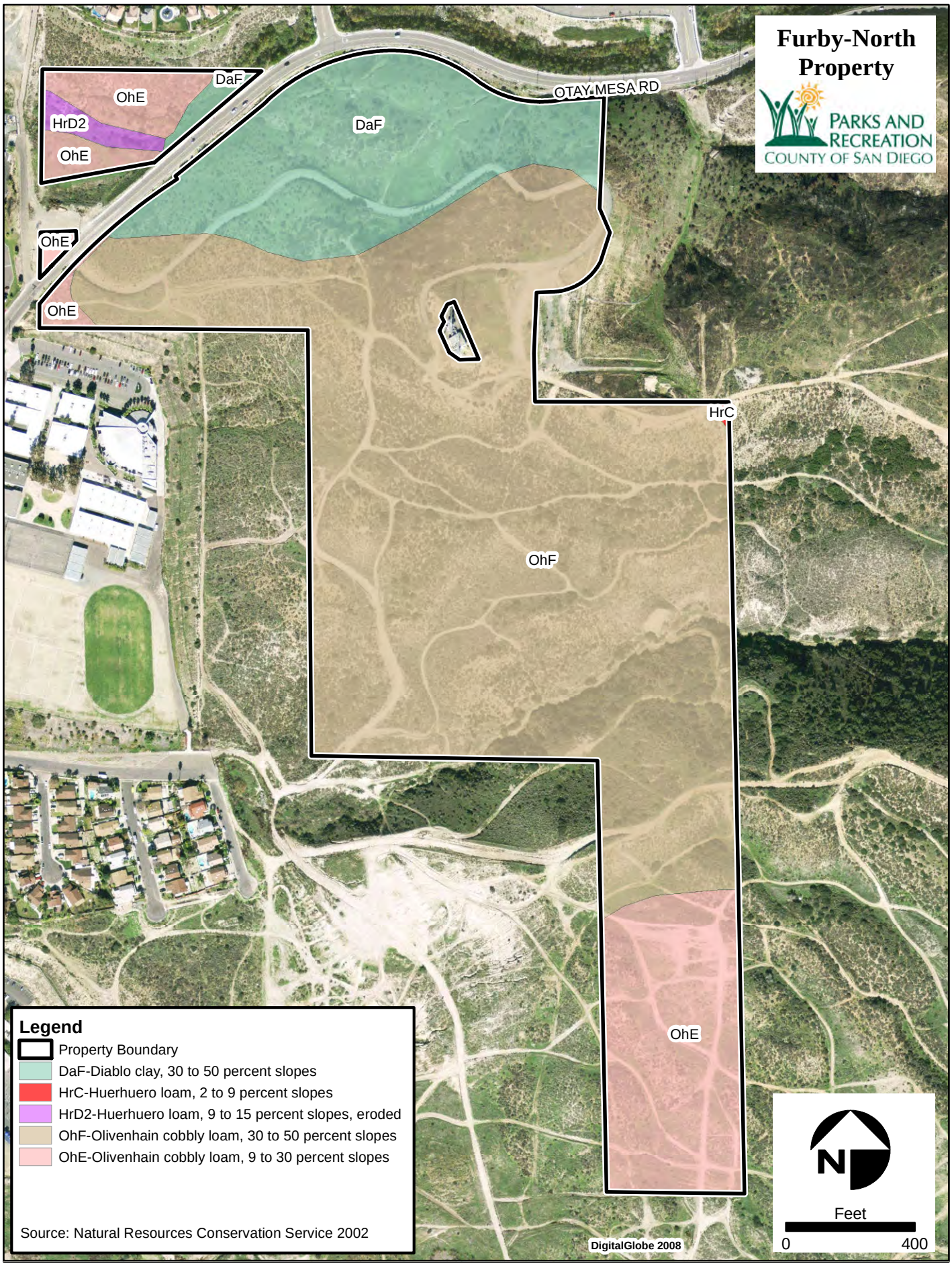
Huerhuero Series: Soils developed on gently sloping coastal plains and are formed from sandy marine sediments. Soils are considered severely erodible.

Olivenhain Series: Soils are gently sloping to strongly sloping and are on dissected marine terraces at elevations of 100 to 600 feet. Soils are well-drained with slow to medium runoff and very slow permeability (USDA Soil Survey 1973). This soil series was formed from cobbly alluvium cut from an Eocene alluvial fan by rising Pleistocene sea levels and deposited on wave-cut terraces; exposed in late Pleistocene.

2.4 Climate

Cismontane portions of San Diego County and southern California largely have a Mediterranean climate. This is characterized by mild winters with modest precipitation and arid, warm summers, according to the Koppen Classification System[2] (Pryde 2004). The Property is located approximately five (5) miles (8 kilometers) inland of the coast but is still heavily influenced by the coastal climate and subsequent marine layer. Climate is generally stable characterized by warm summers and mild winters with the temperatures rarely dropping below freezing. The Property is located within the Sonoran Desert region and as such has relatively low precipitation. Monthly mean temperature data recorded at a weather

[2] The Koppen Classification System is based on the concept that native vegetation is the best expression of climate. Thus, the system delineates climate zone boundaries based on vegetation distribution. The climate zones are also defined by average annual and monthly temperatures and precipitation, and the seasonality of precipitation.



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Soils

Figure 2-3

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station at Brown Field Airport from 1 January 2010 to 30 December 2010 are presented in Table 2. Precipitation data are presented in Table 3 (Weather Underground 2010).

Table 2. Monthly Mean High and Low Temperatures (2010) for Otay Mesa, California

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High Temperature (°F)	67	64	67	67	69	71	74	77	77	71	69	65
Average Low Temperature (°F)	46	46	48	49	42	56	60	59	58	56	48	46

Table 3. Monthly Mean Precipitation in inches (2010) for Otay Mesa California

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Total Precipitation (in.)	0.12	0.10	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13

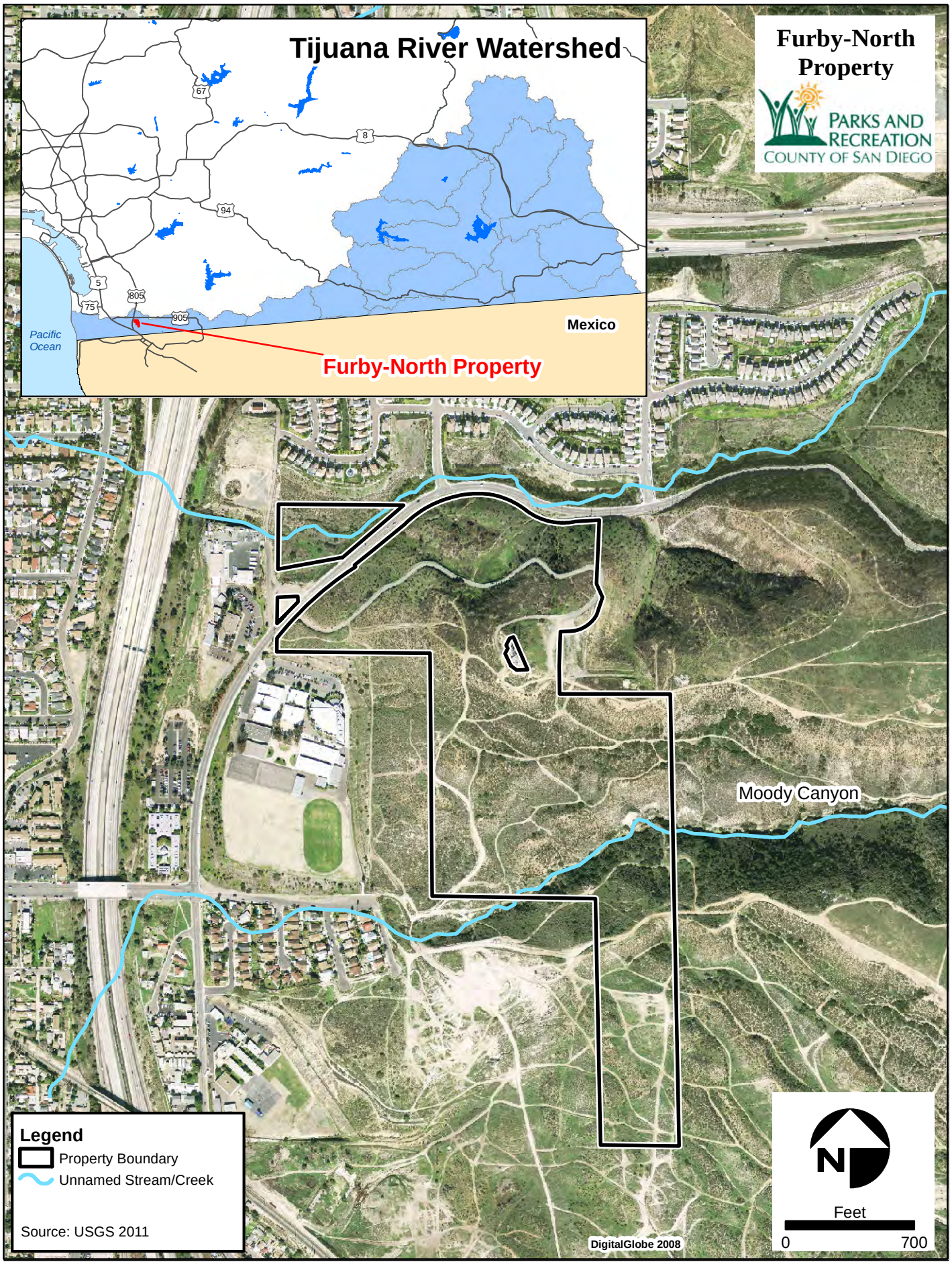
The climate data shown in Tables 2 and 3 highlight the generally arid precipitation regime characteristic of the region. Precipitation in minimal amounts can occasionally occur in summer from tropical weather systems but the majority comes from winter storms originating in the middle to high latitudes of the North Pacific Ocean.

2.5 Hydrology

Hydrology within the Property is typical for the region's semiarid climate. While the Property is located just south of the Otay River Valley, it is wholly within the Tijuana River Valley watershed. Very few hydrologic features exist on-site. A dry streambed associated with Moody Canyon runs east to west through the southern portion of the Property, and an unnamed dry drainage runs east to west through the northernmost fragment of the property (Figure 2-4). Outside of these dry wash features, there are at least two vernal pools present in or just outside the northern Property boundary. Other vernal pool complexes exist on mesas adjacent to the northeast portion of the Property.

2.6 Fire History

No historic fires have been identified on the Property (Cal Fire 2011); however, judging from evidence of charred vegetation, the north-facing hillside on the north end of the Property (bordering Otay Mesa Road) appears to have been burned at least once between 3 and 5 years ago. The lemonadeberry and laurel sumac shrubs mapped during vegetation surveys show signs of charring and resprout. In addition, the fields of non-native grasses have remnants of coastal sage scrub, lending evidence to a fire-induced type conversion in recent years. Western dichondria (*Dichondria occidentalis*), a known fire-follower, was also mapped here.



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Hydrology

Figure 2-4

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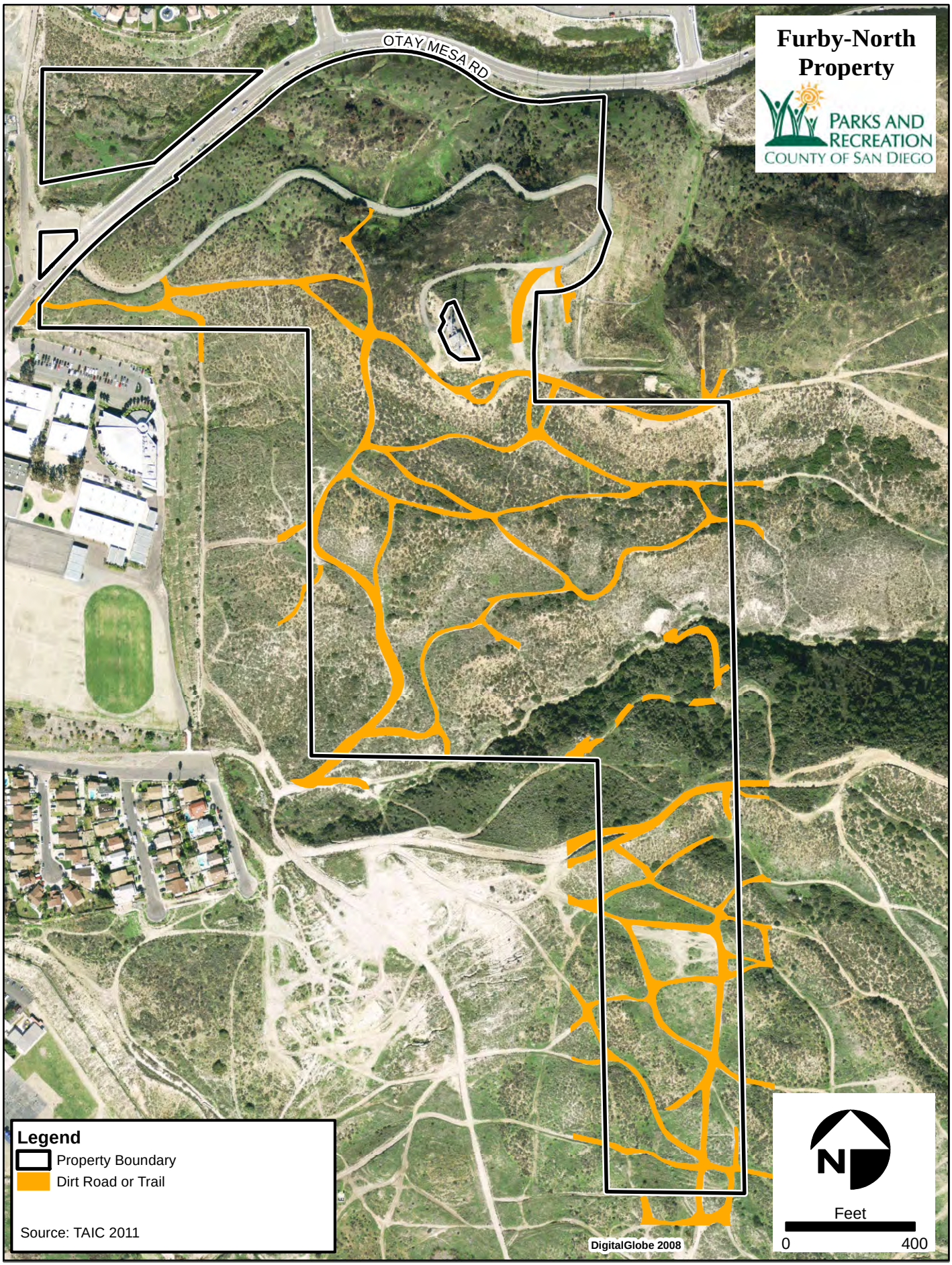
While the Otay Mesa area is prone to brush fires mainly caused by anthropogenic factors, and signs of recent small brush fires are present, no recent reports of any fires on the Property could be located. The Property is located within the City of San Diego and the jurisdiction of the City's Fire Department.

The much larger Otay Fire, which burned during the firestorms of 2003, stopped just east of Lower Otay Lake as did the Harris Fire of 2007. A smaller brush fire behind San Ysidro High School, approximately one mile northeast of the Property boundaries, was quickly contained and likely did not reach the Property.

2.7 Trails

There are multiple unauthorized trails that exist on the Property (Figure 2-5). No authorized trail system exists at this time and the Property is closed to public access, although a public trail system is under consideration. The existence of an access road and easement across the Property for the City of San Diego likely encourages the trespass that contributes to the unauthorized trail creation. The Property is surrounded on all sides by heavy urbanization, and local residents frequently walk their dogs and hike through using the easement road or unauthorized trails. Off-road vehicle (ORV) use, specifically motocross bikes, is also a problem within the Property and especially just off-site to the southeast on adjacent properties where such activity has removed a significant amount of vegetation. Other unauthorized trails on-site seem to have been formed by migrants and include evidence of migrant camps.



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Existing Dirt Roads and Trails

Figure 2-5

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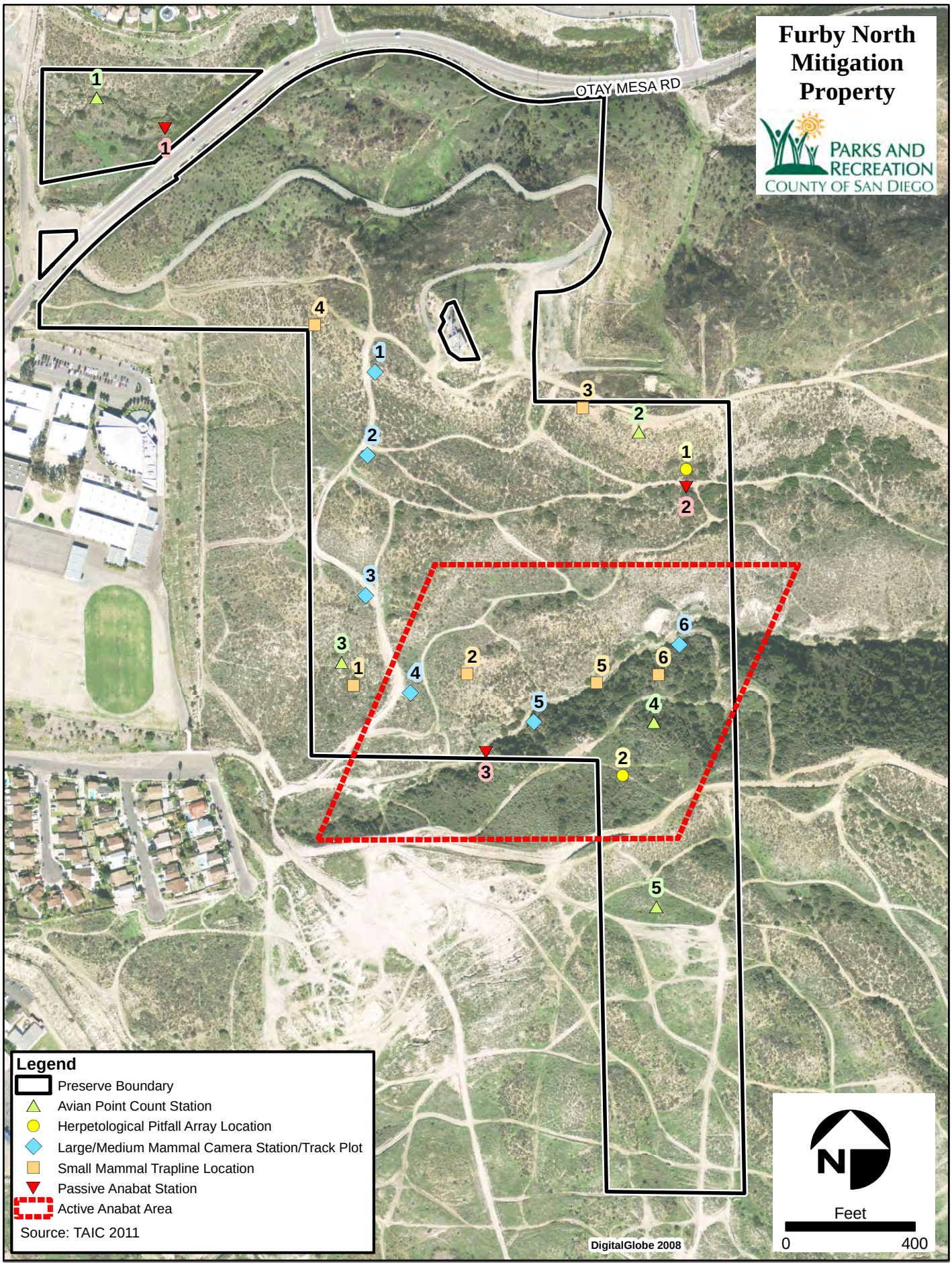
3.0 METHODS

Field surveys and field sampling was conducted during the 2011 field season by TAIC. Surveys were conducted using protocols provided by the County of San Diego using a stratified approach rather than comprehensive sampling to provide the appropriate baseline for long-term monitoring according to methods established for long-term monitoring of MSCP preserves. Wildlife field survey and sampling stations are identified in Figure 3-1. Vegetation communities mapping and baseline biological surveys for plants and wildlife were conducted on the Property from April through July 2011. The protocols used for the field surveys are described below. Survey personnel and survey schedules are detailed in Table 4. All survey and GIS data were entered into San Diego County's Biological Database (SanBIOS) forms and submitted to the County.

Table 4. 2011 Biological Survey Schedule

Date	Surveyor	Survey Type
April 21 and 22, 2011	Rosanne Humphrey	Vegetation mapping
April 26, 2011	Kelcey Stricker	Invasive species mapping
April 15, 2011	Erik LaCoste	Quino checkerspot butterfly habitat assessment
April 21, 2011	Kelcey Stricker	Cactus wren habitat assessment and mapping
April 26, 2011	Rosanne Humphrey	Floristic/rare plant survey
April 15, 2011	Erik LaCoste	Butterfly survey
April 26, May 12 and June 14, 2011	Geoff Rogers, Erik LaCoste	Diurnal avian survey
April 27, 2011	Geoff Rogers, Erik LaCoste	Nocturnal avian survey
April 25 – 29 and May 23-27, 2011	Mike Anguiano, Susan Whitford	Herpetological survey
May 19-21 and July 8-11, 2011	Matt Rahn, Kelcey Stricker	Bat survey (passive and active)
April 26-29, May 31-June 3, June 28- July 1, 2011	Kelcey Stricker, Rosanne Humphrey	Small mammal survey
May 31 – June 3; June 21 – 23, 2011	Kelcey Stricker	Medium/large mammal survey

Prior to conducting biological field surveys, potentially occurring sensitive biological resources were identified through a review of the following species databases: California Natural Diversity Database (CNDDB 2011), MSCP Species Database, U.S. Fish and Wildlife Service (2011), SanBIOS, San Diego Bird Atlas (Unitt 2004), San Diego Plant Atlas database (SDNHM 2011) and Mammals of San Diego County (SDNHM in progress), and HerpNet (www.herpnet.org) for museum voucher specimens.



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Wildlife Survey Locations

Figure 3-1

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Date: 8/31/2011

3.1 Vegetation Communities/Habitat

3.1.1 Vegetation Communities Mapping

Mapping of vegetation communities was conducted by qualified biologists within the Property on April 21 and 22, 2011 (Table 4). Vegetation communities were mapped within the Property boundaries plus a 100-foot buffer pursuant to County of San Diego guidelines (County of San Diego 2010). The methods and classification system used for this effort were consistent with the 2011 *Vegetation Classification Manual for Western San Diego County* (herein referred to as VCM), which is based on *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, Evens 2009). As its name suggests, the VCM was developed specifically for western San Diego County and is based on a detailed analysis of species composition and cover data collected throughout this area. The VCM was made available in February of 2011; as such, the mapping conducted on the Property represents one of the first mapping efforts to use this new classification system.

The VCM is a hierarchical system that is consistent with the National Vegetation Classification System (NVCS). The highest levels of the NVCS are very broad, and therefore not part of the locally derived VCM, which focuses on the lowest levels – the alliances, associations and stands. *Alliances* are characterized by "the presence of diagnostic species within a range of cover values within a single plant stratum" and *associations* are a "subset of types within an alliance, which are further defined by additional diagnostic species that may be present in any stratum" (AECOM et al. 2011). The most basic unit in the VCM classification system is the *stand*, which is defined by species composition and relative cover, as well as structural integrity (e.g., vertical and horizontal structure resulting from local environmental conditions and site history). *Semi-natural stands* are equivalent to an alliance but dominated by non-native species.

The vegetation types (e.g., Alliances and Associations), were determined by assessing the relative dominance of tree, shrub and herbaceous species. These determinations were made with the use of a key, which was in the form of an interactive CD-ROM that was installed on a computer and used in the field. In addition, to confirm the field identification, "membership rules" were reviewed as well as slope aspect, topographic position, and soil texture for each Alliance and Association. The boundaries of vegetation communities were then drawn onto a 150-scale (1" = 150') 2009 color aerial photograph and incorporated into a Geographic Information System (GIS) data layer. To ensure consistency with previous mapping, the MSCP, and other planning or regulatory documents, the mapping on the Property was cross-walked to Holland classification system (1986), as modified by Oberbauer et al. (2008), pursuant guidelines detailed in Appendix C of the VCM.

Invasive species mapping and identification was performed concurrently with general vegetation community mapping.

3.2 Plants

3.2.1 Floristic and Rare Plant Surveys

Prior to conducting biological field surveys, potentially occurring sensitive plant species were identified through a review of the following species databases: California Natural Diversity Database (CNDDB 2011), MSCP Species Database, U.S. Fish and Wildlife Service (2010), SanBIOS, California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants (CNPS 2010), and the SDNHM Plant Atlas Project databases (SDNHM 2011).

A general floristic survey and rare plant survey were conducted concurrently on April 26, 2011 to identify the general floristic diversity, sensitive endemic species, and other rare plants on the Property. A stratified sampling approach was employed in order to best characterize species occurrence and distribution within the Property. Survey sites were selected based upon accessibility, vegetation community, soil type, burn history, known rare plant locations, and other environmental factors such as slope, aspect, and unique geological features. By selecting sites based on these variables, it was possible to focus efforts in areas with a greater potential to encounter high plant species diversity and interesting rare and/or previously undocumented species. Surveys were conducted in the month of April, which is within the growing and flowering season for most species in the coastal areas of San Diego County (March through May). It should be noted that survey season, conditions in the field, and the amount and timing of seasonal precipitation may have influenced the number of rare plants encountered.

A species list was compiled for all identifiable native and non-native plant species found on the Property. The floristic taxonomy used in this analysis is based on the *Checklist of the Vascular Plants of San Diego County* (Rebman and Simpson 2006, 2010). Locations of all federal, state, and local special-status species encountered during surveys were mapped with a Global Positioning System (GPS) Unit, and individuals within a given population were counted or estimated when feasible.

3.2.2 Invasive Species Mapping

Highly invasive exotic plant species or areas of high concentrations of non-natives encountered during the floristic survey were mapped as points or polygons using a GPS unit, or by drawing the approximate area of coverage onto a 150-scale color aerial photograph.

3.3 Wildlife

3.3.1 Invertebrates

Baseline biodiversity invertebrate surveys were limited to butterflies and were conducted as checklists. Any additional invertebrates were noted incidentally during other focused survey efforts. Checklist surveys employ targeted walks that focus on habitat diversity for optimal detectability of butterfly

activity. It is an opportunist method that is difficult to standardize. However, for butterflies, checklist surveys have proved to be optimal for maximizing diversity in preliminary assessments (Royer et al. 1998).

Surveys were conducted by TAIC biologist Erik LaCoste on April 14 and June 20, 2011. Targeted walks were performed in all major vegetation communities within the survey area to fully capture the diversity of the butterfly fauna. This included both native vegetation and areas dominated by non-natives. Attention was also focused on ridges and hilltops to take advantage of butterflies' tendency to congregate in these areas (Baughman et al. 1988). Most butterflies were identified by sight, typically with the aid of close-focusing binoculars. Data were collected in the field using a field notebook, and GPS where appropriate.

In addition to general butterfly surveys, a site assessment for the Quino checkerspot butterfly (*Euphydryas editha quino*) was conducted by Mr. LaCoste. The methodology for the site assessment follows the most current USFWS survey protocol (USFWS 2002). Areas unsuitable for this species were excluded, such as developed, agricultural, closed canopy, and riparian. The remaining areas were assessed for presence and density of larval host plants and adult nectar plants, overall density of vegetation, and topography.

3.3.2 Herpetofauna

Baseline biodiversity surveys for amphibians and reptiles were conducted on the Property during two four-day sessions: April 25-29 and May 23-27 2011. Data were recorded from animals collected in two pitfall arrays (Figure 3-1) constructed following a modified U.S. Geological Survey (USGS) protocol (Fisher et al. 2008, Anguiano 2008). Traps were opened in the early morning of the first day and subsequently checked every following morning for four consecutive days. For amphibians and non-venomous reptiles, descriptive information regarding species, approximate age, snout to vent length, sex, weight, and disposition were recorded using a Personal Data Assistant (PDA). Only presence/absence data were recorded for small mammals and venomous reptiles. Mark/recapture methods were not implemented per the County's request.

Each three-armed array contained four 5-gallon bucket pitfall traps and three box funnel (12'' x 8'' x 18'') traps connected by shade cloth drift fences (15 m x 30 cm). The characteristic y-shape of the array was formed by a center bucket (pitfall) buried in the ground with three 15 m arms extending at 120 degree angles from one another towards the remaining three buckets. Additional sections of 15 m drift fencing extended from these pitfalls and terminated at the box funnel traps. Within each pitfall and box funnel trap was placed a short section of PVC pipe stuffed with cotton batting to serve as cover for captured animals and a wet sponge for hydration (Fisher et al. 2008). Additional attempts to shelter animals included placing boards or lids on top of trap to limit exposure to the sun. All traps were cleaned of excess debris and invertebrates on the final survey morning. To secure the array at the end of each survey period, pitfall traps were secured with lids and box funnel traps were collected for indoor storage.

The location of each array was identified using a hand-held GPS receiver and mapped in GIS. Representative habitat for the survey locations included: Jojoba-San Diego Sunflower Association (Station 1), and Garland Chrysanthemum Stand (Station 2). Arrays were strategically placed in representative vegetation communities within Property boundaries in an attempt to fully describe the diversity of reptile and amphibians present during the allotted survey period. Disturbance to cultural resources on the Property was avoided by locating arrays at a distance from exposed artifacts and sites identified by cultural resource surveys conducted prior to installation.

3.3.3 Birds

The inventory of birds present on the Property was assessed using a combination of diurnal point count surveys and nocturnal surveys. In addition, any incidental data was also recorded. Diurnal point counts were conducted by spending a set amount of time at each established point and identifying and counting any bird species sighted or heard. Nocturnal surveys were conducted in a similar manner, but by relying primarily on auditory detection.

Diurnal point count surveys were performed at five pre-determined stations (Figure 3-1). Stations were located such that each was no more than a 10-minute walk from neighboring stations and were spatially oriented to cover the range of habitat types within the Property. Surveys were conducted on April 26, May 12, and June 14, 2011 from dawn to 10:00 am.

Nocturnal surveys were conducted at stations 2 and 5 on April 27, 2011 (Figure 3-1). Two observers surveyed simultaneously from 6:30 pm until 10:15 pm. A total of 30 minutes were allotted for surveying at each station. Nocturnal surveys target migratory birds and those species active at dusk.

The point count survey method used for this inventory is designed to evaluate densities and trends. It is not the ideal method for an exhaustive inventory of species, nor is it appropriate for assessing which species are migrants and which are local breeders. Additional survey techniques or species-specific surveys may be needed to complete the avian species list.

3.3.4 Mammals

To assess the diversity of mammals present on the Property, multiple techniques designed to target multiple guilds of mammals were employed: (1) acoustic and thermal imaging surveys were used to assess bat diversity; (2) live trapping was used to assess small mammal diversity; and, (3) camera traps and track stations were used to assess medium and large mammal diversity. In addition, any incidental data including scat, tracks, and other signs were recorded to ensure a robust assessment of the mammal diversity on the Property.

