BUSBY
Biological Services

January 27, 2015

Mr. Robert Fletcher
Environmental Specialist-Biologist
San Diego Gas & Electric
2315 Century Park Court, CP21E
San Diego, California 92123

RE: FOCUSED BURROWING OWL (*ATHENA CUNICULARIA*) HABITAT ASSESSMENT REPORT FOR THE PROPOSED SAN DIEGO GAS & ELECTRIC COMPANY SYCAMORE TO PEÑASQUITOS 230 KILOVOLT TRANSMISSION LINE PROJECT, SAN DIEGO COUNTY, CALIFORNIA

Mr. Fletcher:

Busby Biological Services, Inc. (BBS) was contracted by Chambers Group, Inc. (Chambers) to conduct a focused burrowing owl (*Athena cunicularia*) habitat assessment on behalf of San Diego Gas & Electric Company (SDG&E) for the proposed Sycamore to Peñasquitos 230 Kilovolt (kV) Transmission Line Project (Proposed Project).

The approximately 1,215-acre Proposed Project is located entirely within San Diego County, California. More specifically, portions of the Proposed Project occur within the City of Carlsbad, the City of San Diego, the City of Poway, and the extreme northern portion of Marine Corps Air Station (MCAS) Miramar (Attachment 1: Figures 1 through 3). The main alignment for the approximately 16.5-mile Proposed Project begins at Sycamore Canyon Substation in the east, which is located on MCAS Miramar, and terminates at Peñasquitos Substation in the west. The Proposed Project also includes several staging areas as well as the Encina Hub and Mira Mesa Hub (Attachment 1: Figures 1 through 3).

A focused burrowing owl habitat assessment was conducted within the burrowing owl habitat assessment area, which includes the Proposed Project impact footprint and a 500-foot buffer of this impact area. The Encina Hub is not included in this report because a focused burrowing owl habitat assessment will be conducted for the independent Biological Technical Report that will be prepared for that portion of the Proposed Project. This letter report provides a description of the Proposed Project, background information about the burrowing owl, and a summary of the methods and results of the habitat assessment performed for the Proposed Project.

PROPOSED PROJECT DESCRIPTION

SDG&E proposes to construct and operate a new, approximately 16.5-mile 230 kV transmission line between the existing SDG&E Sycamore Canyon and Peñasquitos Substations (Attachment 1: Figures 1 through 3). The Proposed Project would also include the consolidation of two existing 69 kV power lines onto new double-circuit, steel structures that would replace existing, predominantly wood structures. All new transmission line facilities would be located within existing SDG&E Right-of-Way (ROW) or within franchise position within existing public roadways.

Planning for the Proposed Project is still underway. As such, the details about the construction of the Proposed Project, including the work periods, daily work schedules, equipment, and construction activities, are still being determined. Please refer to the Biological Technical Report for the Proposed Project for additional project details and information (BBS 2014).

Elevations within the main Proposed Project alignment, where the potentially suitable burrowing owl habitat occurs, range from approximately 1,000 feet above mean sea level (amsl) at Sycamore Canyon Substation in the eastern portion of the Proposed Project area to approximately 120 feet amsl in an unnamed tributary to Peñasquitos Creek, which is located approximately 1 mile east of the Peñasquitos Substation in the western portion of the Proposed Project area (Attachment 1: Figure 3). Topography along the Proposed Project alignment varies from relatively flat developed and undeveloped areas, to steep and rolling hills and ridges, to wide and narrow drainages and canyons. The Proposed Project area crosses several unnamed and named drainages and canyons, including Peñasquitos Canyon, McGonigle Canyon, and Deer Canyon (Attachment 1: Figure 3). While the Proposed Project area crosses through both residential and commercial development, including a network of roads and highways and mixed-use development, the majority of the Proposed Project alignment is located in undeveloped areas that includes parks and other undeveloped open space that have the potential to support sensitive biological resources, including the burrowing owl.

BURROWING OWL SPECIES & HISTORICAL OCCURRENCE INFORMATION

The burrowing owl is a California Department of Fish and Wildlife (CDFW) species of special concern at its burrow sites and at some wintering sites, and it is covered under the *SDG&E's Subregional Natural Community Conservation Plan* (NCCP). This section provides species-specific information about the burrowing owl range and migration patterns, habitat, breeding information, and population threats.

Burrowing Owl Range & Migration Patterns

The burrowing owl ranges from southwestern Canada and the western United States, south through Central America, and into the northernmost portion of South America as well as the southern half of South America. It can also be found on coastal islands off of Florida and Baja California, Mexico (Haug et. al. 1993). The northernmost populations of this species are almost completely migratory, and wintering birds can be found south to southern Mexico.

The western subspecies of burrowing owl (*A. c. hypugaea*) includes the populations that occur in southern Alberta, Canada, and within the western United States. In California, the western burrowing owl is found throughout the state, with the exception of the northern coast and eastern Sierra Nevada Mountains (Shuford and Gardali 2008). This subspecies remains fairly common in the Imperial Valley, which is home to nearly 70 percent of the entire California population; however, this species is rapidly declining in the remainder of the California populations (Unitt 2004). While the northern populations are often migratory, southern California burrowing owls are only partially migratory as evidenced by reduced population sizes in winter, with some birds remaining on territories throughout the year.

