3.5 Biological Resources

Note to reader: Section 3.5 Biological Resources of the FEIR does not include strikeout or underline as in other sections of the FEIR that show changes from DEIR. Changes are not included in this section due to the numerous changes and substantial reordering of this section.

The Lompoc Wind Energy Project (Project) would be located in a semiarid region where warm and cold ocean currents mix and distributional ranges of a number of northern and southern wildlife species overlap. A high rate of endemism (species only known to occur within a certain area) also characterizes this region of varied topography, geology, and soils. The relatively humid coastal environment of the project region (western Santa Ynez Mountains near Point Conception), characterized by moist sea breezes and frequent fog, is conducive to the growth of lichens. Spanish lace lichen (*Ramalina menziesii*) hanging from the branches of oak trees in San Miguelito Canyon below the project site provides an obvious indication of the atmospheric moisture. This analysis addresses potential Project impacts on both common and special-status plant and wildlife species during both the construction and operation and maintenance (O&M) phases.

Section 3.5.1 describes the data and information sources used to characterize existing conditions at and in the vicinity of the Project. This discussion is followed by Section 3.5.2, a detailed description of the vegetation and habitats observed in the Project area. Section 3.5.3 addresses the common wildlife and plant species present (or likely to be present) in the Project area, and Sections 3.5.4 addresses special-status wildlife and plant species. Wetlands and other sensitive aquatic features are described in Section 3.5.5. The regulatory framework addressing the type of species potentially found in the Project area is included in Section 3.5.6, and impacts, mitigation measures, and residual impacts are included in Section 3.5.7.3.

3.5.1 Methods

Biological resources in the Project area were identified through literature and database searches, personal communications with qualified wildlife biologists and botanists, and field surveys.

3.5.1.1 Literature and Database Review

Much of the information regarding existing conditions was derived from the Lompoc Wind Energy Project Biological Resources report (Olson and Rindlaub, 2006) and supplemented by data provided in technical reports (Memorandums for the Record) prepared by Sapphos Environmental, Inc. on behalf of the applicant. These reports were independently reviewed by the Final EIR preparers, and their findings were verified and supplemented through additional field surveys and database searches.

The Olson and Rindlaub report, published in 2006, was based on the review of numerous sources, including regional and local bird guides, technical reports prepared for nearby La Purisima State Park and Vandenberg Air Force Base (VAFB), the La Purisima Audubon Society newsletters and Web site, and other technical reports prepared for the Lompoc area. Additionally, the California Department of Fish and Game (CDFG) Natural Diversity Database (CNDDB) was queried in 2003 and 2005 for the 7.5-minute United States Geological Survey (USGS) quads of the Project area, as well as adjacent quads (Tranquillon Mountain, Lompoc, Lompoc Hills, Santa Rosa Hills, Point Arguello, Los Alamos, Point Conception, Sacate, and Surf). Additional information regarding

special-status plants was obtained from the California Native Plant Society (CNPS) online inventory, the Central Coast Center for Plant Conservation, and the Santa Barbara Botanical Garden, as well as technical reports for nearby areas, including VAFB and Hollister Ranch. The Jepson Manual (Hickman, 1993) was used to key and identify plant species in the field, and vegetation communities were classified according to the system (1986).

The information gathered by Olson and Rindlaub (2006) was supplemented by CNDDB searches for the Project area and surrounding lands in 2006 and 2008. A list of threatened and endangered species also was obtained from the United States Fish and Wildlife Service (USFWS) in 2006. Further information was obtained from a long-term ecological monitoring program at VAFB conducted by the University of California, Santa Barbara (UCSB) Museum of Systematics and Ecology (Gallo et al., 2000) and from Christmas Bird Counts conducted in Miguelito Canyon by the Audubon Society from 1997 to 2005 (National Audubon Society, 2006).

The Central Coast Bat Research Group (CCBRG, 2008) conducted surveys and prepared a Bat Survey Report for the site that included data collected in previous surveys of the project area.

Data from the Weather Surveillance Radar or NEXRAD (Next Generation Radar) at Vandenberg Air Force Base (VAFB), California were analyzed by Geo-Marine, Inc. under the direction of Dr. Sidney A. Gauthreaux, Jr. (Gauthreaux 2008, Final report included in (Appendix B) to characterize migration patterns of birds over the project area.

Additionally, literature searches and contact with experts was conducted in 2007 and 2008 by the Final EIR preparers and by the Applicant's consultant.

3.5.1.2 Professional Contacts

Biologists with extensive experience in the general Project area were contacted to obtain information about local species distribution, including birds, bats, and species of local concern. Agency botanists from the USFWS, CDFG, VAFB, and the County, as well as the Santa Barbara Botanic Garden were contacted to obtain information regarding Gaviota tarplant (*Deinandra increscens* ssp *villosa*) status and distribution (Olson and Rindlaub, 2006). Information on the endangered El Segundo blue butterfly (*Dienandra increscens* ssp *villosa)* was obtained from contact with environmental staff at Vandenberg Air Force Base, the U. S. Fish and Wildlife Service, and lepidopterist Dr. Gordon Pratt.

Information regarding raptor observations in San Miguelito Canyon dating from 1971 was obtained from the University of California at Santa Cruz, Santa Cruz Predatory Bird Research Group (UCSC SCPBRG) (B. Walton, Personal Communication).

3.5.1.3 Botanical and Plant Community Surveys

Botanical surveys were conducted during daylight hours on 7 separate days in the spring and summer of 2002 for all areas of potential disturbance, including access roads. Surveys were conducted on foot, except for South Road both north and south of Signorelli Ranch, and North West Road south of the Scolari farmstead; these were surveyed from a vehicle. The Olson and Rindlaub (2006) study included portions of the Signorelli Ranch property that extend into the coastal zone; however, these areas are not included in the current Project. Areas that were inaccessible because of steep terrain were checked using binoculars to characterize the vegetation and the presence of

sensitive species. Coverage of the corridors along access roads was limited to about 20 feet on either side of the road unless a wind turbine generator (WTG) site was mapped farther off the road. Similar methods were used on 5 separate days in the spring, summer, and fall of 2005, although these were more limited, focusing on new WTG sites and new access roads (Olson and Rindlaub, 2006).

All areas of the Project site with sandy soils were checked for Gaviota tarplant in 2002. Areas where tarweed seedlings were observed in early 2002 were revisited later in the season, when Gaviota tarplant was in full flower. Areas with sandy soils where WTGs were added or relocated and along new access road routes were rechecked in 2005, but not all areas where Gaviota tarplant was found in 2002 were rechecked in 2005 (Olson and Rindlaub, 2006).

Additional reconnaissance-level surveys were conducted by CH2M HILL on 4 separate days in September 2006, using similar methods to provide independent verification of the findings of the earlier surveys and to evaluate areas not previously surveyed by Olson and Rindlaub (2006) for special-status plant species; particular focus was given to identification of the Gaviota tarplant. New areas for surveys included the PG&E transmission line corridor and Larsen Ranch. Power line angle point locations were marked on maps and flagged or staked in the field. Depending on the terrain, the power line corridor (a 200-foot swath, 100 feet on each side of the proposed alignment) between angle point locations was surveyed by binoculars or walking meandering transects every 20 feet. Surveys for Gaviota tarplant were conducted in a 200-foot radius around potential angle point locations. Vegetation communities were mapped 1,000 feet on either side of the power line corridor. Larsen Ranch was surveyed for the presence of Gaviota tarplant by walking meandering transects every 20 feet along access roads and WTG corridors. Because the 2006 botanical surveys were completed late in the growing season, only dominant plant species were identified in the general community descriptions (CH2M HILL, 2006a). Sapphos Environmental, Inc. (2008) conducted supplemental vegetation surveys and prepared an updated vegetation map for the project property and mapped distribution of Coast buckwheat (*Eriogonum parvifolium*) which may support the El Segundo blue butterfly on site. The Final EIR preparers conducted additional onsite reconnaissance on October 4, 2007, February 18, 2008, and March 10, 2008.

3.5.1.4 Wildlife and Bird Surveys

Wildlife surveys of the WTG corridors, including surveys for birds, were conducted by Olson and Rindlaub on 6 separate dates in the spring, summer, and fall of 2002, and on 7 separate dates in the spring and summer of 2005. The 2005 surveys included the WTG corridors and the Project Substation site. The 2002 surveys were conducted during the afternoon to facilitate good visibility and to avoid the marine layer weather conditions, which are common during the late spring and summer months. Most of the 2005 surveys were conducted in the afternoon, but some took place in the mornings. Surveys extended into adjacent habitats, especially those with a woodland component, out to a distance of 500 feet from proposed WTG corridors. Binoculars were used to examine habitats and to scan periodically for birds in flight. Large features that could be used by nesting and perching birds, such as existing electrical distribution lines, fences, trees, and rock outcrops, were searched with binoculars and a spotting scope (Olson and Rindlaub, 2006).

Additional reconnaissance-level surveys were conducted on 4 separate dates in September 2006 to provide independent verification of the earlier surveys and to identify wildlife present in previously nonsurveyed areas, including portions of some roads, the O&M facility, Larsen Ranch,

and the Pacific Gas and Electric Company (PG&E) power line corridor (CH2M HILL, 2006b). These surveys were performed by CH2M HILL biologists using a methodology similar to that used in 2002 and 2005.

In addition, avian point count stations were established within strategic areas of Larsen Ranch and North Corridor (primarily on the gradient between two vegetation communities and in areas that provided optimal views of ridgelines and valleys) to allow the quantification of bird sightings (Figure 3.5-1) (CH2M HILL, 2006b). Surveys were conducted during the afternoon to avoid the marine layer that is characteristic of the area. All bird species detected through observation and vocalizations were documented during a 10-minute point count interval. To remain consistent with previous survey methodology (Olson and Rindlaub, 2006), incidental wildlife observations also were obtained while walking along meandering transects between point count stations. All wildlife detected via direct observation, vocalization, tracks, scat, or feathers were noted.

Olson (2007) conducted avian point count surveys during three, 3-day periods in December 2006 at 18 potential WTG sites (Figure 3.5-1). The points were surveyed for 20 minutes at different times of the day for each survey. Each point was surveyed once each during the morning, midday, and afternoon. Each point count survey identified birds using sight and sound along with the number of individuals, types of species, the natural community, topography, and incline in which the observation was made, and the behavior of the bird (for example, foraging, flying, or vocalizing). Areas near the point locations were scanned constantly with binoculars during the 20-minute count. A spotting scope was used to identify birds at a distance. Larger birds were observed to an approximate distance of 800 meters on days with good visibility.

Sapphos Environmental, Inc. conducted field surveys in 2007 and 2008 and prepared an avian study memo for the project property. In addition, Sapphos Environmental, Inc. conducted winter 2008 preconstruction avian surveys of the proposed project property (Appendix B). Winter 2008 avian preconstruction surveys were conducted from two to five days a week over a seven-week period, from February 4 through March 27, 2008, for a total of 24 days. A total of 208 hours were dedicated to field observations during this period. Winter 2008 preconstruction avian surveys comprised four different surveys: (1) area search counts centered around 54 points with a 50-meter radius, (2) diurnal raptor and raptor nest surveys along five ridges, (3) supplemental bird counts along 10 transects at three established sites, and (4) incidental bird counts, as follows:

(1) Area search counts. Sapphos Environmental, Inc. used area search counts centered around a total of fifty-four 50-meter-radius point (area of 7,850 m2) to obtain species identification with quantitative information on resident and migrant birds during preconstruction surveys for all species, especially non-raptor species. Most sampling points were placed at a minimum of 100 to 150 meters (m) apart. All birds were counted within each point circle, including birds flying over within the imaginary cylinder of each point circle. Each point was sampled twice during the season (February through March) within five hours of official sunrise when non-raptor species are generally most active. Some counts were conducted under foggy conditions but with visibility greater than 50 meters. Counts were also conducted under windy conditions but never when both weather factors coincided.

(2) Diurnal raptor and nest surveys. Survey efforts focused on collecting information on existing nests and activities of diurnal raptors. For raptor species, Sapphos Environmental, Inc. used line transects of unequal distance and times on each of the five main ridge systems where the

proposed project development would occur, with raptor observations standardized to number observed per kilometer. Observation times were standardized for each ridge system.

(3) Supplemental bird counts. The line transects were limited distance transects, with recorded observations restricted to within each of the five ridges, to reduce concerns associated with repeat counts of birds moving between ridges. All line transects were driven at 5 miles per hour, with stops. Line transects for each of the five main ridge systems were sampled twice from March 18 through 27 during midday (10:30 a.m.–3:00 p.m.) when raptors are expected to be most active. Counts were conducted in mid-March due to heavy rains in early February. Raptors were also counted by using the described methods on all 24 days the observers were in the field. Searches for active raptor nests, including owls, employed area search counts that were conducted within suitable habitat areas—including oak woodlands, riparian corridors, eucalyptus groves, and landscape trees—but focused on the eucalyptus groves. Area search counts for raptor nests, including owls' nests, were conducted three times at all eucalyptus groves within the proposed project property and included the largest grove above the westernmost residence.

Supplemental bird counts were conducted in and outside of the above-referenced areas in all habitats. Supplemental bird counts were conducted on ten established transects as described below. Supplemental bird counts included species detected outside count circles while conducting count circle counts and species detected while walking or driving between count circles. Supplemental counts also included area searches of two of the three arable fields within the proposed project property, one north of Honda Creek, the other about one-half mile south of Honda Creek alongside an ephemeral stream.

Supplemental bird counts were conducted along six line transects located on Honda Creek, two on San Miguelito Canyon Road, and two transects were located on the largest arable field within the proposed project property. Count times varied from 30 to 75 minutes.

(4) Incidental bird counts. Incidental observations were recorded throughout the proposed project property and included plot mapping of horned lark (*Eremophila alpestris*) locations. Incidental observations noted the location of special status bird species and other notable field observations. Sapphos Environmental, Inc. attempted to identify and collect data on morning flights of migratory songbirds that are early spring migrants within the proposed project property, particularly during the month of March.

Sapphos Environmental, Inc collected 2008 spring avian data in a similar fashion; (Appendix B). In addition, the winter survey methods (or similar methods in consultation with CDFG) will be replicated during post-construction surveys to obtain a before-after-control-impact (BACI) comparison to measure potential impacts to avian species at the proposed project site.

To determine the potential for federally or state-listed aquatic species or other sensitive terrestrial wildlife species to occur at the proposed project site, Sapphos Environmental, Inc. conducted a review of published and unpublished literature, including field guides, previously prepared technical reports, the CNDDB, applicable listing packages, USFWS Recovery Plans, and designated or proposed critical habitat to document the potential for sensitive aquatic species reported within the vicinity of the proposed project site to occur within the proposed project site. Sapphos Environmental, Inc. prepared a Memorandum for the Record to describe the Habitat Suitability for

Three Listed Aquatic Species and a second Memorandum to describe the Habitat Suitability for Sensitive Terrestrial Species at the project site.

The FEIR preparers conducted additional onsite reconnaissance on October 4, 2007, February 18, 2008, and March 10, 2008.

3.5.1.5 Bat Surveys

The Central Coast Bat Research Group (CCBRG) conducted surveys and prepared a Bat Survey Report (CCBRG 2008) for the site which included data collected in previous surveys of the project area. In addition, data on specific bat species presence was gathered from previous surveys conducted for VAFB in 1997 and 1998 (a portion of these surveys were conducted by CCBRG biologists).