Bats

The 2011 spring and summer bat species surveys were conducted between May and July, 2011. Each survey season consisted of three nights of active and passive bat monitoring using the AnaBat system, which is designed to help users identify species of bats based on their unique echolocation call frequency. The system converts the ultrasonic echolocation signals of bats into audible electronic signals that can be recorded and processed to asses in identification of the species. Most bats have very unique, readily identifiable echolocation calls.

For each season, three passive echolocation monitoring stations were placed on the Property at three different sites (Figure 3-1). Data were collected autonomously from these monitoring stations from May 18 – 21, 2011 and again from July 10 – 13, 2011. Long-term passive monitoring is designed to collect data on bat presence and activity, as well as seasonal changes in species composition. Data analysis included the use of software filters to remove recordings that were the result of wind or insect background noise.

Active surveys were conducted from May 19 - 21 and July 10 – 12, 2011, commencing at dusk. Biologists were onsite, using both active echolocation recording (AnaBat) and thermal imaging. Active use of the AnaBat detector was used to record and identify bats within the project area, while the thermal imaging camera was used to assess the landscape and provide relative abundance estimates. Walking and driving surveys were used to evaluate the entire project area for bat activity. Thermal imaging and AnaBat equipment allowed biologists to view and monitor the entire Property from various vantages on the existing roads and trails.

Small Mammals

The 2011 surveys were completed in July. Three surveys of four consecutive days of trapping were conducted at six different locations on the Property (Figure 3-1). All trapping was conducted using modified Sherman live traps baited with rolled oats. Traps were set in parallel lines of approximately 25 each line, 100 total. Biologists opened and baited traps at approximately 4 pm in the afternoon before each trapping session. Traps were checked and animals were removed and released following data collection (e.g. species, sex, and reproductive characteristics) commencing at 7 am and ceasing at 9 am. At the conclusion of each survey, all traps and flagging were removed from the location.

In order to diversify trap locations and use representative habitats characteristic of the Property's small mammals population, the six locations for surveys on the Property were chosen to ensure that a greater diversity of small mammal species was captured. The first trapping session from April 26 – 29, 2011 was conducted in thick stands of cactus and coastal sage scrub, the second trapping session from May 31 - June 3, 2011 was conducted in high and moderate quality coastal sage scrub, and the third trapping session from June 28 - July 1, 2011 was conducted in a native grassland alliance/chaparral transitional zone.

Medium and Large Mammals

The 2011 surveys for medium and large mammals were completed in July. Three surveys of three consecutive days of passive data collection were conducted at six different locations on the Property (Figure 3-1). All survey stations consisted of passive, motion triggered video cameras and gypsum track stations baited with scent lure. The camera was attached to a tree, bush, or other existing natural feature using bungee cords. A circle of gypsum was laid directly in front of the camera with a large rock placed in the middle. The liquid scent lure (e.g. "Carman's ProChoice Scent Lure") was then placed on the rock and the surrounding gypsum smoothed.

The combination of cameras and track stations was used to ensure that the greatest diversity of medium and large mammals is recorded. The scent lure was intended to draw animals close to the cameras and track stations, but does not significantly alter their movement patterns or behaviors. While some animals will generally avoid novel stimuli (such as a patch of white gypsum), the scent lure will draw them close enough to be captured on camera. The gypsum will also collect data on animals that visit the scent station but may not trigger the camera.

All cameras were set to begin recording 30 seconds after they were triggered (the minimum delay time and industry standard). In addition, the camera was set to have a minimum of one minute delay between triggers and recording. This helps reduce the amount of "false triggers" which can be caused by the wind moving plants and brush, by extreme temperature changes (e.g. sunrise and sunset), or by an active animal that may spend a significant amount of time near the scent station or other nearby natural feature.

4.0 RESULTS AND DISCUSSION

4.1 Vegetation Communities/Habitat

The Property consists of eleven plant alliances, associations, or semi-natural stands (Table 5; Figure 4-1). These vegetation community types are described below and organized as they are in the classification key by functional group (e.g., drought deciduous shrublands, riparian shrublands, and upland herbaceous vegetation). Currently the VCM classification system does not include vernal pools, which occur on the Property. (Vernal pools are expected to be incorporated in the future when this habitat has been characterized at the statewide level [AECOM et al. 2011]). The VCM does not include unvegetated habitat (e.g. disturbed habitat, urban/developed, and non-vegetated channel); therefore, unvegetated habitat is described using the Oberbauer-modified Holland classification system (Oberbauer et al. 2008, Holland 1986).

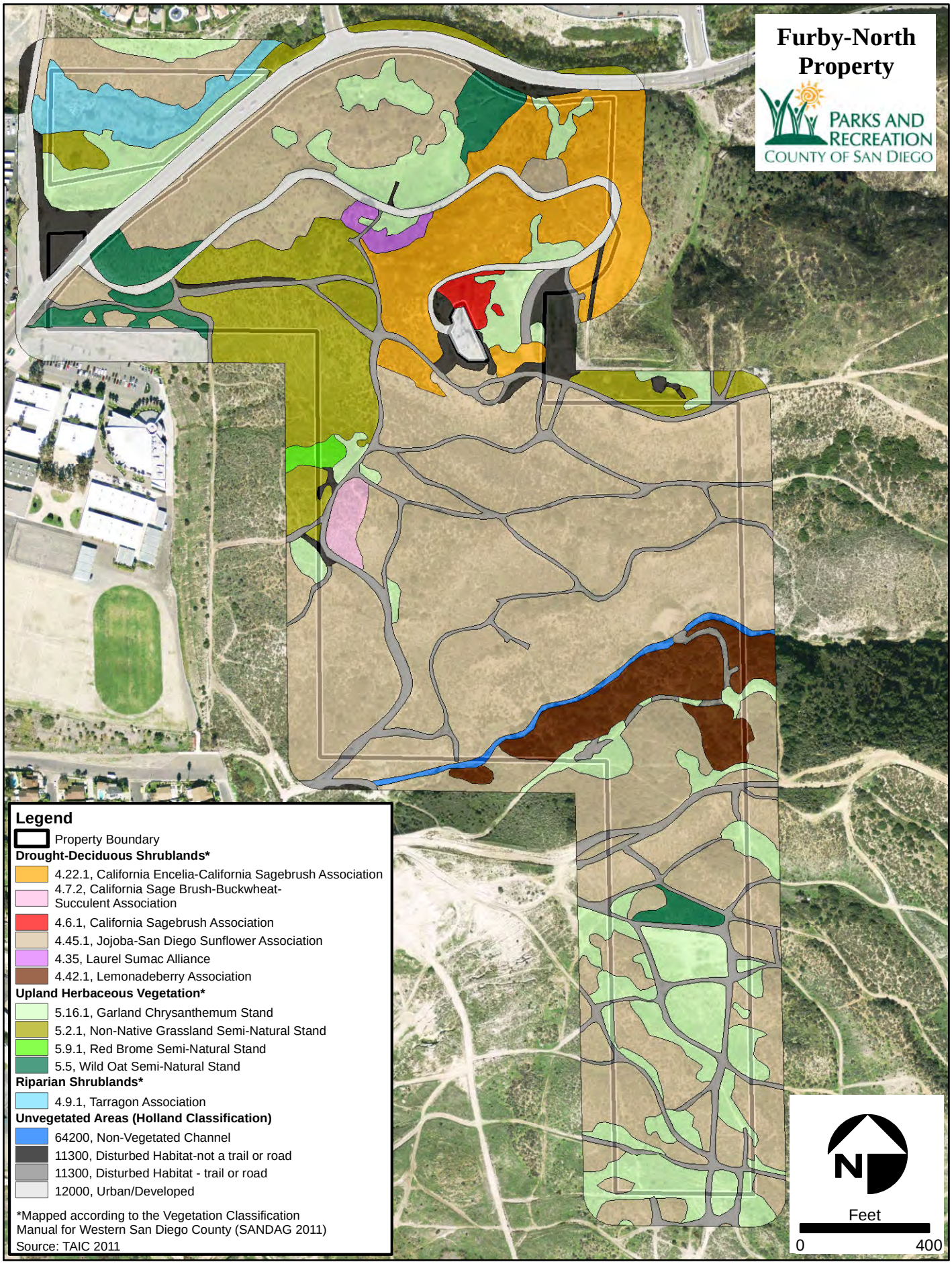
Until the VCM was finalized in 2011, MSCP preserve lands were generally mapped using the Holland classification system. To ensure consistency with previous mapping efforts, the Property map data layer was cross-walked to the Holland system pursuant to the VCM (AECOM et al. 2011; Table 5; Figure 4-2). The vegetation community descriptions below include a discussion of the Holland classification cross-walk. Holland community types not included in the VCM (e.g., vernal pools and unvegetated habitats) are described at the end of this section.

4.1.1 Drought Deciduous Shrublands

***Artemisia californica* (California Sagebrush) Association 4.6.1**

This open shrub community is dominated by a single species, California sagebrush, and has a high diversity of other shrub species, including fourwing saltbush (*Atriplex canescens*), lemonadeberry (*Rhus integrifolia*), California encelia (*Encelia californica*), laurel sumac (*Malsoma laurina*), California buckwheat (*Eriogonum fasciculatum*), coyote bush (*Baccharis pilularis*), broom baccharis (*Baccharis sarothroides*), coast goldenbush (*Isocoma menziesii*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and bush mallow (*Malacothamnus fasciculatus*). California buckwheat (*Eriogonum fasciculatum*), if present, consists of less than five percent cover. This vegetation community may occur as an early transitional stage during fire recovery, or as a mature, stable community. The Holland classification associated with this vegetation community is *Diegan coastal sage scrub*.

A total of 0.41 acre of California sagebrush association occurs on the Property adjacent to the inholding on the northwest side. This area consists of approximately 80 to 90 percent relative cover of California sagebrush. Other species include California encelia, deerweed, and scattered non-native species.



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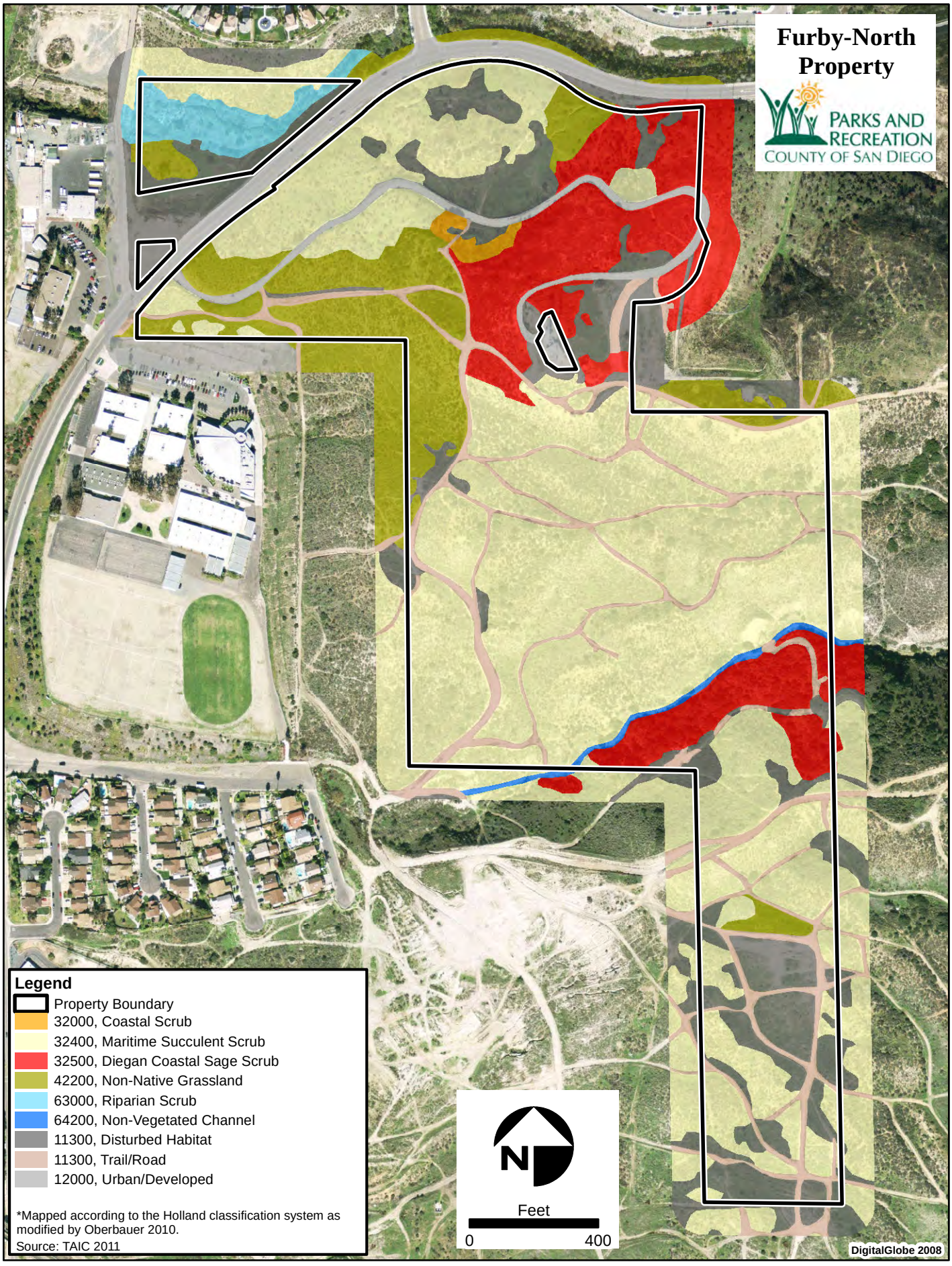
Vegetation Communities - Vegetation Classification Manual for Western San Diego County*

Figure 4-1

File: S:\projects\mios\FurbyNorth\plots\Figures\VCS Veg.mxd

Date: 10/10/2011



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Vegetation Communities - Holland Classification System*

Figure 4-2

File: S:\projects\mios\FurbyNorth\plots\Figures\Holland Veg.mxd

Date: 10/10/2011

Table 5. Vegetation Communities – Vegetation Classification Manual (2011)

VCM Code	Vegetation Community Type				Acres
	VCM Alliance/Association	VCM Common Name	Holland Code	Holland Classification	
Drought Deciduous Shrublands					
4.6.1	*Artemisia californica* Association	California Sagebrush Association	32500	Diegan Coastal Sage Scrub	0.41
4.7.2	*Artemisia californica-Eriogonum fasciculatum - Opuntia littoralis/Dudleya (edulis)* Association	California Sagebrush-Buckwheat-Succulent Association	32400	Maritime Succulent Scrub	0.56
4.22.1	*Encelia californica-Artemisia californica* Association	California Encelia-California Sagebrush Association	32500	Diegan Coastal Sage Scrub	6.17
4.35	*Malosma laurina* Alliance	Laurel Sumac Alliance	32000	Coastal Scrub	0.43
4.42.1	*Rhus integrifolia* Association	Lemonadeberry Association	32500	Diegan Coastal Sage Scrub	3.08
4.45.1	*Simmondsia chinensis-Bahiopsis laciniata Association*	Jojoba-San Diego Sunflower Association	32400	Maritime Succulent Scrub	39.74
	Total Drought Deciduous Shrublands				***50.40***
Riparian Shrublands					
4.9.1	*Artemisia dracunculus* Association	Tarragon Association	63000	Riparian Scrub	1.62
	Total Riparian Shrublands				***1.62***
Upland Herbaceous Vegetation					
5.5	*Avena (barbata, fatua)* Semi-Natural Stands	Wild Oat Semi-Natural Stand	42200	Non-Native Grassland	2.40
5.9.1	*Bromus rubens* Semi-Natural Stand	Red Brome Semi-Natural Stand	42200	Non-Native Grassland	0.16
5.16.1	*Glebionis coronaria* Semi-Natural Stands	Garland Chrysanthemum Stand	11300	Disturbed Habitat (Not Trail or Road)	9.77
5.21	Mediterranean California Naturalized Annual and Perennial Grassland Semi-Natural Stands.	Non-native Grassland Semi-Natural Stand	42200	Non-Native Grassland	5.20
	Total Upland Herbaceous Vegetation				***17.52***
Other Vegetation Communities					
N/A	N/A	N/A	44000	Vernal Pool	0.001
	Total Other Vegetation Communities				***0.001***
Unvegetated[1]					
N/A	N/A	N/A	11300	Disturbed Habitat (Trail or Road)	6.03
N/A	N/A	N/A	11300	Disturbed Habitat (Not Trail or Road)	1.06
N/A	N/A	N/A	12000	Urban/Developed	1.54
N/A	N/A	N/A	64200	Non-Vegetated Channel	0.36
	Total Unvegetated				***8.99***
		TOTAL LAND COVER			**78.53**

[1] The Vegetation Classification Manual does not classify vernal pools or unvegetated habitats such as that found in the Oberbauer-modified Holland classification system: disturbed habitat, non-vegetated channel, and developed.

Artemisia californica-Eriogonum fasciculatum -Opuntia littoralis/Dudleya (edulis) (**California Sagebrush-Buckwheat-Succulent) Association 4.7.2**

In this open shrub community, California sagebrush and California buckwheat are co-dominant. Other common shrub species may include lemonadeberry, San Diego sunflower (*Bahiopsis laciniata*), California box- thorn (*Lycium californicum*), California encelia, coast spice bush (*Cneoridium dumosum*), cliff spurge (*Euphorbia misera*), jojoba (*Simmondsia chinensis*), black sage, and white sage. The well-developed understory may include dudleya species (*Dudleya* spp.), cactus species (*Cylindropuntia* spp., *Opuntia* spp., *Ferocactus viridescens*), granny's hairnet (*Pterostegia drymarioides*), small-flower soap-plant (*Chlorogalum parviflorum*), giant stipa (*Achnatherum coronatum*), ashy spike-moss (*Selaginella cinerascens*), and coastal wishbone plant (*Mirabilis laevis*). To meet the criteria for this association, (a) at least two succulent species must be present or the total cover of succulent species must account for at least five percent; and (b) the combined cover of the co-dominant species, sages, and succulent species must account for more shrub cover than any other single shrub species. This association generally occurs on south-facing slopes with sandy-loam soils, although other soils may also be present. The Holland classification associated with this vegetation community is *maritime succulent scrub*.

A total of 0.56 acre of this association occurs on a west-facing slope of a small knoll on the west central portion of the Property. California sagebrush is the dominant species (40 percent relative cover) in this area, and California buckwheat is subdominant, accounting for approximately 10 to 15 percent cover. In addition, less than five percent cover of each of the following species also occurs: jojoba, cliff spurge, San Diego bur sage (*Ambrosia chenopodiifolia*), San Diego sunflower, needlegrass (*Nassella* sp.), San Diego barrel cactus, snake cholla (*Cylindropunita californica* var. *californica* [*Opuntia parryi* var. *serpentina]*), and fishhook cactus (*Mammillaria dioica*).

Encelia californica-Artemisia californica **(California Encelia-California Sagebrush) Association 4.22.1**

This is an open shrub community co-dominated by California encelia and California sagebrush. Subdominant shrubs species may include coast goldenbush, California desert thorn, California buckwheat, white sage, black sage, lemonadeberry, bladderpod (*Peritima [Isomeris] arborea*), coast cholla (*Cylindropuntia prolifera*), and laurel sumac. Subdominant shrub cover is generally sparse. This association generally occurs on south-facing slopes with sandy loam or clay loam soils, fairly close to the coast. The Holland classification associated with this vegetation community is *Diegan coastal sage scrub*.

A total of 6.17 acres of this association occurs in the northeastern portion of the Property. The vegetation in this area is highly disturbed from past grading and fire and is in the process of recovery. California encelia, California sagebrush, and California buckwheat are the dominant shrub species. Other shrub species in this area include San Diego bur sage, deerweed, and jojoba. Trace amounts of other native species include bladderpod, coyote bush, western dichondra (*Dichondra occidentalis*), lemonadeberry, needlegrass, and cactus species, including San Diego barrel cactus, fishhook cactus, and snake cholla. Herbaceous species consist mostly of non-native species such as garland chrysanthemum, filaree (*Erodium* spp.), red brome, wild oat.

***Malosma laurina* (Laurel Sumac) Alliance 4.35**

This alliance is dominated by laurel sumac. Subdominant shrubs may include California sagebrush, ceanothus species (*Ceanothus* spp.), coast monkey flower (*Mimulus aurantiacus*), California encelia, California buckwheat, toyon (*Heteromeles arbutifolia*), yucca (*Hesperoyucca whipplei*), bush penstemon (*Keckiella antirrhinoides*), holly-leaf redberry (*Rhamnus ilicifolia*), lemonadeberry, sugarbush (*Rhus ovata*), sages, Parry's tetracoccus (*Tetracoccus dioicus*), and/or poison oak (*Toxicodendron diversilobum*). Laurel sumac is highly successful at resprouting after a fire, and therefore, this alliance is fairly common in post-burn areas. A single association under this alliance, the laurel sumac-deer weed association, was identified by the VCM; however, deer weed was not present in this community on site, and therefore, this community was identified only to the alliance level. The Holland classification associated with this vegetation community is *coastal scrub*.

The laurel sumac association occurs in a small area (0.43 acre) in the northern central portion of the Property. Laurel sumac is the dominant shrub and California sagebrush is subdominant. Trace amounts of blue elderberry and lemonadeberry are also present. The undergrowth consists mostly of mixed non-native grasses and forbs.

***Rhus integrifolia* (Lemonadeberry) Association 4.42.1**

Lemonadeberry is the dominant species in this association, often forming a continuous canopy cover. To meet the criteria for this association, lemonadeberry must account for at least 50 percent relative cover in the shrub canopy or it must be present with greater than twice the cover of any other shrub species. Subdominant shrub species may include chamise (*Adenostoma fasciculatum*), California sagebrush, monkey flower, California encelia, California buckwheat, toyon, laurel sumac, spiny redberry (*Rhamnus crocea*), black sage, and mission manzanita (*Xylococcus bicolor*). Because lemonadeberry tends to create dense shade and litter build-up, the understory is often absent or under-developed, and has low species diversity. The Holland classification associated with this vegetation community is *Diegan coastal sage scrub*.

A total of 3.08 acres of Lemonadeberry association occurs in the central portion of the Property on a steep, north-facing slope. Lemonadeberry accounts for approximately 50 percent relative shrub cover, and California sagebrush is subdominant at approximately 20 percent cover. Needlegrass is also present, accounting for approximately one to two percent cover. The remaining understory consists mainly of non-native grasses and forbs.

***Simmondsia chinensis-Bahiopsis laciniata* (Jojoba-San Diego Sunflower) Association 4.45**

Unlike the diagnostic species for many other plant associations, jojoba has to account for only five percent or more relative cover to be classified in the jojoba-San Diego sunflower association. If San Diego sunflower occurs with at least five percent relative cover in the shrub canopy, joboba can be present in any amount. Additional species often found in this association include California sagebrush,

coast cholla, California buckwheat, snakeweed (*Gutierrezia sarothrae*), deerweed, sugarbush, black sage, and yucca. The Holland classification associated with this vegetation community is *maritime succulent scrub*.

The jojoba-San Diego sunflower association is the most prevalent vegetation type on the Property, covering 39.74 acres. Because this association is characterized by as little as five percent cover of jojoba, the overall floristic composition of this vegetation association is quite variable throughout the Property. The relative cover of jojoba varies from 5 to 70 percent, and cover of San Diego sunflower ranges from 0 to 10 percent. Other native species present in this association include California sagebrush, San Diego bur sage, cliff spurge, California encelia, California buckwheat, bush mallow, needlegrass, and various species of cactus (coast cholla, fishhook cactus, San Diego barrel cactus, and snake cholla). The understory was composed mostly of non-native grasses, Malta star thistle, chrysanthemum, and short-pod mustard.

Overall shrub cover in this association varies from approximately 5 to over 80 percent on site, depending on the level of disturbance. Highly disturbed areas, such as the north-facing slope adjacent to the south side of Otay Mesa Road, consist of very high cover of non-native grasses and forbs with as little as 5 to 10 percent native shrub cover. Less disturbed areas, such as the central portion of the Property, consist of a much lower cover of non-native species and higher cover of native shrubs. The dominance of native shrubs in these areas is highly variable, including areas that consist of (1) up to 60 percent cover of San Diego bur sage, (2) up to 70 percent cover of jojoba, (3) up to 65 percent cover of California sagebrush, or (4) up to 50 percent or more of coast cholla. Due to the high level of variability in this vegetation type, definable patches (e.g., subareas of this association on the Property with a fairly distinct species composition) were characterized and described individually, and included on the large fold-out map located in the back of this report. This characterization should help the land manager better assess the biological resources of this Property. Subarea descriptions for this and other associations or alliances are also included in Appendix A.

4.1.2 Riparian Shrublands

***Artemisia dracunculus* (Tarragon) Association 4.9.1**

In this association, tarragon is the dominant or co-dominant species, accounting for at least 50 percent relative shrub cover, and generally occurs in riparian terraces or moist slopes adjacent to seeps in sandy soils. Other species, which tend to occur in transitional areas between wetlands and uplands, may include broom baccharis, blue elderberry (*Sambucus nigra* ssp. *caerulea*), California sagebrush, California encelia, California buckwheat, California croton (*Croton californicus*), and western ragweed (*Ambrosia psilostachya*). Stands of tarragon tend to be small (e.g., less than 2.5 acres). The Holland classification associated with this vegetation community is *riparian scrub*.

A total of 1.62 acres of tarragon association occurs within a small, isolated patch of habitat at the northernmost portion of the Property, north of Otay Mesa Road. This vegetation community occurs

along a drainage that runs roughly east to west. Edge effects from surrounding development and past ground disturbance are evident, as shown by heavy infestation by invasive species such as poison hemlock, non-native grasses, garland chrysanthemum, and castor bean (*Ricinus communis*). Native shrubs are dominated by tarragon. Other native species include broom baccharis, lemonadeberry, blue elderberry, and climbing milkweed (*Sarcostemma cynanchoides* ssp. *hartwegii*)).

4.1.3 Upland Herbaceous Vegetation

***Avena* (*barbata, fatua*) (Wild Oat) Semi-Natural Stand 5.5**

This vegetation community is strongly dominated by wild oat species, which commonly occur in disturbed openings within native shrub or woodland vegetation communities. Other co-occuring species may include other non-native brome grasses (*Bromus* spp.), or native herbs such as clarkias (*Clarkia* spp.), bedstraws (*Galium* spp.), lupins (*Lupinus* spp.), popcorn flowers (*Plagiobothrys* spp.), and clovers (*Trifolium* spp.). Structurally, wild oat stands are tall and thick, generally resulting in a large amount of thatch. The Holland classification associated with this vegetation community is *non-native grassland*. A total of 2.4 acres of wild oat semi-natural stand occurs in small isolated patches in the northern and southern portions of the Property. Wild oat species also occur throughout the Property mixed in with other invasive species.

***Bromus rubens* (Red Brome) Semi-Natural Stand 5.9.1**

This vegetation community is strongly dominated by red brome, a highly invasive grass species. Other non-native species may include filarees, brome grasses, Malta star thistle (*Centaurea melitensis*), short-pod mustard (*Hirschfeldia incana*), common catchfly (*Silene gallica*), and smooth cat's ear (*Hypochaeris glabra*). This association occurs in dry, disturbed areas on poor soils. The Holland classification associated with this vegetation community is *non-native grassland*. A total of 0.16 acre of red brome semi-natural stand occurs in a single patch on the central western boundary of the Property. Red brome grasses also occur throughout the Property mixed in with other invasive species.

***Glebionis coronaria* (Garland Chrysanthemum) Semi-Natural Stand 5.16.1**

Garland chrysanthemum is the dominant or co-dominant species in this semi-natural stand, accounting for at least 30 percent relative cover. It often occurs as a monoculture, choking out other species, including other invasive species. Other herbaceous species that may occur in this community include iceplant (*Mesembryanthemum* spp.), wild radish (*Raphanus sativus*), brome grasses, Russian thistle (*Salsola tragus*), sweetclovers (*Melilotus* spp.), filaree, and Malta star thistle. Pursuant to the VCM, the Holland classification associated with this vegetation community is *disturbed habitat*.

The garland chrysanthemum association is the most prevalent (9.77 acres) upland herbaceous community on the Property. The species occurs throughout the Property mixed in among other native and non-native species, but it mostly occurs in monoculture patches among the extensive unauthorized trail system in the south and in disturbed areas in the north.

Mediterranean California Naturalized Annual and Perennial Grassland
(Non-native Grassland) Semi-Natural Stand

This non-native grassland semi-natural stand is a broad classification based on the group level, which is the level above alliance. This classification can be used for non-native vegetation communities of mixed species that cannot be keyed out to the level of alliance or association. To meet the criteria for this classification, non-native grasses and forbs must account for greater relative cover than native species, and none of the following non-native species can be dominant or co-dominant: wild oats, brome grasses (*Bromus diandrus*, B. *hordeaceus*, B. *rubens*), purple falsebrom (*Brachypodium distachyon*), rye grasses (*Lolium* spp.), fountain grasses (*Pennisetum* spp.), black mustard (*Brassica nigra*), poison hemlock (*Conium maculatum*), and garland chrysanthemum. The Holland classification associated with this vegetation community is *non-native grassland*. The non-native grassland semi-natural stand occurs in several large patches that are composed of a dense mix of wild oats and brome grasses as well as a variety of invasive non-native broadleaf species, such as Malta start thistle, short-pod mustard, garland chrysanthemum, and filarees (5.20 acres).

4.1.4 Other Vegetation Communities

Vernal Pool (Holland 44000)

Vernal pools are ephemeral ponds or depressions that fill during the rainy season and support a distinctive plant and animal community. The hydrology of this vegetation community experiences seasonal extremes of wet and dry periods. "Vernal pools can be differentiated from other temporary wetlands by the following criteria: (1) the basin is at least partially vegetated during the normal growing season or is unvegetated due to heavy clay or hardpan soils that do not support plant growth; and (2) the basin contains at least one vernal pool indicator species" (Oberbauer et al. 2008). Indicator species include woolly marbles (*Psilocarphus* spp.), toothed downingia (*Downingia cuspidata*), San Diego button celery (*Eryngium aristulatum* var. *parishii*), and fairy shrimp (*Branchinecta* spp. and *Streptocephalus* spp.). One small vernal pool (approximately 0.001 acre) was identified on the Property and a second pool (approximately 0.0007 acre) was located just off the Property boundary (Figure 4-3). Both are located along the edge of the main unpaved access road just southeast of the in-holding; they appear as the western extension of a vernal pool complex that strings along the mesa tops along Otay Mesa Road. Although the pools were dry at the time of the observation, woolly marbles were distinguishable at both pools. No other plant species were identifiable because they were desiccated at the time of the survey.