The burrowing owl has disappeared and/or populations have declined in several southern California and San Francisco Bay area counties and in coastal areas throughout California, as they have in other regions throughout the United States and Canada (DeSante et al. 1997, Klute et al. 2003). During the late 1800's and early 1900's, the burrowing owl was widespread and

common in San Diego County, primarily along the coast and into the grassy interior; however, by the 1970's, the burrowing owl was considered uncommon and declining in these areas (Unitt 2004; Bent 1961). The burrowing owl currently occupies some historical sites in San Diego County (e.g., Naval Air Station North Island, south San Diego coastal area, and Otay Mesa) in much reduced numbers and is believed to be absent from many developed areas that it formerly occupied (e.g., north-central San Diego County, coastal areas, and the area around the City of San Diego) (Unitt 2004; Lincer and Bloom 2007). Currently, an estimated 41 to 46 pairs breed and 148 to 168 local individuals winter within San Diego County (Lincer and Bloom 2007). During the winter, local wintering burrowing owls are joined by migratory wintering burrowing owls to form a total estimated wintering population of approximately 300 to 370 individuals (Lincer and Bloom 2007).

Burrowing Owl Habitat

The burrowing owl is a ground-dwelling raptor that requires open, relatively flat terrain with burrows for nesting, roosting, and cover (CDFW 2012). This species can be found in a variety of habitat types that contain suitable burrowing and foraging habitat, including – but not limited to – native and non-native grassland, shrub steppe, shrubland with low density shrub cover, desert, agricultural, golf courses, drainage ditches, earthen berms, pasturelands, fallow fields, and even ruderal areas and vacant lots (Gervais et al 2008, CDFW 2012, TLMA 2006). The burrowing owl is typically associated with areas containing well-drained, friable soils inhabited by fossorial mammals (Haug et al. 1993, CDFW 2012).

In California, the burrowing owl prefers habitat with short, sparse vegetation and few shrubs, level to gentle topography, and well-drained soils (Haug et al. 1993). In San Diego County, the burrowing owl typically inhabits coastal lowlands in grasslands, agricultural areas, and coastal dunes (Unitt 2004).

In addition to burrowing habitat, the burrowing owl requires ample foraging habitat surrounding its burrows. This species concentrates it foraging within approximately 2,000 feet of its burrow, which equates to an area of up to approximately 300 acres (Haug and Oliphant 1990, Rosenberg and Haley 2004); however, the burrowing owl is known to use much smaller patch sizes, especially when they are located adjacent to suitable breeding and/or foraging habitat. Preferred foraging habitat consists of dry, open, relatively flat expanses with short grasses and sparse shrub cover (Ehrlich et al. 1988).

Although the burrowing owl may dig its own burrows (Thomsen 1971, Barclay 2007), this opportunistic species usually modifies or enlarges existing burrows that were previously used by mammals. In California, the burrowing owl frequently uses burrows of California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*), but may also use dens or holes dug by American badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (*Vulpes* sp.; Ronan 2002, CDFW 2012). In addition to earthen burrows, the burrowing owl may also use natural rock cavities, debris piles, culverts, openings beneath cement or asphalt pavement, and pipes (Rosenberg et al. 1998) as well as artificial burrows (Smith and Belthoff 2003) for nesting, roosting, and cover (CDFW 2012).

Burrowing Owl Breeding Information

Burrowing owl breeding behaviors include a wide range of activities associated with site selection by males; breeding pair formation; actual copulation; egg laying, incubation, and

hatching; and care of the young during fledging and post-fledging. In California, the burrowing owl breeding season typically occurs between February 1 and August 31; however, breeding outside of this window has been documented under appropriate environmental conditions (CDFW 2012). The peak of the breeding season, when most burrowing owls have active nests, typically occurs between April 15 and July 15.

In addition to its nest burrow, the burrowing owl may use satellite burrows to reduce predation and parasite infestation, particularly while caring for nestlings (CDFW 2012).

Burrowing Owl Population Threats

In California, the burrowing owl is threatened by a variety of factors, including habitat loss, control of burrowing rodents, and direct mortality. Population declines have been attributed to habitat loss, degradation, and fragmentation resulting most often from conversion of suitable habitat as a result of urbanization (Gervais et al. 2008). Burrowing rodent control programs, especially those targeting the California ground squirrel, threaten burrowing owl populations because ground squirrel burrows are the burrows most often utilized by burrowing owl for nesting and cover. Thus, elimination of burrowing rodents has lead to both recent and historical declines of burrowing owl populations in California and nationwide (Klute et al. 2003). Direct mortality from vehicle collisions (Haug et al. 1993, Gervais et al. 2008), agricultural drain/ditch maintenance, discing in fallow fields (Rosenberg and Haley 2004, Catlin and Rosenberg 2006), and wind turbine collisions (Thelander et al. 2003) as well as exposure to pesticides (Klute et al. 2003, Gervais et al. 2008) have all added to the decline of the burrowing owl in California. In areas of remaining open habitat close to or surrounded by developed areas, disturbance from human activity (e.g., walking, jogging, off-road activity, dog walking) and loose and feral pets are likely factors deterring the burrowing owl from these areas (Wesemann and Rowe 1985, Millsap and Bear 2000).