Acoustic Sampling. CCBRG recorded bat echolocations using broadband ultrasonic bat detectors (Anabat II; Titley Electronics, Ballina, Australia) to determine relative activity levels and occurrences of bat species at a sample of proposed turbine sites. Passive monitoring stations contained an Anabat II detector attached to a high-frequency microphone housed in a waterproof shroud with a 45° reflector mounted on a 1-meter tall pole. The detector was connected to an Anabat Compact Flash Zero-Crossings Interface Module (Titley Electonics, Ballina, Australia) recording device. Four Anabat acoustic units recorded echolocation activity from 1930 to 0630 from March 9th-16th, 2008.

Identification of Species. Anabat uses a zero-crossings analysis (ZCA) (Parsons et al. 2000), which produces files displaying echolocation calls on time-frequency graphs. Sequences were identified to species if they had greater than two diagnostic pulses that met defined criteria based on reference calls. Call parameters such as characteristic frequency (flattest part of the call), minimum and maximum frequency, characteristic slope (slope of the flattest part of the call), call duration, interpulse interval, and shape of the body of the call were measured from known reference calls and were used to characterize call sequences of species (O'Farrell et al. 1999, Gannon et al. 2004).

Nine of the bat species likely to occur in the region are readily identified using the Anabat system. These species are Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus)*, western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), western pipistrelle (*Pipistrellus hesperus*), spotted bat (*Euderma maculatum*), and the western mastiff bat (*Eumops perotis*). Although discernible, Townsend's big-eared bat is rarely detected by acoustic units because it has a low intensity, high frequency call, and the bat must fly in extremely close proximity to the detector unit in order to be recorded.

3.5.1.6 Radar Study of Avian Migration

The project site is within the Pacific Flyway, which is one of the four major north-south migratory bird routes. The Pacific Flyway extends from the Pacific Ocean on the west to Utah and Arizona on the east.[1] Little detailed information is available about migratory traffic over the project area, and it

[1] A USFWS map of the Pacific Flyway is posted at http://pacificflyway.gov/Documents/Pacific_map.pdf

is possible that nocturnal migratory birds may set down in the project area, particularly during inclement weather.

Doppler weather radar systems have the ability to detect flocks of migratory birds. Weather radars operate at coarse spatial scales. For example, the resolution cell can be 500x500x1,000 meters of air space. While the radar cannot resolve individual birds, it does respond to the overall, combined reflectivity of birds flying within the resolution cell. Specifically, the data can be used to detect, quantify, and monitor biological targets in the atmosphere (Gauthreaux and Belser 1998, 1999, 2003; Gauthreaux et al. 2000; Diehl and Larkin 2005).

To characterize patterns of nocturnal bird migration over the project area and region, a study was conducted using the Weather Surveillance Radar, or NEXRAD (Next Generation Radar). Data from radar stations in this system, including the Vandenberg AFB station, are archived and available for internet download from the National Climatic Data Center. Archived data from the Vandenberg AFB station were analyzed by Geo-Marine, Inc. under the direction of Dr. Sidney A. Gauthreaux, Jr. (Gauthreaux 2008, Final Report included in Appendix XX). The project site is located approximately 30-36 km south-southwest of the radar station. The study analyzed data from the nighttime hours of the spring and fall migration periods of 2006 and 2007 (spring: 15 March to 31 May, and fall: 15 August to 15 November).

Radar reflectivity for each pixel under analysis was processed to estimate bird density per cubic kilometer of aerial space.[2] Further processing yielded information on the direction and speed of the birds and migratory activity during adverse weather conditions. The data were prescreened to focus the analysis on nights with appreciable bird movement and to exclude nights for which the data were contaminated by precipitation, insects, or particulate matter. Two data sets were prepared for this project, as follows:

1) Project Site. The data analyzed (referred to as "sample area" in the report) encompasses a zone directly above the project site extending upward from an elevation of 500 meters above sea level.[3] By comparison, the average elevation of the top of the proposed WTGs is 548 meters. Thus, on average, the proposed WTGs would extend nearly 50 meters (more than half their rotor diameter) into the radar beam. The beam width (and height) at the project site is 486-585 meters. The zone sensed by the radar can be visualized as a block of aerial space above the project area, with its bottom surface cutting through the rotor-swept area of the WTGs and top surface 486-585 meters (approximately 1600-1900 feet) higher up.

2) Regional View. This data set (referred to as "maximum dBZ" in the report) extends out to 240 kilometers from the antenna.[4] At that distance, the bottom of the beam is at 4,283 meters above

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2 The NEXRAD system scans 360 degrees horizontally around the antenna, with a conical beam-width of approximately 1 degree. In the data used for this study, the radar beam centerline was tilted upward ½ degree above the horizontal plane. The nominal 3-D pixel size is 1 degree (horizontal) by 1 degree (vertical) by 1 km in "range" (i.e., along the beam axis).

3 The volume analyzed consists of 147 pixels. (Twenty-one 1-degree pixels horizontal times one 1-degree pixel vertical times seven 1-km range bins = 147 pixels.) These pixels cover a 21-degree arc horizontally, by 1 degree vertically, by 7 km in range. At the project site, the base of the radar beam is 78-108 meters above the elevation of the NEXRAD antenna, which is 401 meters above mean sea level. The beam elevation increases with range distance across the site.

4 The regional data set encompasses a full 360 degree (horizontal) by 1 degree (vertical) radar scan, extending out to 240 km (except where blocked by topography). The radar-sensed volume can be visualized as a disk surrounding the radar antenna, thin at the center, and becoming thicker and higher toward the perimeter.

mean sea level and the top of the beam is at 8,177 meters above mean sea level.[5] Unlike the Project Site data, which was processed to estimate average bird densities above the site, the Regional View was processed to locate areas where bird movement was maximal. Because the elevation of the radar-sensed volume increases with range distance, this analysis provided information on location, direction, and altitude of migration in the surrounding region.

The analysis addressed hour-to-hour, night-to-night, and year-to-year variation in migration density, as well as the direction of nightly movements during spring and fall migration. In an effort to determine the number of nights in a season when collisions of migrants with man-made structures such as meteorological towers and wind turbines might occur, the analysis related the density of migration to weather conditions that might cause birds to fly at lower altitudes.

3.5.2 Vegetation and Habitats

The major plant communities at the Lompoc Wind Energy Facility (LWEF) site are identified in Figure 3.5-2 and Table 3.5-1. Most areas where Project components would be located are grazed by cattle. As in many other parts of California, naturalized non-native species are important members of the herbaceous communities. However, some of the grazed grasslands were quite diverse. About 70 percent of the taxa found during the surveys were native plants, although the diversity and proportion of native versus non-native species varied from site to site. Native species usually are more important on steeper terrain where soils are not as favorable to non-native forage and weed species; where bedrock is shallow or exposed; and in areas shaded by larger shrubs and trees.

TABLE 3.5-1
Plant Communities Within the Proposed Lompoc Wind Energy Project Site.

Mapped Series / Association	Area (acre)	Percent of Proposed Project Area
Annual Grassland	1,575.2	53.0
Native Grassland	5.1	< 1
Grassland - Coastal Scrub Mosaic	137.8	4.5
Central Coast Scrub	852.7	28.9
Evergreen Forest and Woodland	196.8	6.5
Central Coast Riparian Scrub	87.3	3.0
Monterey Cypress*	1.0	< 1
Eucalyptus Groves	34.8	1.1
Agricultural Fields	59.3	2.0
Total	2,950	100

* Monterey cypress mapped are trees that originated from plantings around a farmhouse
Source: Sapphos 2008

Native perennial herbs and shrubs not only persist in many of the grazed grassland areas, but are often quite common, particularly on the sandy loam soils of Middle Corridor. Many of the endemic plants for which northern Santa Barbara County is known are more likely to occur in the shrub- and tree-dominated habitats that would be largely avoided by the Project. Chaparral was not found in the immediate Project area.

Evergreen woodlands and forests grow on the tops and leeward slopes of some hills, along ravines, and around farmsteads (where stands of evergreen species have developed from early plantings of

[5] These elevations were calculated using the calculator on the NOAA website http://www.wdtb.noaa.gov/tools/misc/beamwidth/, with 401 meters added to account for antenna height.

species commonly planted in the region, such as eucalyptus and Monterey cypress). Shrub-dominated vegetation is common on steeper slopes and more exposed sites. The boundary between scrub and grassland is often abrupt, sometimes following fence lines. Deciduous riparian vegetation is uncommon at these elevations. Most drainages are steep with rapid runoff, although moisture may be present most of the year, supplied by the scattered seeps and springs. Scrub or evergreen woodland vegetation follows shaded drainage reaches. Flatter and broader reaches may support willow thickets, rush colonies, or small patches of freshwater marsh. Grasslands are the most extensive vegetation type; some grasslands include a substantial component of native plant species, including native grasses. A few areas mapped as grasslands are composed of a mosaic of annual and perennial grasses, short-statured native shrubs, and perennial herbs.

The major vegetation and habitat types are described below.

3.5.2.1 Grassland

Southern Coastal Grassland

Grass- and annual forb-dominated vegetation occupies most of the gentler to moderately steep slopes in the Project area, including the power line corridor. Species composition apparently varies with soil types (dark clays versus lighter sandy loams) and slope exposure, but may also respond to grazing intensity and other factors related to land use history. Where diversity is lowest, dominants are usually non-native annuals, particularly wild oats *(Avena* spp), introduced bromes *(Bromus spp.),* foxtail barley *(Hordeum leporinum),* ryegrass *(Lolium),* milk thistle *(Silybum marianum),* bur clover *(Medicago polymorpha),* storksbill *(Erodium botrys)* and Crete weed *(Hedypnois cretica).* This assemblage is most common on heavily grazed sites, gentle slopes with southern exposure, and on sites with dark clay soil.

Grasslands with more diversity, contributed mostly by native species, are found on sites with less grazing pressure, on northern or eastern exposures, and generally on sandy loam soils. These flowery grassland areas are most prevalent on the central portion of Middle Corridor, extending across San Miguelito Road to Middle Corridor - South, on Sudden Corridor - East, around Quarry Ridge, and on the eastern slopes of South Corridor - Central. Common species include pineapple weed *(Amblyopappus pusillus),* horkelia *(Horkelia cuneata),* silver puffs *(Uropappus),* tidy tips *(Layia platyglossa),* goldfields *Lasthenia californica),* owl's clover *(Castilleja* spp.), mountain dandelion *(Agoseris* spp.), lupines *(Lupinus* spp), Lotus *(Lotus* spp.), clovers (*Trifolium* spp.), and Gaviota tarplant. Native grasses, particularly needlegrasses *(Nassella*) and creeping rye *(Leymus triticoides)* often are associated with concentrations of native herbs. The annual Crete weed is abundant and strongly dominant in most grassland areas, particularly on clay soil. Patches of mustard, principally black mustard *(Brassica nigra),* and colonies of milk thistle are found on some knolls and ridge tops.

In the power line corridor, annual grasslands are dominated by slender wild oats (*Avena barbata*), foxtail barley (*Hordeum murinum),* meadow barley (*Hordeum brachyantherum*), Italian rye-grass (*Lolium multiflorum*), milk thistle, soft chess (*Bromus hordeaceus*), saw-toothed goldenbush (*Hazardia squarrosa*), plantain (*Plantago* sp.), and curly dock (*Rumex crispus*).

Grassland/Coastal Scrub Mosaic

Fingers of bracken fern (*Pteridium aquilinum*) and runners of blackberry (*Rubus ursinus*) and poison oak (*Toxicodendron diversilobum*) extend into the grassland near rock outcrops, cliffs, and on ridges, with small-statured individuals of coffeeberry (*Rhamnus californica*), small-leaved buckwheat (*Eriogonum parvifolium*), goldenbush (*Isocoma* sp), and California sagebrush *(Artemisia californica).* Colonies of needlegrasses and creeping rye are sometimes common in the grasslands with many native herbs, possibly due to upslope seeps, such as on south Middle Corridor. Patches of common rush *(Juncus patens)* and sickle-leaved rush *(J. falcatus)* are scattered in some grassland areas that appear to be downslope of seeps and springs.

Annual Grassland Habitat

Annual grassland is the most widespread vegetation type within the Project area, including the power line corridor. The large expanses of annual grassland are used by nesting horned larks (*Eremophila alpestris*) and western meadowlarks (*Sturnella neglecta*). Flocks of red-winged blackbirds (*Agelaius phoeniceus*) and tricolored blackbirds (*Agelaius tricolor*) were observed during the surveys, as were lark sparrows (*Chondestes grammacus*), grasshopper sparrows (*Ammodramus savannarum*), white-crowned sparrows (*Zonotrichia leucophrys*), and Brewer's blackbirds (*Euphagus cyanocephalus*). Turkey vultures (*Cathartes aura*), red-tailed hawks (*Buteo jamaicensis*), and American kestrels (*Falco sparverius*) foraged over this vegetation type. During two surveys, kestrels were observed roosting on anemometer tower guy wires. California thrasher (*Toxostoma redivivum*), northern harrier (*Circus cyaneus*), and Nuttall's woodpecker (*Picoides nuttallii*) also were observed, as were Western bluebird (*Sialia mexicana*) and golden-crowned sparrow (*Zonotrichia atricapilla*). Other bird species that utilize this open grassland habitat type include: white-tailed kite (*Elanus leucurus)*, ferruginous hawk (*Buteo regalis)*, peregrine falcon (*Falco peregrines)*, and loggerhead shrike (*Lanius ludovicianus*). Short-grass habitats support breeding birds as well, including grasshopper sparrow, western meadowlark, and California horned lark (*Eremophila alpestris actia*). These species are joined in the winter by the western burrowing owl (*Athene cunicularia hypugea*), savannah sparrow (*Passerculus sandwichensis*), and American pipit (*Anthus rubescens*).

Several bird species were noted at the edges of grassland and other vegetation types, such as Central Coast scrub and mixed evergreen forest. Those included red-shouldered hawk (*Buteo lineatus*), mourning dove (*Zenaida macroura*), western scrub-jay (*Aphelocoma californica*), and lesser goldfinch (*Carduelis psaltria*). Western fence lizards (*Sceloporus occidentalis*) were observed throughout the Project area, including the power line corridor, as were species of small mammals that represent prey items for raptors, such as California ground squirrel (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*). The ground squirrels were not evenly distributed throughout the grassland areas, but rather, were in scattered locations. Sign of several predatory mammals was noted, including gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), American badger (*Taxidea taxus*), and mountain lion (*Felis concolor*).

Native Perennial Grassland

Native grasses, particularly the needlegrasses, may be widely distributed on parts of the LWEF site. These species were more prevalent in late August of 2005 than in 2002, possibly due to unusually high rainfall or because those pastures were grazed early that year. Native grasses can be difficult to identify when the vegetation is heavily grazed.

Native perennial grasses such as purple needlegrass *(Nassella pulchra)* seem dense enough in several areas both on clay and sandy soils to satisfy the 10 percent relative cover criterion used as a threshold to delineate native grassland by the County of Santa Barbara (2006), particularly in the southwest portion of the Signorelli property, near its border with the West property. Other species of native grasses, including coast range melic (*Melica imperfecta*), alkali rye (*Elymus triticoides*), and foothill needlegrass (*Nassella lepida*) are in these species-rich grasslands. This grassland is similar to the Valley Needlegrass Grassland of Holland, except that native associates were coastal, rather than interior, species (Holland, 1986). They include wedge-leaved horkelia, poison oak, cudweed aster (*Lessingia filaginifolia*), goldenrod *(Solidago* spp), bracken fern, goldenbush, annual wildflowers, and annual grasses.

A less common type of native grassland, strongly dominated by California barley, is found on or below areas fed by seeps, particularly on the slopes of the southernmost portion of the Signorelli property (South Corridor). In most instances, these grasslands also include a substantial proportion of native perennial herbs.