4.1.5 Unvegetated Areas

Disturbed Habitat (11300)

Disturbed habitat is any land on which the native vegetation has been significantly altered by agriculture, construction, or other land-clearing activities, and the species composition and site conditions are not characteristic of the disturbed phase of one of the plant associations within the study region. Such habitat is typically found in vacant lots, roadsides, construction staging areas,

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Vernal Pools

Figure 4-3

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Date: 10/10/2011

or abandoned fields. For the purpose of this report, "disturbed habitat" in Figure 4-1 is used to classify only areas that are unvegetated. Note, however, that the VCM crosswalk to the Holland classification system identifies the garland chrysanthemum association as disturbed habitat in the Holland system. As such, the vegetation map showing Holland categories (Figure 4-2) is consistent with the crosswalk and shows garland chrysanthemum association as disturbed habitat. On the Property, disturbed habitat has been further classified into two categories to assist with management: (1) trails/dirt roads, and (2) not trails/dirt roads. Trails and dirt roads account for 6.03 acres (see Section 2.7 for more details) and disturbed areas not associated with trails or roads accounts for 1.06 acres.

Urban/Developed (12000)

Urban/Developed areas are found where habitat has been altered by human activities to a state beyond the potential for recovery to a natural state. In general, free standing structures and surrounding areas that are paved, armored, or landscaped are considered developed. On the Property, 1.54 acre of urban/developed land cover occurs as a paved access road from Otay Mesa road to the inholding.

Non-vegetated channel, Floodway, Lakeshore Fringe (64200)

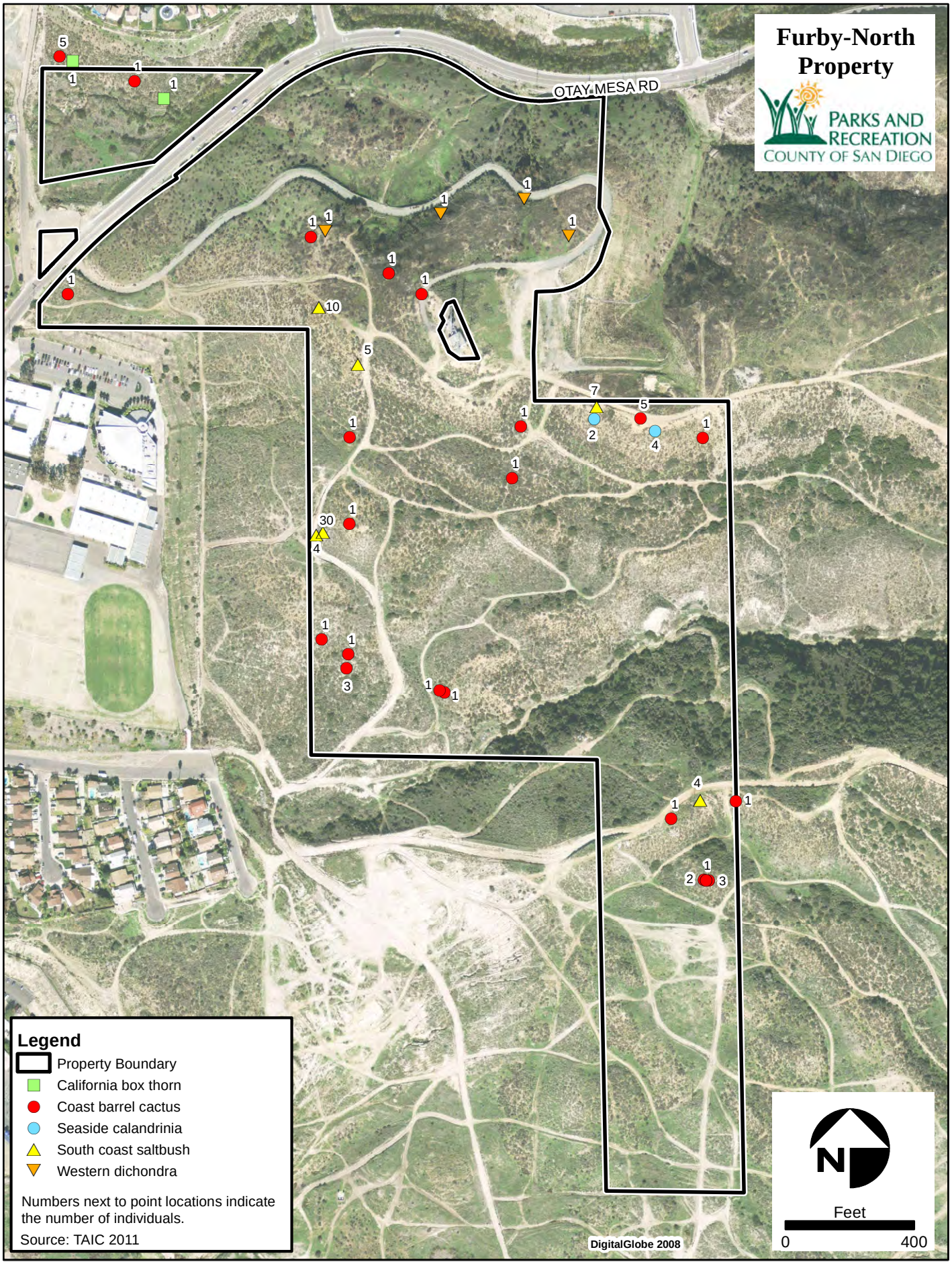
This land cover type consists of a sandy, gravelly, or rocky substrate along the fringe of waterways, flood channels, or streambeds. Non-native species may be present, but generally there is less than ten percent vegetative cover. On the Property, 0.36 acre of non-vegetated channel occurs along a dry streambed in the central portion of the Property.

4.2 Plants

A total of 115 plant taxa were observed on the Property during the 2011 surveys. Approximately 32 percent of these are non-native species, many of which are grasses. The remaining species (about 79 percent) consist of a diverse array of native riparian and upland plants that occur in natural assemblages. A full inventory of plant species observed is included in Appendix B.

4.2.1 Special-Status Plant Species Observed

For the purpose of this report, special status plant species are those species identified as (a) endangered, threatened, rare, or a candidate for listing pursuant to the Federal or State Endangered Species Acts (FESA, CESA); (b) sensitive or special status by the County of San Diego, California Native Plant Society, CDFG, or USFWS; or (c) covered by the South County MSCP. A total of nine (9) sensitive plant taxa were observed on the Property during 2011 rare plant surveys (Figure 4-4a-e). These include California box-thorn, cliff spurge, coast barrel cactus, San Diego bur sage, San Diego sunflower, seaside calandrinia (*Calandrinia maritima*), snake cholla, south coast salt bush (*Atriplex pacifica*), and western dichondra. Species accounts for these species are included below, and unless otherwise noted, the accounts are based on Reiser (1994) and CNPS (2010).



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Sensitive Plant Species

Figure 4-4a

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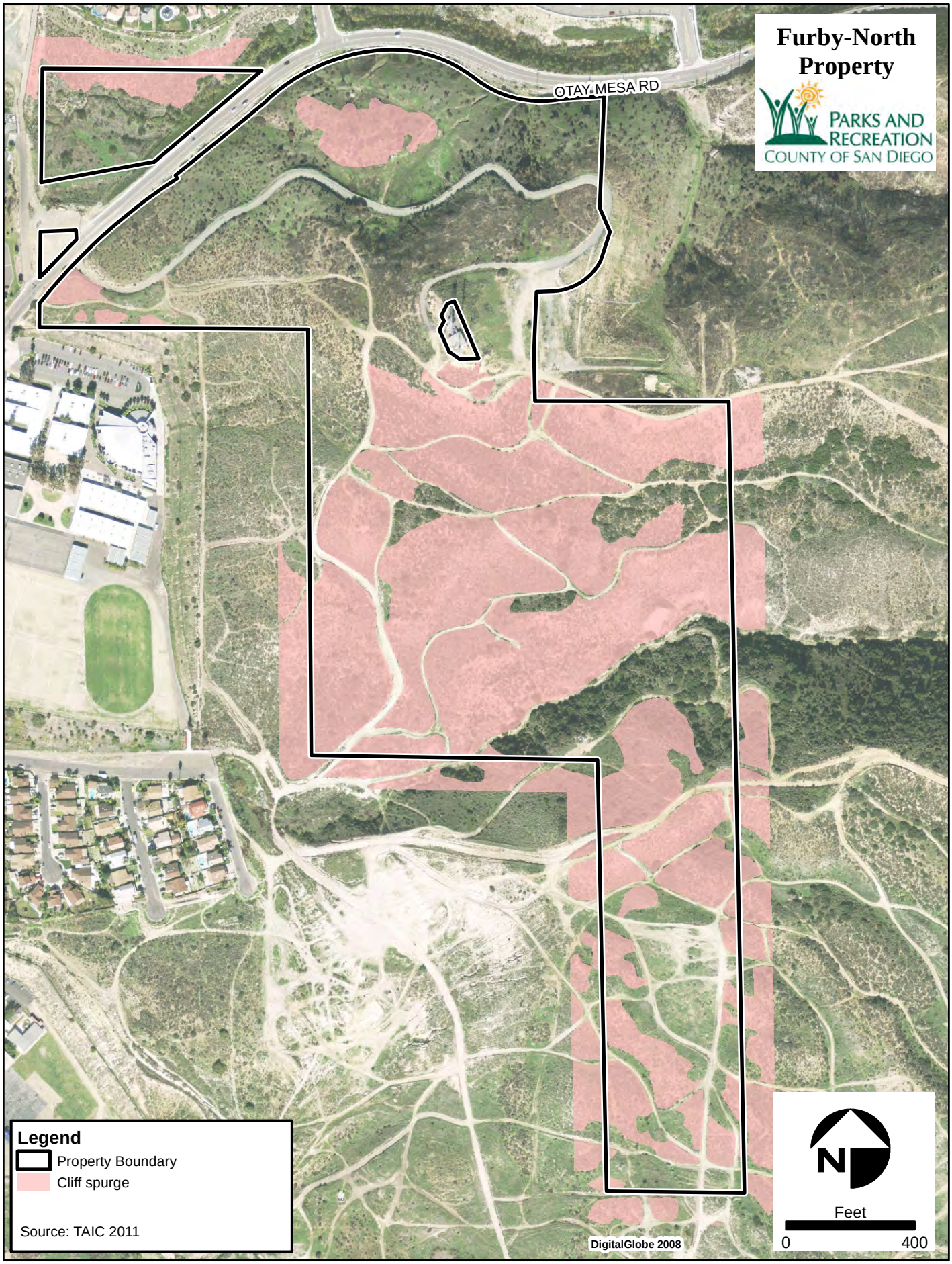
Date: 10/24/2011



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Sensitive Plant Species
Cliff Spurge

Figure 4-4b

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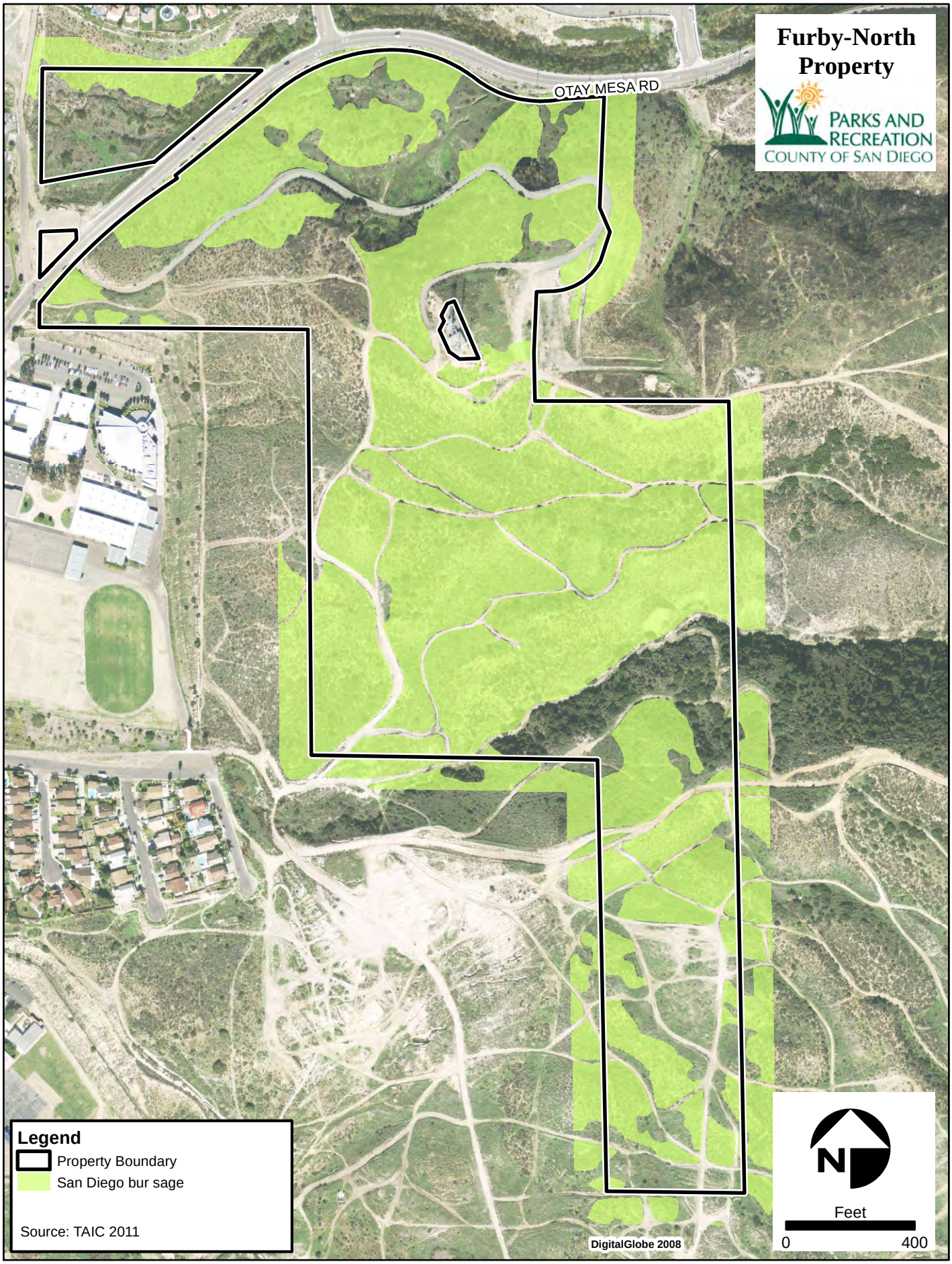

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Sensitive Plant Species
San Diego Bur Sage

Figure 4-4c

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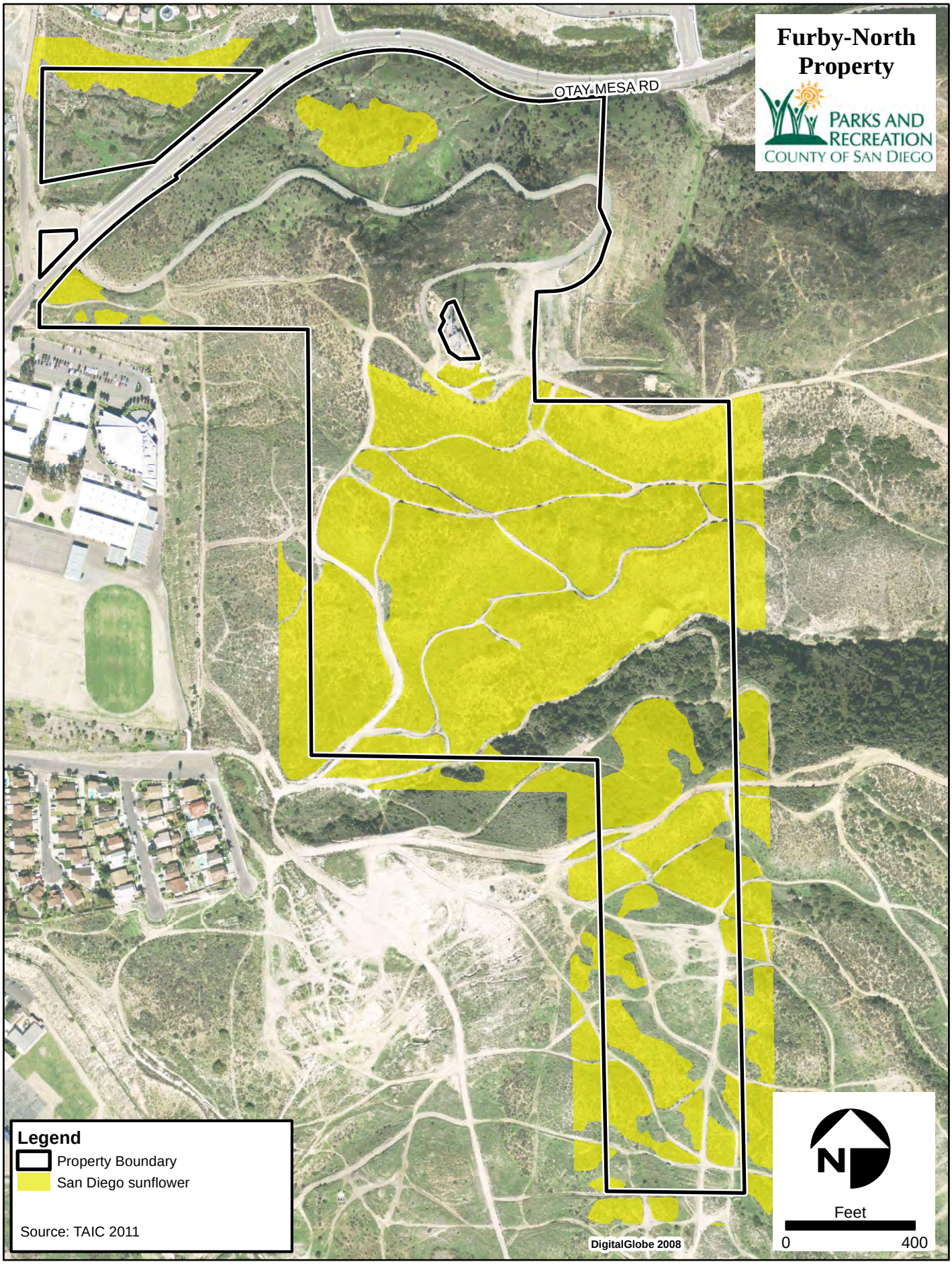
Date: 10/24/2011



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Sensitive Plant Species
San Diego Sunflower

Figure 4-4d

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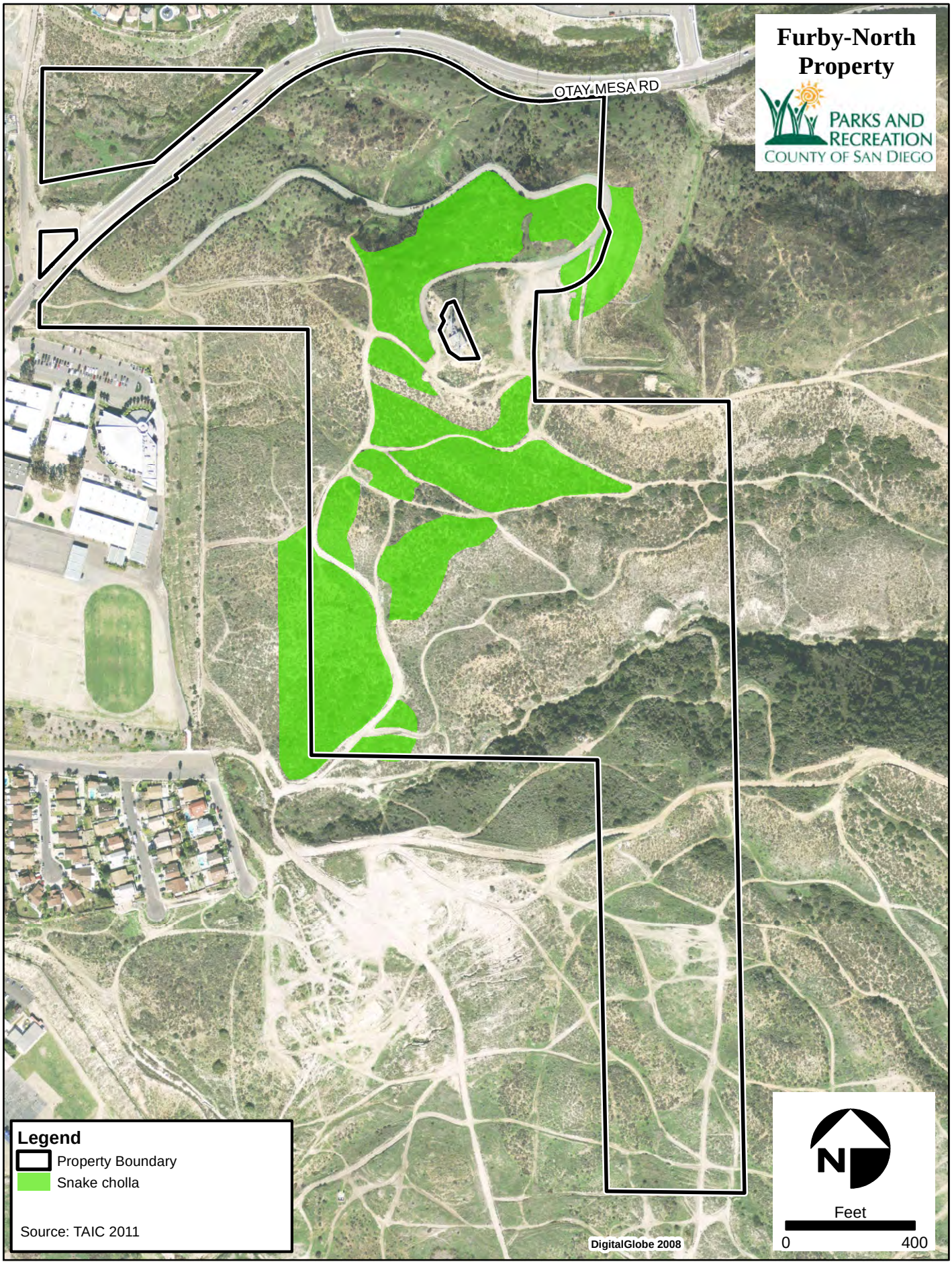

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Sensitive Plant Species
Snake Cholla

Figure 4-4e

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Date: 10/24/2011

California box-thorn – *Lycium californicum*
Federal Status: None
State Status: None
CNPS List: 4.2
County List: D
MSCP: Not Covered

California box-thorn is a shrub that occurs in coastal sage scrub and coastal bluff scrub along the coast of southern California and northern Baja California, Mexico. This shrub is intricately branched with spiny tips. Leaves are very small (3-10 mm) and fleshy. It generally occurs below 150 meters in elevation. Within the Property, several individuals of this species were observed in and adjacent to the disconnected northwestern portion of the Property on a south-facing slope within the jojoba-San-Diego sunflower association (Figure 4-4a). In addition to jojoba and San Diego sunflower, San Diego bur-sage, coast barrel cactus, and saltbush (*Atriplex canescens*) were also present.

Cliff spurge – *Euphorbia misera*
Federal Status: None
State Status: None
CNPS List: 2.2
County List: B
MSCP: Not Covered

Cliff spurge is a perennial shrub that occurs in the counties of San Diego, Orange, and Riverside, San Clemente Island, and Baja California, Mexico. This species typically occurs in scrub habitat with cactus near the coast. If damaged, the branches of this species exude a milky latex-like substance. Cliff spurge is fairly widespread on the Property, occurring in many of the drought deciduous associations, such as jojoba-San Diego sunflower and California sagebrush-buckwheat-succulents associations (Figure 4-4b).

Coast barrel cactus – *Ferocactus viridescens*
Federal Status: None
State Status: None
CNPS List: 2.1
County List: List B
MSCP: Covered

Coast barrel cactus occurs in scrub and grassland habitat in coastal San Diego County and Baja California, Mexico. This species is threatened by development, off-road vehicles, and horticultural collecting. On the Property, this species is fairly common, occurring as scattered individuals within the drought-deciduous shrubland associations (Figure 4-4a).

San Diego bur-sage – *Ambrosia chenopodiifolia*
Federal Status: None
State Status: None
CNPS List: 2.1
County List: B
MSCP: Not Covered

San Diego bur-sage is a perennial shrub that generally occurs in open coastal scrub habitats in San Diego County and Baja California, Mexico. As its name suggests, this species produces spiny fruits that form into burs when dried. San Diego bur sage is widespread throughout the Property in the drought deciduous shrubland alliances (Figure 4-4c). In some areas, relative cover of this species is as high as 70%.

San Diego sunflower – *Bahiopsis* [*Viguiera*] *laciniata*
Federal Status: None
State Status: None
CNPS List: 4.2
County List: D
MSCP: Not Covered

San Diego sunflower occurs throughout southern San Diego County and in Baja California, Mexico. It occurs in coastal sage scrub habitat on a variety of soil types and is often a dominant component of the landscape where it occurs. On the Property, San Diego sunflower occurs as a component of the jojoba-San Diego sunflower association, as well as other drought deciduous shrubland types (Figure 4-4d). Relative cover of this species ranges from trace to approximately ten percent.

Seaside calandrinia - *Calandrinia maritima*
Federal Status: None
State Status: None
CNPS List: 4.2
County List: D
MSCP: Not Covered

Seaside calandrinia is an annual herb with fleshy leaves in the purslane family (Portulacaceae). This species occurs in the counties of Santa Barbara, Ventura, Los Angeles, Orange, and San Diego as well as Baja California, Mexico and various offshore islands. The preferred habitat is sandy bluffs or sandy openings in coastal scrub. Approximately six individuals were observed in two locations during the 2011 surveys in sandstone substrate on the upper slopes adjacent to the south side of the main unpaved access road (Figure 4-4a).

Snake cholla – *Cylindropuntia californica* var. *californica* (*Opuntia parryi* var. *serpentina*)
Federal Status: None
State Status: None
CNPS List: 1B.1
County List: A
MSCP: Covered and subject to the Narrow Endemic Policy

Snake cholla occurs in open scrub habitat in San Diego County and Baja California, Mexico, often in association with coast barrel cactus, fishhook cactus and jojoba. This species has a prostrate growth habit, and can be readily propagated from cuttings. The greatest threat to this species is development. Within the Property, this species occurs in patches, some of which are fairly dense (southwest area of Property, Figure 4-4e). Co-occurring species on site include coast cholla (Cylindropuntia prolifera), fishhook cactus, coast barrel cactus, jojoba, San Diego bur-sage, and cliff spurge.

South coast saltbush – *Atriplex pacifica*
Federal Status: None
State Status: None
CNPS List: 1B.2
County List: A
MSCP: Not Covered

South coast saltbush, an annual herb, occurs in the counties of San Diego, Orange, Los Angeles, Ventura, and Riverside, as well as Baja California, Mexico and several offshore islands. This species prefers coastal scrub habitats in sandy soils and is often found in disturbed areas. On site, south coast saltbush was observed in many locations along the unpaved roads and disturbed edges (Figure 4-4a).

Western dichondra – *Dichondra occidentalis*
Federal Status: None
State Status: None
CNPS List: 4.2
County List: D
MSCP: Not Covered

Western dichondra is a perennial herb that occurs from Santa Barbara County to Baja California, Mexico, in scrub habitat and rocky outcrops within grassland, especially recently burned areas. On the Property this species was observed in several locations in scrub habitat on north-facing slopes south of the east-west paved access road (Figure 4-4a).

4.2.2 Special Status Plant Species with High Potential to Occur

Potentially occurring sensitive plant species based on habitat preferences and distribution were identified by searching the CNDDB and SDNHM Plant Atlas databases. Potentially occurring plant species are those (1) that occur outside of, but within the general vicinity of the Property, and/or (2) whose habitat preferences are consistent with available habitat within the Property. A total of five (5) sensitive species have a high potential to occur on-site as described below. A complete list of potentially occurring species (low, medium and high potential) is included in Appendix C.

Golden-spined cereus - *Bergerocactus emoryi*
Federal Status: None
State Status: None
CNPS List: 2.2
County List: B
City of San Diego MSCP: Not Covered

Golden-spined cereus is a perennial cactus that tends to occur in scrub habitat (maritime succulent scrub, coastal sage scrub, and coastal bluff scrub) near the coast. This species is often found on ocean bluffs in areas with moist ocean breezes in association with cliff spurge and Shaw's agave (*Agave shawii*). Golden-

spined cereus has a high potential to occur on-site within the jojoba-San Diego sunflower association (e.g., maritime succulent scrub or coastal sage scrub).

Otay tarplant – *Deinandra conjugens*
Federal Status: Threatened
State Status: Endangered
CNPS List: 1B.1
County List: A
City of San Diego MSCP: Covered and subject to the Narrow Endemic Policy
Otay tarplant is an annual herb that prefers clay soils within grassland or open scrub habitat (e.g., coastal sage scrub). This species occurs in southern San Diego County and northern Baja California, Mexico. Otay tarplant has a high potential to occur on-site on clay lenses within coastal sage scrub and grassland habitat.

Variegated dudleya – *Dudleya variegata*
Federal Status: None
State Status: None
CNPS List: 1B.2
County List: A
City of San Diego MSCP: Covered and subject to the Narrow Endemic Policy

Variegated dudleya is a tiny perennial succulent that is difficult to see unless it is in bloom (April to June). This species occurs in rocky substrates or clay soils in openings within scrub habitat or in association with vernal pools and mima mound topography. This species has a very high potential to occur; it has been previously recorded on-site in the west central portion (CNDDB 2011) of the Property.

Palmer's goldenbush – *Ericameria palmeri* var. *palmeri*
Federal Status: None
State Status: None
CNPS List: 1B.1
County List: B
City of San Diego MSCP: Covered and subject to the Narrow Endemic Policy

Palmer's goldenbush is a woody perennial shrub that occurs in the western portion of San Diego County and northern Baja California, Mexico. The preferred habitat for this species is along moist drainages and mesic scrub habitat. Palmer's goldenbush has been observed within 2.5 km of the Property. This species has a high potential to occur in the moist areas of drought deciduous shrubland communities on-site.