HABITAT ASSESSMENT METHODS

BBS conducted a focused burrowing owl habitat assessment within the burrowing owl habitat assessment area, which included the Proposed Project impact footprint and a 500-foot buffer of this impact area. The Encina Hub is not included in this report because a focused burrowing owl habitat assessment will be conducted for the independent Biological Technical Report that will be prepared for that portion of the Proposed Project. The habitat assessment consisted of an analysis of historical occurrence data, desktop evaluation of available site data and aerial imagery, and a field evaluation to further investigate and map suitable burrowing owl habitat. The following paragraphs provide detail on the habitat assessment methods.

Historical Occurrence Data

BBS obtained historical burrowing owl occurrence data for the burrowing owl habitat assessment areas and an approximately 5-mile buffer from the SanBIOS database (County of San Diego 2014); and CDFW *California Natural Diversity Database* (CNDDB; CDFW 2014a). BBS also reviewed other sensitive species resources, including the CDFW Special Animals (CDFW 2014b); Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007); San Diego County Breeding Bird Atlas (Unit 2004); North American Breeding Bird Survey, Results Analysis 1966-2012 (Sauer et al. 2014); eBIRD (http://ebird.org); Gervais et al. (2008); the San Diego Natural History Museum (SDNHM) Bird Atlas Project (SDNHM 2014); and other regional and site-specific relevant information, data, and literature.

Desktop Evaluation

BBS obtained aerial imagery of the burrowing owl habitat assessment area and prepared a draft map of potentially suitable burrowing owl habitat. Patches of open habitat that could potentially support burrowing owl breeding and/or foraging habitat were identified on the maps, while portions of the burrowing owl habitat assessment areas that were fully developed, covered by dense vegetation, or otherwise appeared to be unsuitable based on the aerial imagery were identified as potentially excludable. All of these were later evaluated during the focused field evaluation, described below.

Focused Field Evaluation

BBS used the results of the background research along with the draft map of potentially suitable burrowing owl habitat as guidance during the field evaluation conducted within the burrowing owl habitat assessment area. BBS assessed the entire burrowing owl habitat assessment area during the field evaluation. The areas that were excluded during the desktop evaluation were visited to verify that these areas did not support suitable burrowing owl habitat and could be excluded. In addition, the patches of potentially suitable habitat identified on the draft map were field-truthed and refined. Additional areas of suitable habitat that were not identified during the desktop evaluation were drawn onto the map by hand in the field. BBS used binoculars to view portions of the burrowing owl habitat assessment area where lawful access could not be achieved. In addition, photographs were taken of each polygon evaluated in the burrowing owl habitat assessment area.

To consistently and systematically evaluate each patch of potentially suitable habitat within the burrowing owl habitat assessment area for the potential to support the burrowing owl, BBS recorded data on the following criteria:

- polygon patch size
- dominant vegetation and land use within and adjacent to the polygon
- presence of adjacent foraging habitat
- vegetation height and shrub density within the polygon
- presence of friable soils within the polygon
- presence and quantity of burrows and burrow complexes within the polygon
- other evidence of fossorial animal use and burrow features within the polygon
- slope steepness within the polygon

BBS used this data to assess the overall potential of each potentially suitable burrowing owl habitat polygon to support the burrowing owl, taking into consideration the historical occurrence data and the evaluation criteria. Each habitat patch was either determined as not expected to support burrowing owl, or as having a low, moderate, or high potential to support burrowing owl.

HABITAT ASSESSMENT RESULTS & DISCUSSION

This section provides a summary of the results of the historical occurrence data analysis as well as a result of the focused field evaluation.

Historical Burrowing Owl Occurrence within Vicinity of the Proposed Project

A search of the SanBIOS database (County of San Diego 2014) and CDFW *California Natural Diversity Database* (CNDDB; CDFW 2014a) did not result in any historical burrowing owl occurrence data within the burrowing owl habitat assessment areas and an approximately 5-mile buffer. According to current literature, breeding burrowing owls are believed to be absent from the Proposed Project area and vicinity (Unitt 2004; Lincer and Bloom 2007). Currently, the closest known breeding occurrences are at Naval Air Station North Island, south San Diego coastal areas, and Otay Mesa (Unitt 2004; Lincer and Bloom 2007). Migrant wintering burrowing owl can utilize a variety of habitats not suitable for breeding individuals; therefore, migrant wintering burrowing owls have a potential to occur throughout the Proposed Project alignment. Migrant wintering owls were last document in the vicinity of the Proposed Project area along ridgetops in the northeastern corner of MCAS Miramar during the winter of 1996-1997 (Unitt 2004).