Native Grassland Habitat

Wildlife species using native grassland in the Project area include western meadowlark, white-crowned sparrow (*Zonotrichia leucophrys*), lark sparrow, and Brewer's blackbird, northern harrier, loggerhead shrike, California horned larks, and sharp-shinned hawk (*Accipiter striatus*).

3.5.2.2 Central Coast Scrub

Coastal scrub in the Project area is most common on steeper sites, where cover often is very high. As suggested above, grazing probably limits the extent of scrub vegetation on many areas of gentler terrain, although wind and grazing probably control shrub stature. Central Coast Scrub is composed of both summer deciduous and evergreen shrubs and differs from Venturan Coastal Sage Scrub in part because black sage (*Salvia mellifera*) is the only shrubby salvia. Dominant species in most areas include California sagebrush, coyote brush (*Baccharis pilularis*), poison oak, and coffeeberry. Diversity is higher on north-facing slopes, where wild strawberry (*Fragaria vesca*), bracken fern, bedstraws (*Galium* spp), and monkeyflower (*Mimulus aurantiacus*) mingled with the more widely distributed species. Wedge-leaved horkelia, various lotus, sanicle (*Sanicula* spp), wild hyacinth (*Dichelostemma capitatum*), bee plant (*Scrophularia californica*), Indian paintbrush (*Castilleja affinis*), everlastings (*Gnaphalium* sp), and cudweed aster (*Lessingia filaginifolia*) are often found in openings.

In many areas, the line between grassland and scrub is abrupt, but mosaics of shrubs and grasslands occur on the slopes east of Sudden Peak, the east side of South Corridor, and along drainages descending from West Corridor, South Corridor, and Middle Corridor. Scrub vegetation often surrounds rock outcrops and large rocks, and it grows among boulder piles and other places where access is difficult for grazers and browsers. The densest scrub vegetation grows in the bottoms of the deeper drainages.

Central Coast scrub along the power line corridor is dominated by California sagebrush, coyote brush, bush lupine (*Lupinus albifrons*), buckwheat (*Eriogonum* sp.), black mustard, coffeeberry, coast tarweed (*Dienandra increscens ssp. increscens*), pampas grass (*Cordaderia* sp.), and monkey flower (*Mimulus* sp.). In the northeast portion of the power line corridor, the coastal scrub communities are

intermixed with annual grasslands. Even in those portions where coastal scrub is dominant, except rock outcrops, it is intermixed with grasslands.

Central Coast Scrub Habitat

Birds observed in scattered patches of Central Coast scrub within the Project area included loggerhead shrike, California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), wrentit (*Chamaea fasciata*), spotted towhee (*Pipilo maculatus*), Bewick's wren (*Thryomanes bewickii*), common yellowthroat (*Geothlypis trichas*), and song sparrow (*Melospiza melodia*). Rock wrens (*Salpinctes obsoletus*) were observed on and around rock outcrops that occurred in pockets within larger areas of grassland and Central Coast scrub. Sapphos reports that other avian species observed within this habitat included: western scrub-jay, wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivim*), California towhee (*Pipilo crissalis*), and white-crowned (*Zonotrichia leucophrys*) and golden-crowned (*Zonotrichia atricapilla*) sparrows.

Other wildlife sighted included southern alligator lizard (*Elgaria multicarinatus*), California striped racer (*Masticophis lateralis*), and brush rabbit (*Sylvilagus bachmani*). Coyote or gray fox scat, or both, was observed near most patches of Central Coast scrub, particularly those with rock outcrops.

3.5.2.3 Evergreen Forest and Woodland

Evergreen Forest and Woodland are tree-dominated communities that usually occupy north-facing slopes, ravines, and drainages. Understory plants are generally a mixture of shrubs, forbs, and grasses from the surrounding areas; some understory plants are restricted to the shady habitats beneath the tree canopies. Additional shrub species probably grow among the trees that were not found growing on more exposed sites in the adjacent communities. The presence of fence lines along woodland edges and the greater areal coverage by woodland on the VAFB side of the ridges suggest that this vegetation was more extensive in the Project area in the past. The communities within the power line corridor designated as mixed evergreen forest/oak woodland are dominated by oak woodland. Species found in this community type are coast live oak (*Quercus agrifolia*) and poison oak and are surrounded by annual grassland vegetation.

Tanoak Forest

Tanoak forest, dominated by tanoak (*Lithocarpus densiflorus*), is uncommon in Santa Barbara County although common farther north. Many of the species typically found in this type of vegetation may be absent or only sporadic at this latitude (Holland, 1986). Tanoak forest is most commonly seen on the ridges and northeasterly or leeward slopes surrounding the Project site. A small stand of tanoaks was observed on a ridgeline in Larsen Ranch. Chaparral shrubs such as toyon (*Heteromeles arbutifolia*) appeared in the understory with species from the Coastal Scrub community, such as wood mint (*Stachys bullata*) and yerba buena (*Satureja douglasii*). Madrone (*Arbutus menziesii*) and Pacific wax-myrtle (*Myrica californica*), both species with northern affinities, were present in this vegetation community.

Coast Live Oak Woodland

Dominated by coast live oak (*Quercus agrifolia*), coast live oak woodland is common in coastal Santa Barbara County. Oak woodland is common at the lower elevations in Miguelito Canyon, as well as

on some of the more protected north-facing slopes at higher elevations, particularly toward the east end of the LWEF site. A knoll northeast of Sudden Peak is forested by both tanoak and coast live oak. The unusually moist character of the foggy hilltops is illustrated by the distribution of coast live oak on the south-facing slopes, with tanbark oak on west- and north-facing exposures. Shrubs from the surrounding coastal scrub community are most commonly seen in the understory. Some oaks and occasional tanoak and Pacific wax-myrtle (*Myrica californica*) grow in deeper creek channels and on drainage bottoms adjacent to planned access roads.

Evergreen Forest and Woodland Habitat

A number of bird species were observed in mixed evergreen forest, but not in adjacent grassland or Central Coast scrub habitats. Nests of red-tailed hawks were included in the observations. The nests were northeast of the areas that would be disturbed by LWEF construction (that is, northeast of North Corridor and Sudden Corridor).

Red-shouldered hawks and golden eagles (*Aquila chrysaetos*) are also known to be present in this vegetation type in the vicinity; however, no nests of either species were found during the surveys. A communal roost of more than 250 American crows (*Corvus brachyrhynchos*) was observed northeast of Sudden Corridor. A number of woodpeckers used this habitat, including acorn woodpeckers (*Melanerpes formicivorus*), northern flickers (*Colaptes auratus*), Nuttall's woodpeckers, and downy woodpeckers (*Picoides pubescens*). Other birds observed included oak titmouse (*Baelophus inornatus*), bushtit (*Psltriparus minimus*), and California towhee (*Pipilo crissalis*). Sapphos reports that the most numerous avian species observed within this habitat at the LWEP property included: western scrub-jay (*Aphelocoma californica*), oak titmouse, spotted towhee (*Pipilo maculates*), and dark-eyed junco (*Junco hyemalis*).

Mule deer (*Odocoileus hemionus*) and evidence (scat, rootings in the ground) of wild pigs (*Sus scrofa*) were observed during surveys in mixed evergreen forest, especially near interfaces with grassland. Several stick nests of dusky-footed woodrats (*Neotoma fuscipes*) were noted to the northeast of North and Sudden corridors.

3.5.2.4 Central Coast Riparian Scrub

Arroyo Willow Scrub

On gentler, more open terrain, drainages are vegetated by Arroyo Willow Scrub dominated by arroyo willow (*Salix lasiolepis*), common rush, coyote brush, poison oak, and occasionally with narrow-leaf willow (*Salix exigua*) and giant creek nettle (*Urtica dioica* ssp *holosericea*). Ruderal species such as milk thistle are often common along the banks. Common rush is common, along with willow shrubs, in some areas along creeks, such as the small drainage that flows from the south end of Middle Corridor toward Sudden Peak Road. Arroyo willow is most common, although sandbar willow *(Salix exigua)* appears with it along creeks in the bottomlands. Other associates include blackberry (*Rubus* sp.), creek nettle (*Urtica dioica),* coffeeberry, and poison oak. Occasional colonies of elderberries (*Sambucus mexicana*) were found.

Well-developed willow scrub is more common in bottomlands and follows Honda Creek along San Miguelito Road in the vicinity of the proposed access road crossing near the VAFB boundary fence. Arroyo willow scrub also follows the unnamed tributary to Honda Creek that runs between Scolari

and Signorelli benches; and patches of thickets grow on the hillside between the Scolari farmstead and Scolari Corridor. Willow patches were also occasionally seen along seeps and springs, such as the patch in South Middle Corridor.

Dominant species along the power line corridor include California sagebrush, coyote brush, blackberry (*Rubus* sp.), and willows (*Salix* sp.).

Animals utilizing willow scrub habitat include: coyote, bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), black bear *(Ursus americanus californiensis*, which is known to occur on VAFB and could be expected occasionally in the project area); and two-striped garter snake (*Thamnophis hammondii).* On most site visits, Sapphos reports that the most numerous avian species within this habitat at the LWEF property were commonly occurring bird species which included: Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), yellow-rumped warbler (*Dendroica coronata*), song sparrow (*Melospiza melodia*), and purple finch (*Carpodacus purpureus*). Other expected avian species include barn owl (*Tyto alba*), yellow warbler *(Dendroica petechia)*, ruby-crowned kinglet (*Regulus calendula*), California towhee, Anna's hummingbird, and mourning dove.

Central Coast Riparian Scrub Habitat

Wildlife species observed in this habitat type included common yellowthroat, yellow warbler, yellow-rumped warbler, dark-eyed junco, and California towhee. Killdeer *(Charadrius vociferus*) were observed nearby, and golden eagles were observed flying overhead during December 2006 surveys (Olson, 2007) and February 2008 reconnaissance. Brush rabbits occurred in the understory vegetation, as did stick nests of dusky-footed woodrat and coyote scat. Surface water is likely deep enough in some areas of these small drainages for occupation by Pacific treefrogs *(Pseudacris regilla)* and western toads *(Bufo boreas)*.

3.5.2.5 Freshwater Marshes, Seeps, Springs, and Ponds

These freshwater habitats may be closely related because they all appear to originate from the scattered seeps and springs in the Project area. Features subject to regulation under CDFG code, Section 404 of the Clean Water Act, and Santa Barbara County definitions of wetland features are described in more detail in Section 3.5.5.

Seeps and Springs

The USGS Tranquillon Mountain 7.5-minute quadrangle shows a number of seeps and springs scattered through the Project area, particularly at high elevations in Middle and South corridors. Many of the drain ages in this area appear to originate below springs.

An unusually mesic drainage with a rich flora is found in the drainage on the north slope of South Corridor, where elements of mixed evergreen forest, willow scrub, and coastal scrub all are present. Several locally rare species are found along this drainage, including Pacific wax-myrtle (*Myrica californica*), sword fern (*Polystichum munitum*), and thimbleberry (*Rubus parviflorus*). Other mesic associates are strawberry (*Fragaria vesca*), alum root (*Heuchera micrantha*), possibly canyon gooseberry (*Ribes menziesii*), California polypody (*Polypodium californicum*), bracken fern, poison oak, and blackberry (*Rubus* sp.).

Seasonal wetlands are also present in the vicinity of San Miguelito Canyon Road and Sudden Road, dominated by a perennial rush (likely *Juncus phaeocephalus*), brass buttons (*Cotula coronopifolia*), California buttercup (*Rununculus californicus*) and non-native grasses. Exposed, spring-fed hillsides with more open exposures support arroyo willow thickets. A particularly extensive patch of these scattered thickets was seen north of the Scolari farmstead near the bottom of Honda Canyon and the VAFB fence line. Associate species were common rush, toad rush (*Juncus bufonius*), brown-headed rush (*J. phaeocephalus*), honeysuckle (*Lonicera involucrata*), and canyon gooseberry (identification uncertain).

Hillside seeps dominated by patches of what appeared to be California barley are found around and south of VABM Prospect 1933 (South Corridor). The colonies were only occasionally spot-checked to search for meadow barley, which is a wetland indicator. The soil beneath these colonies was very dark clay; no formal testing for hydric soil characteristics was performed, although a few bright mottles were seen on a recently bladed road. Clay soils that weather from Monterey shale may be very dark without being wetland soils.

A colony of California barley was also found on the steeper section of the planned route for access to South Corridor along Signorelli Ridge. The steep northwest slope of VABM Prospect 1933 (South Corridor) and a small area in South Middle Corridor support colonies of Mexican rush (*Juncus mexicanus*). In the former location, creeping rye, purple owl's clover (*Castilleja exerta*), and alkali rye (*Elymus glaucus*) are associates with other upland grasses and forbs. No quantitative cover data were collected, although the extent of the Mexican rush colony in South Corridor was measured in 2005. Sickle-leaved rush also was found farther down slope from the South Middle Corridor seep, mixed in the grassland with creeping rye and purple owl's clover.

Wildlife species observed at the seeps included California towhee, spotted towhee, Anna's hummingbird (*Calypte anna*), blue grosbeak *(Passerina caerulea)*, and brush rabbit.

Ponds

A small pond is located on the western slope of the northern part of Middle Corridor, where a landslide apparently created a small basin that collects rainwater runoff. Duckweed (*Lemna* sp.) was observed floating on the water surface, and mesic weedy species, such as watercress (*Rorippa anagallis-aquatica*) and pimpernel (*Anagallis arvensis*), were observed in the muddy area surrounding the pond. Another pond is located just north of the northwestern ridge of VABM Prospect 1933 (South Corridor). Vegetation surrounding this bermed pond includes giant spikerush (*Eleocharis macrostachya*) and poison hemlock (*Conium maculatum*), as well as clumps of common rush. Brass buttons (*Cotula coronopifolia*) and watercress were observed growing in the water. This pond appears to be fed by seeps, as well as rainwater runoff. A third pond, which was not surveyed, was seen next to the agricultural field at the bottom of Honda Canyon.

Freshwater Marsh

Freshwater marsh develops only in very small areas in the rather steep terrain on the Project sites. Landslides may impound runoff and slow drainage, creating marshy areas colonized by species of rush, as in northern Middle Corridor around the small pond. Freshwater marsh, dominated by giant spikerush, surrounds the small bermed pond below the South Corridor ridgeline. Another small patch of freshwater marsh has developed around a spring-fed cattle trough on the access

route to North Corridor. In 2002, watercress, brass buttons, willow dock (*Rumex salicifolius*), rabbit's foot grass (*Polypogon monspeliensis*), and other common species had colonized the short reach of the creek that had silted in behind the access road along the small channel next to the trough.

3.5.2.6 Eucalyptus Groves

Well-grown eucalyptus trees, generally composed of blue gum (*Eucalyptus globulus*), are planted around most of the residences in the Project area and along portions of the power line corridor. One large grove of eucalyptus trees has expanded near the VAFB boundary on the south side of Honda Canyon north of the Scolari farmstead buildings. These trees are down slope of the willow-dominated seep area. The trees in this grove are clustered; groups of trees with interwoven canopies are separated by small openings. Other stands of eucalyptus trees are far smaller and are often planted along fence lines. At the northern end of the eucalyptus grove is an area of Monterey cypress (*Cupressus macrocarpa*) about an acre in extent that probably developed by reproduction of trees originally planted at the original Scolari house. Monterey cypress is a California native species native to the Monterey Peninsula that has been extensively planted in coastal areas outside its current natural distribution.