Robinson's peppergrass – *Lepidium virginicum* var. *robinsonii*
Federal Status: None
State Status: None
CNPS List: 1B.2
County List: A
City of San Diego MSCP: Not Covered

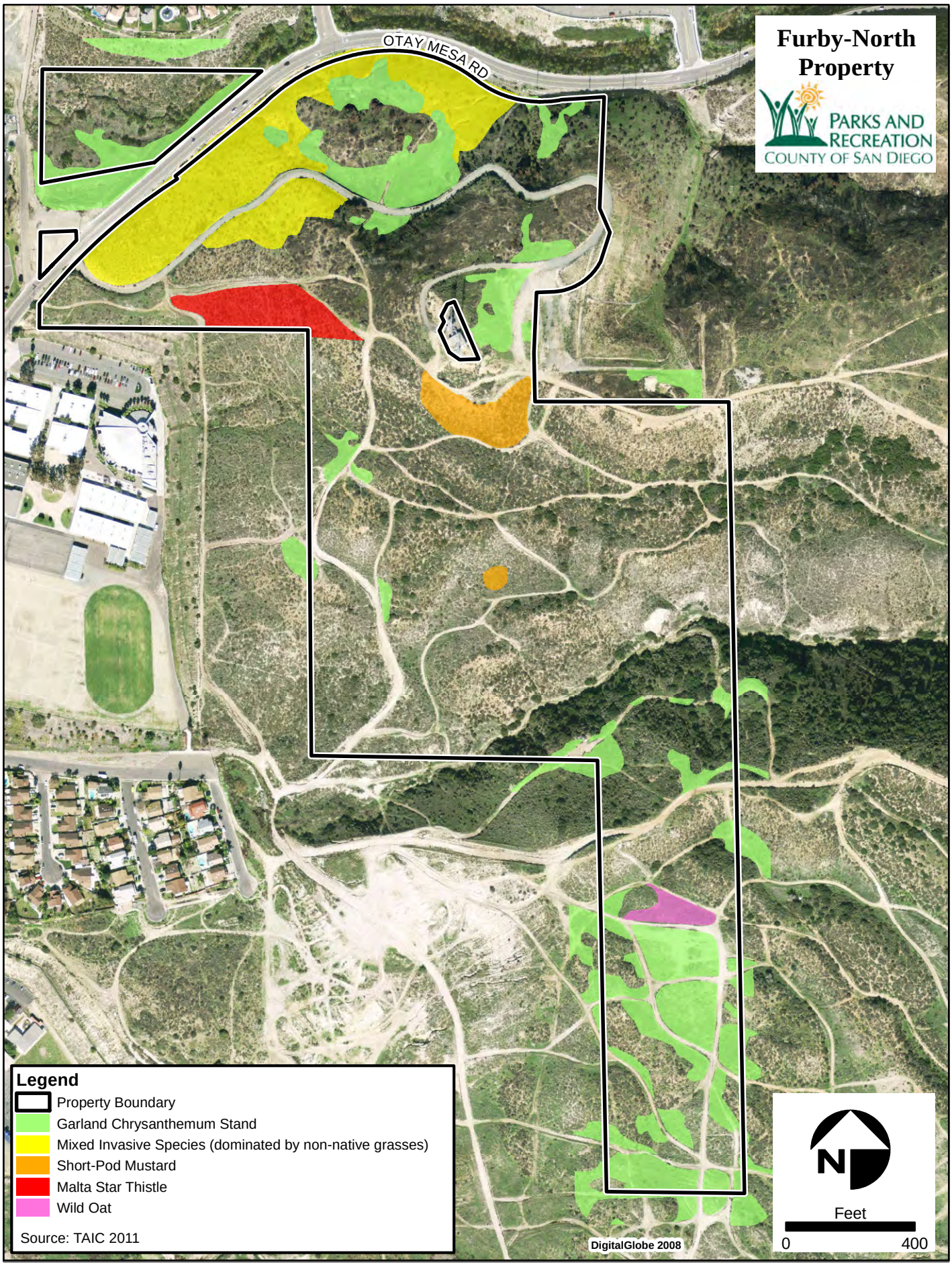
Robinson's peppergrass is an annual herb in the mustard family (Brassicaceae) that occurs in western southern California and northern Baja California, Mexico. The preferred habitat for this species is dry, exposed openings within coastal sage scrub or chaparral habitat in foothill elevations. This species has a high the potential to occur within the drought deciduous vegetation alliances on the Property. It has been observed within four km of the site.

4.2.3 Invasive Plants

While the majority of the Property is occupied by relatively undisturbed native habitats, up to 30 percent of the Property is impacted by large and dense stands of exotic and invasive species. Although many invasive plant species are present, there are three herbaceous species in particular that occur in significant and extensive stands on the Property: garland chrysanthemum (*Glebionis coronarium*); Malta starthistle (*Centaurea melitensis*) and short-pod mustard (*Hirshfeldia incana*) (Figure 4-5). In addition, the property has a high cover of non-native grasses, such as wild oats (*Avena* spp.) and brome grasses (*Bromus* spp.). A monotypic stand of wild oat dominates one small fragment in the southern portion of the property (Figure 4-5).

All of these species are considered invasive due to their aggressive expansion and persistent nature. With the exception of red brome (*Bromus rubens*), these species are ranked by the California Invasive Species Council (Cal-IPC) as having a "moderate risk," which is defined as having substantial and apparent – but generally not severe – ecological impacts on physical processes, plant and animal communities, and vegetation structure (Cal-IPC 2006). Red brome, a "high risk" species defined as having severe ecological impacts in physical processes, plant and animal communities and vegetation structure was scattered across the Property and co-occurred with other native and non-native species. Fennel, another high risk species, was also observed on site. Because red brome and fennel were scattered throughout the property and intermixed with other invasive species, it was not possible to map them as discrete patches, except as shown in Figure 4-5. Table 6 includes a list of moderate to high risk invasive species that occur on-site. Monitoring and invasive species control should include, but not be limited to, species in Table 6.

The garland chrysanthemum on-site exists as dense patches, most of which occur as a monoculture with less than one percent cover of any other plant species (native or exotic). Extensive stands of chrysanthemum can be found throughout the Property but are especially concentrated along the sides of roads and trails and along the borders of the Property. Associated with high disturbance levels, this species was likely introduced from neighboring properties—which were also observed to contain monocultures of chrysanthemum—and then propagated through cutting of unauthorized trails, the use of maintenance roads, and other seed and propagule introduction. Wildfires, mowing, and other large-scale vegetation removal and disturbances would also contribute to the establishment of this species on the Property.



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Invasive Species

Figure 4-5

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Date: 11/17/2011

Short-pod mustard and Malta starthistle (tocalote) are both associated with high levels of disturbance. Both are common colonizers following wildfire, mowing, and other large scale vegetation disturbances. The mustard appeared to be confined to small and defined patches with individuals scattered at low densities throughout the Property (Figure 4-5). The Malta starthistle appeared to be present in a large monoculture on the northern area of the Property where open space borders San Ysidro middle school and Otay Mesa Road. Malta starthistle was also common on the northern area of the Property, just off-site and within the stands of cholla on-site. In addition, this species was intermixed with other non-native species throughout the non-native grassland semi-natural stand.

A smaller stand of wild oats was present within the southern portion of the property (Figure 4-5). This species is present in lower densities and as scattered individuals within the non-native grassland on-site. This species is considered a moderate risk by Cal-IPC.

High risk species on-site include red brome and fennel. Red brome is generally interspersed with other invasive grasses and forbs, especially in the areas mapped as non-native grassland semi-natural stand or within the jojoba-San Diego sunflower association located in the vicinity of the paved access road. It also occurs in a small, dense stand on the western portion of the Property. Fennel occurs in scattered locations on the Property, rather than dense patches. Other species observed on the Property are those commonly associated with the wildland-urban interface. Especially common were exotic grasses, thistles (*Carduus pycnocephalus*; *Salsola tragus*), and various ruderal weeds. These species were found in conjunction with native vegetation communities at varying levels of density, or within non-native communities, such as non-native grassland semi-natural stand (Figure 4-1).

Table 6. Moderate to High Risk Invasive Species Identified on Property

Scientific Name	Common Name	Cal-IPC Risk Category
Bromus rubens	Red brome	High
Foeniculum vulgare	Fennel	High
Atriplex semibaccata	Australin saltbush	Moderate
Avena barbata	Slender wild oat	Moderate
Avena fatua	Wild oat	Moderate
Brassica nigra	Black mustard	Moderate
Bromus diandrus	Ripgut brome	Moderate
Centaurea melitensis	Malta starthistle, tocalote	Moderate
Glebionis coronarium	Garland chrysanthemum	Moderate
Hirshfeldia incana	Short-pod mustard	Moderate
Holcus lanatus	Common velvetgrass	Moderate
Hordeum murinum	Hare barley	Moderate
Hypochaeris radicata	Rough catsear	Moderate
Lolium multiflorum	Italian ryegrass	Moderate
Vulpia myuros	Rattail fescue	Moderate

4.3 Wildlife

The wildlife present on the Property includes species of the southwestern California and Baja California biomes. A total of 92 mammal species were detected during general inventory surveys, 10 of these species are considered special-status species by either federal, state, or local government, and nine (9) are City of San Diego MSCP covered species. A full inventory of wildlife species observed is included in Appendix D.

Especially notable were the copious small mammals. There were many species present, but the high densities at which they were present were especially remarkable. The cholla cactus stands and Jojoba-San Diego Sunflower Association vegetation types support a thriving community of rodents.

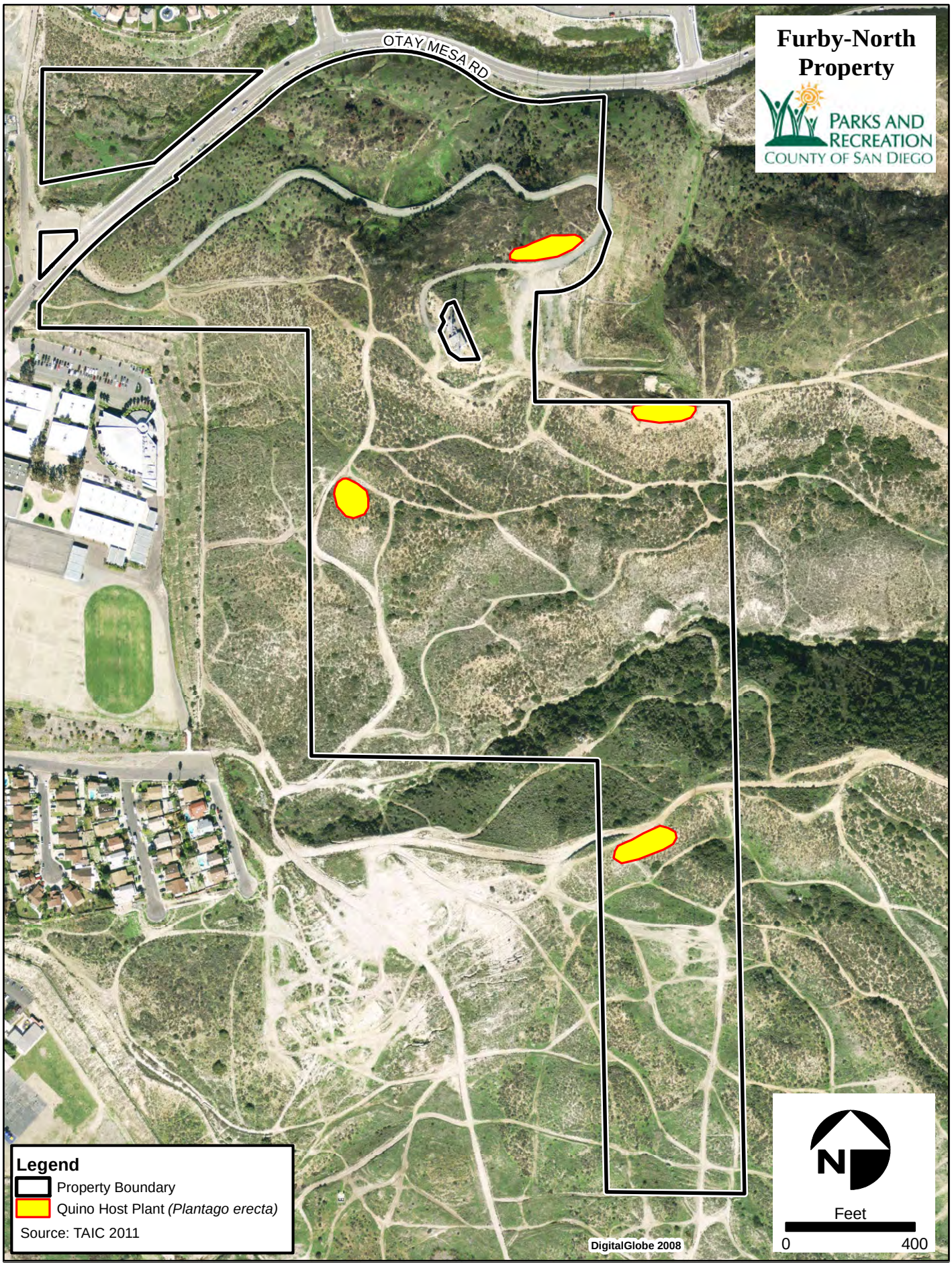
The large amounts of small mammal prey likely contribute to the other notable feature of the Property, the many raptors present. Foraging raptors were identified during nearly every survey conducted on the Property. It appears that this Property is an important resource for birds nesting on and off-site.

4.3.1 Butterflies

Surveys conducted in April and June 2011 resulted in 83 observations representing 10 species of butterflies. The west coast lady (*Vanessa anabella*) and Pacific Sara orangetip (*Anthocharis sara sara*) were the most frequently observed species in the survey area. Other species included funereal duskywing (*Erynnis funeralis*), common California ringlet (*Coenonympha californica californica*), gray hairstreak (*Strymon melinus pudica*), red admiral (*Vanessa atalanta rubria*), common buckeye (*Juonia coenia*), anise swallowtail (*Papilio zelicaon*), cabbage white (*Pieris rapae*), and Behr's metalmark (*Apodemia mormo virgulti*).

The observed butterfly species composition is reflective of the vegetation communities onsite and the time of year the surveys were conducted. Most of the observed species use hosts that are relatively abundant in the coastal sage scrub vegetation communities common in the survey area. However, many of the species observed likely benefit from the presence of non-native flowering plant species, such as mustard (*Brassica* sp.) onsite.

No Quino checkerspot butterfly (*Euphydryas editha quino*) was observed within the Property; however, based on regional distribution in the vicinity of the Property, habitat preferences, and the presence of a small amount of habitat on the Property (Figure 4-6), there is the possibility this species could occur on-site. Quino checkerspot is generally associated with sage scrub, open chaparral, grassland, and vernal pool habitats (USFWS 2003). Within these habitats the species is usually observed in open or sparsely vegetated areas (including trails and dirt roads), and on hilltops and ridgelines (USFWS 2003). The primary larval host plant is dot-seed plantain (*Plantago erecta*) which was observed on the Property during the butterfly surveys, though very sparse and in a desiccated condition (due to season). Other habitat features onsite that potentially support Quino include open native habitat, dirt roads and trails,



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Potential Quino Checkerspot Butterfly Habitat

Figure 4-6

File: S:\projects\mios\FurbyNorth\plots\Figures\Quino Habitat.mxd

Date: 10/10/2011

and hilltops and ridges. The quality of the habitat on-site is considered low due to the prevalence of non-native grasses and forbs and the sparseness of larval host plant.

Other Invertebrates

No additional invertebrate surveys were conducted. A few additional invertebrate species were incidentally observed during other surveys (e.g. small mammal trapping, rare plant surveys, vegetation mapping). The invertebrates recorded were common, highly visible species including beetles, bees, and wasps.

While the baseline surveys for invertebrates were restricted to butterflies, the invertebrate fauna on the Property is likely diverse. The vegetation community diversity alone indicates a broad range of insect pollinators. Several species of the Tenebrionidae (darkling beetle) family were observed. These species are generally ground obligate and feed on both live and decaying plant matter. In addition, several active bee hives, mostly likely of the common honey bee (*Apis mellifera*), were also recorded. Other species of the order Hymenoptera noted include wasps, most likely the common yellowjacket (*Vespula squamosa*). At least one spider wasp—a tarantula hawk (*Pepsis* sp.)—was noted during vegetation mapping.

4.3.2 Herpetofauna

A total of 33 herpetofauna captures comprised of six (6) species were recorded during the two pitfall sampling periods (April 26-29 and May 23-27, 2011). Including incidental observations, a total of nine species were found to be present on the Property. Incidental observations included one amphibian species, three lizard species, and two snake species observed during pitfall array installation and foot travel to and from the traps and the field vehicle. Incidental observations augmented the herpetofauna species list as three of the incidentally observed species were never captured in the pitfall arrays (Table 8). Locations of these observations are noted. Non-native invasive amphibians or reptiles were not captured.

Amphibians

Only one species of amphibian was detected during baseline surveys (Table 7); however, detections of amphibians made up approximately 36 percent of all captures at pitfall array 1. Eight western spadefoot toads (*Spea hammondii*), a California Species of Special Concern (CSC), were captured exclusively in the northernmost array (Figure 3-1) in the Jojoba-San Diego Sunflower Association vegetation community. This array was located a few meters away from a derelict footpath down slope from a regularly used dirt road (Figure 3-1). Substrate at this location was littered with shrub leaves and some thatch and there is a prevalence of rodent burrows at this site.

One subadult toad was found dead in a funnel trap after it was removed from the array at the end of the April survey period, and another during the May survey period. Both voucher specimens were taken to the San Diego Museum of Natural History for placement in the permanent collection.

Toads were not captured at the second array, where the habitat consisted of mostly intact California sagebrush adjacent to non-native grasses and garland chrysanthemum. Also undetected were salamanders, which are increasingly active during wet periods. Timing of surveys did not occur during spring rainfall and may account for the lack of salamander detections.

With the presence of both subadult and adult toads, the western spadefoot toad is evidently breeding on or near the survey site. At least two vernal pools have been identified within the Property boundaries, but the proximity to survey locations (e.g. pitfall arrays) would suggest that other complexes are being used for breeding purposes.

Table 7. Amphibians and Reptiles observed on the Furby-North Property in 2011

Scientific Name	Common Name	Status			MSCP Coverage	Survey Period	Location
		Federal	State	County			
Spea hammondii	Western spadefoot toad	--	CSC	Group 2	Covered	April, May	Array 1
Anniella pulchra	California legless lizard		CSC		Not Covered	April	N/A[1]
Elgaria multicarinata	Southern alligator lizard	--	--		Not Covered	May	Arrays 1, 2
Sceloporus occidentalis	Western fence lizard	--	--		Not Covered	April, May	Arrays 1,2
Phrynosoma coronatum	Coast horned lizard		CSC	Group 2	Covered	May	N/A[1]
Aspidoscelis hyperythrus	Orange-throated whiptail	--	CSC	Group 2	Covered	May	Array 1
Coluber lateralis	Striped racer	--	--		Not Covered	May	Arrays 1, 2
Rhinocheilus lecontei	Long-nosed snake	--	--		Not Covered	April	N/A[1]
Crotalus oreganus helleri	Southern Pacific rattlesnake	--	--		Not Covered	April, May	Arrays 1,2

[1] These species were observed incidentally while walking to and from pitfall arrays and during installation of pitfall arrays.

Status: FSC = Federal Species of Concern, CSC= California Species of Special Concern, County Group= San Diego County Sensitive Animal.

Reptiles

During the 2011 inventory surveys at the Property, eight (8) reptile species were observed (Table 7). Five (5) lizards and two (2) snakes were detected with three (3) having special status. Special-status species included California legless lizard (*Anniella pulchra*), coast horned lizard (*Phrynosoma coronatum*), and orange-throated whiptail (*Aspidoscelis hyperythrus*). Lizard species accounted for half of all herpetofauna captures (52 percent) (Table 7). Western fence lizards (*Sceloporus occidentalis*) accounted for the greatest number of lizard captures (59 percent); however at array 1, almost as many southern alligator lizards, (*Elgaria multicarinata*) were captured as western fence lizards (six and seven captures, respectively). The orange-throated whiptail, a California Species of Special Concern (CSC), was observed twice at array 1; one chance observation occurred near the array in April, and an adult male was captured during the May survey period.

Two special-status lizard species were incidentally observed (Table 7). During the installation of array 1, a California legless lizard was unearthed. In addition, one adult coast horned lizard was seen basking on a dirt road several meters away from, and upslope of, array 2 in habitat dominated by buckwheat and dudleya. Both species are considered to be California Species of Special Concern.

An equal number of striped racers (*Coluber lateralis*) and southern pacific rattlesnakes (*Crotalus oreganus helleri*), were present as pitfall captures (four total), although southern pacific rattlesnake was captured almost exclusively during April surveys while striped racers were present only during May surveys. An additional snake species, a long-nosed snake (*Rhinocheilus lecontei*), was unearthed during the installation of array 1 in April (Table 8). An additional long-nosed snake was incidentally observed by biologists during small mammal trapping data collection efforts near the southern end of the Property.

Table 8 lists the species captured and total captures for both arrays. Those species detected during pitfall sampling represent the majority of types expected to occur in open coastal sage scrub and disturbed grassland habitats.

Table 8. 2011 Pitfall Array Survey Results

Array	Veg.[1]	Species (Scientific Name/Common Name)											
		Spea hammondii Western spadefoot toad		*Elgaria multicarinata* S. alligator lizard		*Sceloporous occidentalis* Western fence lizard		*Aspidoscelis hyperythrus* Orange-throated whiptail		*Coluber lateralis* Striped racer		*Crotalus oreganus helleri* S. Pacific rattlesnake	
		April	May	April	May	April	May	April	May	April	May	April	May
1	J-S	3	5	4	4	2	2	0	1	0	3	2	0
2	J-S	0	0	2	2	5	1	0	0	0	1	1	1
Subtotal		*3*	*5*	*6*	*6*	*7*	*3*	*0*	*1*	*0*	*4*	*3*	*1*
Total		**8**		**6**		**10**		**1**		**4**		**4**	

[1] J-S = Jojoba-San Diego sunflower association

4.3.3 Birds

The combination of nocturnal surveys and diurnal point count surveys conducted on April 26, 27, May 12, and June 14, 2011 detected a total of 48 species on the Property including eight (8) special-status species and five (5) City of San Diego MSCP covered species. Station 2 (Figure 3-1) was the most active, accounting for 89 detections total. The most commonly detected species (with 120 detections total) was the common house finch (*Carpodacus mexicanus*) which likely reflects the Property's proximity to highly urbanized areas. Sensitive species detected include the least Bell's vireo (*Vireo bellii pusillus*), coastal California gnatcatcher (*Polioptila californica californica*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), yellow-breasted chat (*Icteria virens*), California horned lark (*Eremophilus alpestris actia*), and the southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). A complete dataset from nocturnal and diurnal surveys is provided in Appendix E.

While the high detection rate at Station 2 can be attributed to sampling bias, the homogeneity of representative vegetation communities onsite likely negates this. Because the stations 1-5 were visited in chronological order and because birds are most active in the early morning, the large number of detections at station 2 may be attributed to an early morning sampling bias. However, outside of the wetter areas and north-facing slopes, the general vegetation homogeneity on Furby would offset this potential bias, especially because many data were collected during peak migration (mid-April through mid-May).

No species were detected during nocturnal surveys conducted on April 27. This could be attributed, in part, to the high level of artificial noise input from the surrounding areas. These sources include vehicles, aircraft, and residential ambient noise (e.g. barking dogs, radio, television, outdoor conversations). This may also be due to the relatively small size of the Property or simply be a statistical anomaly to be corrected by additional nocturnal surveys.

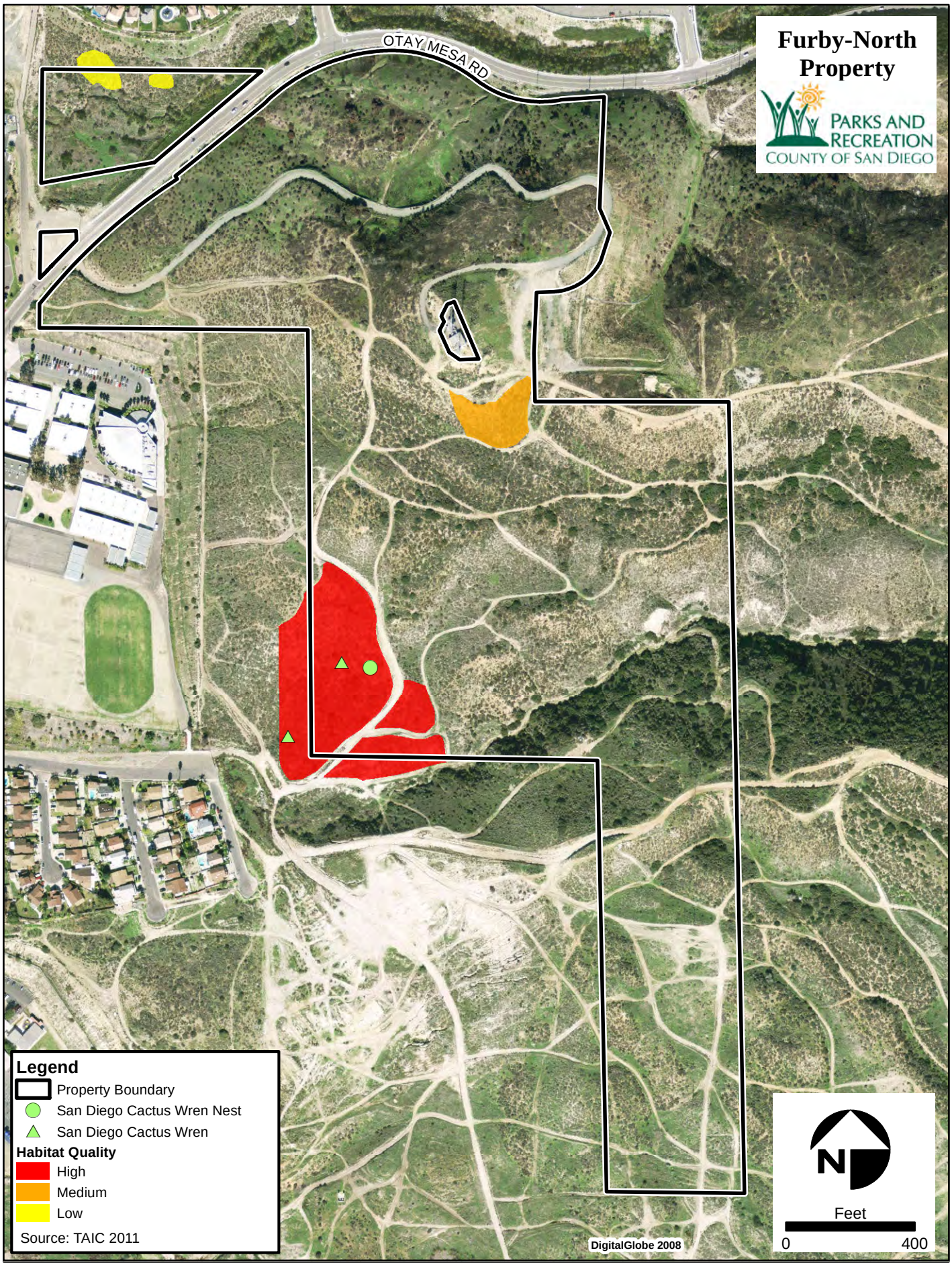
As shown in Figure 4-7, several patches of potential habitat for the coastal cactus wren occur onsite. High quality habitat on the western portion of the Property consists of dense cholla cactus. During mammal trapping surveys, this species was incidentally observed flying in and out of the cactus. A nest was observed in this area at the same time, although it was unclear if the nest was active at the time of surveys.

4.3.4 Mammals

In total, 23 mammals were detected during general surveys including mammal trapping and Anabat sampling (Appendix D). Of these detections, four (4) species have special-status with state and/or local government. One species is considered an MSCP covered species. The mammal diversity on the Property is as expected for southern California. Several species of special concern were detected either during focused surveys or incidentally. While the overall detection rate of carnivores during focused surveys was low, this can be attributed to the large amount of unauthorized access, and not necessarily a lack of carnivores and/or suitable habitat. In addition, low detection rates of bats were expected because of the lack of roosting habitat and open water sources onsite.

In direct opposition is the high density of small mammals. Not only were rodents prolific, accounting for an almost 50 percent trapping success rate, almost all were native. Only two non-native species were captured during focused small mammal surveys on the Property. This is especially notable given the Property's close proximity to heavily urbanized areas and the availability of non-native vegetation and disturbed habitat onsite. A large population of brush rabbit (*Sylvilagus audubonii*) is also present with direct observations of groups of 20 or more individuals occurring on a daily basis.

Sign of an American badger (*Taxidea taxus*) was incidentally observed. A burrow was detected on the southern end of the Property, and claw and scrape marks were detected along small mammal trap lines.



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Potential Cactus Wren Habitat

Figure 4-7

File: S:\projects\mios\FurbyNorth\plots\Figures\Cactus Wren.mxd

Date: 10/21/2011

This species can be especially cryptic and is rarely detected at camera stations. Observation of a burrow and other sign indicates that there are likely multiple individuals on the Property.

Small Mammals

Detection rates of small mammals were extremely high on the Property in all areas sampled. Trap lines, on average, had a 30-50 percent capture rate on all days sampled. Because trapping success was high, trap lines were rotated across multiple vegetation communities to capture the greatest diversity of species possible on the Property given the sampling period. Given the level of disturbance on the Property (e.g. stands of non-native vegetation such as garland chrysanthemum) and the close proximity to urban areas, it was expected that there would be multiple captures of urban adapted and non-native species such as the common rat (*Rattus rattus*) and house mouse (*Mus musculus*). While one house mouse and one California ground squirrel were captured on the traplines nearest the urban edge to the south, the Property is remarkably free of non-native small mammal species.

Small mammals representative of the coastal sage scrub community, such as the California and San Diego pocket mouse, were frequently captured in traplines throughout the Property (Table 9). Also ubiquitous were woodrats. Traplines in grassy areas and vegetation community transitional areas yielded two detections of meadow vole (*Microtus californicus*). Only one kangaroo rat (*Dipodomys agilis*) was trapped during the entire sampling period. Kangaroo rats are notoriously "trap shy" but may also be found in a lower density on this Property. The western harvest mouse (*Reithrodontomys megalotis*) was also only trapped once during the sampling period. Although this species has a wide distribution range, it may be present in lower densities on the Property.

The presence of pocket mouse (*Chaetodipus* spp.) at every trapline indicates a widespread and robust population of mice native to the southern California region (Table 9). In addition, both male and female mice were captured with many displaying active reproductive characteristics (such as lactating or pregnant females). Large stands of cholla, scattered barrel cactus and prickly pear, and other succulents on the Property also support cactus mouse. While not captured at Station 1, which had the densest stand of cholla, cactus mouse was captured at Station 3 which was surrounded by scattered barrel cactus and maritime succulent scrub vegetation community with bare open ground (Figure 3-1). All of these species have a range restricted to southwestern California and northern Baja Mexico.

Also found throughout the Property were woodrats (*Neotoma* sp.) with many individuals reproductively active (lactating and pregnant females). At least one species of woodrat was trapped at every line in every station on the Property. All three species of woodrat native to San Diego County were detected: white-throated (*N. albigula*), dusky-footed (*N. fuscipes*) and desert (*N. lepida*) woodrat (SDNHM 2011). While the dusky-footed and desert woodrat were seen across the Property, the white-throated woodrat was only seen on the southernmost portions (Stations 1 and 5). This likely reflects the species' preference for cholla and prickly pear cactus. A few of the individuals captured on the northern most portion of the Property (e.g. Station 4) had significant bald spots on their heads. It is not clear if this is the result of disease, behavior, or a heritable trait, but should be noted.