Desktop & Field Evaluation Results

During the desktop evaluation of the burrowing owl habitat assessment area, BBS identified approximately 380 acres of potentially suitable burrowing owl habitat based on our understanding of the existing conditions onsite along with an interpretation of the aerial imagery available for the burrowing owl habitat assessment area. BBS biologists conducted the field evaluation of the burrowing owl habitat assessment area on November 17 and 18, 2014, to (1) verify that areas that were potentially excluded during the desktop evaluation did not support suitable burrowing owl habitat and (2) evaluate the potentially suitable burrowing owl habitat polygons to determine if the existing habitat within these polygons has a potential to support burrowing owl.

Based on the field assessment revisions to the potentially suitable habitat, BBS evaluated approximately 338 acres of potentially suitable habitat distributed within 35 polygons within the burrowing owl habitat assessment area (Attachment 1: Figure 4). A summary of the data collected for each polygon as well as the potential for burrowing owl to occur in each polygon is presented in Attachment 2: Burrowing Owl Habitat Assessment Summary Table. In addition, representative photographs of the polygons evaluated in the burrowing owl habitat assessment area are included in Attachment 3: Burrowing Owl Habitat Assessment Photographs.

Of the 35 polygons evaluated, 14 of the polygons did not provide potentially suitable habitat for breeding and resident burrowing owl (Attachment 1: Figure 4) because they had at least three, and usually more, of the following characteristics:

- small polygon size
- vegetation community and/or density within the polygon not suitable for burrowing owl
- polygon surrounded by unsuitable burrowing owl habitat, such as development or tall, dense vegetation
- compact soils
- few to no small mammal burrows and/or burrow complexes
- no adjacent open foraging or breeding habitat

The remaining 21 polygons provide potentially suitable habitat for breeding and resident burrowing owl (Attachment 1: Figure 4). These polygons had at least four, and sometimes more, of the following characteristics:

- adequate polygon size
- vegetation community and/or density within the polygon suitable for burrowing owl

- friable soils
- small mammal burrows and/or burrow complexes present within the polygon
- adjacent open foraging or breeding habitat

Burrowing Owl & Sign Observations

No burrowing owls or burrowing owl sign was observed during the focused burrowing owl habitat assessment conducted in winter 2014.

SUMMARY & RECOMMENDATIONS

Approximately 303 acres of potentially suitable habitat for breeding and resident burrowing owl burrowing owl was identified in 21 polygons within the burrowing owl habitat assessment area (Attachment 1: Figure 4). Focused burrowing owl surveys within these potentially suitable habitat polygons are recommended to be completed during the spring 2015 breeding season to assess the presence/absence of the burrowing owl within and adjacent to the Proposed Project area and to allow potential impacts to this species to be evaluated adequately.

During the focused burrowing owl surveys, the suitable habitat polygon boundaries should be refined, and more detailed vegetation data along with other relevant site information should be collected to provide as much information as possible about the Proposed Project area and its potential to support the burrowing owl.

Please do not hesitate to contact Melissa Busby at melissa@busbybiological.com or 858.334.9507 or Darin Busby at darin@busbybiological.com or 858.334.9508 if you have any questions.

Sincerely,

Melissa Busby
Owner/Principal Biologist
Busby Biological Services, Inc.

Darin Busby
Owner/Principal Biologist
Busby Biological Services, Inc.

cc: Mike McEntee, Chambers
Elisha Back, TRC

REFERENCES

Barclay, J.H., K.W. Hunting, J.L. Lincer, J. Linthicum, and T.A. Roberts, editors
2007 Proceedings of the California Burrowing Owl Symposium, 11-12 November 2003, Sacramento, California, USA. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc., Point Reyes Station, CA.

Bent, A.C.
1961 Life histories of North American birds of prey. Part 2. U.S. Natl. Mus. Bull. No. 170. Dover Publications, New York.

Busby Biological Services, Inc. (BBS)
2014 Biological Technical Report, Sycamore To Peñasquitos 230 Kilovolt Transmission Line Project, City Of San Diego, San Diego County, California. March.

California Department of Fish and Wildlife (CDFW)
2012 Staff Report on Burrowing Owl Mitigation. State of California. Natural Resources Agency, Department of Fish and Game. March 2012.
2014a Natural Diversity Data Base. Nongame-Heritage Program, California Department of Fish and Wildlife, Sacramento.
2014b CDFW Biogeographic Data Branch, California Natural Diversity Database. Special Animals List. Available at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf. January 2011. Accessed October 2014.

Catlin, D.H. and D.K. Rosenberg
2006 Nest destruction increases mortality and dispersal of Burrowing Owls in the Imperial Valley, California. Southwest Naturalist 51: 406–409.

County of San Diego
2014 SanBIOS GIS Database. Created in 2009. Available at: http://www.sangis.org/. Accessed October 2014.