Eucalyptus Groves as Habitat

Five (four small and one large) eucalyptus groves are all in one location near the farmhouses in the east-central part of the LWEF area. All the eucalyptus trees probably originated from the same planting period. Because groves of eucalyptus trees are almost monotypic, this habitat lacks structural diversity to be used by many wildlife species. However, the trees do provide important habitat for some species. The trees are known to be used by some roosting and nesting birds. American crows (*Corvus brachyrhynchos*) were observed in the trees during the surveys. During the August 26, 2005, survey, up to 12 turkey vultures were observed foraging over and near the large eucalyptus grove. Sapphos reports observing this species roosting in the largest eucalyptus grove near the western boundary of the LWEF property. The wintering-flowering species of eucalyptus has resulted in some bird species now wintering in the County. Some species of bats, including the red bat (*Lasiurus blossevillii*), are known to forage along rows of eucalyptus trees.

3.5.2.7 Ruderal

A few areas are dominated by one or a few weedy plant species that typically follow disturbance. Native species may be entirely absent in ruderal areas, but some natives, such as coyote brush and telegraph weed (*Heterotheca grandiflora*), readily colonize disturbances. Ruderal plants often persist along roadsides and trails, next to agricultural fields, and around fences, water sources, and in areas where livestock use is concentrated. Ruderal species may replace the herbaceous understory in tree and shrub dominated habitats if cattle find shade beneath the taller plants. Ruderal plants may be annual or perennial, and many produce copious amounts of seed. Common ruderal species are black mustard and thistles, including milk thistle, Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), and tocalote (*Centaurea melitensis*). Knotweed (*Polygonum aviculare*) is an example of a species commonly found growing in very compacted soils. Poison hemlock frequently colonizes disturbed wetland margins, and fennel (*Foeniculum vulgare*) may spread over large areas of upland habitats.

3.5.2.8 Agricultural Fields

Cultivated fields were located in the bottom of Honda Canyon between Honda Creek and the hills to the south. The crop under cultivation in 2005 appeared to be a forage crop such as red fescue. Crops in 2002 may have included safflower. Another cultivated field is located along the bottom of the unnamed drainage just south of Honda Canyon and south of the West Corridor site. Agricultural fields usually are surrounded by a few ruderal species such as milk thistle.

Agricultural Fields as Habitat

Red-winged blackbirds were observed foraging in agricultural fields during the surveys. Such fields are also known to provide habitat for burrowing small mammals, such as Botta's pocket gopher and California ground squirrel. The presence of small mammals attracts raptors, including northern harrier and red-tailed hawk, to forage over agricultural fields. Undisturbed portions of these fields are especially important to ground dwelling birds such as meadowlark, horned lark, and lark sparrow.

3.5.3 Wildlife

Common wildlife species are addressed in this section with special attention to raptors, passerines, bats and general avian migration patterns in the project area.

Common wildlife species observed or expected to be in the Project area include western fence lizard, California ground squirrel, Botta's pocket gopher, gray fox, bobcat, coyote, mountain lion, southern alligator lizard (*Elgaria multicarinatus*), California striped racer (*Masticophis lateralis*), brush rabbit, mule deer (*Odocoileus hemionus*), wild pigs (*Sus scrofa*), and dusky-footed woodrats. Additionally, small drainages may be occupied by Pacific treefrogs and western toads.

3.5.3.1 Avian Species

During the various field surveys for this Project, numerous species of birds were observed. Lists of all birds observed in the 2002, 2005, 2006, and 2008 surveys are presented in Appendix B.

Sapphos reports (Appendix B) observing 73 avian species at the LWEP site as a result of winter avian pre-construction surveys conducted from December 2007 through March 2008. These 73 avian species were categorized as 39 year-round residents, 17 winter residents, and 17 winter transients (or early spring migrants). An additional 18 species were reported as a result of the winter season avian pre-construction surveys. With the addition of these 18 species, the total number of avian species recorded at the project site during all of the project surveys through March 2008, including species documented in the DEIR and the two biological reports, is 91 avian species. These 91 avian species represent 38 families, with 6 families added to the list as a result of the winter season avian surveys.

Eleven sensitive species (discussed below) were observed during the winter season bird surveys within and/or near the boundary of the proposed project: northern harrier, sharp-shinned hawk, Cooper's hawk (*Accipiter cooperii*), ferruginous hawk, golden eagle, long-billed curlew (*Numenius americanus*), western burrowing owl, loggerhead shrike, California horned lark, California rufous-crowned sparrow (*Aimophila ruficeps*), and grasshopper sparrow. Six of these 11 sensitive species are raptors.

The horned lark was the most frequently recorded species on area search counts, being observed in 25 of 108 counts, followed by three other species of grassland birds in order of decreasing frequency: western meadowlark, savannah sparrow (*Passerculus sandwichensis*), and American pipit. The only other species recorded more than 10 times on area search counts was the turkey vulture (*Cathartes aura*). The other three raptors recorded on area search counts, in order of decreasing frequency, was American kestrel, red-tailed hawk, and northern harrier.

The mean number of birds per count circle within and outside of wind turbine corridors was 4.64 birds per sample area.

During previous surveys of the project site the most frequently observed species on the LWEF site and power line corridor include the following:

- Turkey vulture (*Cathartes aura*)
- Red-tailed hawk (*Buteo jamaicensis*)
- American kestrel (*Falco sparverius*)
- California quail (Callipepla californica)
- Killdeer (Charadrius vociferus)
- Mourning dove (*Zenaida macroura*)
- Anna's hummingbird (*Calypte anna*)
- Western scrub-jay (Aphelocoma californica)
- California horned lark (Eremophila alpestris actia)
- Cliff swallow (Petrochelidon pyrrhonota)
- Wrentit (Chamaea fasciata)
- European starling (*Sturnus vulgaris*)
- Spotted towhee (*Pipilo maculatus*)
- Song sparrow (Melospiza melodia)
- Western meadowlark (*Sturnella neglecta*)
- American Crow (Corvus brachyrhynchos)
- Barn swallow (*Hirundo rustica*)
- American pipit (*Anthus rubescens)*
- Savannah sparrow (Passerculus sandwichensis)

Raptors

As of winter 2008, fourteen species of raptors were observed during the surveys on the LWEF site. Up to seven raptor species were observed during each survey week at the LWEF property from February into early March during the Sapphos 2008 surveys. The number of raptors observed dropped to three to four raptor species for the survey weeks from mid to late March. The first survey on March 18–19, 2008 produced 12 turkey vultures, 6 adult red-tailed hawks, and two female American kestrels. The second survey on March 26–27 produced 22 turkey vultures, 6 adult red-tailed hawks, and 1 common raven (*Corvus corax*).

The sensitive raptor species observed (white-tailed kite [*Elanus leucurus*], ferruginous hawk [*Buteo regalis*], peregrine falcon [*Falco peregrinus anatum*], golden eagle [*Aquila chryssaetos*], northern harrier [*Circus cyaneus*], sharp-shinned hawk [*Accipiter striatus*], western burrowing owl [*Athene cunicularia*] and Cooper's hawk [*Accipiter cooperii*]) are discussed in Section 3.5.4.2, along with other sensitive raptors with potential to occur in the Project area. Species without sensitive classifications that were sighted during surveys for this Project include turkey vulture, red-tailed hawk, red-shouldered hawk, and American kestrel. With the exception of red-shouldered hawk, these species were observed throughout the Project area. As noted earlier, kestrels were observed perching on the guy wires for two anemometers near Quarry Ridge and North Corridor. Overall, turkey vultures, red-tailed hawks, and American kestrels would be considered common in the Project area, while red-shouldered hawks were uncommon.

The four non-sensitive raptor species are year-round resident species in the vicinity of the Project area. Red-tailed hawk nests were observed in mixed evergreen forest northeast of Middle Corridor. Red-shouldered hawks also nested in mixed evergreen forest. This species more likely nests in lower densities within the vicinity of the Project area than red-tailed hawks and kestrels. Turkey vultures nest primarily in cavities in cliffs, banks, and steep hillsides. As such, secluded portions of Sudden Peak, Oak Mountain, and other ridges in the vicinity of the Project area contain potential nesting habitat. No turkey vulture nests were found during the surveys.

Several raptors (predominantly red-tailed hawks and American kestrels) were repeatedly observed using the uplift formed along ridgelines on the project site for soaring. Raptors including red-tailed hawk kestrel, golden eagle, peregrine falcon and other bird-of-prey, including burrowing owl and great-horned owl were observed on several occasions foraging over open areas throughout the project area.

Sapphos reports that active nests were identified for two species of raptors on the project site: red-tailed hawk and great horned owl. An active red-tailed hawk nest was discovered in a tall eucalyptus tree in the upper Honda Creek valley on February 23, 2008. Sapphos reports that this nesting pair is one of four resident pairs of red-tailed hawks that include at least a portion of the LWEF property within their home range. Two of the three remaining pairs were assumed to nest outside the LWEP property.

An active great horned owl nest was discovered in another tall eucalyptus tree in the lower Honda Creek valley on February 27, 2008. This great horned owl pair is reportedly one of two pairs present at the LWEF property; the other pair frequents the Larsen tract and areas outside the LWEF property where it is expected to nest.

During the Sapphos 2008 winter surveys red-tailed hawks were recorded on many diurnal raptor surveys along the five main ridges of the LWEP property, and on every one of the 24 survey dates. More than 90 percent of red-tailed hawks detected were adults. The largest daily number of birds observed at the LWEP site was 10 to 12 red-tailed hawks being observed in December 2007. The raptors were observed flying below, within, and above wind turbine blade swept heights, with an appreciable percentage (>30 percent) within wind turbine blade swept heights of approximately130 to 400 feet. Individuals in February and March, 2008 all appeared to be local breeding birds, and breeding activity was observed as early as early February. Red-tailed hawks occurred over all habitats throughout the LWEP site. In general, the observed birds preferred foraging in open and semi-open habitats or along woodland and forest edges; they are expected to roost in eucalyptus groves, oak woodland, or other tall closed habitats at the LWEF site. An appreciable percentage of red-tailed hawks flew within wind turbine blade swept heights of approximately 130 to 400 feet.

Sapphos reports that only one observation of an American kestrel was recorded on some diurnal raptor surveys along the five main ridges of the LWEF property, and on 20 of the 24 survey dates. All but two American kestrels observed were females, and the single males were seen on site on one day each. The largest daily number of birds observed at the LWEF property was five to six birds in February 2008, although numbers decreased in March. Larger numbers, up to approximately 10 birds, were observed in December 2007. Birds flew below and within wind turbine blade swept heights with fewer than 20 percent of individuals within wind turbine blade swept heights of approximately 130 to 400 feet, although American kestrels frequently perched on meteorological towers within wind turbine swept blade heights. The number of American kestrels

had considerably decreased by late March 2008, when two to three females were still present, with no breeding activity observed. Breeding activity did not occur after March. American kestrels occurred over all habitats throughout the LWEF site, although females in particular typically preferred foraging in open and semi-open habitats.

Two great horned owls were heard calling on two calm nights (February 5 and February 6) during the Sapphos winter surveys in the lower to middle Honda Creek valley. Sapphos reports that according to local residents, owls had been present on this territory for at least several years. Great horned owls occurred over all habitats throughout the LWEF site and are expected to forage in a variety of habitats at the LWEF site.

Twenty turkey vultures were recorded 16 times during Sapphos winter area search counts, on all diurnal raptor surveys along the five main ridges of the LWEF property, and on every one of the 24 survey dates. The largest number of up to 25 birds formed a nocturnal roost at the largest eucalyptus grove near the western boundary of the LWEP property adjacent to VAFB. The largest number of birds observed foraging in a single flock on the LWEF property was 14 to 17 birds. Birds flew below (<130 feet), within (130 to 400 feet), and above wind turbine blade swept heights (> 400 feet), with an appreciable percentage (>30 percent) within wind turbine blade swept heights of approximately 130 to 400 feet. No certain spring migrants were observed on the LWEF property, which can begin as early as mid-February in Southern California.

Passerines

A majority of the birds observed during the field surveys were passerines. Among the most frequently observed species listed above were California horned lark, wrentit, spotted towhee, song sparrow (*Melospiza melodia*), western meadowlark, cliff swallow (*Petrochelidon pyrrhonota*), and European starling (*Sturnus vulgaris*). Spotted towhees occasionally nest on undergrowth or piles of debris or brush just above ground level. California horned lark (*Eremophila alpestris actia*) and western meadowlark nest almost exclusively in grassland. Song sparrows nest on the ground or in shrubs or trees just above ground level in chaparral, coastal sage scrub, and riparian scrub habitat. Cliff swallows build mud nests along cliffs or rock overhangs. Starlings have been known to nest on the ground, but typically nest in cavities or crevices.

Sapphos reports (2008) observing the following avian species within the ridgeline areas: mourning dove (*Zenaida macroura*), Say's phoebe (*Sayornis saya*), western bluebird (*Sialia mexicana*), European starling (*Sturnus vulgaris*), savannah sparrow (*Passerculus sandwichensis*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), and house finch (*Carpodacus mexicanus*).

Bats

Seventeen species of bats, from two families, are known to occur in the Central California region. Nine of these species have special status and all are insectivorous, yet vary in their foraging and roosting habits. Information on the presence of the following bat species detected in the project region (Table 3.5-2) was gathered using survey results conducted by CCBRG in 2008 and previous studies conducted on VAFB (Pierson et al., 2002) and surrounding areas in 1997 and 1998.

Occurrence information for the four species with sensitive classifications (pallid bat [*Antrozous pallidus*], Townsend's big-eared bat [*Corynorhinus townsendii*], western red bat [*Lasiurus blossevillii*], and western mastiff bat [*Eumops perotis*]) is presented below under other sensitive species (Section 3.5.4.2).

TABLE 3.5-2
Species Detected in Lompoc Area during Spring 2008 and VAFB Surveys 1997-1998

Family VESPERTILIONIDAE (Plain-nosed or mouse-eared bats)		
Myotis yumanensis	Yuma myotis	VAFB
Myotis californicus	California myotis	VAFB
Eptesicus fuscus	Big brown bat	2008, VAFB
Lasionycterius noctivagans	Silver-haired bat	VAFB
Lasiurus blossevillii	Western red bat*	VAFB
Lasiurus cinereus	Hoary bat	VAFB
Corynorhinus townsendii	Townsend's big-eared bat *	VAFB
Antrozous pallidus	Pallid bat*	2008, VAFB
Family MOLOSSIDAE (Free-tailed bats)		
Tadarida brasiliensis	Mexican free-tailed bat	2008, VAFB
Eumops perotis	Western Mastiff bat*	VAFB

2008 = Detected during CCBRG acoustic surveys March 9 through March 16, 2008
* Sensitive species discussed in Section 3.5.4
VAFB = Detected during Pierson surveys on Vandenberg Air Force Base 1997-1998

Two species and one phonic group were detected across four acoustic sampling stations (Table 3.5-2). Activity levels during the five days of sampling were very low. Four call sequences were recorded for a total of 25 detector nights. Notes on the acoustic detection follow:

California myotis (Myotis californicus). No 50Khz call sequences characteristic of California myotis were detected at any of the acoustic monitoring stations. This species was widespread and frequently encountered during the 1997-1998 VAFB Study and was consistently recorded during acoustic surveys in Upper Honda Canyon.

Big brown bat (Eptesicus fuscus. Call sequences characteristic of big brown bats were recorded during the 2008 sampling. This species' calls were reported as being abundant during acoustic surveys in Upper Honda Canyon during the 1997 and 1998 sampling.

Silver-haired bat (Lasionycteris noctivagans). This species was not recorded during the 2008 sampling but was recorded at three acoustic sites during the 1997-1998 VAFB study. Two of the detection sites were located near the Lompoc Wind Energy project site (Upper Honda canyon had detections in July and Miguelito County Park in June).