Table 9. Small Mammal Data Summary

Common Name	Scientific Name	Status[2]	Trapline[1]						Incidental
			1	2	3	4	5	6	
		Federal/State/ County/MSCP	April 26-29, 2011		May 31 – June 3, 2011		June 28 – July 1, 2011		Spring 2011
Northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	--/CSC/ Group 2/--			x	x			
Dulzura pocket mouse	*Chaetodipus californicus femoralis*	--/CSC/ Group 2/--	x	x	x	x	x	x	
Agile kangaroo rat	*Dipodomys agilis simulans*	--/--/--/--		x					
California vole	*Microtus californicus*	--/--/--/--					x		
White-throated woodrat	*Neotoma albigula*	--/--/--/--	x					x	
Dusky-footed woodrat	*Neotoma fuscipes*	--/--/--/--		x	x	x	x	x	
San Diego desert woodrat	*Neotoma lepida intermedia*	--/CSC/ Group 2/--	x	x	x	x	x	x	
California mouse	*Peromyscus californicus*	--/--/--/--	x	x			x	x	
Cactus mouse	*Peromyscus eremicus*	--/--/--/--			x				
Deer mouse	*Peromyscus maniculatus*	--/--/--/--			x	x	x	x	
Desert cottontail	*Sylvilagus audubonii*	--/--/--/--							x
Western harvest mouse	*Reithrodontomys megalotis*	--/--/--/--	x						
California ground squirrel	*Spermophilus beecheyi*	--/--/--/--					x		x
Botta's pocket gopher	*Thomomys bottae*	--/--/--/--							x
House mouse	*Mus musculus*	--/--/--/--		x					

[1]All species listed were captured multiple times on the trapline. The exceptions are *Reithrodontomys megalotis, Dipodomys agilis* and *Spermophilus beecheyi nudipes* which were each only captured once.

[2] Status: CSC= California Species of Special Concern, Group= San Diego County Sensitive Animal.

Only small portions of the Property contain native grassy and open areas large enough to support the related small mammal community. However, two meadow voles were captured at Station 5 during the last week of the sampling period (Table 9; Figure 3-1). Voles were captured in two separate traps in close proximity to each other; it is possible this was a recapture, however, no marking system was employed for this survey effort per the County's request. A juvenile California ground squirrel was also trapped at this trapline. While the traps are not designed to capture ground squirrel, it is not uncommon to incidentally trap these species.

A single agile kangaroo rat was captured on Station 2 during the first week of the sampling period (Figure 3-1). This species was trapped along a steep eastern facing slope in vegetation mapped as

Jojoba-San Diego Sunflower association. Because this vegetation type is present throughout the Property in large, contiguous swaths, and the kangaroo rat is difficult to trap, future surveys will likely detect this species on other areas of the Property; key habitat components include steep slopes with little understory vegetation in coastal sage scrub vegetation communities.

It should be noted that, on the final day of trapping, nearly 40 traps were stolen from Station 5. While it is unlikely animals were harmed (the traps containing animals were left behind), this event is indicative of the level of unauthorized activity on this Property. Because previous trap success rates were very high, and the fact that this was the final day of trapping, data collection efforts were likely not impacted. It is unlikely we would have captured a new species not already detected at this station.

Medium and Large Mammals

Detection rates of medium and large mammals during focused surveys were especially low. While the combination of video camera and track stations combined with scent lure is designed to capture the greatest diversity of medium and large mammals possible, the survey period (e.g. season) and copious amounts of anthropogenic activity onsite was not conducive to high levels of detection (Table 10).

Table 10. Medium and Large Mammal Data Summary

Common Name	Scientific Name	Status	Station[1]	Date
Bobcat	*Lynx rufus*	--/--/--/--	N/A	4/21/2011
American Badger	*Taxidea taxus*	--/CSC/Group 2/Covered	N/A	5/31/2011
Coyote	*Canis latrans*	--/--/--/--	N/A, 1	6/1 and 6/3/2011
Brush rabbit	*Sylvilagus audubonii*	--/--/--/--	2	6/2 and 6/3/2011
Domestic cat	*Felis catus*	--/--/--/--	N/A	6/29/2011

[1]Station locations listed as N/A are incidental observations.

Status: CSC= California Species of Special Concern, County Group= San Diego County Sensitive Animal, Covered = City of San Diego Multiple Species Conservation Program Covered Species.

The camera stations failed to detect carnivores on-site. The placement of the cameras along trails was based on tracks and scat found in the vicinity and within the Property and the fact that dirt paths are often highly traveled by coyotes, bobcats, and other carnivores used to following game trails. Unfortunately, the large amount of unauthorized access on the Property lead to the scattering of gypsum track stations and the removal and/or disruption of scent lure placement on several occasions. Multiple camera and track station locations were used in an attempt to capture animal movement and avoid human interference (Figure 3-1). However, all camera stations experienced some level of human-induced disturbance. In addition to gypsum being scattered, a single SD card was stolen from camera station 4, although the equipment was left behind.

While the camera and track stations were less successful, several incidental observations confirmed the presence of multiple taxa of medium and large mammals on site. A badger burrow, bobcat scat and tracks, and observations of coyote on and off-site along with scat and tracks added to data collection efforts.

Bats

Only four species of bats were detected on the Property during the spring and summer surveys. This is likely a combination of weather conditions and lack of significant open water or foraging habitat onsite. The habitat on the Property does not seem to support resident roosting populations of bats, as no individuals were detected emerging from potential rocky outcrops or trees during the survey period. In addition, the Property does not appear to contain suitable roosting habitat for cliff, crevice, or boulder roosting bats. Rocky outcrops that were present were small and close to the ground; undesirable habitat for roosting bats. The riparian areas also seem to lack suitable habitat for tree roosting bats. Tree roosting bats often prefer mature palm trees with intact palm frond skirts or other mature trees with dense canopies. Those individuals detected on-site during surveys were generally flying through the Property (east to west) rather than roosting or foraging in it.

The spring surveys had limited detections. Ambient weather conditions were mostly cloudy with winds from the west between 2-4 miles per hour (mph). Evening temperatures at the beginning of the surveys were between 66-68 degrees Fahrenheit (F) reaching a low of 51-52 degrees F by early morning. No precipitation occurred during the spring survey period.

No bats were recorded during the first two nights of active echolocation monitoring. Similarly, no bats were observed in the Property, or adjacent to the Property using thermal imaging. However, on the third night two echolocation calls from two different individuals were recorded (Table 11). An individual of California myotis (*Myotis californicus*) was detected at 8:20 pm on May 21 on the southern edge of the Property, near bird point count station #3 (Figure 3-1). A second *Myotis* sp. was detected at 8:46 pm flying past the eastern edge of the Property, approximately 50 m from the boundary adjacent to the passive AnaBat station #2 (Figure 3-1). Due to the large distance from the observer and the short duration of the call, the bat was identified only to the genus level (*Myotis* sp.).

Bats were detected on all nights of the survey period. While only six (6) bats total were recorded by the AnaBat detector during active monitoring, thermal imaging results suggest that roughly twice that number exist on the Property during peak activity (8:30 pm-10:30 pm). Based on their behavior, the bats were generally flying over the Property with limited foraging activity. Bats were largely absent from the Property after 10:30 pm. Most activity was concentrated along the riparian area in the southern portion of the Property. Bat species recorded during summer active surveys include the California myotis, Western pipistrelle (*Pipistrellus hesperus*), and the big brown bat (*Eptesicus fuscus*).

Table 11. Active Monitoring Data Summary

Date	Time		Scientific Name	Common Name
Spring				
05/21/11	8:20 pm		*Myotis californicus*	California myotis
05/21/11	8:46 pm		*Myotis californicus*	California myotis
Summer				
07/10/11	8:25 pm		*Pipistrellus hesperus*	Western pipistrelle
07/11/11	9:15 pm		*Pipistrellus hesperus*	Western pipistrelle
07/11/11	9:00, 9:30 pm		*Myotis californicus*[1]	California myotis
07/13/11	9:40 pm		*Eptesicus fuscus*	Big brown bat

[1]Two individuals of the same species detected. One was recorded at 9:00, one at 9:30.

During passive surveys conducted in May 2011, the California myotis and the Western pipistrelle were detected. The calls recorded on May 21 were too short and fragmented to be identified but were mostly likely from the Western pipistrelle (Table 12). No bats were recorded at station #1 in May 2011.

During the passive surveys, ambient weather conditions were mostly clear skies with winds from 1-2 mph. Evening temperatures at the beginning of the surveys were between 78-81° F reaching a low of 59-62° F by early morning. No precipitation occurred during the summer survey period.

Table 12. Passive Monitoring Data Summary

Date	Time	Location[1]	Scientific Name	Common Name
Spring				
05/18/11	9:14 pm	Station 2	*Myotis californicus*	California myotis
5/19/11	N/A	N/A	*N/A*	No species observed
05/20/11	5:25 am	Station 3	*Pipistrellus hesperus*	Western pipistrelle
05/21/11	8:11, 8:12 pm	Station 2	*Pipistrellus hesperus*	Western pipistrelle
05/21/11	4:35, 4:36 am	Station 3	*Pipistrellus hesperus*	Western pipistrelle
Summer				
07/10/11	8:52 pm	Station 2	*Myotis californicus*	California myotis
07/10/11	8:23, 8:42, 4:55 pm	Station 3	*Pipistrellus hesperus*	Western pipistrelle
07/10/11	8:57, 9:32 pm	Station 3	*Eptesicus fuscus*	Big brown bat
07/11/11	8:24, 9:11 pm	Station 3	*Pipistrellus hesperus*	Western pipistrelle
07/11/11	8:27, 8:33, 8:39 pm	Station 3	*Pipistrellus hesperus*	Western pipistrelle
07/11/11	10:12, 10:15 pm	Station 3	*Myotis californicus*	California myotis
07/12/11	8:33, 8:51pm, 4:12 am	Station 3	*Pipistrellus hesperus*	Western pipistrelle
07/12/11	9:31, 9:39 pm	Station 3	*Tadarida brasiliensis*	Brazilian free-tail bat
07/13/11	4:35 am	Station 3	*Pipistrellus hesperus*	Western pipistrelle
07/13/11	9:15, 9:17, 9:23 pm	Station 3	*Eptesicus fuscus*	Big brown bat

[1]See Figure 3-1 for passive monitoring station locations.

An additional species was detected during passive monitoring; the Brazilian free-tailed bat (*Tadarida brasiliensis*), recorded at station 3 on July 12 at 9:39 pm. This is the only detection of this species for both survey periods. All three previously detected species were also recorded with passive monitoring

during the summer survey period including: California myotis, Western pipistrelle, and the big brown bat (Table 12). No bats were recorded at station 1 during surveys performed in 2011.

4.3.5 Special-Status Wildlife Species Observed

A total of 12 special status wildlife species were observed on-site, and 4 were observed just off-site (Figure 4-8). When species are identified just off-site and the habitat type is similar and/or the Property is contiguous, it can generally be assumed that these species are also present onsite. Species accounts are below and include a description of sensitivity status (federal, state, County and MSCP coverage), MSCP covered species monitoring priority (based on Regan et al. 2006), brief natural history and location on-site.

Amphibians

Western spadefoot toad – *Spea hammondii*
Federal Status: Species of Concern
State Status: Species of Special Concern
County List: Group 2
City of San Diego MSCP: Not covered
MSCP Risk Group: N/A

The western spadefoot toad is distributed throughout the coastal and inland areas of central and southern California and into northern Baja Mexico. The species is almost exclusively terrestrial and nocturnal. It is able to inhabit hot dry areas by burrowing underground using the spade-like appendages on its hind feet. This species uses temporary rain pools, such as vernal pools, for breeding; for this reason it is active for only a short time of the year. Its decline in the southern California area has been associated with the rapid urbanization that has accompanied explosive human population growth. In addition, the loss of temporary rain pools (such as vernal pools) has been a contributing factor to spadefoot toad population decline. This species is covered by the MSCP because of its rapid decline in the San Diego area. A total of 8 observations of this species were made at pitfall array 1, including one that was incidentally unearthed during the installation of the array (Figure 4-8). The highest number of individuals observed on a single day (May 26, 2011) was three.

Reptiles

Coast horned lizard – *Phrynosoma cornonatum*
Federal Status: Species of Concern
State Status: Species of Special Concern
County List: Group 2
City of San Diego MSCP: covered
MSCP Risk Group: 3

The coast horned lizard is distributed throughout the coast of California and into northern Baja Mexico. This species prefers open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Its primary food source is harvester ants, native to the southern California region; this specialty diet is intimately related to its subsequent decline in southern California and San Diego County. The rapid urbanization of the southern California region has facilitated the invasion of the Argentine ant which is associated with residential areas. These ants displace the native harvester ants and thus, there is less food available for the coast horned lizard. This species is covered by the MSCP because of its recognized decline regionally. This species was identified just off-site through an incidental observation (Figure 4-8).

Orange-throated whiptail – *Aspidoscelis hyperythrus*
Federal Status: N/A
State Status: Species of Special Concern
County List: Group 2
City of San Diego MSCP: covered
MSCP Risk Group: 3

The orange-throated whiptail inhabits low-elevation coastal scrub, chamise-redshank chaparral, mixed chaparral, and valley-foothill hardwood habitats (Morey 2000). This species is restricted to the extreme southwest of California and northwest of Baja California Norte, Mexico (Stebbins 2003). In California, it is found on the west side of the Peninsular Ranges between sea level and 3,000 feet, in Los Angeles, San Bernardino, Orange, Riverside, and San Diego counties (Zeiner et al. 1988). It is still locally common in many areas where it remains. The principal threat to the orange-throated whiptail is degradation and loss of habitat, however it is also impacted by off-road vehicle activity, over-grazing by livestock, and predation by introduced predators (e.g., cats and dogs) (San Diego Herpetological Society 1988). A limiting factor to the species' range is the availability of its primary food item, the termite (*Reticulitermes hesperus*). Within the Property, the orange-throated whiptail was captured twice at one pitfall array; one chance observation occurred near the array in April, and an adult male was captured during the May survey period at the array (Figure 4-8). The Property probably contains a low density of prey due to the low density of trees and woody shrubs that would support termites.

California legless lizard – *Anniella pulchra*
Federal Status: N/A
State Status: Species of Special Concern
County List: N/A
City of San Diego MSCP: not covered
MSCP Risk Group: N/A

The California legless lizard is a very small slender lizard with smooth scales and no legs. It is sometimes confused for a snake; however eyelids (a diagnostic character) are visible. Although sometimes found on the surface at dawn and dusk, this lizard spends most of its time underground in loose, sandy soil or under leaf litter, where it forages for insects and spiders. The preferred habitat for this species is moist,

sparsely vegetated areas of scrub, washes and stream terraces with loose soil and leaf litter. Within the Property, this lizard was found incidentally in the soil while installing pitfall trap array 1.

Birds

Least Bell's vireo – *Vireo bellii pusillus*
Federal Status: Endangered
State Status: Endangered
County List: Group 1
City of San Diego MSCP: covered
MSCP Risk Group: 2

The least Bell's vireo was formerly widespread and abundant throughout the Central Valley of California and other low-elevation river valleys, in the Sierra Nevada foothills and the Coast Ranges, and its range extended from Red Bluff (Tehama County) to northwestern Baja California, including populations in the Owens Valley, Death Valley, and the Mojave Desert. Today the species is apparently extirpated from the Sacramento and San Joaquin valleys, and by 1983 nesting was restricted to several localities in the Salinas River Valley (Monterey and San Benito counties), one locality along the Amargosa River (Inyo County), and numerous small populations in southern California south of the Tehachapi Mountains and in northwestern Baja California (Matthews and Moseley 1990), south to at least Mission San Fernando and probably to Catavina. Nests are usually placed along the margins of bushes (usually willow, baccharis, or mesquite) or on twigs projecting into pathways. The species is endangered due to loss of breeding habitat (i.e. thick, low riparian growth), mainly attributed to agricultural and urban development, and river channelization projects. Another major factor in reduced breeding success is nest parasitism by brown-headed cowbirds (*Molothrus ater*). In San Diego County the least Bell's vireo is a summer resident in low riparian habitat in the vicinity of water or in dry river bottoms.

The least Bell's vireo was detected twice in two different drainages with southern willow scrub immediately off-site, southwest of the Property on City of San Diego-owned land (Figure 4-8). There is no suitable nesting habitat for this species onsite. The two drainages where the vireo was observed are unsuitable as nesting habitat for this species because the southwestern willow scrub patch is isolated and small. The detections were likely the result of migrating birds or dispersing juveniles. At its current habitat conditions, the Property should not be considered to support least Bell's vireo.

Coastal California gnatcatcher – *Polioptilia californica californica*
Federal Status: Threatened
State Status: Species of Special Concern
County List: Group 1
City of San Diego MSCP: covered
MSCP Risk Group: 2

The coastal California gnatcatcher is a resident of southwestern California from Los Angeles County southward to northwestern Baja California, extending south to about 30 degrees north latitude near the

vicinity of El Rosario and eastward to the eastern base of the Sierra San Pedro Martir. The species was once extensively distributed in Los Angeles County but is now reduced to a small portion of the Palos Verdes Peninsula, and is seldom found above 250 m in Orange, Ventura (rarely), San Bernardino, Riverside, and San Diego counties. Its decline in California is attributed to loss and fragmentation of habitat due to urban development throughout its range. Coastal California gnatcatcher is a permanent resident of low coastal sage scrub habitats in arid washes and on mesas and slopes. The species is known to frequent several distinctive subassociations of the coastal sage scrub plant community; especially those dominated by California sagebrush, but is also known to generally avoid crossing even small areas of unsuitable habitat. The coastal California gnatcatcher was identified onsite in several locations: observed during point counts near stations 1, 3, and 4; and observed incidentally during other surveys near stations 2 and 5 in the central portion of the Property (Figure 4-8). Although sparse in some areas, extensive Diegan coastal sage scrub (preferred nesting habitat of the gnatcatcher) is present onsite (Figure 4-2). A large portion of the Property supports vegetation conducive to gnatcatcher breeding and foraging activities. It is likely that multiple pairs of gnatcatchers are actively breeding on-site.

Coastal cactus wren – *Campylorhynchus brunneicapillus sandiegensis*
Federal Status: None
State Status: Species of Special Concern
County List: Group 1
City of San Diego MSCP: covered
MSCP Risk Group: 1

The coastal cactus wren is distributed from southern Ventura County, southeast to the Baldwin Hills and the Palos Verdes Peninsula in Los Angeles County, and east along the southern flank of the San Gabriel and San Bernardino mountains from the northern San Fernando Valley in Los Angeles County to Mentone in San Bernardino County. Populations also extend south along the coastal slopes and interior valleys west of the Peninsular ranges in western Riverside, Orange, and San Diego counties to extreme northwestern Baja California, Mexico, in the vicinity of Tijuana and Valle de las Palmas (Harper and Salata 1991). The species occurs in coastal sage scrub habitats and requires tall opuntia cactus for nesting and roosting. Coastal cactus wren is considered a State Species of Special Concern as populations are under decline due to decline and fragmentation of habitat, particularly undisturbed coastal sage scrub vegetation, due to urbanization and residential development.

This species was identified as present on-site and just off-site through incidental observations. A large patch of high quality nesting habitat consisting mainly of cholla cactus exists on the southwestern portion of the Property (Figure 4-7). It is likely that cactus wrens breed onsite as nest-remnants were found within the identified nesting habitat. However, annual breeding—confined to spring time—would need to be confirmed through breeding survey and evidence such as observation of provisioning or removal of fecal sacs as this species maintains a nest year-round.

White-tailed kite – *Elanus leucurus*
Federal Status: None
State Status: Fully Protected
County List: Group 1
City of San Diego MSCP: not covered
MSCP Risk Group: N/A

The white-tailed kite is a year-long resident of cismontane habitats throughout most of the western half of California and along the Colorado River to the east. The species prefers coastal and valley lowlands near agricultural areas, and can also be found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodlands. White-tailed kites often forage in open grasslands, meadows, or marshes, and require isolated, dense-topped trees for roosting and nesting. White-tailed kite was seen frequently in flight over the Property and may forage extensively on-site. However, this species is an arboreal nester and would likely breed off-site as there are no trees on the Property.

Yellow-breasted chat – *Icteria virens*
Federal Status: None
State Status: Species of Special Concern
County List: Group 3
City of San Diego MSCP: not covered
MSCP Risk Group : N/A

The yellow-breasted chat is an uncommon summer resident and migrant in coastal California and in foothills of the Sierra Nevada. Found up to about 1450 m (4800 ft) in valley foothill riparian, and up to 2050 m (6500 ft) east of the Sierra Nevada in desert riparian habitats. The species is uncommon along the coast of northern California east to the Cascades and occurs only locally south of Mendocino County. In southern California, it breeds locally on the coast and very locally inland. In migration, it can be found in lower elevations of mountains in riparian habitat (Zeiner, D.C. et al. 1988-1990). Yellow-breasted chat inhabits riparian thickets of willow and other brushy areas near watercourses, and forages and nests close to the ground (within 10 feet). The species nests in low, dense riparian habitat often consisting of willow, blackberry, and wild grape. Breeding populations in California have experienced a marked decline due to loss and degradation of riparian habitat. Yellow-breasted chat was detected on the first survey near station 1 in the drainage north of Otay Mesa Road (Figure 4-8). The Property lacks the well-developed riparian vegetation that the species prefers for nesting and thus would not be expected to nest on-site.

Horned lark – *Eremophila alpestris actia*
Federal Status: None
State Status: Watch List
County List: Group 2
City of San Diego MSCP: not covered
MSCP Risk Group : N/A

Horned lark is distributed in coastal areas of California, primarily Sonoma County South to San Diego County and east in the main part of the San Joaquin Valley to the Sierra Nevada foothills. The species can be found in a variety of habitats including short-grass prairie, bald hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats. The horned lark prefers open areas dominated by low herbaceous vegetation or widely scattered low shrubs. The species nests in hollow ground often next to grass tufts, earth clods, or manure. California horned lark populations in California are in decline due to habitat degradation associated with agricultural development. This species was identified on the Property in flight by call from point count station 5. The species may nest on-site as the habitat is appropriate; it prefers flat, semi-open ground.

Southern California rufous-crowned sparrow – *Aimophila ruficeps canescens*
Federal Status: None
State Status: Watch List
County List: Group 1
City of San Diego MSCP: covered
MSCP Risk Group: 3

The Southern California rufous-crowned sparrow is a resident of southwestern California in the slopes of the Transverse and Coastal ranges, north from Los Angeles County to northern Baja California, Mexico. The species inhabits coastal sage scrub and sparse mixed chaparral habitats. This species frequents relatively steep, often rocky hillsides with grass and forbe patches. The species nests on or close to the ground at the base of rocks, grass tufts, or saplings 0-3 m above ground in branches of shrubs or trees. The Southern California rufous-crowned sparrow population is in decline due to habitat loss and degradation due to urbanization and related development. This species was previously considered a Species of Special Concern (SSC) by CDFG, but is currently on the Watch List. The Watch List consists of taxa that were previously SSCs but no longer merit SSC status or which do not meet SSC criteria but for which there is concern and a need for additional information to clarify status (CDFG 2011). This species was observed on-site at several survey stations (Figure 4-8) and is anticipated to nest on the site as adequate habitat is available.

Northern harrier – *Circus cyaneus*
Federal Status: None
State Status: Species of Special Concern
City of San Diego County List: Group 1
MSCP: covered
MSCP Risk Group: 3

The northern harrier is distributed throughout North America and Eurasia (Johnsgard 1990). Northern harriers breed from northern Alaska and Canada, south into roughly the northern two-thirds of the western United States, and the northern one-third of the eastern United States. Wintering harriers utilize the southern portion of the breeding range and extend farther south into Central America. San Diego County lies at the southwest edge of the harrier's breeding range in North America (Johnsgard 1988). Northern harrier is an uncommon to fairly common winter visitor and rare and local summer

resident in the coastal lowlands of San Diego County (Unitt 2004). Harriers breed in marshes and grasslands and forage in grasslands, agricultural fields, wetlands, and open coastal sage scrub. Home ranges and breeding territories are variable in size and probably reflect differing habitat resources (Johnsgard 1990). Harriers have declined in California in recent decades but can be locally abundant where suitable habitat remains free of disturbance, especially from intensive agriculture (Zeiner et al. 1988-1990). The breeding population, especially in coastal southern California, is reduced because of destruction of native wetland, meadow, and grassland habitats, and burning and plowing of nesting areas during early stages of the breeding cycle (Remsen 1978). The species was observed in flight over the southern portion of the Property on at least two occasions. Nesting of this species was confirmed in this area during surveys conducted for the San Diego Bird Atlas (Unitt 2004). The northern harrier is a ground nester under low vegetation and may breed within the Property boundaries.

Mammals

Dulzura pocket mouse – *Chaetodipus californicus femoralis*
Federal Status: None
State Status: Species of Special Concern
County List: None
MSCP: not covered
MSCP Risk Group: N/A

The Dulzura pocket occurs along the western portion of San Diego County and northern Baja California, Mexico. This species prefers dense scrub and is less likely to be found in open grassland and desert habitats. They prefer sandy and gravely soils for burrowing and feed predominantly on seeds and grains. This species was found throughout the Property (Figure 4-8). All traplines were associated with, or adjacent to, chaparral and other dense scrub. This species is not covered under the MSCP. The CDFG calls out various subspecies of *C. californicus* as Species of Special Concern but notes that the whole species should be considered sensitive. This is likely due to overlapping ranges of sensitive subspecies and the difficulty of in-field identification of sensitive subspecies during live-trapping.

Northwestern San Diego pocket mouse – *Chaetodipus fallax fallax*
Federal Status: None
State Status: Species of Special Concern
County List: None
MSCP: not covered
MSCP Risk Group: N/A

The northwestern San Diego pocket mouse is restricted to coastal southern California and northern Baja California, Mexico. The northern extent of this species' range is the southeastern portion of Los Angeles County. This species has habitat requirements similar to those of the California pocket mouse, but with a greater preference for desert biomes and rocky and gravelly soils. This species was found only on traplines 3 and 4 (Figure 4-8). While the habitat for this species exists throughout the Property, it is possible that competition with the more ubiquitous California pocket mouse has restricted this species'

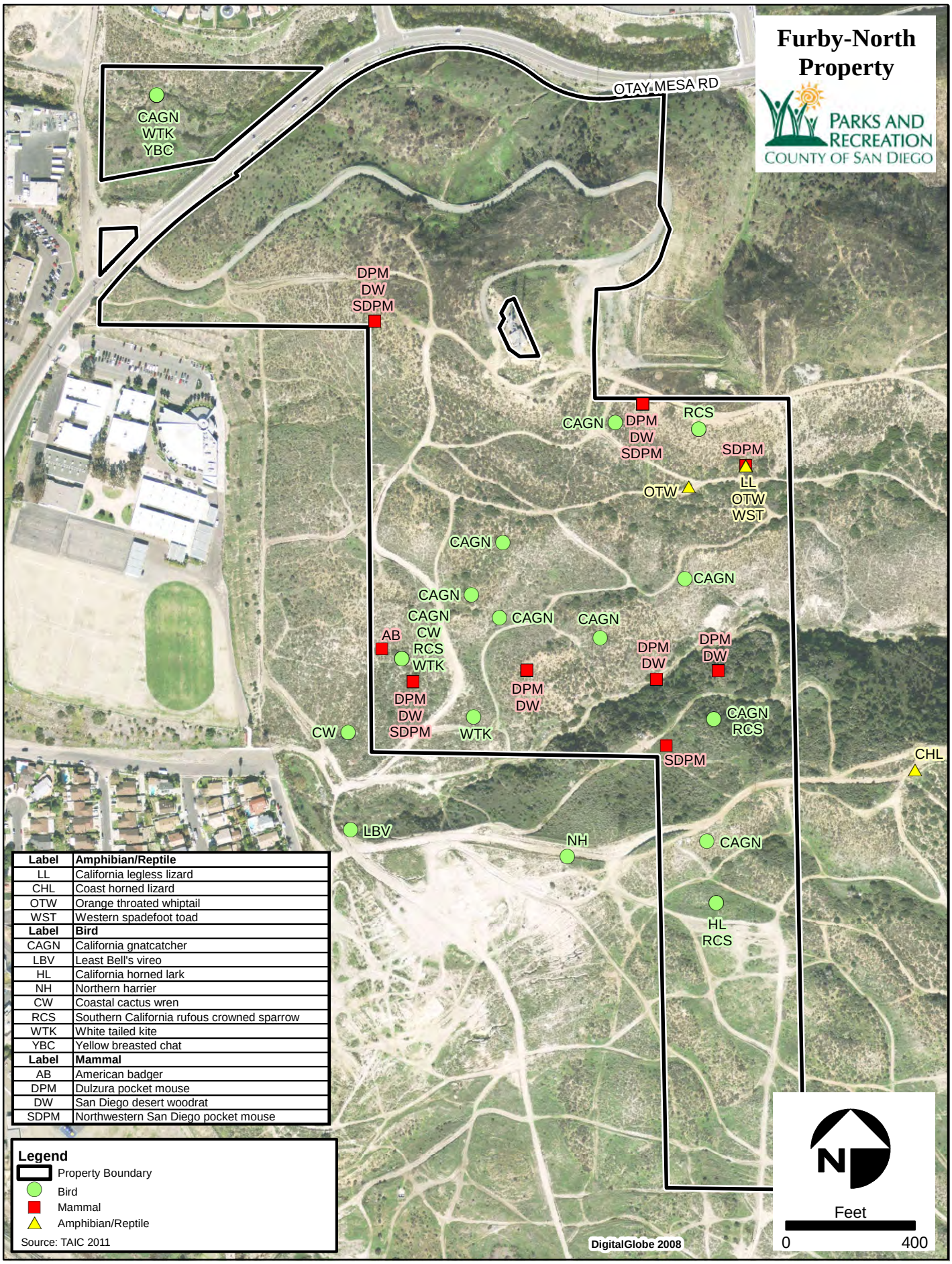
distribution on the Property. This species is not covered under the MSCP. The CDFG calls out various subspecies of *C. fallax* as Species of Special Concern but notes that the whole species should be considered sensitive.

San Diego desert woodrat – *Neotoma lepida intermedia*
Federal Status: None
State Status: Species of Special Concern
County List: Group 2
MSCP: not covered
MSCP Risk Group: N/A

The San Diego desert woodrat is restricted to coastal southern California and coastal Baja California, Mexico. This species is a desert dwelling woodrat which relies on fleshy cacti and succulents as a water source. Because of this, the middens this species builds can often be found at the base of cactus plants and will often include cactus parts along with sticks, leaves, and other vegetation detritus. These middens act as insulation against environmental temperature extremes and as protection from predators. This species is also strongly associated with coastal sage scrub habitats, which is why it has experienced decline. Loss of appropriate habitat combined with a limited distribution makes the San Diego desert woodrat a CDFG Species of Special Concern. This species was identified at each of the trapping locations (Figure 4-8).