Desante, D.F., E.D. Ruhlen, S.L. Adamany, K.M. Burton, and S. Amin
1997 A census of Burrowing Owls in Central California in 1991. Pages 38-48 in Lincer, J. L. and K. Steenhof [EDS]. 1997. The Burrowing Owl, Its Biology and Management: Including the Proceedings of the First International Burrowing Owl Symposium. Raptor Research Report Number 9.

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

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack
2008 Burrowing Owl (Athene cunicularia) *in* California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies

of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, California, USA.

Haug, E.A., B.A. Millsap, and M.S. Martell
1993 Burrowing owl (Speotyto cunicularia), *in* A. Poole and F. Gill, editors, The Birds of North America, The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C., USA.

Haug, E.A. and L.W. Oliphant
1990 Movements, activity patterns, and habitat use of burrowing owls in Saskatchewan. Journal of Wildlife Management 54: 27-35.

Klute, D.S., L.W. Ayers, M.T. Green, W.H. Howe, S.L. Jones, J.A. Shaffer, S.R. Sheffield, and T.S. Zimmerman
2003 Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C.

Lincer, J.L. and P.H. Bloom
2007 The Status of the Burrowing Owl in San Diego County, California. Proceedings of the California Burrowing Owl Symposium 90-102 © The Institute for Bird Populations

Millsap, B.A. and C. Bear
2000 Density and reproduction of Burrowing Owls along an urban development gradient. Journal of Wildlife Management 64:33-41.

Ronan, N.A.
2002 Habitat selection, reproductive success, and site fidelity of burrowing owls in a grassland ecosystem. Thesis, Oregon State University, Corvallis, Oregon, US

Rosenberg, D.K., J.A. Gervais, H. Ober, and D.F. DeSante
1998 An adaptive management plan for the burrowing owl population at Naval Air Station Lemoore, California, USA. Publication 95, Institute for Bird Populations, P.O. Box 1346, Pt. Reyes Station, CA 94956.

Rosenberg, D.K., and K.L. Haley
2004 The ecology of burrowing owls in the agroecosystem of the Imperial Valley, California. Studies in Avian Biology 27:120-135.

Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link
2014 *The North American Breeding Bird Survey, Results and Analysis 1966 - 2012.* Version 02.19.2014 USGS Patuxent Wildlife Research Center, Laurel, MD.

San Diego Natural History Museum (SDNHM)
2014 http://www.sdnhm.org/science/birds-and-mammals/projects/san-diego-county-bird-atlas/. Bird Atlas Project. Accessed October 2014.

Shuford, W.D. and T. Gardali
2008 California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Smith, B.W. and J.R. Belthoff
2003 Patterns of artificial burrow occupancy and reuse by burrowing owls in Idaho. Wildlife Society Bulletin 31:1-7.

Thomsen, L.
1971 Behavior and ecology of burrowing owls on the Oakland Municipal Airport Condor 73: 177-192.

Unitt, P.A.
2004 San Diego County Bird Atlas. San Diego Natural History Museum. San Diego, CA.

Wesemann, T. and M. Rowe.
1985 Factors influencing the distribution and abundance of Burrowing Owls in Cape Coral, Florida. Pages 129-137 in Adams and Leedy, EDS. Integrating Man and Nature in the Metropolitan Environment. Proc. Natl. Symp. on Urban Wildlife.