Hoary bat (Lasiurus cinereus). No hoary bats call sequences were detected during the 2008 surveys. Hoary bat calls were recorded throughout VAFB from 1997-1998 VAFB Study yet at only a few sites and in low numbers. The majority of the detections were recorded during the fall migration period which is consistent with records which suggest that this species is migratory along the California coast.

Mexican free-tailed bat (Tadarida brasiliensis). One call sequence in the 25khz range was recorded that could possibly be attributed to this species during the 2008 sampling. This species was the second most abundant a frequently encountered species during the VAFB

1997/1998 study. This species was detected year round. Mexican free-tailed bats were regularly detected acoustically in Upper Honda Canyon.

Yuma myotis (Myotis yumanensis). Although a number of roosts of Yuma myotis were identified on the base during the 1997/1998 studies, most were on North Base, a considerable distance from the Project area. This species is a year-round resident of the region.

3.5.3.2 Migration Patterns

Migratory movements of birds in northern Santa Barbara County include both seabird migration which occurs along the Pacific coastline, and overland migration of large numbers of aquatic and terrestrial avian species. Migration typically occurs during two different times of the year when birds fly north in the spring and south during the fall. However, due to Southern California's mild and homogenous climate, birds could be expected to migrate through and/or over the project area during any month of the year.

Bird migration can occur during the day or night. Species that typically begin their flights during the night from land and fly over water include rails, sandpipers, plovers, large shorebirds, flycatchers, orioles, most sparrows, warblers, vireos, and thrushes (EDC 2007). Special status or locally rare species in this group include burrowing owl, western snowy plover, southwestern willow flycatcher (*Empidonax traillii extimus*), and yellow warbler. Daytime migrants include some species of ducks and geese, loons, gulls, pelicans, hawks, swallows, nighthawks, and swifts (EDC 2007). Many of the larger species, especially raptors and vultures use updrafts created by thermal convection or wind deflection off of ridgelines to gain altitude during migration events.

Inclement weather conditions such as fog or high winds are likely to influence typical bird behavior and migration routes as adverse weather may cause ocean-going migrants landward. The typical weather patterns in the project area can be characterized as having mild winters with 18 inches or more of precipitation rain and temperatures occasionally reaching freezing. Little to no rain typically falls during the summer months; however, the project site is located close to the coast and regularly has heavy fog from spring through the summer months. High winds are also typical of the site with the normal wind pattern being from the Northwest. During and immediately prior to major storms, winds often shift and head in from the south and east.

Pacific Flyway

The Pacific Flyway is a major bird migration route extending from Alaska to Patagonia. The coastal route of the Pacific Flyway is utilized by shorebirds and seabirds that breed in the north and fly to important wintering areas along the coast of California between, the San Francisco Bay and Baja California in the fall (Hickey et al 2003). Extraordinarily large numbers of waterfowl and shorebirds including loons, Brants, scoters, California brown pelicans, cormorants, gulls, terns, and phalaropes have been observed migrating along the coast. Lehman recorded 37 species flying south during surveys along the Goleta coastline in 1976 that included common loon, Pacific loon, red-throated loon, surf scoter, Brant, Brant's cormorant, red-necked phalarope, California gull, and Heerman's gull.

Fall Migration. A majority of the fall, southward migration to the wintering areas occurs from late September to late December with a fairly consistent rate of passage (Lehman 1994). Although there

are typically many more birds flying south at this time of the year than the spring northward migration, the fall passage of coastal seabirds is less pronounced (i.e., migration occurs over a longer duration of time) overall than the passage in spring. In the fall, the migration route occurs farther offshore than the spring migration with coastal seabirds largely being detectable only from the shore north of Point Conception.

Spring Migration. Large numbers of seabirds have been observed from the shore at Goleta Point in spring returning to their breeding grounds (Lehman 1994). Lehman theorizes that the east-west trending coastline from Malibu to Point Conception is a broad barrier to the seabirds migrating north, and the seabirds hug the coastline until Point Conception and then continue on their northward path. Lehman also notes the spring migration is more concentrated in a shorter time period than in the fall. The northward migration of Pacific coastal seabirds occurs from the end of February through the beginning of June, although some species have much more concentrated migration pulses (e.g., over 90% of the three species of loon migrate in spring in a one month period from early April to early May, Lehman 1994).

Overland Migration. Based on the observational data from Lehman (1994), the following waterfowl or shorebird species have been observed to utilize overland migration routes: red-necked phalarope (spring nocturnal migrations were detected over the Santa Barbara coastal plain in 1980, 1981, and 1982 during calm, clear nights), western sandpiper (a dead western sandpiper was found at the Jesusita trail in the Santa Barbara foothills and western sandpipers are known to use Lake Cachuma), semi-palmated plovers, whimbrels, long-billed curlews, and parasitic jaeger (all of which have been recorded at Lake Cachuma). Sapphos Environmental, Inc. also observed a single long-billed curlew flying over low elevation nonnative grasslands outside the project development footprint on February 6, 2008 (Sapphos 2008).

Migrating Shorebirds

The following species comprise a subset of one group of birds (shorebirds) as an example of expected migration in coastal areas of Santa Barbara County. Most shorebirds are expected to be concentrated near the coast (and potentially as far inland as the project area). The following descriptions of just these nine species demonstrate the variability in timing and numbers of migrating species expected along the coastline:

Red-necked Phalarope. Over 80,000 individual red-necked phalaropes migrate along the U.S. Pacific Coast in fall (Page et al. 1999), with almost 20,000 found in San Francisco Bay alone (Stenzel et. al 2002, Hickey et al 2003). Fall transients arrive in the project area mid or late June; the first juveniles arrive in early or mid-August and the species is rare by late October. Spring migration occurs from mid-April until the beginning of June. During spring the large majority appear to pass farther offshore (Lehman 1994). This species is most abundant in offshore waters during migration events.

Red Phalarope. This species is an abundant offshore migrant in the California current (Tyler et al. 1993; Warnock et al. 2001) but accurate counts are lacking (Hickey et al 2003). Fall migrants appear in the project area as early as mid-August. The species is most numerous during late fall (late October to November). Spring migration occurs primarily offshore with peak numbers in April and May. The largest numbers during migration events occur in offshore waters; large flights are rarely visible from the shore (Lehman 1994).

Western Sandpiper. Over one million western sandpipers migrate through the Central Valley and along the coast during spring (PRBO unpublished data; Hickey et al 2003). Early western sandpipers migrants arrive in Santa Barbara County at the end of July. By late October most sandpipers are found at their principal wintering areas: Santa Maria Valley and the Sandyland Slough. Spring migration begins in late March and peaks between early April and the beginning of May (Lehman 1994). This species is known to utilize Lake Cachuma (Lehman 1994) and further evidence of overland migration includes a single count of a dead bird being found at the Jesusita trail in the foothills above Santa Barbara.

Dunlin. The minimum estimate of 250,000 individuals of the race (*Calidris alpina pacifica)* that winters along the coast and in the Central Valley (PRBO unpublished data) represents about one half of that subspecies' entire population (Page and Gill 1994; Hickey et al 2003). The first individuals of this species appear by mid-September. Individuals overwinter mainly at the Santa Maria River mouth and Sandyland Slough. Spring transients move through the general area from early April to mid-May (Lehman 1994). This species prefers coastal sloughs and river mouths during migration events (Lehman 1994).

Short-billed Dowitcher. As many as 150,000 short-billed dowitchers migrate along the California coast in spring (PRBO unpublished data; Hickey et al 2003). This species is common only in migration, which takes place from early July to late September in the fall and from late March to early May in the spring. Flocks of up to 200 individuals have been seen migrating offshore or over the coastal plain during April (Lehman 1994).

Marbled Godwit. An estimated 37,000 godwits occur along the California coast in winter (PRBO unpublished data), and up to 138,000 may pass through during migration, assuming the majority of birds wintering in Baja California, Mexico (Page et al. 1997) migrate through California. Wintering numbers on the California coast are unmatched elsewhere in the United States (Hickey et al 2003). This species is a common transient and winter visitor. Fall migrants begin appearing in early July and are occasionally observed in large numbers on flooded fields in the Santa Maria Valley (Lehman 1994).

Willet. Over 20,000 Willets winter along the California coast and over 50,000 may migrate through the coastal region (PRBO unpublished data; Hickey et al 2003). Migrants return early mid- or late-June and this species is typically observed during migration events near sloughs, lagoons, beaches, and along the shore (Lehman 1994).

Semipalmated Plover. Coastal wetlands are important for this species during fall and spring migration, with low thousands of birds migrating through the region (Page et al. 1999; Hickey et al 2003). Late spring transients are observed until late May, and fall transients appear as early as late June. Evidence of overland migration includes three records at Lake Cachuma (Lehman 1994).

Black-bellied Plover. At least 28,500 birds winter and 42,500 migrate along the coast (PRBO unpublished data; Hickey et al 2003). The first south bound migrants have been observed as late June and early July. This species is known to frequent coastal areas and short grass pastures during migration events (Lehman 1994).

Migratory Flight Altitude

Birds migrate within a wide range of altitudes, from ten feet to ten thousand feet. Some species like the common loon fly only a few feet over water but fly 3,000 to 5,000 feet over land. The height of migratory flights can be extremely variable and birds change their flight altitude according to weather and topography (Kerlinger 1995).

Weather conditions have been shown in many radar studies to influence migration passage rates and flight altitudes of nocturnal birds. Wind is a key factor in migratory flight altitudes. Birds typically fly at heights at which headwinds are minimized and tailwinds are maximized (Cooper, 2004). In pre-construction surveys at a Chautauqua Study Area, New York, it was observed that flight altitudes were significantly lower during foggy daytime periods than during periods with no fog; in contrast, at night, birds flew significantly higher during foggy periods (Cooper 2004). Table 3.5-3 shows altitudes (feet above ground level) of bird species that were observed in the Chautauqua Study Area (several of these bird species are also expected in the Lompoc Project area). The largest single-night kill for nocturnal migrants (27 passerines) at a wind power project occurred on a foggy night during spring migration, when they collided with a turbine near a lit substation at the Mountaineer Wind Power Development in West Virginia (Curry & Kerlinger, 2004).

TABLE 3.5-3.
Radar-measured flight altitudes (feet above ground level) of birds observed in the Chautauqua Study Area, New York during spring 2003

Species	Flight Altitude (feet)			Number of Flocks
	Mean	Minimum	Maximum	
Common Loon	1,780	1,030	3,060	9
Turkey Vulture	400	90	1,650	83
Osprey	810	190	1,540	4
Bald Eagle	1,860	1,530	2,170	3
Northern Harrier	550	350	750	3
Sharp-shinned Hawk	490	190	720	4
Cooper's Hawk	580	160	590	3
Accipiter spp.	1,010	260	2,620	13
Red-shouldered Hawk	1,950	1,270	2,620	2
Broad-winged Hawk	1,260	240	2,730	172
Red-tailed Hawk	550	140	2,620	37
Buteo spp.	480	160	930	10
American Kestrel	120	110	130	2
Raptor spp.	880	230	1,160	7
Shorebird spp.	710	710	710	4
Barn Swallow	380	160	590	2
Passerine spp.	1,230	130	2,190	8

From Table 3 (Cooper 2004)

Passerines. The majority of passerines' flight occurs in the first 2,000 feet above the ground surface. A radar study conducted in the eastern United States (Able 1970) demonstrated that more than 75 percent of passerines in their study migrated at altitudes between the ground and 2,000 feet. A survey conducted in the Appalachians found that during nights of heavy southward migration over the Appalachian ridgelines, there were an exceptional number of birds flying less than 100 feet from the ground surface (Williams 2001). In other observations at sites with level terrain Williams (2001) did not observe as many low-flying birds.

Waterfowl. The migratory flights of ducks and other waterbirds over water are typically within 100 to 200 feet of the ocean. In studies along the Atlantic Coast researchers found that 90 percent of thousands of scoters, mergansers, black ducks, loons, gannets and other birds flew at less than 90 feet above the ocean (Kerlinger 1995). Kerlinger observed common loons and some ducks regularly migrating overland at 3,000 to more than 5,000 feet above ground level. A radar study conducted in Scandinavia found that migrating eiders and oldsquaws flew at less than 300 feet above the ocean, but when crossing the Scandinavian Peninsula they flew at altitudes between 2,000 and 6,000 feet. Kerlinger postulates that some seabird fly at high altitudes overland because the ability to see water is important to birds that cannot take off from land (Kerlinger 1995).

Shorebirds. A visual study of overland migration of shorebirds in eastern Alaska found that approximately eighty percent of shorebirds within the study area flew within 100 feet of the ground surface (Cooper 1995). However, a few long-distance shorebirds (red knots, semi-palmated plovers) were observed to migrate at very high altitudes, from 5,000 to even 12,000 feet above the ground surface. These are some of the highest flights known for migrants (Kerlinger 1995).

3.5.3.3 Results for Radar Analysis of Nocturnal Bird Migration Patterns

The NEXRAD radar study (Gauthreaux, 2008) provides estimates of average density and movement of nocturnal migrating birds in a surveillance area above the project area during the 2006 and 2007 spring and fall migration seasons. The study also provides information on patterns of migration in the northern Santa Barbara region. Please refer to Section 3.5.1.6 for a summary of the study methodology and Appendix B for the Final Report. The Final Report contains the full data set of estimated bird densities used in the study, analysis of migration direction, and detailed information on adverse weather conditions and associated migratory bird activity. The following is a brief summary of the study results. Because the methodology is complex and the results fairly difficult to interpret, a draft summary of results was provided to Dr. Gauthreaux for verification. The following summary reflects his revisions and includes supplementary information not contained in the Final Report, but provided subsequently by Dr. Gauthreaux in phone calls and email communications.[6] The summary omits discussions of variability in migration hour-to-hour, day-to-day, season-to season, and year-to-year, which are covered in the Final Report.

Migration above the project site. The maximum bird density recorded above the project site was 86 birds per cubic kilometer (km^3) on one day in May, 2006. Density was much lower on most days during the peak migration period. The overall level of nocturnal migration above the project site in both fall and spring migratory seasons in 2006-07 was typical for those recorded along the West Coast but very low compared to other sites previously analyzed by the author in other parts of the U.S. As discussed in Section 3.5.1.6, the surveillance area above the site extended from within the WTG rotor swept zone (RSZ) upwards approximately 1600-1900 feet. The Final Report notes: "It is impossible to tell exactly where the birds are within the radar beam over the sample area, but based on the fact that migration density increased with altitude, it is likely that a major proportion of the birds recorded in the sample area were above the RSZ."

Regional migration. The highest densities of birds observed in the region were flying at altitudes (between 2,000 to 5,000 feet) much higher than the WTGs rotor sweep zones. In addition, most of

6 Pers. Comm. S. Gauthreaux to John Day: Phone calls May-June, 2008; and emails June 23-30, 2008.

the migration followed trajectories just west of the Sierra Madre and San Rafael Mountains which would locate the majority of migration approximately 20 to 40 miles east of the project area.

Observed bird densities for the region were generally very low compared to over 70 sites also analyzed by Gauthreaux: maximum densities exceeding 100 birds km^{-3} were detected on only 22 occasions during the four migratory periods analyzed. By comparison, peak bird densities observed in other studies in other parts of the U.S. described in the report ranged from 400 to 1,148 birds per km^3. (Gauthreaux 2008, p. 9) The direction of migration observed in the spring was toward the north-northwest (342° to 343°) and in the fall was toward the south-southeast (152° to 153°). The results indicate that most overland migration in Santa Barbara County follows an inland route, cutting diagonally north-northwest from the Gaviota Coast, rather than following the coastline around Point Conception or above the coastal ridges and project site.