American badger – *Taxidea taxus*
Federal Status: None
State Status: Species of Special Concern
County List: Group 2
MSCP: covered
MSCP Risk Group: N/A

The American badger has a distribution across much of North America, but has become increasingly rare in southern California. Badgers are normally associated with open, treeless areas including: prairies, parklands, and cold desert areas. This species digs and utilizes multiple ground burrows where it resides for much of the daytime. Principally nocturnal, the badger preys primarily on fossorial (e.g. ground-associated) rodent and other small mammals including skunks. However, it is known to consume birds, reptiles and other terrestrial-obligate species. The decline in badger population can be primarily attributed to habitat loss. The clearing of sagebrush and development of open lands for grazing and agriculture all affect small mammal (e.g. prey) populations as well as available burrowing habitat. The badger is an MSCP-covered species because of its recognized local decline in population as well as its importance as a mesopredator. This species, while not observed directly, was detected on the Property through sign (Figure 4-8). A burrow with a skunk remnant was identified and various areas of scratchmarks were also identified during small mammal trapping sessions. The large prey base (especially the abundance of *Neotoma* sp.) as well as the brushy and treeless open vegetation makes for ideal badger habitat. It is likely there are multiple individuals on the Property.



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Sensitive Wildlife Species

Figure 4-8

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Date: 11/17/2011

4.3.6 Special-Status Wildlife Species with High Potential to Occur

The baseline biological surveys detected many of the sensitive species known from San Diego County. Sensitive species with a high potential to occur on the Property, but not detected during initial survey efforts, include the San Diego black-tailed jackrabbit, coastal whiptail, Coronado skink, patch-nosed snake, and San Diego fairy shrimp (*Branchinecta sandiegonensis*) (Appendix D).

San Diego black-tailed jackrabbit – *Lepus californicus bennettii*
Federal Status: None
State Status: Species of Special Concern
County List: None
MSCP: not covered
MSCP Risk Group: N/A

The San Diego black-tailed jackrabbit is likely present on the Property but was not observed during initial biodiversity assessments. Like many rabbits and hares, the population numbers of the black-tailed jackrabbit can fluctuate greatly from year to year. The resources available on the Property, the presence of other rabbits, and the known distribution of the black-tailed jackrabbit all indicate that this species will likely be detected on the Property during future survey efforts.

Coastal whiptail – *Aspidoscelis tigris stejnegeri*
Federal Status: None
State Status: None
County List: Group 2
MSCP: not covered
MSCP Risk Group: N/A

The coastal whiptail is known from the Otay Mesa area and has a high potential to occur on the Property. The coastal whiptail prefers the same habitat as the orange-throated whiptail (which was detected on-site) such as open areas for running. The coastal sage scrub habitat (e.g. Jojoba-San Diego Sunflower association) on the northern portion of the Property which contains lower understory vegetation and more open areas would be considered preferred habitat (Figure 4-1).

Patch-nosed snake – *Salvadora hexalepis virgultea*
Federal Status: None
State Status: Species of Special Concern
County List: Group 2
MSCP: not covered
MSCP Risk Group: N/A

Patch-nosed snake is known from the Otay Mesa area and has a high potential to occur on the Property. The coastal sage scrub habitat (e.g. Jojoba-San Diego Sunflower association) on the northern portion of the Property which contains lower understory vegetation and more open areas would be considered

preferred habitat for this snake (Figure 4-1). The patch-nosed snake prefers open areas for foraging and loose soils for burrowing.

Coronado skink – *Plestiodon skiltonianus interparietalis*
Federal Status: None
State Status: Species of Special Concern
County List: Group 2
MSCP: not covered
MSCP Risk Group: N/A

The Coronado skink can be found in a wide variety of habitats, including grassland and chaparral, and prefers early successional stages or open areas, as well as rocky areas near streams and dry hillsides. This species is known to occur within 5 kilometers of the Property. The Property offers adequate habitat, soil type and commonly coexisting species to support the Coronado skink.

Non-listed Species with a High Potential to Occur

Non-listed reptile species with a high potential to occur include the common kingsnake (*Lampropeltis getula*) and gophersnake (*Pituophis catenifer*). The habitat on-site is appropriate and the prey base is robust, therefore these common species are likely present on the Property, though they were undetected during initial survey efforts.

Non-listed avian species with a high potential to occur onsite include the common poorwill (*Phalaenoptilus nuttallii*), lesser nighthawk (*Chordeiles acutipennis*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), and western scrub-jay (*Aphelocoma californica*). These species can be very difficult to detect if not seen or heard calling (e.g. nests and other sign are often cryptic). The habitat is adequate for both the poorwill and nighthawk. In addition, the variable ground cover on-site should be ideal for the detection of rodents (the chief prey of nocturnal raptors) making the Property ideal for both barn owl and great horned owl.

4.3.7 Invasive Wildlife Species

No invasive animal species were detected during baseline biological surveys.

4.4 Wildlife Movement

Wildlife movement across a landscape is both a challenge and an essential component of modern conservation biology. The ability of individuals and populations of animals to move across a landscape allows for beneficial exchange of genetics within a metapopulation. Thus, linkages between isolated patches of habitat negate the deleterious effects of inbreeding depression by allowing juveniles and related individuals to disperse and by enabling emigration of individuals from outside populations.

The Property contributes to core habitat located on the southern portion of a City of San Diego MSCP subarea plan designated wildlife linkage (City of San Diego 1997). The linkage connects the southernmost conserved lands in Otay Mesa Area to the northern most conserved lands. The wildlife linkage runs across Highway 905 which bisects the constrained portion (Figure 1-3).

This wildlife linkage is designed to support the movement of large, highly mobile species such as medium and large mammalian carnivores, rabbits and hares, deer, and herpetofauna of various taxon. Increasing the core, live-in habitat, on the southern half of the linkage supports a larger population of primary producers (e.g. plants) and related herbivores and therefore more carnivores and other secondary and tertiary consumers. A larger core area also lessens the edge effects of the urban-wildland interface which can be especially severe when patches of conserved lands are small.

Continued conservation efforts through the acquisition and restoration of adjacent lands will contribute to wildlife movement efforts. The larger the core areas are, and the wider the linkage is, the greater the opportunities for wildlife movement to occur.

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5.0 MANAGEMENT RECOMMENDATIONS

5.1 Vegetation Communities/Habitat

Eleven vegetation alliances, associations and/or stands were mapped on the Property during the 2011 baseline surveys. Managing these vegetation communities will help maintain ecosystem function and provide habitat to native species. The dominant vegetation type on the Property is the jojoba-San Diego sunflower association (equivalent to Holland's *maritime succulent scrub*), which provides habitat for the western spadefoot toad, San Diego horned lizard, coastal cactus wren, coastal California gnatcatcher, and American badger. A variety of sensitive plant species also occur in this community, including San Diego bur-sage, cliff spurge, south coast saltbush, seaside calandrinia, snake cholla, and coast barrel cactus. Although the northern and southern portions of this community are highly invaded by non-native species, the central portion is in relatively good condition. The other vegetation types on the site, especially the California encelia-California sagebrush association, tarragon association, and upland herbaceous vegetation types, show a high level of edge effects (e.g., invasive species, habitat fragmentation, etc.) due to past disturbance from off-road vehicles and other unauthorized use, fire, and adjacent development.

The County should maintain at least the baseline acreages of native vegetation communities, as determined by this inventory survey. A vernal pool survey should be conducted to assess the quality and species composition of the two small pools on-site. For long-term vegetation community monitoring, it is recommended that the County maintain an updated vegetation community map to be used as a tool for adaptive management within the Property. An ongoing mapping effort will aid in identifying changes in vegetation communities that may affect quality and usage by wildlife. In addition, long-term monitoring should be conducted to assess the change in habitat quality and function over time and address habitat value for target species, including those covered by the MSCP. Vegetation mapping and monitoring, which should occur at least every five years, should be consistent with recommendations provided by the San Diego Regional Management and Monitoring Program (SDMMP) and the Institute for Ecological Monitoring and Management (IEMM) for preserve-level vegetation monitoring.

5.2 Plants

A total of 115 plant taxa were observed during floristic surveys conducted in 2011, including 9 sensitive plant species, and two MSCP covered species – coast barrel cactus and snake cholla. Most of the sensitive species on the Property will not require species-specific management actions or monitoring other than at the habitat level. For example, cliff spurge, San Diego bur-sage, San Diego sunflower, and coast barrel cactus are slow-growing perennials that are fairly widespread on the Property. Slow growing perennials are generally not as vulnerable to changes in rainfall, drought, trampling, or invasive species as annual herbs. These perennial species are not under any immediate threat. Snake cholla is

also a slow-growing perennial. This species is not as widespread on the Property, but generally occurs in dense patches of cholla, which is a very effective defense against unauthorized access (a potential threat from trampling or unauthorized collection).

Seaside calandrinia is the most vulnerable species on-site. Only six individuals were observed, and these were located fairly close to a well-traveled access road. These small succulent plants could easily be crushed by foot traffic (there appears to be a significant number of school-aged children passing through the Property to and from the adjacent San Ysidro Middle School). Herbivory is also a potential threat to this species (Reiser 1994). In addition, there is a potential for sensitive vernal pool plant species to occur on-site. The vernal pool on-site is at the edge of the access road, very close to the seaside calandrinia.

Two vernal pool indicator plant surveys are recommended for the small vernal pool on site; one during the aquatic phase of the pools (during the rainy season) and one during the terrestrial phase (blooming season). The purpose of these surveys is to establish a comprehensive inventory of vernal pool indicator species. A focused branchiopod survey should also be conducted during the aquatic phase of the pool. In addition, annual focused-species surveys for seaside calandrinia, and periodic floristic monitoring surveys (every three to five years) are recommended to monitor the sensitive plant species detected on the Property. Surveys should be scheduled during ideal climatic conditions (average or above-average rainfall) and appropriate time of year (blooming period) to maximize detection. Because floristic surveys were restricted to the height of blooming period in spring of 2011, summer and fall species were missed due to timing constraints of the inventory data collection effort. Collecting trips made in the summer and fall of a good rain year are recommended to be included in future monitoring methods. Monitoring surveys should follow monitoring protocols specifically developed for preserve-specific trend monitoring in perpetuity. Examples of such protocols are included in McEarchen (2007) and Tracey et al. (2011). In addition, researchers associated with the SDMMP and IEMM are currently updating monitoring protocols for specific sensitive plant species.

Prior to any ground disturbing activities (e.g., trail development, fire management, or road maintenance activities), rare plant surveys are recommended in suitable habitats to ensure that sensitive plant taxa will not be impacted. In addition, the County should coordinate closely with the City and other users of the access road to ensure that road maintenance, vehicles and equipment associated with the communication tower and other users do not impact any of the sensitive species known to occur on-site. Any road improvements or change in use should be accompanied by a rare plant survey to facilitate the avoidance of any sensitive species. Further, to protect seaside calandrinia, unauthorized access on the Property should be monitored to determine if cars or people are straying off of the main access road; if determined necessary based on access monitoring, a fence should be placed along the southern edge of the road adjacent to the seaside calandrinia populations.

5.2.1 MSCP Table 3-5 Species-Specific Conditions

MSCP species-specific conditions for coast barrel cactus are to "include measures to protect this species from edge effects, unauthorized collection, and include appropriate fire management/control practices to protect against too frequent fire cycle."

MSCP species-specific conditions for snake cholla are to "include specific measures to protect the species against detrimental edge effects and promote translocation opportunity where appropriate." Edge effects are potential impacts that tend to occur along the edge between the urban/wildland interface or along trails or other disturbance within a natural open space area. Examples of edge effects include invasion by aggressive non-native species, competition by non-native ants, changes in hydrology, soil compaction, and trampling. Management and monitoring recommendations related to edge effects and fire management/control practices are described above in Sections 5.1, 5.2, and below in Sections 5.4 and 5.6.

5.3 Wildlife

5.3.1 Invertebrates

The suite of invertebrates present on the Property may include listed species and those considered to be an important food source for other sensitive species. The presence of fairy shrimp in the vernal pools mapped on the Property should be assessed. These federally listed species require specific management and monitoring actions to ensure their long term persistence on conserved lands. The presence of San Diego fairy shrimp can only be determined through focused species-specific surveys conducted by a qualified biologist (USFWS 1996). These surveys should be conducted as soon as possible during the next rainy season in order to implement appropriate monitoring and management actions, if necessary.

Additional future focused surveys should include species and distribution of native ants. Native ants are an important food source for the coast horned lizard (Suarez and Case 2002), which is an MSCP-covered species detected just outside the Property boundaries.

5.3.2 Herpetofauna

Monitoring for herpetofauna should occur every five to ten years. When devising the sampling design for the next herpetofauna monitoring, it is recommended that additional surveys be conducted to augment the inventory data collection efforts. Increased survey effort (e.g. an increase in both spatial and temporal scale) will increase the probability of detection for rare species. Sampling during wetter months will increase the probability of detection for amphibians (e.g. salamanders and other frog and toad species) so that the presence of these species is better described. Provided rainfall is adequate, amphibians are best surveyed beginning in mid-March to late June.

To identify the full extent of herpetofauna occupying the Property, efforts to describe the presence of amphibians and reptiles need to be continued to increase the likelihood of detecting rare species and assessing the impact of increasing anthropogenic disturbance. Foot traffic, mountain biking, and utility maintenance activities observed during the survey all have the potential to impact sensitive habitat such as the habitat supporting western spadefoot toads detected during this inventory.

To detect patterns in species variation, additional arrays should be placed on the Property in representative habitat with replication (Fisher et al. 2008). Extending the survey period and increasing the number of sampling efforts would provide information to better capture the seasonal activity of herpetofauna and increase the possibility of detecting wide-ranging species.

5.3.3 Birds

The habitat for many sensitive bird species is present on the Property and is considered moderate to high quality. Further enhancement of disturbed habitat or restoration of habitat impacted by invasive non-native plants could improve the quality and quantity of foraging and nesting areas for Risk Group 1 species such as the coastal cactus wren and Risk Group 2 species coastal California gnatcatcher (see Regan et al 2006).

When assessing and prioritizing restoration opportunities for birds, it is important to consider raptor foraging habitat. While non-native grasses can compete with native vegetation communities and degrade habitat, they also provide valuable foraging opportunities for raptors. Although northern harrier was observed on the Property, extensive grasslands that would provide nesting habitat for this species are absent. Because many raptors were observed foraging on the Property, native vegetation communities that provide raptor foraging habitat should replace areas of treated invasive non-native vegetation communities. Species-specific surveys should be conducted prior to, during, and after the implementation of any management action, including invasive species removal and restoration activities.

5.3.4 Mammals

Additional species specific mammal surveys should be conducted in an attempt to elucidate the community interactions on this Property and, thus, inform management. Future small mammal surveys on the Property should focus on identifying the distribution of kangaroo rat on the Property and identifying the population size and distribution of the other commonly trapped species including woodrat and pocket mouse. A mark-recapture study as part of the monitoring the small mammal population on the Property would greatly aid in the effort to estimate population density of rodent species (which is likely very high).

Small mammal populations on the Property appear to be especially robust. Based on this presumption, there is opportunity for a healthy carnivore population in the area. Although the inventory surveys were conducted in the summer when medium and large carnivores are typically much more difficult to detect,

the population of carnivores appears to be somewhat depressed. Based on incidental observations the density of coyote and other carnivores onsite is inconclusive. With a robust rodent and rabbit population, it should be possible for this Property to support a large number of mammalian carnivores. However, the robust prey population also lends evidence for a general lack of predators. Further studies should be conducted to establish an estimate of density and distribution for all medium and large mammals, but carnivores in particular. We recommend that the Property be included in the MSCP regional wildlife movement study conducted through SANDAG's EMP.

If carnivores are found to be lacking on the Property, efforts to increase and support their populations can include the enhancement of wildlife movement corridors, restoration of vegetation communities to provide appropriate refugia, and access control to limit disturbance from unauthorized access by humans as well as domestic dogs.

5.3.5 MSCP Table 3-5 Species-Specific Conditions

MSCP species-specific conditions for MSCP-covered wildlife species identified on the Property require that management directives address edge effects and fire management. These are discussed in Sections 5.4, 5.5, 5.6, and 5.8 below. The requirement for monitoring MSCP-covered species consists of specific surveys at designated locations within the MSCP preserve area (City of San Diego 1998, Ogden Environmental 1996). None of these locations occur within the Furby Property. While regional MSCP monitoring protocols are being developed, preserve-level protocols have not yet been revised or identified. Applicable species-specific conditions per Table 3-5 of the MSCP are as follows:

Quino Checkerspot Butterfly

The County is currently developing an amendment to the South County MSCP subarea to obtain coverage for the Quino checkerspot butterfly. The amendment includes proposed conservation policies and a proposed adaptive management and monitoring strategy (County of San Diego 2009b and 2009c). Because the Property falls within the MHPA of the City of San Diego MSCP rather than the South County MSCP, this property is not included in the planning area. However, management and monitoring of this species should be conducted in a manner that is consistent with the amendment.

The Property contains small areas of fairly low quality Quino checkerspot habitat, consisting of only sparse larval host plants and a high cover of tall non-native grasses and forbs (Figure 4-6). However, the species is known to occur nearby. Because there has been a recent focus on the conservation of this species through the Quino checkerspot MSCP amendment process, it would be prudent to conduct a focused survey on this property to provide better presence/absence information than relying only on the 2011 habitat assessment. The focused survey should be conducted during a high dispersal year using the USFWS survey protocol for this species (USFWS 2002). To identify a high dispersal year, the Quino checkerspot butterfly monitoring website should be checked frequently (USFWS 2011). If the butterfly is found, surveys should continue only if the area is chosen as a sampling site for the Quino occupancy and habitat monitoring program (County of San Diego 2009c), or otherwise recommended

by the San Diego Management and Monitoring Program. If the butterfly is not found, no additional surveys would be needed.

One of the greatest threats to the Quino checkerspot is conversion from native vegetation to non-native annual grassland. If the Quino checkerspot is found on the Property, an invasive species management program should be developed for areas containing suitable Quino habitat.

Coast Horned Lizard

The MSCP requirement for monitoring consists of pitfall trapping. To assess the condition of the species at the preserve level (e.g., on the property), it is recommended that monitoring be conducted every five years at the same locations as the baseline survey stations as well as at additional station specifically after major invasive species removal activities. The monitoring protocol should follow the modified U.S. Geological Survey (USGS) protocol (Fisher et al. 2008, Anguiano 2008), as outlined in Section 3.3.2 of this report.

In order to maintain native ant species (the main source of food for this species) and discourage the Argentine ant (which can disrupt and displace native ant populations), a directed ant study should be conducted to understand the gradient of nonnative Argentine ant populations in the vicinity of residential communities and the native ant population on the Property. MSCP preserves surrounded by residential communities and other water sources are at heightened risk for introduction of the predatory Argentine ant that has shown a detrimental effect on the coast horned lizard (Suarez and Case 2002). Due to the intensity of effort required, rather than conduct focused species surveys through established herp arrays, it is recommended that the coast horned lizard be monitored at the habitat level; e.g., monitoring for invasive species, including non-native ants. Management actions should consist of invasive species management, as described in Section 5.4.

Western Spadefoot Toad

The western spadefoot toad is not a covered species, and therefore, there are no MSCP monitoring requirements. However, the species is regionally rare and should be monitored as part of the property's herpetofauna; care should be taken that at least one of the pitfall arrays used for herpetological monitoring be set up in the vicinity of vernal pools. The western spadefoot toad is often found in association with vernal pools. Vernal pools are common within the Otay Mesa area which contains large quantities of soil types and topography needed to support vernal pools. Restoration and enhancement of vernal pools within the Property would expand breeding habitat for the western spadefoot toad. Maintenance and enhancement of ponds, and other areas of seasonal wetlands would also expand the toad's breeding areas. Enhancement activities should include removal of invasive plant species and regular monitoring and targeted removal of non-native, invasive species, including red-eared sliders and bullfrogs.

Orange Throated Whiptail

The MSCP requirement for monitoring consists of pitfall trapping. To assess the condition of the species at the preserve level, it is recommended that monitoring be conducted every five years at the same locations as the baseline survey stations and/or after major invasive species removal activities. The monitoring protocol should follow the modified U.S. Geological Survey (USGS) protocol (Fisher et al. 2008, Anguiano 2008), as outlined in Section 3.3.2 of this report.

Targeted invasive plant species removal in areas preferred by the whiptail, including sandy washes, dry brushy areas with friable soils will enhance the available habitat for this species. Invasive plant species removal will maintain the open spaces between plants and shrubs within the coastal sage scrub community preferred by this species.

Coastal Cactus Wren

A small patch of highly disturbed cholla exists on the north end of the Property just west of the vernal pool complex. The cholla present here is mature and branched which is considered desirable nesting habitat for cactus wren; it is however, heavily invaded with short-pod mustard and yellow star thistle. Because the wren prefers open foraging habitat surrounding cactus patches, removal of invasive and dethatching dense vegetation would improve habitat quality. Planting of prickly pear and lemonadeberry as well as additional cholla to increase the overall size of the patch would also provide enhanced nesting opportunities for coastal cactus wren. Because this species is present on the southern side of the Property and because the patch of disturbed cholla on the northern end of the Property is on a south facing slope, this is an ideal opportunity for cactus wren habitat restoration.

The MSCP requirement for monitoring the coastal cactus wren consists of monitoring coastal sage scrub plots. To assess the condition of the species at the Property, it is recommended that focused surveys be conducted in all suitable habitat on the Property to establish a baseline, identify all locations of the cactus wren, and determine whether the species is breeding onsite. Baseline surveys should include annual surveys for three years to capture the natural fluctuation of this species on site. Long-term monitoring should be conducted thereafter every three to five years. The monitoring protocol should follow Preston et al. (2009) or protocols recommended by the SDMMP.

Coastal California Gnatcatcher

To assess the condition of the species at the preserve level, it is recommended that baseline focused species surveys be conducted in all suitable habitat on the Property to identify presence/absence and distribution of this species onsite and whether the species is nesting on the Property. Baseline surveys should include annual surveys for three years to capture the natural fluctuation of this species on site. Long-term monitoring should be conducted thereafter following recommendations by the MSCP Monitoring Partners and the SDMMP.

The coastal California gnatcatcher is present in multiple areas throughout the Property. However, large parts of the Property are invaded with garland chrysanthemum, non-native grasses, and short pod mustard, making these areas unavailable for nesting and foraging. Removal of these invasive species and habitat restoration which includes active revegetation of coastal sage scrub vegetation communities would expand the available nesting and foraging opportunities for gnatcatcher. This property has the ability to support greater numbers of gnatcatcher through habitat enhancement.

American Badger

Maintaining access controls will benefit the American badger potentially occurring on the Property (badger sign and a badger burrow was found in cactus habitat on the Property, see Figure 4-8). In addition, domestic dogs can be a deterrent to this species and other mesopredators through scent marking, feces, and other behaviors.

The MSCP requirement for monitoring consists of habitat based monitoring (e.g., monitoring the condition of habitat rather than a focused-species approach). However, because a potential badger den was observed onsite, the area should be revisited during vegetation mapping and other regular monitoring surveys in the vicinity of the den and badger sign should be recorded. In addition, concurrent with medium and large mammal monitoring, a wildlife camera may be placed in the vicinity of the den.

Northern Harrier

To assess the condition of the species at the preserve level, it is recommended that monitoring be conducted through habitat monitoring (e.g., assessing the condition of habitat for this species during regular habitat monitoring visits), and by recording all incidental observations of this species.

Northern harriers are ground nesting birds which prefer grasslands and low-shrubby areas on relatively flat terrain. The removal of stands of garland chrysanthemum on the flat portions of the southern area of the Property would expand potential nesting opportunities. Revegetation of these areas with native grasslands would also expand foraging opportunities for this species which preys on rodents and other small mammals.

Southern Rufous-Crowned Sparrow

To assess the condition of the species at the preserve level, it is recommended that avian point count surveys be conducted every three to five years. This species forages in shrubby and woody areas and has a distinct preference for open shrubby habitat on rocky, xeric slopes. Rufous-crowned sparrows also appear to prefer coastal sage scrub dominated by California sagebrush (*Artemisia californica*), but they can also be found breeding in bluff scrub, low-growing serpentine chaparral, and within the edges of tall chaparral habitats (Thorngate and Parsons 2005). Maintenance and enhancement of these preferred habitats will expand breeding and foraging opportunities for this species on the Property.

White-tailed Kite

To assess the condition of the species at the preserve level, it is recommended that monitoring be conducted through habitat monitoring (e.g., assessing the condition of habitat for this species during regular habitat monitoring visits), and by recording all incidental observations of this species. The white-tailed kite uses trees for nesting, like many raptors, and therefore will likely not nest on-site. However, maintenance and enhancement of grasslands on site will encourage and expand existing foraging habitat utilized by this species.

5.4 Non-Native Invasive Species Removal and Control

5.4.1 Plants

Invasive plant species are prevalent throughout the Property; the Property is large; and the topography is steep. Therefore, total eradication of invasive plant species will not be possible. However, it is possible to implement an effective weed control program if properly planned. It is recommended that a weed management plan be prepared to (1) describe how the invasive plant species interfere with management goals (e.g., a specific sensitive biological resource is being threatened), (2) assess the difficulty of control for each invasive plant species or area, (3) identify on and off-site sources of invasive plant species, and (4) set priorities for invasive plant species control.

Garland chrysanthemum poses the most immediate threat to the Property. This species spreads quickly and tends to out-compete all other native and non-native plants, forming thick monoculture patches. The most vulnerable locations are areas that have experienced ground disturbance, such as unmaintained roads and unauthorized trails. In addition, because there are large patches of chrysanthemum off-site, there will be a continuous seed source. Control of this species will be most successful if treated with herbicide early in the season (e.g., prior to seed-set) followed by active restoration, to ensure that this species does not recolonize (Harmsworth Associates 2011) (See Section 5.5 below). The best location for restoration is the southern end of the Property, which is flatter than the rest of the Property and riddled with unauthorized trails.

The other moderate and high risk species identified on-site are fairly widespread throughout the Property and may be difficult to control. The best strategy may be to allow the habitat to regenerate passively after treating the invasive species. Areas of high priority (e.g., areas with known populations of sensitive species) can be monitored and treated as necessary. High priority areas should include the edges of the main east-west unpaved access road were vernal pools, seaside calandrinia, and sensitive cactus species are located. Figure 4-5 shows high concentrations of invasive species that are on-site (the entire site has some level of invasive species cover, much like any other urban preserve). The main east-west road does not currently have a high concentration of invasive species and therefore, invasive species along this road are not shown in Figure 4-5. However, because there are highly vulnerable sensitive species in this location, this area should be more actively managed. The cactus wren habitat in the southwest area of the Property should also be monitored closely. Currently, the habitat is in good

condition; however, coastal cactus wren is a Risk Group 1 MSCP species and therefore, invasive plant species should not be allowed to colonize this area. Treating the invasive plants would be difficult due to the dense cholla, so it would be most effective to use prevention as the main means of control.

5.4.2 Wildlife

Currently, non-native or invasive animal species are not threatening the ecological integrity of the Property or the continued existence of any sensitive species. Sensitive bird species such as the California gnatcatcher may be affected by the presence of cowbirds; however cowbirds have not been observed on the Property. If monitoring reveals the presence of cowbirds, populations should be monitored, and the need to implement a cowbird trapping program should be evaluated at that time. Access controls should be maintained and no trespassing signs posted to preclude access by dog walkers. In addition, the public in the surrounding residential and educational community should be educated to keep cats indoors to avoid feral cats preying on sensitive wildlife on the Property.

5.5 Restoration Opportunities

To further the purpose of the Property for future mitigation, restoration should prioritize the decommissioning of unauthorized trails and associated erosion repairs, and the removal of invasive plant species. In addition, other active restoration such as habitat enhancement through the seeding and planting of native vegetation and the creation of species specific refugia and other habitat features will increase the habitat available for sensitive species.

Active restoration will not only benefit the ecological integrity of native habitats on the Property but also increase the habitat mitigation potential. The Property is crisscrossed by many trails, dirt roads, and pathways mainly in the southern portion, which experiences frequent unauthorized access by OHV users. Many of these users are youth on motocross bikes. The conversion of disturbed areas and unauthorized trails to native coastal sage scrub habitat would enhance the quality and increase the quantity of habitat suitable to such sensitive species as the Quino checkerspot butterfly, coastal California gnatcatcher, coastal cactus wren, and other MSCP-covered species.

Because of the prevalence of garland chrysanthemum on the Property, it is recommended that active restoration techniques be applied rather than passive restoration which relies on natural recruitment of surrounding natives. Garland chrysanthemum prolifically invades disturbed areas such as trails and can best be permanently controlled through active restoration (Harmsworth Associates 2011). Active restoration of unauthorized trails should be conducted by permanently closing and de-compacting (cross-ripping) trails and imprinting with a local, native coastal sage scrub seed mix. Soil stabilization methods using bio-engineering techniques and natural materials (e.g. coconut fiber rolls and bonded fiber matrices [BFM]) should be applied to stabilize soils and prevent erosion. Any seed materials must

be thoroughly inspected and all non-native or unidentifiable seed material removed to avoid potential contamination.

When completing a habitat restoration plan for all or part of the Property, the appropriate density and species composition of coastal sage scrub habitat (or other native habitat) should be decided based on the conservation goal. Both Quino checkerspot butterfly and coastal cactus wren have species-specific preferences for vegetation density and composition. These preferences should be mimicked as appropriate when restoring vegetation.

The Property also contains opportunities for species-specific mitigation credits provided the appropriate habitat restoration and enhancement measures are applied. These species include the aforementioned coastal cactus wren and Quino checkerspot butterfly as well as the San Diego and Riverside fairy shrimp, burrowing owl, California gnatcatcher, and least Bell's vireo. Vernal pool complexes, of which there is one small complex present on the Property, contain totally unique suites of plants and animals associated with them; they are extraordinary and rare ecosystems.

A small vernal pool complex exists in the north-eastern portion of the Property. Focused surveys for vernal pool associated plant and animal species should be conducted (see Section 5.3.1) to confirm the quality and restoration potential of these pools. Enhancement of these pools would benefit the San Diego (and potentially Riverside) fairy shrimp, Quino checkerspot butterfly, and western spadefood toad (the latter of which has been documented on the Property). It is also possible that vernal pool systems could enhance burrowing owl habitat through mima mound creation.

The Otay Mesa area is one of the last remaining hot spots of burrowing owl in San Diego County. This species is in significant decline in the region. Potential burrowing owl habitat could be created on the Property surrounding the area of the small vernal pool complex. Creating burrows associated with vernal pool habitat (mima mound) or releasing ground squirrels in the area to act as surrogates for burrow creation could enhance potential burrowing owl habitat (San Diego Zoo Institute for Conservation Research, unpubl. data 2011, Shier et al. 2011). Vernal pool restoration and creation projects that include the creation of burrowing habitat are currently being implemented on two sites immediately to the east of the Property (Otay Mesa Parcel A and B). Enhanced vernal pools on the Property would contribute to the overall ecological function of the vernal pool complexes on the mesa south of Otay Mesa Road.