ATTACHMENT 1 – Figures

ATTACHMENT 2 – Burrowing Owl Habitat Assessment Summary Table

Poly ID	Patch Size (ac.)	Dominant Vegetation and Land Use			Adjacent Foraging Habitat	Polygon Habitat Parameters				Polygon Burrow Features			Slope	Potential for Occurrence
		Within	Adjacent	Development Type and Proximity		Soils	Ave Veg Height (in.)	Max Veg Height (in.)	Shrub Density (%)	Small Mammal Burrows ?	Burrow Complexes ?	Burrowing Features		
1	4.40	DH	DL	Commercial, paved roads surrounding	None	Compact	<6	18	10	No	No	None	Level	Not expected. Polygon is surrounded by commercial development and paved roads; and contains compact soils, no small mammal burrows, and no adjacent open foraging or breeding habitat.
2	0.81	SMC-D	SMC, DL	Unpaved firebreak road within polygon; paved road adjacent	None	Compact, slightly friable	10	16	15	Yes, very few	No	Slopes	Slight	Not expected. Polygon is very small, isolated, and surrounded by tall and dense vegetation; and contains compact soils, few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
3	1.50	BG	CSS, SMC, DL	Transmission tower within polygon; substation and paved and unpaved roads adjacent; residential within 1/2 mile	None	Compact	<3	60	5	No	No	None	Level	Not expected. Polygon is very small, isolated, and surrounded by tall and dense vegetation and development; and contains compact soils, no small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
4	4.00	DCSS-D, DH	CSS, SMC, DL	Substation and paved and unpaved roads adjacent; residential within 1/4 mile	None	Compact	<4	<4	5	No	No	None	Level	Not expected. Polygon is isolated and surrounded by tall and dense vegetation and development; and contains compact soils, no small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
5	1.31	BG, CSS	DL, SMC, SWS	Residential, ranches, paved roads surrounding	None	Friable	2	0	0	Yes, very few	No	Slopes	Slight	Not expected. Polygon is very small and surrounded by residential development, ranches, and paved roads; polygon contains few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
6	1.29	SMC-D	SMC, DL	Unpaved firebreak road within polygon; paved road adjacent; residential within 3/4 mile	None	Compact, slightly friable	10	16	15	Yes, very few	No	Slopes	Slight	Not expected. Polygon is very small, isolated, and surrounded by tall and dense vegetation; and contains compact soils, few small mammal burrows, and no adjacent open foraging or breeding habitat.
7	17.37	NNG, DH, DCSS-D	DL, NNG	Unpaved roads and transmission tower within polygon; substation and paved roads adjacent; residential surrounding	Contiguous with adjacent NNG	Friable	<6	108	15	Yes, many	Yes, many	Slopes, berms	Slight to moderate	Low. Polygon is large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and many burrows and burrow complexes.
8	3.09	NNG, DH	DL, CSS	Unpaved road within polygon; residential and paved roads surrounding	None	Compact, friable	12	36	60	Yes, very few	No	Slopes, berms, debris piles	Slight	Not expected. Polygon is surrounded by residential development and paved roads; is dominated by compact soil; and contains tall and dense vegetation, few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
9	6.00	NG, CSS	DL, CSS	Paved roads within and adjacent; high school, residential, and paved roads adjacent	Contiguous with adjacent NG	Friable	<6	24	8	Yes, few to moderate	No	Slopes	Slight	Low to moderate. Polygon is medium; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soil and a few to moderate number of burrows but no burrow complexes.
10	6.59	NG, CSS	DL, CSS	Unpaved roads and transmission tower within polygon; park and paved and unpaved roads adjacent; residential within 500 feet	Contiguous with adjacent NG	Friable	<6	24	20	Yes, few to moderate	No	Slopes	Moderate	Low. Polygon is medium; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains friable soil and a few to moderate number of burrows but no burrow complexes.
11	1.85	NNG	CSS, DL	Unpaved roads within and adjacent; residential and paved roads within 200 feet	None	Friable	<6	<6	60	Yes, many	No	Slopes	Moderate	Not expected. Polygon is very small, isolated, and surrounded by tall and dense vegetation; and contains adjacent residential development and no adjacent open foraging or breeding habitat.

Poly ID	Patch Size (ac.)	Dominant Vegetation and Land Use			Adjacent Foraging Habitat	Polygon Habitat Parameters				Polygon Burrow Features			Slope	Potential for Occurrence
		Within	Adjacent	Development Type and Proximity		Soils	Ave Veg Height (in.)	Max Veg Height (in.)	Shrub Density (%)	Small Mammal Burrows ?	Burrow Complexes ?	Burrowing Features		
12	1.49	NNG, CSS	CSS, DL	Unpaved roads adjacent; residential and paved roads within 200 feet	None	Friable	<6	36	10	Yes, few	No	Slopes	Slight	Not expected. Polygon is very small, isolated, and surrounded by tall and dense vegetation; and contains few small mammal burrows, no burrow complexes, adjacent residential development, and no adjacent open foraging or breeding habitat.
13	2.69	NG, CSS	DL, CSS	Paved and unpaved roads adjacent; residential within 1/4 mile	None	Friable	<6	36	10	Yes, few	No	Slopes	Slight to moderate	Not expected. Polygon is small, isolated, and surrounded by tall and dense vegetation; and contains few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat.
14	4.46	NNG, CSS	DL, CSS	Residential and paved and unpaved roads surrounding	None	Friable	<6	36	10	Yes, few	No	Slopes	Slight	Not expected. Polygon is surrounded by residential development and paved and unpaved roads; polygon contains few small mammal burrows, no burrow complexes, adjacent residential development, and no adjacent open foraging or breeding habitat.
15	4.24	NNG, DH, CSS	NNG, DH, CSS, DL	Park and paved and unpaved roads adjacent; residential within 1/2 mile	Contiguous with adjacent DH	Friable	12	18	30	Yes, few to moderate	No	Slopes, rock piles	Level	Low. Polygon is small; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains friable soil and a few to moderate number of burrows but no burrow complexes.
16	59.61	DH, BG	DH, BG, DL	Unpaved roads and transmission tower within polygon; park, residential, and paved and unpaved roads adjacent	Contiguous with surrounding DH	Friable	0	6	2	Yes, few	Yes, few	Slopes, berms, rock piles	Slight to moderate	Low to moderate. Polygon is very large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, few burrows, and few burrow complexes.
17	42.40	NNG	NNG, CSS, DL	Unpaved roads within polygon; residential, and paved and unpaved roads adjacent	Contiguous with adjacent NNG	Friable	10	48	10	Yes, few to moderate	Yes, few	Slopes, berms, drainage banks	Slight to moderate	Low to moderate. Polygon is very large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, few to moderate burrows, and few burrow complexes.
18	19.41	NNG	NNG, SWS, DL	Unpaved roads within polygon; paved and unpaved roads adjacent; residential within 500 feet	Contiguous with adjacent NNG	Friable	8	48	5	Yes, moderate	Yes, few	Slopes, berms	Slight to moderate	Low to moderate. Polygon is large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, a moderate number of burrows, and few burrow complexes.
19	25.38	NNG	NNG, SWS, DL	Unpaved roads within polygon; residential and paved and unpaved roads adjacent	Contiguous with adjacent NNG	Friable	<6	48	<5	Yes, moderate	Yes, few	Slopes, berms	Slight to moderate	Low to moderate. Polygon is large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, a moderate number of burrows, and few burrow complexes.
20	1.60	NNG	NNG, SWS, DL	Unpaved roads within polygon; residential and paved and unpaved roads adjacent	Contiguous with adjacent NNG	Friable	8	48	5	Yes, moderate	Yes, few	Slopes, berms	Moderate	Low to moderate. Polygon is small; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, a moderate number of burrows, and few burrow complexes.
21	8.37	NNG	NNG, DL	Unpaved roads within polygon; residential and commercial, and paved roads surrounding	None	Friable	<6	18	5	Yes, many	No	Slopes, berms	Slight	Low. Polygon is medium; supports suitable, low-density vegetation; and contains friable soil and many burrows but no burrow complexes.
22	1.12	NNG, DH	NNG, DH, DL	Residential and commercial, and paved and unpaved roads surrounding; active construction adjacent	None	Compact, friable	<6	18	10	Yes, few	No	Slopes, berms	Slight	Not expected. Polygon is very small, is surrounded by residential and commercial development, and paved and unpaved roads, and is dominated by compact soils; polygon contains few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat; active construction of a large development is occurring adjacent to polygon.