Seasonality. The observed peak migration periods were from mid-April to mid-May and from mid-August to the end of September. Fall migration over the project site and regionally was between 1.1 to 1.5 times greater than what was observed in spring. In the spring, migration was recorded beginning in mid-April, peaks near the end of April and the beginning of May, and then declines after the first weeks of May. In the fall, the patterns of migration were similar in 2006 and 2007 with more of the migration occurring between August 15 and September 30 than between October 1 and November 15. A pulse of fall migration began in late August and early September and another pulse of greater magnitude occurred in late September. From the beginning of October the density of migration declined and by November very little migration was recorded. Bird densities above the project site were closer to the region-wide densities in the fall than in the spring. This is likely due to more favorable winds at low altitudes in fall than in spring. The seasonal patterns of migration show year-to-year variation, which is discussed in the Final Report.

Inclement Weather. Adverse weather conditions (e.g., fog, overcast, low ceiling, drizzle, rain) were reported on 66 out of 171 nights in 2006 and 76 out of 171 nights in 2007. These weather conditions could force migrating birds to fly at lower altitudes over the project area, where they could potentially collide with wind turbines. However, the analysis also indicated that on most days with adverse weather, little or no migration was recorded. Of the 142 nights with adverse weather, bird densities of 25 or more birds per km^3 over the project site were detected on only 27 occasions.

3.5.4 Endangered, Threatened, Rare, and Other Sensitive Species

Wildlife and plant species that have special status may be protected under policies of federal, state, and local agencies. These include species formally proposed or listed for protection under the Federal or California Endangered Species acts (ESA and CESA, respectively) as well as species that are not protected by Endangered Species legislation but are recognized by various authorities including the California Native Plant Society, the California Department of Fish and Game, and other authorities as rare, declining, or species of local concern. These are collectively termed "other sensitive species."

3.5.4.1 Federally and State-Listed Species

Federally and state-listed and their potential to occur in the Project area are listed in Table 3.5-4, which is followed by a more detailed description of each.

TABLE 3.5-4
Federally and State-Listed Species and Potential Occurrence in the Project Area

Common Name/ Scientific Name	Federal/ State Rank	Occurrence
Gaviota tarplant Dienandra increscens ssp villosa	FE/SE	Grasslands in North Corridor, Middle Corridor, South Corridor – East, Sudden Corridor – West, Quarry Flank, Signorelli Corridor, and Scolari Bench
Gambel's Water Cress *Rorippa gambelii*	FE/SE	One population on VAFB. Has not been found on LWEP site.
Lompoc Yerba Santa Eriodictyon capitatum	FE/SR	Has not been found on LWEP site.
Seaside Bird's Beak Cordylanthus rigidus ssp littoralis	--/SE	Has not been found on LWEP site.
El Segundo Blue butterfly (ESBB) Euphilotes battoides allyni	FE/--	Known from remnant coastal dune habitat in Los Angeles County. A geographically distinct population recently discovered on Vandenberg Air Force Base was identified as ESBB in2005. Since then it has been documented from several areas on Vandenberg Air Force Base, including areas near Tranquillon Peak, adjacent to the project site. ESBB is closely associated with coast buckwheat (*Eriogonum parvifolium*), which is documented on the project site. Based on proximity to documented occurrences of ESBB and presence of the host plant on the project site, ESBB is expected to occur on project site.
Vernal pool fairy shrimp Branchinecta lynchi	FT/--	Occurs in 12 locations on VAFB. No suitable habitat has been identified on the project site.
California tiger salamander Ambystoma californiense	FT/CSC	Not expected to occur due to lack of habitat
California red-legged frog Rana aurora draytonii	FT/CSC	Known to occur in Honda Creek west of Tranquillion Peak. Marginal habitat for this species is present on the project site in Honda Creek and stockponds. The southwestern portion of the project site is located within designated critical habitat (STB-4) although no suitable aquatic habitat is present onsite within the critical habitat unit.
Unarmored threespine stickleback Gasterosteus aculeatus williamsoni	FE/SE, FP	Occurs in Canada Honda Creek downstream of project. Honda Creek within the project site boundary provides low quality habitat for this species due to the lack of permanent water in the channel.
California condor Gymnogyps californianus	FE/SE	Not seen at LWEP, or western Santa Barbara County.
Peregrine falcon Falco peregrinus	--/SE, FP	Utilize open habitats. Observed during surveys in winter 2006 and during SAIC February 2008 site visit; low likelihood for nesting on project site, is known to nest on VAFB.
Southwestern Willow flycatcher Empidonax traillii extimus	FE/SE	Utilizes willow vegetation at VAFB. Not documented to occur at LWEP, no nesting habitat for this species on the project site.

CSC – California Species of Special Concern
FE – Listed by the Federal government as an endangered species
FT – Listed by the Federal government as a threatened species
FP – Fully protected animal in California per Section 5050 of the California Fish and Game Code
SE – Listed by the State of California as an endangered species
SR – Listed by the State of California as a rare species
Source: Olson and Rindlaub, 2006; Sapphos 2008; USFWS 2007

Gaviota Tarplant (*Deinandra increscens* ssp. *villosa*)

Gaviota tarplant is a late-season annual species that flowers from approximately May through October. Plants are often clustered, possibly because it does not disperse easily over longer distances. It frequently is found in recently disturbed or grazed areas. Horses and cattle generally avoid grazing these strongly scented plants. Gaviota tarplants plants prefer full sun and apparently compete poorly with introduced annual grasses. These tarplants may flower abundantly in 1 year and then virtually disappear for the next several years.

Gaviota tarplant has been affected by a number of oil and gas development projects in the Gaviota area. When listed by CDFG, Gaviota tarplant was thought to be restricted to about 1 mile along the coastal terraces in Gaviota. Additional sites documented in recent years include locations on Hollister Ranch, at Point Conception, Jalama Beach, Point Arguello, Oak Mountain/Sudden Peak, Lions Head on north VAFB, and near Point Sal. All federal land proposed as Critical Habitat in the Oak Mountain/Sudden Peak area was removed from the Critical Habitat in the final rule (November 2002). Private property, including some of the proposed Project area, was included in the Federal Critical Habitat designated by the USFWS.

Recent surveys of the distribution of this species on private land conducted in 2002 near Point Sal, near Orcutt, on both north and south VAFB, and on the Bixby Ranch documented new, large populations, and demonstrated that the plant is probably distributed more or less continuously on suitable habitat between Point Sal and Gaviota (Olson and Rindlaub 2006). Some of the new populations were found on the sandy loam soil thought typical for this species, but other, very large populations were found on completely different, broken shale substrate. These new populations included many thousands of individuals on many acres in 2002. New sites for Gaviota tarplant were found in many locations on north VAFB, and on several locations on south VAFB (at both low and high elevation). The Sudden Ranch fire in June 2002 eliminated the vegetation over a large area north of Jalama, but it seems likely that Gaviota tarplant occupies the coastal terraces at this location (Olson and Rindlaub, 2006). Plants resembling Gaviota tarplant were reportedly seen in 2005 (C. Nathe, Personal Communication).

Gaviota tarplant locations on the LWEF site are shown on Figure 3.5-3. More detailed results are presented in Olson and Rindlaub (2006). Gaviota tarplant is scattered over Middle Corridor - South, Middle Corridor - North, and Middle Corridor – Flank; and it appeared again in North Corridor - East. Small populations also were found northwest of the upper part of North Ridge Central Road and on the east side of the creek in the upper Sloan Canyon drainage. A small population was found near the VAFB fence line north of Honda Creek. Gaviota tarplant also occurs in much of the area northwest of Sudden Peak, in Sudden Corridor - West, Quarry Flank, and near the junction of Quarry and Sudden roads. Gaviota tarplant occurs patchily in Signorelli Corridor and along the lower elevations of Signorelli Ridge Road. It also was found along Scolari Bench Road. The 2006 botanical survey identified numerous plants in North Corridor within 200 feet of the proposed access road, and one small population was observed on a north facing slope. One small patch also was found in the power line corridor on the hills south of San Miguelito Road west of the quarry on the fingers of valleys and ridges. No Gaviota tarplant was observed on the Larsen Ranch property.

Gambel's Water Cress *(Rorippa gambelii)*

One of the three extant populations of this aquatic plant is on north VAFB (Keil and Holland, 1998). Although the Project area is rather high in elevation for this species, potential habitat may be found in the bottom of Honda Canyon. The area where the new North East Road would cross Honda Creek is deeply cut and shaded by willows. According to Keil and Holland, this plant probably requires permanently wet soils, and is "generally associated with tall monocots in freshwater marshes." No suitable habitat for this species occurs on the Project site, and even the pools and creeks at the higher Project elevations probably dry out too much in normal rainfall years for this species to thrive. Gambel's water cress was not found during the surveys and is unlikely to occur on the LWEF site or the power line corridor.

Lompoc Yerba Santa (*Eriodictyon capitatum*)

This endemic shrub is associated with chaparral and closed-cone pine forest. It has been found on the crest of the Santa Ynez Mountains on Hollister Ranch, three sites on Vandenberg AFB, including localized occurrences in Lake Canyon and near 13th Street south of the Airfield, and in the Purisima Hills north of Lompoc. It has not been found in the Sudden Peak or Tranquillon Ridge areas. It is also possible that suitable shrub-dominated habitat on the project site was converted to grassland. Keil and Holland commented that they found no sensitive species from the tanoak woodland on VAFB (Keil and Holland, 1998). Lompoc yerba santa is unlikely to occur on the main LWEF site based on floristic surveys conducted on the site. It is unlikely to occur along San Miguelito Road, partly because of the shady nature of most of the habitat, and partly because it probably would have been noticed along the public road.

Seaside Bird's Beak (*Cordylanthus rigidus* ssp *littoralis*)

The Santa Barbara County population of seaside bird's beak is disjunct from the larger center of distribution in Monterey County. With the exception of one record from the Santa Rosa Hills, all populations have been reported from sites north of Lompoc in the sandy soils of the Burton Mesa. This genus flowers late in the season and would have been observed during the late season surveys conducted for Gaviota tarplant. This species is unlikely to occur on the LWEF site, but could occur in the power line corridor.

El Segundo Blue Butterfly (*Euphilotes battoides allyni*)

The El Segundo blue butterfly is a federally listed endangered species. It is not listed under the California Endangered Species Act. Until recently it had been known from only three extant occurrences in coastal dune habitat in Los Angeles County (El Segundo, near LAX, and at Malaga Cove on the Palos Verdes Peninsula. These locations total about 220 acres in area and are located over 120 miles southeast of the project area. At the Los Angeles County locations, the butterflies are very closely associated with coast buckwheat (*Eriogonum parvifolium*). The larvae feed and develop in the developing seed heads, pupate under the bush, and the adults feed on nectar produced by the flowers.

In 2005, ESBB were identified by Dr. Gordon Pratt on Vandenberg Air Force Base (VAFB) in western Santa Barbara County and additional surveys in 2006 and 2007 have increased the understanding of its distribution on VAFB. On VAFB, the butterflies are associated with the same

host plant species (coast buckwheat) but were found not only in coastal dune habitats but also on slopes and rocky areas occupied by coast buckwheat. The distribution on VAFB includes areas immediately adjacent to the Project site (Figure 3.5-4).

It has been estimated by FWS (2007) that VAFB contains 17,470 acres of ESBB habitat. This estimate is derived by adding a 1-mile buffer to each documented locality where ESBB has been found in 2006 and 2007 and determining the area. The 1-mile buffer is related to the approximate maximum dispersal distance of ESBB (USFWS 2007).

Given the distance from the known Los Angeles County populations and the additional habitat types occupied by the species on VAFB, the identification and status and the VAFB population is currently being further evaluated taxonomically. However, based on proximity to documented occurrences on VAFB, continuity of similar habitat between the project site and the documented VAFB occurrences near the project site, and the relative abundance of habitat occupied by coast buckwheat on the project site, ESBB is assumed to be present on the project site. There are an estimated 30.9 acres of habitat on the project site containing the ESBB host plant (Sapphos 2008, MFR-06). These are concentrated in the southern portion of the project site (Figure 3.5-5).

Vernal Pool Fairy Shrimp *(Branchinecta lynchi)*

Vernal pool fairy shrimp occur in vernal pools and vernal pool-like depressions. They are most commonly found in small swales, earth slumps or depression basins in grassland habitat. Habitats can vary dramatically in size from a vernal lake exceeding 25 acres to a shallow puddle of less than three square feet and one inch deep. Vernal pool fairy shrimp often occur in swale and depression areas that exhibit an unpredictable and short-lived inundation pattern. The species can reach maturity in approximately 18 days under optimal conditions; however, 41 days is more typical. Vernal pool fairy shrimp have been found at elevations that range from 33 to 4,003 feet above mean sea level (AMSL) with one occurrence recorded at 5,600 feet AMSL in the Los Padres Nation Forest, Santa Barbara County. The species is found predominantly in the Central Valley and Coast Ranges of California. At least 12 habitat complexes on VAFB are occupied by vernal pool fairy shrimp. The site has not been investigated for the presence of this species. Possible habitat exists on the site in slumps and depressions caused by earth movement in the northwestern portion of the site and in seasonal wetlands elsewhere on the site. Suitable habitat would be generally absent from the areas where the wind turbines are proposed, which are typically on ridgelines.

California Tiger Salamander *(Ambystoma californiense)*

The California tiger salamander is a federally listed threatened species and a California Species of Special Concern. The USFWS published a Final Rule in November 2004 (50 CFR Part 17) designating 11,180 acres of land as critical habitat in several portions of Santa Barbara County; the Project site and power line corridor are not within designated critical habitat. The tiger salamander is found in permanent and seasonal ponds and pools, usually in grassland and savanna habitats. Seasonal pools must hold surface water for at least 10 weeks to allow successful breeding to take place. This species spends a majority of its life underground in small mammal burrows that can be up to 1.2 miles from the breeding pond or pool. California tiger salamanders are known from the Santa Maria and Los Alamos valleys and from several locations between Lompoc and Buellton. There are no known locations near the Project area. The only potential habitat for this species are impounded stock ponds located throughout the project footprint. The only observations of

amphibians during the surveys were Pacific treefrog larvae. Due to a lack of habitat and substantial distance from the nearest reported occurrence, this species is not expected within the Project area.

California Red-legged Frog *(Rana aurora draytonii)*

The California red-legged frog is a federally listed threatened species and a California Species of Special Concern. The USFWS published a Final Rule in April 2006 (50 CFR Part 17) designating critical habitat in several portions of Santa Barbara County, including Unit STB-4 comprised of 7,662 acres about 4.4 miles south of the City of Lompoc; this area includes the southeastern portion of the Project site. Possible threats to this species include predation by non-native species and water management practices that could negatively affect the aquatic habitat of the frog.

This species is known to occur in Honda Creek west of Tranquillion Peak and tadpoles have been observed in a trough near a northern tributary to Miguelito Canyon near the boundary between VAFB and the project site. Marginal habitat for this species is present on the project site in Honda Creek and in the various stockponds present on the project site. California red-legged frogs are also known to travel long distances overland between different aquatic habitat. This species typically utilizes rivers and streams with permanent water. Honda Creek was observed on several occasions during past surveys to be dry at different times of the year making it less hospitable for red-legged frogs. This species may persist in stockponds located on the project site although the three ponds observed by SAIC biologists during their two day visits to the site did not contain any wetland vegetation that this species typically requires. The southwestern portion of the project site is located within designated critical habitat (STB-4) although no suitable aquatic habitat is present onsite within the critical habitat unit. This species may be present on the project site during infrequent migration events and may persist in stockponds located throughout the LWEF site. USFWS protocol surveys for this species were not conducted for this EIR due to the lack of suitable habitat (i.e., Honda Creek does not have water flow during the summer every year) on the project site.

Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*)

Unarmored threespine sticklebacks are known to occur in Canada Honda Creek (approximately 1 mile downstream of the project boundary) as a transplanted population originating from elsewhere on VAFB. In 1984, about 850 unarmored threespine stickleback were salvaged from the Barka Slough area of San Antonio Creek on VAFB and relocated to Canada Honda Creek. This species prefers slow moving water, such as pools with abundant vegetation, backwater areas, and stream margins where water velocity is low. Habitat requirements also include clear water with temperatures below 23 degrees Celsius with sufficient water depth. The portion of Honda Creek on the project site does not provide a permanent water source for this species. Unarmored threespine stickleback are unlikely to be present on the project site. However, protocol surveys for this species were not conducted for this EIR due to the lack of suitable habitat (i.e., Honda Creek does not have water flow during the summer every year) on the project site.

Steelhead (*Onchorrynchus mykiss*)

The southern steelhead trout is an anadromous fish that utilize an area extending from the Pacific Ocean to the freshwater streams where spawning occurs. Adults need water approximately 10 to 20 centimeters deep to move upstream and downstream. The jump height for steelhead trout is

dependent on several factors, such as size of the fish, depth of jumping and landing pools, how far the fish would have to swim to the barrier, and size of the barrier. In addition, southern steelhead trout do not tolerate temperatures much above 21°C; therefore, cooler, deeper pools are critical to the success of the trout. Fish movements both upstream and downstream generally coincide with flow pulses from storms.

There are no known occurrence records for steelhead trout within the proposed project site. As a result of the CNDDB query, the nearest known occurrence record for steelhead trout near the proposed project site is located over 14 miles to the east in the Santa Ynez River (observed in 1993).

The proposed project includes several streams that appear to run seasonally but do not provide the conditions necessary to support steelhead trout or the resident variety of rainbow trout. Only two drainages at the proposed project site flow to the ocean and in turn have the potential to support steelhead trout: Cañada Honda Creek and San Miguelito Creek. Sapphos (2008 MFR 8) reports that San Miguelito Creek has several impediments to movement. Cañada Honda Creek does not have impediments to steelhead trout movement, but this drainage is dry during periods of drought. At VAFB, suitable spawning habitat was identified along Cañada Honda Creek with intact riparian and in-stream habitat. However, during 1987–1992, this drainage was absent of water. In addition, a survey of Cañada Honda Creek at VAFB did not identify steelhead trout within this drainage. A reconnaissance survey and preliminary habitat assessment conducted by Sapphos Environmental, Inc. biologists did not result in the identification of suitable habitat for steelhead trout due to the lack of water in the majority of the drainages found throughout the proposed project site. Where water was observed in drainages, the water was too shallow to support steelhead trout, particularly within areas proposed for road crossings.

California Condor (*Gymnogyps californianus*)

The California condor has not been recorded in western Santa Barbara County (Sapphos 2008) but occurs in wilderness areas in eastern Santa Barbara County, more than 30 miles away from the project area. The three condor feeding stations in eastern Santa Barbara County and environs often concentrate condors there. Though the California condor can travels great distances (50+ miles) during the day, the closest single occurrence to the project site in Santa Barbara County was 43.8 miles away in eastern Santa Barbara County at the Sisquoc-San Rafael Condor Area (1975 sighting date). Nesting habitat is unavailable at the project site although cattle and mule deer are present and could provide this species large carrion to feed on. In the rare case that a California condor would appear at the project area, it is most likely that the individual or individuals would traverse the site at high altitude, as is typically the case when condors are traveling long distances (i.e., not foraging).

Peregrine Falcon (*Falco peregrinus anatum*)

The peregrine falcon is a state-listed endangered species and fully protected bird in California. The peregrine falcon was federally delisted on August 25, 1999. This species forages over open habitats, such as grasslands, agricultural fields, ponds, and coastal areas. Throughout Santa Barbara County and specifically in the Lompoc area, the peregrine falcon is considered rare, occurring mostly in fall and winter months.

Sightings compiled by Holmgren and Collins (1999) included a September 1993 observation by Paul Collins on Honda Ridge and a pair observed along lower Honda Ridge Road in September 1994. Tetra Tech (1999a,b) reported that one nesting pair of peregrine falcons had been using rocky cliffs along the coast of South VAFB. Those reports also included an estimate of 60 acres of such habitat occurring on the base. No similar habitat exists in the Project area. Peregrine falcon was among the species observed during surveys on the South Base of VAFB. Nancy Read indicated that peregrine falcons are regularly reported from the vicinity of the Project area during migration (Olson and Rindlaub, 2006). During the December 2006 survey, two observations of this species were made during Surveys 1 and 3 at North Corridor – East and South Corridor – Central, respectively. It is possible that the two observations of the bird diving were the same individual. This species was observed on two occasions during the SAIC site visits: one individual was observed on October 4, 2007 and a second peregrine falcon observation was made on February 18, 2008; this falcon was observed in level flight at about 30 meters altitude flying near the proposed O&M site at San Miguelito Road and Sudden Peak Road.

Southwestern Willow Flycatcher (*Empidonax traillii*).

The willow flycatcher is an uncommon breeder and spring and autumn transient in Santa Barbara County within streamside willow vegetation at VAFB. Suitable breeding habitat with appropriate vegetative characteristics is lacking along Cañada Honda Creek and San Miguelito Canyon Creek at the LWEF site. However, this species is anticipated to be a rare spring and autumnal migrant at the LWEP study area. It was not documented to be present at the LWEF site, but intensive sampling usually is required to detect this elusive species outside the breeding season.

3.5.4.2 Other Sensitive Species

Sensitive Species include those that are:

- Plant species categorized under "List 1B," "2," or "4" by the California Native Plant Society (CNPS).
- Wildlife species on the "species of special concern," "watch list," or "fully protected" lists maintained by the State of California.
- Plant and wildlife species considered to be rare or declining on a local or regional basis

Special-status species and their potential to occur in the Project area are listed in Table 3.5-5, which is followed by a more detailed discussion of each.

TABLE 3.5-5
Other Sensitive Species in the Project Area and Potential Occurrence on the Project Site

Common Name/Scientific Name	Status Federal/ State/Local	Occurrence
Plants found on the Project Site		
Kellogg's horkelia Horkelia cuneata ssp sericea	CNPS List 1B[a]	Middle Corridor, possibly Sudden Corridor and Quarry Ridge areas, Signorelli Corridor and South Corridor –East
Mesa horkelia[b] Horkelia cuneata ssp puberula	CNPS List 1B	Middle Corridor, possibly the Sudden Corridor and Quarry Ridge areas, Signorelli Corridor, and South Corridor – East and Central.

Common Name/Scientific Name	Status Federal/ State/Local	Occurrence
Western dichondra Dichondra occidentalis	CNPS List 4[a]	South and West Corridors
Seaside agoseris[c] Agoseris apargioides	Local Concern	Middle Corridor, South Corridor – East
Seaside heuchera Heuchera pilosissima	Local Concern	Old road linking Signorelli and Scolari benches
Sickle-leaved rush Juncus falcatus	Local Concern	Middle Corridor – South, South Corridor – East, possibly upper Signorelli Corridor
California globemallow[c] Sidalcea malvaefolia ssp californica	Local Concern	Middle Corridor
Plants Possibly Occurring on the Project Site or Powerline Corridor		
Purisima manzanita *Arctostaphylos purissima*	CNPS List 1B	Not observed
Eastwood's manzanita *Arctostaphylos tomentosa* ssp *eastwoodiana*	CNPS List 1B	Not observed at site, although it may occur along the powerline corridor where it passes through chaparral
Straight-awned spineflower *Chorizanthe rectispina*	CNPS List 1B	Not expected to occur
Umbrella larkspur *Delphinium umbraculorum*	CNPS List 1B	Not observed and not expected to occur
Blochman's dudleya *Dudleya blochmaniae* ssp *blochmaniae*	CNPS List 1B	Not observed
Ojai fritillary *Fritillaria ojaiensis*	CNPS List 1B	Not observed and not expected to occur at site; more likely in drainages traversing power line corridor
Santa Barbara honeysuckle *Lonicera subspicata* ssp *subspicata*	CNPS List 1B	Not observed
Black-flowered figwort *Scrophularia atrata*	CNPS List 1B	Not observed, although likely to occur at the site and very likely to occur along power line corridor
Sonoran maiden-fern *Thelypteris puberula* var. *sonorensis*	CNPS List 2	Not observed; probability of occurrence is very low
Vernal barley *Hordeum intercedens*	CNPS List 3	Could possibility occur at the site and along the power line corridor, particularly in areas with seeps and springs.
Mount Diablo cottonweed *Micropus amphibolus*	CNPS List 3	Not observed, but is a possibility in scrub openings and in low and open grassland with a high native component
Bitter gooseberry *Ribes amarum* var. *hoffmannii*	CNPS List 3	Unlikely to occur at site, but may occur along power line corridor
Santa Cruz Island manzanita *Arctostaphylos tomentosa* ssp. *subcordata*	CNPS List 3	Not observed, although it could possibly occur in the power line corridor or along road alignments
Plummer's baccharis *Baccharis plummerae* ssp. *Plummerae*	CNPS List 3	Not observed, but may occur at the site
Brewer's calandrinia *Calandrinia breweri*	CNPS List 4	Considered likely to occur at the site and the power line corridor
Catalina mariposa lily *Calochortus catalinae*	CNPS List 4	Not found in VAFB, and therefore, unlikely to occur at site
Small-flowered morning-glory *Convolvulus simulans*	CNPS List 4	Not observed, but potentially occurs at the site and along the power line corridor
San Luis Obispo wallflower *Erysimum capitatum* ssp. *Lompocense*	CNPS List 4	Has been found on north VAFB, but unlikely to occur at site and may occur along the power line corridor

Common Name/Scientific Name	Status Federal/ State/Local	Occurrence
Southern California black walnut *Juglans californica*	CNPS List 4	Found near site in south VAFB, but not observed at site. Unlikely to occur at site, but may occur along power line corridor
Ocellated Humboldt lily *Lilium humboldtii* ssp. *ocellatum*	CNPS List 4	Not observed at the site, although there is potential habitat at site and along power line corridor
Michael's rein orchid *Piperia michaelii*	CNPS List 4	Observed in VAFB in Honda Canyon, unlikely on the project site due to differences in habitat.
Santa Cruz Island oak *Quercus parvula* var. *parvula*	CNPS List 4	Possible but unlikely on project site
Hoffmann's sanicle *Sanicula hoffmannii*	CNPS List 4	Possible but unlikely on project site
Pacific Coast Iris *Iris douglasiana*	LR	Not expected on Project site.
Douglas' Pogogyne Pogogyne douglasii	LR	Possible on project site.
Canyon Gooseberry *Ribes menziesii*	LR	Possible on project site.
Island Morning-glory *Calystegia macrostegia* subsp. *macrostegia*	LR	Possible on project site.
Sensitive lichen species	LR	Possible on the project site.
Amphibians		
Western spadefoot toad *Spea (=Scaphiopus) hammondii*	--/CSC	Not expected to occur due to lack of habitat
Reptiles		
Coast patch-nosed snake *Salvadora hexalepis virgultea*	--/ CSC, LR	Possible in areas with scrubby vegetation
Southwestern pond turtle *Emys (=Actimenys= Clemmys) marmorata pallida*	--/CSC	Unlikely due to lack of suitable habitat
Two-striped garter snake *Thamnophis hammondii*	--/CSC	Moderately likely along Miguelito Creek; known from area, but limited habitat
California horned lizard *Phrynosoma coronatum frontale*	--/CSC	Known to occur
Silvery legless lizard *Anniella pulchra pulchra*	--/CSC	Likely present in some areas (scrub and woodland habitats)
Birds		
Golden eagle *Aquila chrysaetos*	BGA/FP, WL	Observed during surveys in April 2005, winter 2006,during February 2008 site visit by SAIC biologist, and spring 2008 surveys by Sapphos. Likely to nest near the Project area and forage over large grasslands and semiopen woodlands.
White-tailed kite *Elanus leucurus*	--/FP, LR	Most likely to forage over open areas, low probability of nesting, though nesting has been observed in the Lompoc area. Observed on project site in Spring 2008 during Sapphos survey.
Western burrowing owl *Athene (=Speotyto) cunicularia hypugea*	--/CSC, PSTE	Observed onsite utilizing large expanses of grassland and agricultural areas. Wintering individuals known from VAFB and Cojo Ranch. Burrows remained active during the Sapphos winter 2008 surveys, this included multiple observations.
Grasshopper sparrow *Ammodramus savannarum*	--/CSC, LR	Observed nesting in grassland on Project sites. Found in grassland areas with scattered shrubs that are used as perches. Found at all elevations and throughout project site. Observed during summer 2002 and 2005 surveys by Olson, and also observed most weeks of Sapphos 2008 surveys. Large numbers were seen in early May.

Common Name/Scientific Name	Status Federal/ State/Local	Occurrence
Northern harrier *Circus cyaneus*	--/CSC	Observed foraging in area. Utilize a number of habitats including: grassland, CSS, wetlands, and agricultural fields. Observed during an April 2005 survey by Olson and also during spring 2008 surveys by Sapphos.
Long-eared owl *Asio otus*	--/CSC	One sighting at VAFB in 1996. In winter, large numbers (8-12 individuals) have been observed in recent past roosting along Honda Creek just off VAFB.
Loggerhead shrike *Lanius ludovicianus*	--/CSC	Known to occur onsite; observed by CH2M HILL in 2006 and Olson in 2007. Utilizes multiple habitat types, but not seen during Sapphos 2008 surveys.
Vaux's swift *Chaetura vauxi*	--/CSC	Observed during the spring 2008 surveys by Sapphos. Found in past years at VAFB. Does not breed in area.
Mountain plover *Charadrius montanus*	--/CSC	Found in numbers on VAFB. Not seen during Sapphos 2008 surveys.
Yellow warbler *Dendroica petechia*	--/CSC	Known to occur onsite; observed by Olson in 2002 and 2005. Breeds in riparian areas, particularly dense willow shrubs. Observed almost every week during Sapphos 2008 surveys.
Tricolored blackbird *Agelaius tricolor*	--/CSC	Observations in area; unlikely to nest due to lack of extensive bulrush/cattail habitat. Observed by Olson in 2002. Not seen during 2008 Sapphos surveys.
Yellow-breasted chat *Icteria virens*	--/CSC	Breeds in riparian areas of Santa Barbara County, including Honda Creek on VAFB. Observed during the spring 2008 survey by Sapphos.
California rufous-crowned sparrow *Aimophila ruficeps ruficeps*	--/ WL, LR	Observed nesting in select areas that include dry open areas of scrub habitat or rock outcrops. Were observed during 2002 and 2005 surveys by Olson and also during winter and spring 2008 surveys by Sapphos.
Sharp-shinned hawk *Accipiter striatus*	--/WL	Occupies woodlands and the interface between woodlands and open areas. Observed during the winter and spring 2008 surveys by Sapphos.
Cooper's hawk *Accipiter cooperii*	--/WL	Observed during surveys. Utilizes woodlands, riparian areas, and open habitats – including agricultural. Olson observed during 2002 and 2005 surveys, and Sapphos observed during both winter and spring 2008 surveys. Additionally, one definitive and possibly a second nest site.
Ferruginous hawk *Buteo regalis*	--/WL	Observed during surveys in winter 2006; low potential to nest in vicinity. Utilizes open areas – grasslands and agricultural. Not observed during Sapphos 2008 surveys.
Merlin *Falco columbarius*	--/WL	Low. Utilize open habitats. Not observed during Sapphos 2008 surveys.
California horned lark *Eremophila alpestris actia*	--/WL	Observed nesting and numerous on Project sites during nesting season. Utilize open areas with short vegetative cover. Observed during most surveys by Olson in 2002 and 2005. Observed every week (often in large numbers) during the Sapphos 2008 surveys.
Bell's sage sparrow *Amphispiza belli belli*	--/WL	Low; not observed on site but habitat present in region. Utilizes chaparral habitat types.
Long-billed curlew *Numenius americanus*	--/WL	Observed by Sapphos in Winter 2008 flying over site. Found in the Santa Maria River Plain and beaches along VAFB.
Olive-sided flycatcher *Contopus borealis*	--/LR	Observed by Sapphos in May 2008 near the boundary of the proposed project site; expected in very low numbers.
Blue grosbeak *Guiiraca caerulea*	--/LR	Observed by Sapphos during the 2008 avian surveys near the boundary of the proposed project site; expected in relatively low numbers.
Swainson's thrush *Catharus ustulatus*	--/LR	Observed by Sapphos during the 2008 avian surveys on the proposed project site; expected in relatively low numbers.