The restoration of unauthorized trails and invasive species removal areas would enhance habitat for California gnatcatcher and coastal cactus wren, both identified on-site. In addition, cactus patches could be established in areas where invasive plant species were removed to increase nesting habitat for the cactus wren. Studies conducted at the Nature Reserve of Orange County (Preston et al. 2009) conclude that cactus wren prefer open understory areas for foraging. Restored cactus patch should be ≥ 3.3 m x

4.5 m, typically on a slope with southerly aspect or along a seasonal streambed; however, larger cactus patches provide increased nesting opportunities for the species.

A lone singing male least Bell's vireo was repeatedly observed in a patch of southwestern willow scrub immediately west of the Property, on City of San Diego park land. Provided that there is sufficient hydrological gradient, southwestern willow scrub may be established adjacent to the least Bell's vireo observation on the Property along the seasonal streambed. The establishment of least Bell's vireo habitat on the Property could potentially provide mitigation credits for least Bell's vireo and impacts to wetlands and riparian communities.

5.6 Fire Management

Wildfire is an integral part of the southern California ecosystem that has shaped the landscape of the Property and its surroundings. Natural wildfires adequately spaced in time and occurring during the spring or summer seasons benefit certain vegetation communities, among them chaparral that includes plants that regenerate based on certain triggers provided by fire (e.g., heat, chemicals present in charcoal, burn frequency). If natural conditions prevailed, fire management would not be necessary. However, increased human presence in the County has changed the natural fire cycles and more frequent fires, especially those driven by hot and strong Santa Ana winds during the fall season (Keeley and Fotheringham 2001) have caused considerable damage to the human and natural landscape. Therefore, fire management has become necessary in the wildland-urban interface as a safety feature to protect homes and life. Fire management in conserved open space areas away from the wildland-urban interface should be restricted to fire prevention and management geared toward public safety, as described below. Due to the proximity of residential communities surrounding the Property, including a middle school, a fire and vegetation management plan should be prepared specifically for the Property identifying defensible space, fuel management zones, and public education. Continuing coordination among the state and local fire agencies (e.g. CDF, City of San Diego, etc.) with Federal [USFS] and other fire departments and with adjacent landowners and communities can increase the likelihood of sustaining long-term ecosystem health and processes in these fire-adapted lands.

The area north of the Property is identified by the City of San Diego Fire Department (Otay Mesa) as a Very High Fire Severity Zone 2 (City of San Diego Department of Parks and Recreation). The Property is dominated by coastal sage scrub communities of varying density, with significant amounts of open canopy interspersed by garland chrysanthemum and other non-native species. While coastal sage scrub is more flammable than many other native scrub communities, the open canopy creates less fuel loading and continuity (Westman 1976 and 1982). These stand characteristics promote more frequent ignition, but less intense fire behavior. However, the presence of flammable non-native species, particularly in the northern- and southern-most expanses of the Property increases the likelihood of intensive burns. Although no recent or historical large fires have been recorded on the Property (CalFire 2011), it appears that the northern portion of the Property was burned within the last three to five years based on the

observation of charred branches and resprouts. This may be one reason for the relatively high cover of non-native species. Should another fire occur within the Property, fire management must be practiced to protect human lives and adjacent private properties, while minimizing potential impacts to on-site biological and cultural resources from fire suppression activities. Post-fire management activities should include an assessment of the burned habitat to determine the extent of damage and any remedial measures that should be taken, such as BMP installation for soil stabilization, more intensive weed management or restoration.

5.6.1 Public Safety

Fire management for public safety purposes includes the use of fire prevention, zoning and planning, implementation of appropriate housing construction standards that include sheltering in place, the creation of defensible space around homes, and the identification of fuel management zones. The 100-foot fuel modification zones associated with adjacent private residences and the San Ysidro School District to create defensible space around buildings do not encroach into the Property. Generally, residential development is present on the northern and western borders of the Property. Across from the western entrance of the Property are buildings associated with the San Ysidro School District, and the San Ysidro Middle School complex is located immediately south of the entrance road.

The County will ensure that the Property-side portion of defensible space surrounding the adjacent San Ysidro Middle School is maintained per the County's code (County of San Diego Consolidated Fire Code [County Health and Safety Code SS 13869.7]) by performing vegetation thinning in accordance with the defensible space guidelines presented in the County of San Diego, Department of Planning and Land Use (2004) publication *Fire, Defensible Space, and You…* and codified in the Combustible Vegetation and Other Flammable Materials Ordinance (Sections 68.401 through 86.406 of the County of San Diego's Zoning Ordinance).

DPR staff shall also maintain access on the Property for firefighting personnel. DPR staff will coordinate with the local fire district regarding access for fire fighting, and will maintain at least one access road across the Property (Figure 2-4). In the event of a fire, the north-south trail across the central portion of the Property, and the trail traveling along the northern boundary, can be utilized as access roads for emergency response.

DPR staff will continue to coordinate with CAL FIRE and the City of San Diego Fire Department (incl. San Ysidro Fire Station 29, located west of the Property on 198 W. San Ysidro Blvd.) to implement appropriate fire response within the Property. As part of this effort, DPR staff will review fire history maps at least once every 10 years to determine if the Property is within natural fire return intervals and for estimation of fuel age class.

5.6.2 Ecosystem and Vegetation Management

While vegetation management and fuel treatment have shown effectiveness in the wildland-urban interface, specifically within fuel breaks and 100-foot defensible space buffers, there is overwhelming evidence that these management methods fail in remote areas because they can be surmounted by wind driven fires and lead to type conversions of native scrublands to non-native grasslands. Ongoing studies initiated after the 2003 Cedar Fire by the San Diego Natural History Museum and U.S. Geological Survey are now showing that type conversions have occurred in the County as a direct result from too frequent and intense fires. Type conversions can result from any management action that might lead to increased disturbance frequency including loss of native flora and fauna; increase in exotic weeds that are more flammable and, in turn, increase fire frequency; increase in erosion and sedimentation; loss of soil holding capacity for deeply rooted vegetation in favor of shallow rooted grasses and exotic species; and loss of carbon storage capacity. Fire and fuel management, such as prescribed burns or thinning of vegetation, are not found to benefit non-forest ecosystems such as scrublands (Keeley et al. 1999, 2005). Therefore, fire management to benefit the Property's ecosystem and natural resources needs to be carefully evaluated and implemented based on the most current available science, and restricted to areas where it directly benefits a sensitive species or habitat. Measures and treatment areas should be identified based on landscape-level fire models and risk analyses, such as The Nature Conservancy's LANDFIRE program. This "Landscape Fire and Resource Management Planning Tool" is a five-year multi-partner project producing consistent and comprehensive maps and data describing vegetation, wildland fuel, and fire regimes across the United States. The data are based on the most current science and include field-derived data, including layers of vegetation composition and structure, surface and canopy fuel characteristics, and historical fire regimes at a 30-meter grid spatial resolution raster data set.

Fire management in open space intended for the conservation of biological and ecological resources is described the County of San Diego's Vegetation Management Report (County of San Diego 2009a) and the fire management section of the South County MSCP. Due to the proximity of residential development to the Property, prescribed fires for the purpose of vegetation management is not recommended on the Property. Other vegetation management techniques, including extensive removal of invasive plant species and managed grazing (e.g., goats) might be considered to reduce fuel load and increase spatial distance between shrubs preventing fire from spreading quickly and burning at high intensity. However, prior to any managed grazing, a thorough inventory of sensitive species should be conducted to avoid the removal of any sensitive plants that may benefit the use of the Property for mitigation purposes. The Wildlife Agencies should be notified if managed grazing is considered for fire management within the Property.

5.7 Wildlife Linkages and Corridors

Wildlife movement on the Property is currently limited to adjacent conserved lands and the City of San Diego MSCP designated wildlife movement area for the Otay Mesa Area. The creation and enhancement of wildlife movement corridors is a priority for the City's MSCP and is a specific directive for the Otay Mesa Area. However, the Property is flanked on three sides by heavy urbanization that does not allow

for the movement of a majority of wildlife. The exception is avian species which can often use patches of conserved lands that have no terrestrial connections to each other for dispersal and migratory purposes.

All of the wildlife movement to and from the Property would come from contiguous open space to the east and north east (Figure 1-3). Management of wildlife linkages and corridors should focus on lessening edge effects present at the wildland-urban interface. These include minimizing unauthorized access to the Property and removing unauthorized trails. This would reduce the wildlife populations' exposure to anthropogenic disturbances such as hiking, biking, and domestic dogs. In addition, the County may include the Property in the County-wide MSCP wildlife movement study planned to be initiated through the SANDAG EMP.

Other enhancement measures may include the lessening of nighttime lighting to allow for nocturnal species to forage and engage in other behaviors which might otherwise be affected by the present of artificial light. The lessening of artificial lighting can be accomplished by reducing light pollution, any night time work, and outdoor lighting through cooperative agreements with neighboring HOA's and schools.

5.8 Additional Management Recommendations

The Property faces similar threats as other open space preserves across San Diego County. Some of these threats, which affect many of the sensitive plants and animals that are to be protected by these preserves and the MSCP, include unauthorized public access, off-road activity, unauthorized trail development, inadequate patrol by County staff, changes in hydrology, and global climate change. In addition, like other protected areas near the Mexican border, access by the border patrol could also impact biological resources on site. This section discusses these threats and some of the appropriate management actions that should be implemented to reduce the impact of each on the natural habitat and sensitive native species on the Property.

5.8.1 Public Access

Trails and Access Roads

The Property is not currently open to the public and no infrastructure for public access exists. Access is allowed on the paved road to authorized individuals conducting activities on the City of San Diego's communication tower in-holding. Other access easements exist for utilities maintenance activities. Unauthorized use on the Property includes school children using the Property as a short-cut, residents walking their dogs, and off-road vehicle and motocross use.

An official trail system is not currently planned for the Property. Infrastructure such as fire and maintenance access must be planned carefully, balancing authorized use with habitat degradation. Unauthorized trails should be restored using active restoration techniques versus passive restoration to avoid the continued invasion with garland chrysanthemum.

Fencing and Gates

The Property is largely unfenced. Fencing occurs around the City of San Diego communications tower in-holding and in short sections along the eastern and southwestern boundaries of the Property. A gate is located at the western access point off of Otay Mesa Boulevard. An access plan should be developed in coordination with neighboring Property owners, including the City of San Diego. Fencing, gates, and large boulders should be used to control the off-road use of the Property and to protect closed trails, while allowing for wildlife movement. It is recommended that an assessment of Property use be conducted (e.g., which trails are being used, when, and by whom) prior to developing an access plan.

Signage and Education

Because the Property is not currently open to the public, no signage (boundary signs, use regulations, or interpretive) has been installed. As part of an access plan for the Property, the DPR will determine the appropriate level of public access, and this will then determine the types of signage and educational outreach required. In general, signs are not highly effective in keeping out unauthorized individuals. However, at minimum, DPR should install no-trespassing signs at strategic locations to facilitate enforcement.

Currently, trespassing using dirt bikes and other off-road vehicles is prolific on the Property and should not be allowed. It is recommended that DPR staff collaborate with neighboring Property owners, including the City of San Diego and the San Ysidro School District, to initiate a public education program discouraging trespassing, off-road vehicle usage, promote leash laws and keep cats indoors, and encourage wildlife and habitat conservation. DPR may also consider developing a stewardship program with the San Ysidro School District to encourage school children to participate in the conservation effort of their local flora and fauna and thus reduce trespassing across the Property.

Illegal Off-Road Activity

As previously mentioned, off-road activity is one of the greatest threats to this Property. Patrol by DPR staff is recommended to aid in the prevention of unauthorized activities and trespassing. Patrol routes should be designed with minimal impact, avoiding areas supporting sensitive habitats or species, and patrols should be timed to coincide with the highest incidents of off-road vehicle use on the Property. SANDAG's EMP-funded enforcement program may assist in funding additional patrols on the Property. The access study recommended in this section may assist in securing funding for additional patrols. Signage, fencing, public outreach and trail closure/restoration should also be used to control off-road activity.

5.8.2 Litter and Trash Removal

Overall, the Property is relatively free of trash. However, there are a few locations of illegal dumping on the Property. One of these areas is located near the entrance to the dry streambed near the gate off of Beyer Boulevard. Management should include at least quarterly site visits to monitor for and clean up trash and litter on site. A stewardship program in collaboration with the San Ysidro School District could include regular volunteer clean-up efforts by the school children in the area.

5.8.3 Hydrological Management

The only hydrological management actions recommended for the Property is protection of the hydrology of the vernal pools identified on the Property. This may be somewhat difficult since the pools are small and located at the edge of one of the main access roads; however, DPR staff should coordinate with the neighboring Property owners and Caltrans and the San Ysidro School District/City of San Diego who are initiating two vernal pool restoration projects immediately east of the Property (Otay Mesa Parcels A and B).

5.8.4 Emergency and Safety Issues

The main emergency-related issue on the Property is fire management. See Section 5.6 above for more information. Currently the Property is not accessible to the public, thereby limiting the need for emergency response for issues other than fire; however, public access, including a trail system, is under consideration. If this occurs, signs with emergency contact information should be posted in prominent locations.

5.8.5 Global Climate Change

The effects of global climate change pose a challenge to resources managers, specifically as conflicts between the desires of people versus wildlife needs will escalate as climate crises become more frequent and severe. In the future, agriculture may require the same spaces currently used for biodiversity conservation. The adverse impacts of climate change can impose severe stresses on biodiversity resources that are fragile, vulnerable, and already under stress.

A recent study based on climate models predicts that, as a worst case scenario, California plant diversity could decrease by as much as 25 percent, and 66 percent of all species unique to California would suffer more than an 80 percent decrease in range (Loarie et al. 2008). Some ranges may contract, others expand, and the distribution of threatened species versus more common species will also shift. Plant species would move into different ranges, potentially breaking up familiar California native plant associations and eliminating pollinators and dispersal mechanisms. In southern California, plants may move to higher elevations from the inland toward the coast.

With the shifting ranges of endemic species, species conservation becomes a moving target. Adaptive management and regular, rigorous monitoring are key to maximizing species' survival as ecosystems change. On a reserve scale, ecosystem changes may be slow and barely visible, and may appear chaotic; therefore, regular long-term monitoring is important to capturing gradual ecosystem changes. Monitoring target or indicator species should be selected, starting with the monitoring of vegetation as the basis for species habitats, (plants will move, animals will follow), and amphibians that have already shown susceptibility to global climate change. In addition, management to reduce other stresses (e.g. grazing, fire, and trespassing) should be considered to enhance the resilience for current resident species. Planning for new plant refugia and acquiring funding for large scale restoration efforts may also be a crucial management tool.

It is recommended that DPR institute collaborations with scientific research organizations geared toward understanding the effects of global climate change on biodiversity, apply for funding to participate in data collection and modeling efforts, and participate in working toward achievable management goals that incorporate rapid, fundamental changes in the County's biodiversity.

6.0 REFERENCES

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APPENDICES

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APPENDIX A. Characterization of Vegetation Alliances, Associations and Semi-Natural Stands On-Site

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Appendix A. Characterizations of Alliance, Associations and Semi-Natural Stands on Site

Community Type	Alliance Code	Alliance	Association Code	Association	Common Name	Characterization Code (Map Label)	Characterization Description	Slope	Holland Code	Holland Type	Notes
Drought-Deciduous Shrublands	4.6	*Artemisia californica*	4.6.1	*Artemisia californica*	California Sagebrush Association		Disturbed. Dominant: *Artemisia californica* (80-90%). Other species: *Encelia californica* and *Lotus scoparius* (10%), non-native species		32500	Diegan Coastal Sage Scrub	
Drought-Deciduous Shrublands	4.7	*Artemisia californica-Eriogonum fasciculatum*	4.7.2	*Artemisia californica-Eriogonum fasciculatum - Opuntia littoralis/Dudleya (edulis)*	California Sage Brush-Buckwheat-Succulent Association		*Artemisia californica* (40%), *E. fasciculatum* (10-15%), *S. chinensis* (3-5%), *Euphorbia misera* (5%), *A. chenopodiifolia* (0-5%), *B. laciniata* (3%), *Nassella* (trace); Also trace cactus (*F. viridis, Mammilaria dioica, Cylindropuntia californica*)	west-facing slope	32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.22	*Encelia californica*	4.22.1	*Encelia californica-Artemisia californica*	California Encelia Association	A	Highly disturbed. Previously graded, but now growing in. Dominant species: *Glebionis coronaria* (65%). Other species: *Encelia californica* (20%), *Lotus scoparius* (1-10%) *Artemisia californica* (3-5%). The rest: *Deinandra fasciculata*, *Oncosiphon piluliferum, Ambrosia chenopodiifolia, C. melitensis, Eriogonum fasciculatum, Baccharis salicifolia.* Some areas have trace *Nassella* spp.	steep, north-facing slope;	32500	Diegan Coastal Sage Scrub	
Drought-Deciduous Shrublands	4.22	*Encelia californica*	4.22.1	*Encelia californica-Artemisia californica*	California Encelia Association	B	Dominant shrubs: *Artemisia californica, Eriogonum fasciculatum, Encelia californica* and *S. chinensis* (combined approx 30-7%). Also present: *A. chenopodiifolia*. High cover of non-native species, including *Erodium* spp., *Bromus rubens, Avena fatua, H. incana* and *C. melitensis*. Trace native species: *Isomerus arborea, Dichondra occidentalis, Melica* sp., *Nassella* spp., *Rhus integrifolia*. Also trace cactus (*F. viridis, Mammilaria dioica, Cylindropuntia californic*a).	hill top and north-facing slope; drier than 4b; more grasses and other non-natives.	32500	Diegan Coastal Sage Scrub	
Drought-Deciduous Shrublands	4.35	*Malosma laurina*	none		Laurel Sumac Alliance		Shrub cover: *M. laurina* (30%), *A. californica* (20%), *R. integrifolia* (2%), *S. nigra* (2%).		32000	Coastal Scrub	Doesn't fit the Alliance description
Drought-Deciduous Shrublands	4.42	*Rhus integrifolia*	4.42.1	*Rhus integrifolia*	Lemonadeberry Association		50% *Rhus integrifoli* a, 30% *A. californica, Nassella pulchra* and *N. lepida* (quite a lot, but a very delicate species; therefore estimating 1-2%)	north-facing slope.	32500	Diegan Coastal Sage Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	A	Dominant species: *Avena fatua, Bromus rubens, G. coronaria, C. melitensis*. Shrub cover approx 10-15 %. Dominant shrubs: *Simmondsia chinensis*. Also present: *A. chenopodiifolia*. Few or no *Bahiopsis laciniata*. Highly disturbed. Post-fire condition		32400	Maritime Succulent Scrub	Not a good fit; shrub alliance requires at least 50% shrub cover; Avena alliance requires <5% shrub cover overall.
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	B	*Ambrosia chenopodiifolia* (40-60%), *A. californicus* (5%), *S. chinensis* (5-20%), *Encelia californica* (trace), *Euphorbia misera* (0-5%), *B. laciniata* (0-10%). Various non-native species. May also have trace *Cylindropunia littoralis*, *Mammliaria dioica* and *Ferocactus viridescens*	southwest-facing slope	32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	C	Codominant species: *A. chenopodiifolia* and *S. chinensis*. The rest is mostly invasive non-native species.	fairly flat; bottom of slope	32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	D	Dominant: *S. chinensis* (50-70%). Subdominant: *Bahopsis laciniata* (5-10%). Other: *Artemisia californica* (0-5%), *Euphorbia misera* (0-5%), *A. chenopodiifolia* (0-5%), trace cactus (*F. viridis, Mammilaria dioica*). Also, *C. melitensis, H. incana, B. rubens*	steep, south-facing slope	32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	E	*S. chinensis* and *Cylindropuntia californica* codominant, or *C. californica* dominant (>50%) and *S. chinensis* codominant (30-50%). Also, *B. laciniata* (10%), *A. californica* (1-5%), *Euphorbia misera* (1-5%), *A. chenopodiifolia* (0-5%)	steep, south-facing slope	32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	F	*Artemisia californica* (45-65%), *S. chinensis* (20-30%), *B. laciniata* (5%), *Ambrosia chenopodiifolia* (5+%), *Euphorbia*		32400	Maritime Succulent Scrub	

Appendix A. Characterizations of Alliance, Associations and Semi-Natural Stands on Site

Community Type	Alliance Code	Alliance	Association Code	Association	Common Name	Characterization Code (Map Label)	Characterization Description	Slope	Holland Code	Holland Type	Notes
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	G	*R. integrifolia* (40%), *A. californicus* (20%), *Bahiopsis laciniata* (3%), *S. chinensis* (2%), *A. chenopodiifolia*	gentle, north-facing slope.	32400	Maritime Succulent Scrub	According to membership rules, R. integrifolia must account for at least 50% shrub cover and B. laciniata + S. chinensis must be less than 5%. Since the property is generally dominated by S. chinensis, I decided to use this association.
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	H	*Ambrosia chenopodiifolia* (40-70%), *Artemisia californica* (<20%), *S. chinensis* (20-30%), *B. laciniata* (5%), *Euphorbia misera* (trace)		32400	Maritime Succulent Scrub	
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	I	*Malacothamnus fasciculatus* (20%), *R. integrifolia* (7%), *S. chinensis* (5%), *Sambucus nigra* (10%), *Heteromeles arbutifolia* (5%), *Quercus agrifolia* (1%), *Malosma laurina* (1%). The rest of cover consists of non-native grasses, tocalote and chrysanthemum	north-facing, steep slope	32400	Maritime Succulent Scrub	Post fire. Used to have greater cover of R. integrifolia and Q. agrifolia (stump sprouting now).
Drought-Deciduous Shrublands	4.45	*Simmondsia chinensis*	4.45.1	*Simmondsia chinensis-Bahiopsis laciniata*	Jojoba-San Diego Sunflower Association	J	Approx 5% *S. chinensis* . *Nassella cernua* 1-5%. Other species: *Avena fatua, Lolium multiflorum, G. coronaria* .	north-facing slope. Surrounded by disturbed scrub habitat	32400	Maritime Succulent Scrub	
Riparian Shrublands	4.9	*Artemisia dracunculus*	4.9.1	*Artemisia dracunculus*	Tarragon Association		Mosaic of native and non-native riparian species. Codominant species: *Artemisia dracunculus* and *Baccharis sarothroides.* Other species: large patch of *Conium maculatum* and scattered *B. salicifolia, Sambucus nigra, Rhus integrifolia, Atrplex* , *Ricinus comunis* and *Marah macrocarpus*	Bottom land, along ephemeral drainage	63000	Riparian Scrub	*Above the level of alliance; to be used when Assoc or Alliance cannot be determined
Upland Herbaceous Vegetation	5.5	*Avena (barbata, fatua)* semi-natural stands	none		Wild Oat Semi-Natural Stand	A	Dominant species: *Avena* spp. Subdominant or codominant: *G. coronaria* . Other species of non-native grasses (e.g., *Bromus* spp.), *H. incana* , and *C. melitensis* .	steep, previously scrub habitat, north-facing	42200	Non-Native Grassland	
Upland Herbaceous Vegetation	5.5	*Avena (barbata, fatua)* semi-natural stands	none		Wild Oat Semi-Natural Stand	B	Dominated by *Avena* spp. May have scattered *A. chenopodiifolia* (<5%).		42200	Non-Native Grassland	
Upland Herbaceous Vegetation	5.9	*Bromus rubens-Schismus (arabicus, barbatus) s* emi-natural stand	5.9.1	*Bromus rubens* semi-natural stand	Red Brome Semi-Natural Stand		Almost monotypic stand of *B. rubens*		42200	Non-Native Grassland	
Upland Herbaceous Vegetation	5.16	*Globionis coronaria* semi-natural stands	5.16.1	*Globionis coronaria* semi-natural stands	Garland Chrysanthemum Stand		Dominant species: *Glebionis coronaria* (70-100%); other species: non-native grasses.	flat to steep; multiple aspects	11300	Disturbed Habitat	
Upland Herbaceous Vegetation	5.21	Mediterranean California naturalized annual and perennial grassland semi-natural stands.	none		Non-Native Grassland Semi-Natural Stand		An intermixture of invasive non-native species, including *Avena* spp., *Bromus* spp., *Hirschfeldia incana, G. coronaria, Centauria melitensis*		42200	Non-Native Grassland	Group level (e.g., above the level of alliance); used when Assoc or Alliance cannot be determined
Unvegetated Areas (Holland Classification)	none				Disturbed Hab.-not a trail/road (Holland 11300)		Disturbed Habitat-not a trail or road		11300	Disturbed Habitat	
Unvegetated Areas (Holland Classification)	none				Disturbed Habitat - trail/road (Holland 11300)		Disturbed Habitat - trail or road		11300	Disturbed Habitat	
Unvegetated Areas (Holland Classification)	none				Urban/Developed (Holland 12000)		Urban/Developed		12000	Urban/Developed	
Unvegetated Areas (Holland Classification)	none				Non-Vegetated Channel (Holland 64200)		Non-Vegetated Channel		64200	Non-Vegetated Channel	

APPENDIX B. Observed Species List - Plants

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Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage
ANGIOSPERMS-MONOCOTS				
Agavaceae - Agave Family				
	Yucca schidigera	Mohave Yucca	--/--/--/--	not covered
Hyacinthaceae - Hyacinth Family				
	Chlorogalum parviflorum	Small-flower Soap-plant	--/--/--/--	not covered
Iridaceae - Iris Family				
	Sisyrinchium bellum	Blue-eyed Grass		
Liliaceae - Lily Family				
	Calochortus splendens	Splendid Mariposa	--/--/--/--	not covered
Poaceae - Grass Family				
	*Bromus diandrus**	Ripgut Grass		
	*Bromus hordeaceus**	Soft Chess	--/--/--/--	not covered
	*Bromus madritensis**	Compact Brome	--/--/--/--	not covered
	*Bromus rubens**	Foxtail Chess, Red Brome	--/--/--/--	not covered
	*Hordeum murinum**	Barley	--/--/--/--	not covered
	*Lamarckia aurea**	Goldentop	--/--/--/--	not covered
	Leymus condensatus	Giant Wild Rye	--/--/--/--	not covered
	*Lolium multiflorum**	Italian Ryegrass	--/--/--/--	not covered
	Melica imperfecta	Coast Range Melic	--/--/--/--	not covered
	Nassella cernua	Nodding Needlegrass	--/--/--/--	not covered
	Nassella lepida	Foothill Needlegrass	--/--/--/--	not covered
	Nassella pulchra	Purple Needlegrass	--/--/--/--	not covered
	*Phalaris minor**	Littleseed Canary Grass	--/--/--/--	not covered
	Vulpia myuros	Foxtail Fescue	--/--/--/--	not covered
Themidaceae - Brodiaea Family				
	Dichelostemma capitatum	Wild Hyacinth/Blue Dicks	--/--/--/--	not covered
ANGIOSPERMS-EUDICOTS				
Adoxaceae - Adoxa Family				
	Sambucus nigra ssp. caerulea	Blue Elderberry	--/--/--/--	not covered
Aizoaceae - Fig-Marigold Family				
	*Mesembryanthemum crystallinum**	Crystalline Iceplant	--/--/--/--	not covered
	*Mesembryanthemum nodiflorum**	Slender-leaf Iceplant	--/--/--/--	not covered
	*Tetragonia tetragonioides**	New Zealand Spinach	--/--/--/--	not covered

Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage
Amaranthaceae - Amaranth Family				
	Atriplex canscens	Wingscale	--/--/--/--	not covered
	Atriplex lentiformis ssp. lentiformis	Big Saltbush	--/--/--/--	not covered
	Atriplex pacifica	South coast saltbush	--/--/1B.2/A	not covered
	*Atriplex semibaccata**	Australian Saltbush	--/--/--/--	not covered
	Chenopodium californicum	California Goosefoot	--/--/--/--	not covered
	*Chenopodium murale**	Nettle-leaf Goosefoot	--/--/--/--	not covered
Anacardiaceae - Sumac Family				
	Malosma laurina	Laurel Sumac	--/--/--/--	not covered
	Rhus integrifolia	Lemonade Berry	--/--/--/--	not covered
	*Schinus molle**	Peruvian Peppertree	--/--/--/--	not covered
Apiaceae - Carrot Family				
	Apiastrum angustifolium	Mock Parsley	--/--/--/--	not covered
	Conium maculatum	Common Poison Hemlock	--/--/--/--	not covered
	Daucus pusillus	Rattlesnake Weed	--/--/--/--	not covered
	*Foeniculum vulgare**	Fennel	--/--/--/--	not covered
Asteraceae - Sunflower Family				
	Ambrosia chenopodiifolia	San Diego Bur-Sage	--/--/2.1/B	not covered
	Artemisia californica	California Sagebrush	--/--/--/--	not covered
	Artemisia dracunculus	Tarragon	--/--/--/--	not covered
	Baccharis pilularis	Chaparral Broom, Coyote	--/--/--/--	not covered
	Baccharis salicifolia	Mule-Fat, Seep-Willow	--/--/--/--	not covered
	Baccharis sarothroides	Broom Baccharis	--/--/--/--	not covered
	Bahiopsis laciniata	San Diego Sunflower	--/--/4.2/D	not covered
	*Carduus pycnocephalus**	Italian Thistle	--/--/--/--	not covered
	*Centaurea melitensis**	Tocalote	--/--/--/--	not covered
	Chamomilla suaveolens	Common Pineapple Weed	--/--/--/--	not covered
	*Chrysanthemum coronarium**	Garland Chrysanthemum	--/--/--/--	not covered
	Corethrogyne filaginifolia var. filaginifolia	Common Sand-Aster	--/--/--/--	not covered
	Deinandra fasciculata	Fascicled Tarweed	--/--/--/--	not covered
	Encelia californica	California Encelia	--/--/--/--	not covered
	Eriophyllum c. var. confertiflorum	Golden-yarrow	--/--/--/--	not covered
	Gnaphalium stramineum	Cotton-Batting Plant	--/--/--/--	not covered
	*Hypochaeris radicata**	Hairy Cat's Ear	--/--/--/--	not covered
	*Hypochaeris glabra**	Smooth Cat's Ear	--/--/--/--	not covered
	Isocoma menziesii	Goldenbush	--/--/--/--	not covered

Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage
	*Logfia gallica**	Narrow-leaf Filago	--/--/--/--	not covered
	*Oncosiphon piluliferum**	Globe Chamomile	--/--/--/--	not covered
	Osmadenia tenella	Osmadenia	--/--/--/--	not covered
	*Silybum marianum**	Milk Thistle	--/--/--/--	not covered
Boraginaceae - Borage Family				
	Amsinckia menziesii var. intermedia	Rancher's Fireweed	--/--/--/--	not covered
	Amsinckia menziesii var. menziesii	Rigid Fiddleneck	--/--/--/--	not covered
	Cryptantha micromeres	Minute-Flower Cryptantha	--/--/--/--	not covered
	Pectocarya linearis ssp. ferocula	Slender Pectocarya	--/--/--/--	not covered
Brassicaceae - Mustard Family				
	*Brassica nigra**	Black Mustard	--/--/--/--	not covered
	Descurainia pinnata	Tansy-Mustard	--/--/--/--	not covered
	*Hirschfeldia incana**	Shortpod Mustard	--/--/--/--	not covered
	Lepidium nitidum var. nitidum	Shining Peppergrass	--/--/--/--	not covered
	*Sisymbrium orientale**	Hare's-Ear Cabbage	--/--/--/--	not covered
Cactaceae - Cactus Family				
	Cylindropuntia californica var. californica	Snake Cholla	--/--/1B.1/A	covered, NE
	Cylindropuntia prolifera	Coast Cholla	--/--/--/--	not covered
	Ferocactus viridescens var. viridescens	Coast Barrel Cactus	--/--/2.1/B	covered
	Mammillaria dioica	Fish-Hook Cactus	--/--/--/--	not covered
	Opuntia oricola	Chaparral Prickly-Pear	--/--/--/--	not covered
Capparaceae - Caper Family				
	Isomeris arborea	Bladderpod	--/--/--/--	not covered
Convolvulaceae - Morning-Glory Family				
	Dichondra occidentalis	Western Dichondra	--/--/4.2/D	not covered
Crassulaceae - Stonecrop Family				
	Crassula connata	Pygmyweed	--/--/--/--	not covered
	Dudleya pulverulenta	Chalk-lettuce	--/--/--/--	not covered
Cucurbitaceae - Gourd Family				
	Marah macrocarpus	Wild Cucumber	--/--/--/--	not covered
Euphorbiaceae - Spurge Family				
	Chamaesyce polycarpa	Prostrate Spurge	--/--/--/--	not covered
	Euphorbia misera	Cliff Spurge	--/--/2.2/B	not covered
	*Ricinus communis**	Castor-bean	--/--/--/--	not covered

Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage
Fabaceae - Legume Family				
	Astragalus trichopodus var. lonchus	Ocean Locoweed	--/--/--/--	not covered
	Lupinus bicolor	Miniature Lupine	--/--/--/--	not covered
	*Melilotus indicus**	Indian Sweetclover	--/--/--/--	not covered
Fagaceae - Oak Family				
	Quercus agrifolia var. agrifolia	Coast Live Oak	--/--/--/--	not covered
Geraniaceae - Geranium Family				
	*Erodium cicutarium**	Red-stem Filaree	--/--/--/--	not covered
	*Erodium moshcatum**	White-stem Filaree	--/--/--/--	not covered
Heliotropaceae - Heliotrope Family				
	Heliotropium curassavicum	Salt Heliotrope	--/--/--/--	not covered
Hydrophyllaceae - Waterleaf Family				
	Phacelia cicutaria var. hispida	Caterpillar Phacelia	--/--/--/--	not covered
Lamiaceae - Mint Family				
	*Marrubium vulgare**	Horehound	--/--/--/--	not covered
Malvaceae - Mallow Family				
	Malacothamnus fasciculatus	Mesa Bush Mallow	--/--/--/--	not covered
Nyctanginaceae - Four O'clock Family				
	Mirabilis laevis var. crassifolia	California Wishbone Plant	--/--/--/--	not covered
Onagraceae - Evening Primrose Family				
	Clarkia epilobioides	Canyon Godetia	--/--/--/--	not covered
Oxalidaceae - Oxalis Family				
	*Oxalis pres-caprae**	Bermuda Buttercup	--/--/--/--	not covered
Plantaginaceae - Plantain Family				
	Antirrhinum nuttallianum	Nuttall's Snapdragon	--/--/--/--	not covered
	Antirrhinum nuttallianum ssp. subsessile	Big-Gland Nuttall's Snapdragon	--/--/--/--	not covered
	Plantago erecta	Dot-seed Plantain	--/--/--/--	not covered
Plumbaginaceae - Leadwort Family				
	*Limonium perezii**	Sea Lavender	--/--/--/--	not covered

Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage
Polemoniaceae - Phlox Family				
	Linanthus dianthiflorus	Ground Pink	--/--/--/--	not covered
	Navarretia hamata	Hooked Skunkweed	--/--/--/--	not covered
Polygonaceae - Buckwheat Family				
	Eriogonum fasciculatum var. foliolosum	Inland California Buckwheat	--/--/--/--	not covered
Portulacaceae - Purslane Family				
	Calandrina maritima	Seaside calandrinia	--/--/4.2/D	not covered
	Claytonia perfoliata ssp. perfoliata	Miner's-Lettuce	--/--/--/--	not covered
Primulaceae - Primrose Family				
	*Anagallis arvensis**	Scarlet Pimpernel	--/--/--/--	not covered
Ranunculaceae - Buttercup Family				
	Clematis pauciflora	Small-Leaf Virgin's Bower	--/--/--/--	not covered
Rosaceae - Rose Family				
	Heteromeles arbutifolia	Toyon	--/--/--/--	not covered
Rubiaceae - Madder or Coffee Family				
	Galium aparine	Common Bedstraw	--/--/--/--	not covered
Simmondsiaceae - Jojoba Family				
	Simmondsia chinensis	Jojoba	--/--/--/--	not covered
Solanaceae - Nightshade Family				
	Lycium californicum	California box-thorn	--/--/4.2/D	not covered
	Nicotiana clevelandii	Cleveland's Tobacco	--/--/--/--	not covered
	*Nicotiana glauca**	Tree Tobacco	--/--/--/--	not covered
	Solanum douglasii	Douglas' Nightshade	--/--/--/--	not covered
	Solanum parishii	Parish's Nightshade	--/--/--/--	not covered
Tamaricaceae - Tamarisk Family				
	*Tamarix ramosissima**	Tamarisk, Salt-Cedar	--/--/--/--	not covered
Urticaceae - Nettle Family				
	Parietaria hespera	Western Pellitory	--/--/--/--	not covered
	*Urtica urens**	Dwarf Nettle	--/--/--/--	not covered
Verbenaceae - Vervain Family				
	Verbena menthifolia	Mint-leaf Vervain	--/--/--/--	not covered

Appendix B: Observed Species List - Plants

Family	Scientific Name	Common Name	Status	MSCP Coverage

***Non-native**

Status: Federal/State/CNPS List/County List/MSCP. Federal: FE = Federally Endangered; FT = Federally Threatened. State: FE = State Endangered; FT – State Threatened. CNPS List: 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere, 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere, 3 = Plants About Which We Need More Information - A Review List, 4 = Plants of Limited Distribution - A Watch List; CNPS threat ranks: 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat), 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat), 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known). County List: A = meaning equivalent to CNPS List 1B; County List B = equivalent to CNPS List 2, C = equivalent to CNPS list 3, D = equivalent to CNPS list 4.

APPENDIX C. Potentially Occurring Sensitive Species – Plants

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Appendix C. Potentially Occurring Sensitive Species - Plants

Scientific Name	Common Name	Habitat	Status[1]	Potential to Occur
Adolphia californica	Spineshrub	Clay soil, chaparral, coastal sage scrub, grassland	-- /--/CNPS List 2.1/ County List B/not covered	Moderate; limited clay soils on site
Ambrosia chenopodiifolia	San Diego bur-sage	Coastal scrub	--/--/CNPS List 2.1/County List B/not covered	Observed
Ambrosia monogyra	Singlewhorl burrobush	Sandy soils in chaparral and desert scrub	--/--/CNPS List 2.2/--/not covered	low; no habitat on site
Ambrosia pumila	San Diego ambrosia	Moist soils in chaparral, coastal sage scrub, grassland and vernal pools	FE/--/CNPS List 1B.1/County List A/ covered	Low; limited habitat on site
Atriplex coulteri	Coulter's saltbush	Alkaline or clay soils in coastal scrub and grasslands	--/--/CNPS List 1B.2/County List A/not covered	Moderate; habitat present on site
Atriplex pacifica	South coast saltbush	Alkaline or clay soils in coastal scrub and grasslands	--/--/CNPS List 1B.2/County List A/not covered	Observed
Bahoipsis (*Viguiera*) *laciniata*	San Diego sunflower	Chaparral, coastal sage scrub	--/--/CNPS List 4.2/County List D/not covered	Observed
Bergerocactus emoryi	Golden-spined cereus	Coniferous forest, chaparral, coastal sage scrub	--/--/CNPS List 2.2/County List B/not covered	High; preferred habitat on site, which supports numerous cactus species
Calandrinia (Cistanthe) maritima	Seaside calandrinia	Coastal bluff scrub, coastal sage scrub, grassland	--/--/CNPS List 4.2/County List D/not covered	Observed
Cordylanthus (Chloropyron) orcuttianus	Orcutt's bird's beak	Coastal dunes, marshes, swamps	FE/SE/CNPS List 1B.2/County List A/ covered	Low; no habitat on site
Cylindropuntia californica var. *californica*	Snake cholla	Chaparral, coastal sage scrub	--/--/CNPS List 1B.1/County List A/covered	Observed
Deinandra conjugens	Otay tarplant	Coastal sage scrub, grassland	FT/SE/CNPS List 1B.1/County List A/ covered	High; preferred habitat on site
Dichondra occidentalis	Western dichondra	Chaparral, woodland, coastal sage scrub, grassland	--/--/CNPS List 4.2/County List D/not covered	Observed
Dudleya variegata	Variegated dudleya	Chaparral, woodland, coastal sage scrub, grassland, vernal pools	--/--/CNPS List 1B.2/County List A/ covered	High; preferred habitat on site; historic record on the property
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	Chaparral, coastal sage scrub	--/--/CNPS List 1B.1/County List B/ covered	High; preferred habitat on site
Eryngium aristulatum var. *parishii*	San Diego button-celery	Vernal pools	FE/SE/CNPS List 1B.1/County List A/ covered	Moderate; limited vernal pool habitat on site
Euphorbia misera	Cliff spurge	Coastal bluff scrub, coastal sage scrub, desert scrub	--/--/CNPS List 2.2/County List B/not covered	Observed
Ferocactus viridescens	Coast barrel cactus	Chaparral, coastal sage scrub, grassland	--/--/CNPS List 2.1/County List B/covered	Observed
Fritillaria biflora var. *biflora*	Chocolate lily	Clay soils in grassland	--/--/--/County List D/not covered	Low; limited habitat on site
Grindelia hirsutula var. *hallii*	San Diego gumplant	Chaparral, coniferous forest, meadows, seeps, grassland	--/--/CNPS List 1B.2/County List A/not covered	Low; no habitat on site

Appendix C. Potentially Occurring Sensitive Species - Plants

Scientific Name	Common Name	Habitat	Status[1]	Potential to Occur
Iva hayesiana	San Diego marsh-elder	Marshes, swamps, playas	--/--/CNPS List 2.2/County List B/not covered	Low; no habitat on site
Lepidium virginicum var. *robinsonii*	Robinson's peppergrass	Chaparral, coastal sage scrub	--/--/CNPS List 1B.2/County List A/not covered	High; preferred habitat occurs on site
Lycium californicum	California box-thorn	Coastal bluff scrub, coastal sage scrub	--/--/CNPS List 4.2/County List D/not covered	Observed
Myosurus minimus ssp. *apus*	Little mousetail	Vernal pools, grassland	--/--/CNPS List 3.2/County List C/not covered	Moderate; limited vernal pool habitat on site
Navarretia fossalis	Spreading navarretia	Chenopod scrub, marshes, swamps, playas, vernal pools	FT/--/CNPS List 1B.1/County List A/ covered	Low; limited vernal pool habitat on site
Nemacaulis denudata var. *gracilis*	Slender woolly-heads	Coastal dunes, desert dunes, desert scrub	--/--/CNPS List 2.2/County List B/not covered	Moderate; limited habitat on site
Orcuttia californica	California Orcutt's grass	Vernal pools	FE/SE/CNPS List 1B.1/County List A/ covered	Moderate; limited vernal pool habitat on site
Pogogyne nudiuscula	San Diego mesa mint	Vernal pools	FE/SE/CNPS List 1B.1/County List A/ covered	Moderate; limited vernal pool habitat on site
Quercus dumosa	Nuttall's scrub oak	Coniferous forest, chaparral, coastal sage scrub	--/--/CNPS List 1B.1/County List A/not covered	Moderate; limited habitat on site
Rosa minutifolia	Small-leaf rose	Chaparral, coastal sage scrub	--/SE/CNPS List 2.1/County List B/ covered	Moderate; limited habitat on site

[1] Status: Federal/State/CNPS List/County List/MSCP. Federal: FE = Federally Endangered; FT – Federally Threatened. State: FE = State Endangered; FT – State Threatened. CNPS List: 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere, 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere, 3 = Plants About Which We Need More Information - A Review List, 4 = Plants of Limited Distribution - A Watch List; CNPS threat ranks: 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat), 0.2-Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat), 0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known). County List: A = meaning equivalent to CNPS List 1B; County List B = equivalent to CNPS List 2, C = equivalent to CNPS list 3, D = equivalent to CNPS list 4; Covered = species are covered under the City of San Diego MSCP subarea plan; Not Covered = species are not covered under the City of San Diego MSCP subarea plan.

APPENDIX D. Observed Species List - Wildlife

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Appendix D. Observed Species List - Wildlife

Scientific Name	Common Name	Listing Status[1]	MSCP
HYMENOPTERA (Sawflies, Wasps, Bees, and Ants)			
Apidae (Bees)			
Apis mellifera	Western honey bee	--/--/--	No
Pompilidae (Spider wasps)			
Pepsis sp.	Trantula wasp	--/--/--	No
Tenebrionidae (Darkling beetles)			
Tenebrioninae sp.	ground-obligate beetle	--/--/--	No
Vespidae (Wasps)			
Vespula vulgaris	Common yellowjacket	--/--/--	No
LEPIDOPTERA (Butterflies and Moths)			
Hesperiidae (Skippers)			
Erynnis funeralis	Funereal duskywing	--/--/--	No
Lycaenidae (Goassamer-winged butterflies)			
Coenonympha californica californica	Common California ringlet	--/--/--	No
Strymon melinus pudica	Gray hairstreak	--/--/--	No
Vanessa atalanta rubria	Red admiral	--/--/--	No
Vanessa annabella	West coast lady	--/--/--	No
Nyphalidae (Four-footed butterflies)			
Juonia coenia	Common buckeye	--/--/--	No
Papilionidae (Swallowtail butterflies)			
Papilio zelicaon	Anise swallowtail	--/--/--	No
Pieridae (Whites and sulphurs)			
Anthocharis sara sara	Pacific Sara orangetip	--/--/--	No
Pieris rapae	Cabbage white	--/--/--	No
Riodinidae (Metalmarks)			
Apodemia mormo virgulti	Behr's metalmark	--/--/--	No
ANURA (Frogs and Toads)			
Pelobatidate (Spadefoot toads)			
Scaphiopus hammondii	Western spadefoot toad	--/CSC/Group 2	Yes
SQUAMATA (Lizards and Snakes)			
Anguidae (Anguid lizards and relatives)			
Anniella pulchra	California legless lizard	--/CSC/--/ No	
Elgaria multicarinata	Southern alligator lizard	--/--/--	No

Appendix D. Observed Species List - Wildlife

Scientific Name	Common Name	Listing Status[1]	MSCP
Phrynosomatidae (Spiny lizards and relatives)			
Sceloporus occidentalis	Western fence lizard	--/--/--	No
Phrynosoma cornonatum	Coast horned lizard	--/CSC/Grp 2	Yes
Teiidae (Whiptails and relatives)			
Aspidoscelis hyperythrus	Orange-throated whiptail	--/CSC/Grp 2	Yes
Colubridae (Colubrids)			
Coluber lateralis	Striped racer	--/--/--	No
Rhinocheilus lecontei	Long-nosed snake	--/--/--	No
Viperidae (Vipers and pit vipers)			
Crotalus oreganus helleri	Southern Pacific rattlesnake	--/--/--	No
AVES (Birds)			
Odontophoridae (New World Quail)			
Callipepla californica	California Quail	--/--/--	No
Charadriidae (Plovers)			
Charadrius vociferous	Killdeer	--/--/--	No
Accipitridae (Hawks, and Harriers)			
Elanus leucurus	White-tailed Kite	--/FP/Group 1	No
Circus cyaneus	Northern Harrier	--/CSC/Group 1	Yes
Buteo jamaicensis	Red-tailed Hawk	--/--/--	No
Falconidae (Caracaras and Falcons)			
Falco sparverius	American Kestrel	--/--/--	No
Columbidae (Pigeons and Doves)			
Zenaida macroura	Mourning Dove	--/--/--	No
Cuclidae (Cuckoos, Roadrunners, and Anis)			
Geococcyx californianus	Greater Roadrunner	--/--/--	No
Apodidae (Swifts)			
Aeronautes saxatalis	White-throated Swift	--/--/--	No
Trochilidae (Hummingbirds)			
Calypte anna	Anna's Hummingbird	--/--/--	No
Tyrannidae (Tyrant Flycatchers)			
Sayornis nigricans	Black Phoebe	--/--/--	No
Sayornis saya	Say's Phoebe	--/--/--	No
Tyrannus vociferans	Cassin's Kingbird	--/--/--	No
Tyrannus verticalis	Western Kingbird	--/--/--	No

Appendix D. Observed Species List - Wildlife

Scientific Name	Common Name	Listing Status[1]	MSCP
Vireonidae (Vireos)			
Vireo bellii pusillus (offsite)	Least Bell's Vireo	FE/SE/Group 1	Yes
Vireo gilvus	Warbling Vireo	--/--/--	No
Corvidae (Jays, Magpies, and Crows)			
Corvus brachyrhynchos	American Crow	--/--/--	No
Corvus corax	Common Raven	--/--/--	No
Alaudidae (Larks)			
Eremophila alpestris	Horned Lark	--/WL/Group 2	No
Hirundinidae (Swallows)			
Stelgidopteryx serripennis	Northern Rough-winged Swallow	--/--/--	No
Petrochelidon pyrrhonota	Cliff Swallow	--/--/--	No
Aegithalidae (Bushtit)			
Psaltriparus minimus	Bushtit	--/--/--	No
Troglodytidae (Wrens)			
Campylorhynchus brunneicapillus	Cactus Wren	--/CSC/Group 1	Yes
Thryomanes bewickii	Bewick's Wren	--/--/--	No
Troglodytes aedon	House Wren	--/--/--	No
Polioptidae (Gnatcatchers)			
Polioptila caerulea	Blue-gray Gnatcatcher	--/--/--	No
Polioptila californica californica	Coastal California Gnatcatcher	FT/CSC/Group 1	Yes
Sylviidae (Old World Warblers)			
Chamaea fasciata	Wrentit	--/--/--	No
Mimidae (Mockingbirds and Thrashers)			
Mimus polyglottos	Northern Mockingbird	--/--/--	No
Toxostoma redivivum	California Thrasher	--/--/--	No
Sturnidae (Starlings)			
Sturnus vulgaris	European Starling	--/--/--	No
Parulidae (Wood Warblers & Allies)			
Oreothlypis celata	Orange-crowned Warbler	--/--/--	No
Geothlypis trichas	Common Yellowthroat	--/--/--	No
Setophaga nigrescens	Black-throated Gray Warbler	--/--/--	No
Cardellina pusilla	Wilson's Warbler	--/--/--	No
Icteria virens	Yellow-breasted Chat	--/CSC/Group 1	No

Appendix D. Observed Species List - Wildlife

Scientific Name	Common Name	Listing Status[1]	MSCP
Emberizidae (Sparrows)			
Pipilo maculatus	Spotted Towhee	--/--/--	No
Melozone crissalis	California Towhee	--/--/--	No
Aimophila ruficeps canescens	Rufous-crowned Sparrow	--/WL/Group 1	Yes
Melospiza melodia	Song Sparrow	--/--/--	No
Cardinalidae (Cardinals, Grosbeaks & Allies)			
Pheucticus melanocephalus	Black-headed Grosbeak	--/--/--	No
Passerina caerulea	Blue Grosbeak	--/--/--	No
Passerina amoena	Lazuli Bunting	--/--/--	No
Icteridae (Blackbirds, Orioles & Allies)			
Sturnella neglecta	Western Meadowlark	--/--/--	No
Icterus cucullatus	Hooded Oriole	--/--/--	No
Fringillidae (Finches)			
Carpodacus mexicanus	House Finch	--/--/--	No
Spinus psaltria	Lesser Goldfinch	--/--/--	No
Spinus tristus	American Goldfinch	--/--/--	No
CHIROPTERA (Bats)			
Molossidae (Free-tailed bats)			
Tadarida brasiliensis	Mexican free-tailed bat	--/--	No
Verpertilionidae (Evening bats)			
Eptesicus fuscus	Big brown bat	--/--	No
Myotis californicus	California myotis	--/--	No
Pipistrellus hesperus	Western pipistrelle	--/--	No
RODENTIA (Rodents)			
Cricetidae (Rats, mice, hamsters, voles, and lemmings)			
Microtus californicus	California vole	--/--/--	No
Neotoma albigula	White-throated woodrat	--/--/--	No
Neotoma fuscipes	Dusky-footed woodrat	--/--/--	No
Neotoma lepida intermedia	San Diego Desert woodrat	--/CSC/Group 2	No
Peromyscus californicus	California mouse	--/--/--	No
Peromyscus eremicus	Cactus mouse	--/--/--	No
Peromyscus maniculatus	Deer mouse	--/--/--	No
Reithrodontomys megalotis	Western harvest mouse	--/--/--	No
Heteromyidae (Kangaroo rats and pocket mice)			
Chaetodipus californicus femoralis	Dulzura pocket mouse	--/CSC/--	No
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	--/CSC/--	No
Dipodomys agilis	Agile kangaroo rat	--/--/--	No

Appendix D. Observed Species List - Wildlife

Scientific Name	Common Name	Listing Status[1]	MSCP
Geomyidae (Pocket gophers)			
Thomomys bottae	Botta's pocket gopher	--/--/--	No
Muridae (True mice, rats and gerbils)			
Mus musculus	House mouse	--/--/--	No
Sciuridae (Squirrels, chipmunks and marmots)			
Spermophilus beecheyi	California ground squirrel	--/--/--	No
LAGOMORPHA (Rabbits, Hares, and Pikas)			
Leporidae (Rabbits and hares)			
Sylvilagus audubonii	Desert cottontail	--/--/--	No
CARNIVORA (Dogs, Cats, Bears, Weasels, and others)			
Canidae (Wolves, dogs, jackels, coyotes, and foxes)			
Canis lupus	Coyote	--/--/--	No
Felidae (Cougars, lynxes, ocelots, and others)			
Lynx rufus	Bobcat	--/--/--	No
Mustelidae (Badgers and weasels)			
Taxidea taxus	American badger	--/CSC/Grp 2	Yes

[1] Status: Federal/State/ County Group. Federal: FE = Federally Endangered; FT = Federally Threatened. State: FE = State Endangered; FT – State Threatened. State: CSC= California Species of Special Concern, WL = Watch List. County Group= San Diego County Sensitive Animal.

APPENDIX E. Avian Survey Data Summary

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Appendix E. Avian Survey Data Summary

Species	Station→	1				2				3				4				5					
		26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	27 Apr Nocturnal	Totals
California Quail						8	5	1			1	4		3				1	1				24
Killdeer										1													1
White-tailed Kite			1									3											4
Northern Harrier																						1	1
Red-tailed Hawk						1																	1
American Kestrel														1									1
Mourning Dove						1	2	1		1	1	1		2					1	2			12
Greater Roadrunner								2				1				1							3
White-throated Swift								1						1									2
Anna's Hummingbird		1	1	1			2			1													6
Black Phoebe										1													1
Say's Phoebe							1																1
Cassin's Kingbird								1											1				2
Western Kingbird			1					1															2
Bell's Vireo[1]																							
Warbling Vireo																			1				1
American Crow		1																					1
Common Raven								2		1					1								4
Horned Lark																		1					1
Northern Rough-winged Swallow																1							1
Cliff Swallow				1			1							2		1							5
Bushtit			5																				5
Cactus Wren[2]																							
Bewick's Wren		1	1			2	2			1	1	2		1	1	1		1	1				15

Appendix E. Avian Survey Data Summary *continued*

Species	Station→	1				2				3				4				5				N/A	
		26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	26-Apr	12-May	14-Jun	Station Subtotal	27 Apr Nocturnal	Totals
House Wren				1						1													2
Blue-gray Gnatcatcher[2]																							
California Gnatcatcher		1		2							1			1									5
Wrentit										3		1				1							5
Northern Mockingbird		1				1	2	2		1	1	1			1				1				11
California Thrasher						1		1			1			1	1	1		1		1			6
European Starling										3													3
Orange-crowned Warbler						1	1																2
Common Yellowthroat		1		1																			2
Black-throated Gray Warbler														1									1
Wilson's Warbler										1													1
Yellow-breasted Chat		1																					1
Spotted Towhee								1						1	1								3
California Towhee		3	3	6			4	5		1		1		2	3	2			3	3			36
Rufous-crowned Sparrow						1	1			1				1					1	1			6
Song Sparrow		2	2	1											1								6
Black-headed Grosbeak		1				1																	1
Blue Grosbeak						1																	1
Lazuli Bunting														1									1
Western Meadowlark										1													1
Hooded Oriole										1													1
House Finch			10	20		2	16	13		1	20	10		1	10	5		2	5	5			120
Lesser Goldfinch		1	3	4			1			1					2								12
American Goldfinch											1												1
Totals→		14	27	37	**78**	20	38	31	**89**	21	27	24	**72**	19	21	13	**53**	6	15	12	**33**	**1**	**651**

[1]Observed outside of the property boundary.

[2]Incidental observations noted by other biologists conducting surveys on the property.

APPENDIX F. Potentially Occurring Sensitive Species - Wildlife

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Appendix F. Potentially Occurring Sensitive Species - Wildlife

Scientific Name	Common Name	Habitat	Status[1]	Potential to Occur
Branchinecta sandiegoensis	San Diego fairy shrimp	Vernal pools	FE/--/Group 1/covered	Moderate; pools exist on site
Euphydryas editha quino	Quino checkerspot butterfly	Hilltops with appropriate nectaring flower species and the host plant, dot seed plantain	FE/--/Group 1/not covered	Moderate to high; small amounts of appropriate habitat with host plant present on site (Figure 4-6)
Spea hammondii	Western spadefoot toad	Abundant, open vegetation scrub habitat in the foothills and coastal plains	--/CSC/Group 2/not covered	Observed
Anniella pulchra	California legless lizard	Moist, warm loose soil with sparse plant cover in dunes, chaparral, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks	--/CSC/--/not covered	Observed
Phrynosoma coronatum	Coast horned lizard	Open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains	--/CSC/Group 2/covered	Observed
Plestiodon skiltonianus interparietalis	Coronado skink	Moist microhabitat such as areas of heavy leaf litter and non-native grasslands	--/CSC/Group 2/not covered	High
Aspidoscelis hyperythrus	Orange-throated whiptail	Semi-arid brushy areas with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral	--/CSC/Group 2/covered	Observed
Aspidoscelis tigris stejnegeri	Coastal whiptail	Open areas for running such as low density coastal sage scrub	--/--/Group 2/not covered	High; habitat on-site
Salvadora hexalepis virgultea	Coast patch-nosed snake	Open areas for foraging and loose soils for burrowing	--/CSC/Group 2/not covered	High
Thamnophis hammondii	Two-striped garter snake	Permanent water sources (e.g. creek, pond, river) and open areas for foraging	--/CSC/Group 1/not covered	Low; no permanent water sources on site
Elanus leucurus	White-tailed kite	Open grasslands, meadows, or marshes, with isolated, dense-topped trees for roosting and nesting	--/FP/Group 1/not covered	Observed
Circus cyaneus	Northern harrier	grasslands, agricultural fields, wetlands, and open coastal sage scrub	--/CSC/Group 1/covered	Observed
Athene cunicularia	Burrowing owl	Abandoned burrows on flat-topped and mesa areas.	--/CSC/Group 1/covered	Moderate; if artificial burrows are constructed onsite, potential to occur could change

Appendix F. Potentially Occurring Sensitive Species - Wildlife

Scientific Name	Common Name	Habitat	Status[1]	Potential to Occur
Vireo bellii pusillus	Least Bell's vireo	Riparian scrub, woodland and forest with willows and mulefat	FE/SE/Group 1/covered	Observed
Campylorhynchus brunneicapillus sandiegensis	Coastal cactus wren	Coastal sage scrub habitat and maritime succulent scrub habitat within patches of prickly pear or cholla cactus	--/CSC/Group 1/covered	Observed
Polioptilia californica californica	Coastal California gnatcatcher	Coastal sage scrub and maritime succulent scrub	FT/CSC/Group 1/covered	Observed
Eremophila alpestris actia	Horned lark	Open areas dominated by low herbaceous vegetation or widely scattered low shrubs.	--/WL/Group2/not covered	Observed
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	Coastal sage scrub and sparse mixed chaparral habitats	--/WL/Group 1/covered	Observed
Icteria virens	Yellow-breasted chat	Riparian thickets of willow and other brushy areas near watercourses	--/CSC/Group 1/not covered	Observed
Chaetodipus californicus femoralis	Dulzura pocket mouse	Dense scrub with sandy and gravely soils for burrowing and sources of seeds and grains	--/CSC/Group 2/not covered	Observed
Chaetodipus fallax fallax	San Diego pocket mouse	Scrub habitat with sandy and gravely soils for burrowing and sources of seeds and grains	--/CSC/Group 2/not covered	Observed
Neotoma lepida intermedia	San Diego desert woodrat	Coastal sage scrub and desert habitats	--/CSC/Group 2/not covered	Observed
Taxidea taxus	American badger	Scrub and grassland habitat	--/CSC/Group 2/covered	Sign observed (burrow and scratch marks)
Urocyon cineraoargenteus	Grey fox	Undisturbed shrubby and open areas as well as trees	--/--/--/not covered	Moderate; prey base is good but edge effects are high
Puma concolor	Mountain lion	Undisturbed native habitats with adequate prey (e.g. deer)	--/--/Group 2/covered	Low; no deer detected on-site, relatively small territory for lion
Mustela frenata latirostra	Long-tailed weasel	Riparian habitat (e.ge permanent water source) adjacent to open grasslands for foraging	--/--/--/not covered	Low; permanent water sources located off-site
Odocoileus hemionus fuliginata	Mule deer	Open grasslands and low density shrub communities for foraging	--/--/Group 2/covered	Low; lack of permanent water sources and high disturbance (e.g. trespass)
Lepus californicus bennettii	Black-tailed jackrabbit	Desert scrubland, non-native grasslands	--/CSC/Group 2/not covered	High; habitat is appropriate and present

[1] Status: Federal/State/County List/MSCP. Federal: FE = Federally Endangered; FT – Federally Threatened.. State: SE = State Endangered; ST – State Threatened; CSC = California Species of Special Concern, WL = Watch List, FP = Fully Protected. County List: 1 = species with the highest conservation level/concern; County List 2 = species of conservation concern; Covered = species are covered under the City of San Diego MSCP subarea plan; Not Covered = species are not covered under the City of San Diego MSCP subarea plan.