Poly ID	Patch Size (ac.)	Dominant Vegetation and Land Use			Adjacent Foraging Habitat	Polygon Habitat Parameters				Polygon Burrow Features			Slope	Potential for Occurrence
		Within	Adjacent	Development Type and Proximity		Soils	Ave Veg Height (in.)	Max Veg Height (in.)	Shrub Density (%)	Small Mammal Burrows ?	Burrow Complexes ?	Burrowing Features		
23	14.27	NNG, DH	NNG, DH, DL	Unpaved roads and transmission tower within polygon; residential and commercial, paved and unpaved roads, and active construction adjacent	None	Friable	6	18	5	Yes, few	Yes, few	Slopes, berms	Slight to moderate	Low. Polygon is medium; supports suitable, low-density vegetation; and contains friable soil and a few burrows and burrow complexes.
24	35.92	NNG	NNG, CSS, SWS, DL	Unpaved roads and transmission tower within polygon; paved and unpaved roads, and active construction adjacent; residential within 1/4 mile	Contiguous with adjacent NNG	Compact, friable	6	18	10	Yes, very few	No	Slopes, berms	Slight to moderate	Low. Polygon is very large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and friable soils, very few burrows, and no burrow complexes.
25	8.91	DH	DH, DL	Unpaved roads within polygon; residential and commercial, and paved roads adjacent	Adjacent DH in polygon 26	Compact, friable	6	12	30	Yes, many	Yes, few	Berms	Level	Low to moderate. Polygon is medium; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and friable soils, many burrows, and few burrow complexes.
26	7.86	DH	DH, DL	Unpaved roads within polygon; residential and commercial, and paved roads adjacent	Adjacent DH in polygon 25	Compact, friable	6	12	20	Yes, many	Yes, few	Berms	Level	Low to moderate. Polygon is medium; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and friable soils, many burrows, and few burrow complexes.
27	8.93	DH	DH, DL	Residential and commercial, and paved roads adjacent	Contiguous with adjacent DH	Compact, slightly friable	6	24	30	Yes, very few	No	Berms	Level	Low. Polygon is medium; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and slightly friable soils and very few burrows but no burrow complexes.
28	16.48	DH, NNG	NNG, DH, DL	Unpaved roads within polygon; residential and commercial, paved roads, and active construction adjacent	Adjacent DH in polygon 27	Compact, slightly friable	2	18	30	Yes, very few	No	Berms	Level	Low. Polygon is large; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and slightly friable soil and very few burrows but no burrow complexes.
29	4.23	NNG, CSS	CSS, DL	Unpaved roads within polygon; residential development adjacent	Few scattered patches of NNG in vicinity	Friable	<12	36	5	Yes, few	No	Slopes	Moderate to steep	Low. Polygon is medium; supports suitable, low density vegetation; is located adjacent to suitable foraging habitat; and contains friable soil and a few burrows but no burrow complexes.
30	2.54	CSS	CSS	Residential development within 300 feet	Few scattered patches of NNG in vicinity	Friable	36	72	60	Yes, few	No	Slopes	Slight to steep	Not expected. Polygon is small; and contains tall and dense habitat, steep topography, few small mammal burrows, no burrow complexes, and limited adjacent open foraging or breeding habitat.
31	1.36	NNG, CSS	CSS, DL	Residential development adjacent	Contiguous with adjacent NNG	Friable	<6	96	10	Yes, moderate	No	Slopes	Moderate	Low. Polygon is small; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and a moderate number of burrows but no burrow complexes.
32	4.19	NNG, CSS	CSS, DL	Residential development within 150 feet	Few scattered patches of NNG in vicinity	Friable	<6	36	15	Yes, few	No	Slopes	Moderate to steep	Low. Polygon is medium; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and a few burrows but no burrow complexes.

Poly ID	Patch Size (ac.)	Dominant Vegetation and Land Use			Adjacent Foraging Habitat	Polygon Habitat Parameters				Polygon Burrow Features			Slope	Potential for Occurrence
		Within	Adjacent	Development Type and Proximity		Soils	Ave Veg Height (in.)	Max Veg Height (in.)	Shrub Density (%)	Small Mammal Burrows ?	Burrow Complexes ?	Burrowing Features		
33	4.71	CSS, NNG	CSS, NNG	Residential development within 1/4 mile	Contiguous with adjacent NNG	Friable	36	72	60	Yes, few	No	Slopes, drainage banks,	Steep	Not expected. Polygon contains tall and dense habitat, steep topography, few small mammal burrows, and no burrow complexes.
34	5.35	NNG, NG, CSS	NNG, CSS	Unpaved roads and transmission tower within polygon; residential development within 1/4 mile	Contiguous with adjacent NNG	Friable	<6	36	5	Yes, moderate	No	Slopes, berms	Moderate	Low to moderate. Polygon is medium; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and a few burrows but no burrow complexes.
35	4.57	NNG, CSS	CSS, DH, DL	Unpaved roads and transmission tower within polygon; residential development adjacent	Few scattered patches of NNG in vicinity	Friable	<6	36	10	Yes, moderate	No	Slopes, berms	Level	Low. Polygon is medium; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and a few burrows but no burrow complexes.

ATTACHMENT 3 – Burrowing Owl Habitat Assessment Photographs

	**Polygon 1.** Burrowing owl are not expected to occur in this staging yard that is surrounded by commercial development and paved roads; and contains compact soils, no small mammal burrows, and no adjacent open foraging or breeding habitat (Facing south; November 18, 2014).
	**Polygon 6.** Burrowing owl are not expected to occur in this firebreak on MCAS Miramar that is isolated and surrounded by tall and dense vegetation; and contains compact soils, few small mammal burrows, and no adjacent open foraging or breeding habitat (Facing south; November 18, 2014)
	**Polygon 7.** Burrowing owl have a low potential to occur in this staging yard that is large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and many burrows and burrow complexes (Facing east; November 18, 2014;).

	**Polygon 9.** Burrowing owl have a low to moderate potential to occur in this polygon that is medium in size; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soil and a few to moderate number of burrows but no burrow complexes (Facing north; November 18, 2014).
	**Polygon 14.** Burrowing owl are not expected to occur in this polygon that is surrounded by residential development and paved and unpaved roads; contains few small mammal burrows, no burrow complexes, adjacent residential development, and no adjacent open foraging or breeding habitat (Facing west; November 18, 2014).
	**Polygon 17.** Burrowing owl have a low to moderate potential to occur in this polygon that is very large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils, few to moderate burrows, and few burrow complexes (Facing southwest; November 18, 2014).

	**Polygon 22.** Burrowing owl are not expected to occur in this polygon that is very small, is surrounded by residential and commercial development, and paved and unpaved roads, and is dominated by compact soils; polygon contains few small mammal burrows, no burrow complexes, and no adjacent open foraging or breeding habitat; active construction of a large development is occurring adjacent to polygon (facing west; November 17, 2014).
	**Polygon 24.** Burrowing owl have a low potential to occur in this polygon that is very large; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and friable soils, very few burrows, and no burrow complexes (Facing southwest; November 17, 2014).
	**Polygon 28.** Burrowing owl have a low potential to occur in this staging yard that is large; supports suitable but moderate density vegetation; is located adjacent to suitable foraging habitat; and contains both compact and slightly friable soil and very few burrows but no burrow complexes (Facing northeast; November 17, 2014).

	**Polygon 30.** Burrowing owl are not expected to occur in this polygon that is small; and contains tall and dense habitat, steep topography, few small mammal burrows, no burrow complexes, and limited adjacent open foraging or breeding habitat (Facing northeast; November 17, 2014).
	**Polygon 32.** Burrowing owl have a low potential to occur in this polygon that is medium in size; supports suitable, low-density vegetation; is located adjacent to suitable foraging habitat; and contains friable soils and a few burrows but no burrow complexes (Facing northwest; November 17, 2014).
	**Polygon 33.** Burrowing owl are not expected to occur in this polygon that contains tall and dense habitat, steep topography, few small mammal burrows, and no burrow complexes (Facing north; November 17, 2014).