Common Name/Scientific Name	Status Federal/ State/Local	Occurrence
Mammals		
American badger *Taxidea taxus*	--/ CSC, LR	Resident along Sudden Corridor – East and North Corridor; could occur elsewhere in grassland habitat.
Western mastiff bat *Eumops perotis*	--/CSC	Rare; observed in 1997/1998 on VAFB, no suitable roosting habitat onsite but could forage over Project site.
Pallid bat *Antrozous pallidus*	--/CSC	Pallid bats were recorded onsite during the 2008 CCBRG surveys. No roosting habitat available, but likely to forage over LWEP.
Townsend's big-eared bat *Corynorhinus townsendii*	--/CSC	Low likelihood, found at VAFB in 1997/1998 surveys. No roosting habitat available, but could occasionally forage over LWEP.
Red bat *Lasiurus blossevillii*	--/CSC	Low likelihood, commonly found at VAFB in 1997/1998 surveys in upper Honda Canyon. No roosting habitat available, but could occasionally forage over LWEP.
San Diego desert woodrat *Neotoma lepida intermedia*	--/CSC	Potential to occur in areas of coastal sage scrub, especially South Corridor and West Corridor, Signorelli Ridge, and Signorelli Bench.

[a] CNPS Status
List 1B: Plants rare, threatened, and endangered in California and elsewhere
List 4: A "watch list" for plants that appear to be declining.
[b] Identification tentative, but included as a potential hybrid with other Horkelias, including Kellogg's horkelia.
[c] Identification tentative.
BGA – Protected by the Bald and Golden Eagle Act
CSC – California Species of Special Concern
FE – Listed by the Federal government as an endangered species
FT – Listed by the Federal government as a threatened species
FP – Fully protected animal in California per Section 5050 of the California Fish and Game Code
LR – Recognized as a locally rare species
PCSC – Proposed for status as California Species of Special Concern
PSTE – Petitioned for state-listing as threatened or endangered
SE – Listed by the State of California as an endangered species
WL – California Department of Fish and Game Watch List – defined by the CA DFG on the basis of prior concern for the well-being of these populations in California. These species are not on the current special concern list.
Source: Olson and Rindlaub, 2006; Pierson et al., 2002

3.5.4.2.1 Other Sensitive Plant Species

The following section discusses sensitive plant species considered to have some potential to occur in the project area (Olson and Rindlaub 2006). Floristic field surveys of the site were conducted in 2002 and 2005 with supplemental surveys in 2006-2008 as described under methods (Section 3.5.1.3). The following accounts are drawn primarily from Olson and Rindlaub (2006).

California Native Plant Society (CNPS) Listed Plant Species

The CNPS maintains several lists in its Inventory of Rare and Endangered Plants of California, now in its 6th edition (CNPS, 2001). Plants on List 1B may qualify for federal or state listing. Therefore, mitigation is usually required for List 1B plants under the provisions of CEQA. The following paragraphs discuss the subset of the species from Santa Barbara County that potentially occur on the Project site.

CNPS List 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

The closely related CNPS List 1B taxa Kellogg's horkelia *(Horkelia cuneata ssp. sericea)* and Mesa horkelia *(H. c. ssp. puberula)* were found on the Project site. A few other species potentially occur on the site and could have been missed, because they are easily overlooked or because the above-ground parts may have been grazed off early in the season.

Contra Costa goldfields (*Lasthenia conjugens*) is a federally listed species that is also on CNPS List 1B. This vernal pool plant is apparently extinct in Santa Barbara County, although its range extends farther inland and northward. It was not observed on the project site.

Purisima Manzanita (Arctostaphylos purissima). Purisima manzanita is endemic to the region. It ranges from Point Sal and Solomon Hills in the north to the Burton Mesa and Purisima Hills, eastward to Buellton; is in the hills southeast of Lompoc; and extends to the Santa Ynez Mountains on Hollister Ranch (Smith, 1998). Although part of the maritime chaparral that grows in the Pleistocene dune sheets, this species also grows on soils derived from diatomite and siliceous shales. Records appeared in the CNDDB search for the area in lower Sloan and La Salle Canyons within about 1 mile of SR-246. There were no records for this species within the hills southwest of Lompoc. The unusually mesic character of the local climate may be unsuitable for this species. It was not seen and is very unlikely to occur on the LWEP site; Purisima manzanita is unlikely but possible in the transmission line corridor if it passes through chaparral habitat. This species is also unlikely but possible in the power line corridor where it passes through chaparral habitat.

Eastwood's Manzanita (Arctostaphylos tomentosa ssp eastwoodiana). This subspecies is a local endemic that occurs on diatomite on Purisima Ridge and extends to Point Sal. It also occurs on the Burton Mesa and in the lower reaches of Sloans and La Salle canyons within about 1 mile of Ocean Avenue (SR-246), west of Lompoc. It was not seen and is not expected to occur on the LWEP site. Eastwood's manzanita may occur along the power line corridor where it passes through chaparral habitat.

Straight-awned Spineflower (Chorizanthe rectispina). Straight-awned spineflower grows in sandy to gravelly soils in grassland, woodland, and coastal scrub habitats below about 4,000 feet elevation. It was found on north VAFB (Keil and Holland, 1998), but no records are listed for it on the South Base or south of the Santa Ynez River. This annual is considered rather unlikely in the foggy habitat of the LWEP site.

Umbrella Larkspur (Delphinium umbraculorum). Larkspurs were not found on the LWEP site, although this species may occur in the woodland and scrub habitats. The nearest location of Umbrella larkspur is at Refugio Pass, about 25 miles east of the site. It is very unlikely to grow on the LWEP site or the power line corridor.

Blochman's Dudleya (Dudleya blochmaniae ssp blochmaniae). This small, vernal liveforever has been found in heavy clay soil on the back side of the Point Sal Ridge, which is similar to some of the clay soil grassland habitats on the LWEP site. Typical habitats for this species are shallow, fine-textured soils over rock outcrops. It is very small and dries up in summer and fall, so it could have been missed. It was not found on the project site, but rock outcrops and clay lenses should be considered potential habitat.

Ojai Fritillary (Fritillaria ojaiensis). Ojai fritillary potentially occurs in the project area. It is known from Point Sal, although most other locations are farther south and farther inland. The only fritillary observed in the project area was in rocky soil near the VAFB property line, but it appeared to be *F. bicolor.* Suitable habitat for Ojai fritillary is found along drainages, but the probability that this species grows on the LWEP site is low. It is somewhat more likely in areas traversed by the power line corridor.

Mesa Horkelia (Horkelia cuneata ssp puberula). Mesa horkelia is a perennial herb that grows in sandy or gravelly soils in coastal scrub, chaparral, and woodland habitats. It flowers from February to September. The known range is from 230 to 2,657 feet (70 to 810 meters) elevation, from San Luis Obispo to San Diego counties along the coast and inland to Riverside and San Bernardino counties. Populations in Ventura, Riverside, San Bernardino, and San Diego have been extirpated. According to the regional flora, the Santa Barbara County occurrences of this entity are probably part of a hybrid population (Smith, 1998).

Plants with some of the characteristics of mesa horkelia were found occasionally, scattered among the more common Horkelia *(Horkelia cuneata* ssp *cuneata)* populations of Middle Corridor and South Corridor - East, where plants that keyed to Kellogg's horkelia also were found. Even if the plants in the Project area are not "pure" mesa horkelia, the mixed gene pool may be characteristic of plants in this region of the coast.

Mesa horkelia may occur with low probability in the upper elevations of the power line corridor.

Kellogg's Horkelia (Horkelia cuneata ssp sericea). Kellogg's horkelia is part of the group of closely related taxa discussed above. It also grows in chaparral and coastal scrub habitats. Kellogg's horkelia has recently been recorded from Gaviota State Park (Ballard, 2005) and from Hollister Ranch (Hendrickson et al., 1998).

Glandular plants that keyed to this entity were found in central and southern Middle Corridor and eastern South Corridor. The number of individuals attributable to this subspecies is unknown. Other populations of Horkelia within the project area may also include this subspecies, particularly in areas with sandy-loam soil, such as Signorelli Corridor, Scolari Bench, the Sudden Corridor area, particularly Quarry Flank, and North Corridor – East.

Kellogg's horkelia may occur in the upper elevations of the power line corridor.

Santa Barbara Honeysuckle (Lonicera subspicata ssp subspicata). This Santa Barbara County endemic has been recorded on the south side of the Santa Ynez Mountains as far west as Refugio Canyon, but suitable habitat for it is found in the drainages, cool coastal scrub, and woodland habitats in the project area. However, the probability that this species occurs on the LWEP site is low, but it could occur in the power line corridor. It was not found during the surveys.

Black-flowered Figwort (Scrophularia atrata). Black-flowered figwort is likely to occur in the project site. Figworts often were encountered in scrub and along creeks, but the flowers of all plants observed were red with the very open throats that characterize California bee plant (*Scrophularia californica*). Although this endemic species was not found, it may grow in the woodlands and creeks. There is a high probability that black-flowered figwort occurs along the power line corridor, particularly in Miguelito Canyon or on soils derived from diatomite.

CNPS List 2: Plants Rare, Threatened, or Endangered in California, but more Common Elsewhere

Sonoran Maiden-fern (Thelypteris puberula** var. **sonorensis), CNPS 2. This large fern, also known as downy wood fern, has not been found west of Gaviota. In Santa Barbara County it grows on sandstone outcrops in moist, shaded canyons on the south side of the Santa Ynez Mountains, typically where there is a spring or seep. This species ranges southward into Mexico and the documented Santa Barbara County occurrences are at its northern and western limits of distribution. Sandstone outcrops in the Project vicinity may be suitable for this plant, but the probability of occurrence is very low and project elements are not proposed in such environments.

CNPS List 3: A Review List of Plants about which More Information is Needed.

Vernal Barley (Hordeum intercedens), CNPS 3. Vernal barley has a wide distribution and occurs in vernally wet lands such as seeps and vernal pools. It ranges to 1,000 meters in elevation. This small annual grass is easily overlooked, particularly in grazed grasslands, and this species may be more common than current records indicate. It could possibly occur on the LWEP site and along the power line corridor, particularly in areas with seeps and springs.

Mount Diablo Cottonweed (Micropus amphibolus), CNPS 3. Mount Diablo cottonweed has been found in Santa Barbara County and ranges well to the north. This is a small annual, superficially similar to a close and common relative. For that reason, Mount Diablo cottonweed may be more common than records show. It potentially occurs on the Project site. No species of *Micropus* were seen during the survey, but these small plants could have been grazed down. It would be a possibility in scrub openings and in low and open grassland with a high native component.

Bitter Gooseberry (Ribes amarum var. hoffmannii), CNPS 3. Bitter gooseberry is a plant of cool canyons and streams in the Santa Ynez Mountains, but it has not been found west of Gaviota Pass (Smith, 1998), which is about 18 miles east of the site. Based on vegetative characters, the gooseberries found in the Project area appeared closer to Canyon gooseberry (*Ribesmenziesii*) than to bitter gooseberry, but the identification has not been confirmed. The probability for this species in the LWEP area is relatively low, but it could occur in the power line corridor.

Santa Cruz Island Manzanita (Arctostaphylos tomentosa ssp. subcordata), CNPS 1B. Occasionally found on the mainland coast, the main distribution of this species is on the Channel Islands. Neither chaparral habitat nor any manzanitas were found in the Project area, but this species could possibly occur in the power line corridor or along road alignments.

Plummer's Baccharis (Baccharis plummerae ssp. Plummerae), CNPS 4. This shrub grows in forests, woodland, and in coastal scrub. It is visible all year, but was not found on the Project site. This species did not appear on the CNDDB search and is not listed for the Project area in the local flora (Smith, 1998). Its probability of occurrence is medium on the LWEP site and the power line corridor.

CNPS List 4: Plants of Limited Distribution

Brewer's Calandrinia (Calandrinia breweri), CNPS 4. Brewer's calandrinia is an annual herb that reportedly is often mixed in with populations of its more common sister species, red maids *(Calandrinia ciliata)*, although Brewer's calandrinia may more strictly follow fires. Neither species, which have vividly colored flowers, was seen in 2002 or 2005. This species is considered likely on the LWEP site and power line corridor.

Catalina Mariposa Lily (Calochortus catalinae), CNPS 4. Plants that grow from bulbs (such as wild hyacinth and amole) that were seen during the surveys were largely confined to rock outcrops, broken rock, and on slopes with some shrub cover. Although not seen, Catalina mariposa lily would be most likely to occur in those habitats, rather than on the exposed ridges proposed as sites for the wind turbines. Because this species was not found on VAFB, its probability of occurrence in the LWEP area is low.

Small-flowered Morning-glory (Convolvulus simulans), CNPS 4. This small morning-glory is often, but not always, found on serpentinite. It has been recorded growing in coastal scrub, chaparral, and valley and foothill grasslands (CNPS, 2001). The nearest coastal location in Santa Barbara County is on metamorphics near Point Sal (Keil and Holland, 1998). It has also been found in Mission Canyon in Santa Barbara on soils derived from sedimentary rock. It potentially occurs on the Project site, including the power line corridor, and could have been overlooked in grasslands.

Western Dichondra (Dichondra occidentalis), CNPS 4. Western dichondra is a perennial herb that is likely to occur on the Project site. In grasslands, it most likely would be grazed off by cattle, with the result that the most likely occurrences for surviving plants would be rock outcrops with limited access for livestock. Plants in a vegetative condition that may have been western dichondra were found on several rock outcrops and rocky areas, primarily along the VAFB fence line.

San Luis Obispo Wallflower (Erysimum capitatum ssp. Lompocense), CNPS 4. Typical habitat for this species is in the woodlands, coastal scrub, and chaparral of the Burton Mesa Chaparral, Solomon Hills, and Nipomo Mesa. It has been found in several locations on north VAFB. Keil and Holland noted that they also had found it "below the Honda Ridge Tower on South Base in the Santa Ynez Mountains," but they do not comment on the soil type (Keil and Holland, 1998). It has also been found in Miguelito Canyon (Smith, 1998). This species may occur in areas of scrub and woodland on sandy soils in the Project area, although the probability that it would occur at the elevation of the main Project sites is low; it was not seen during the surveys. This species may occur on the power line corridor.

Southern California Black Walnut (Juglans californica), CNPS 4. A disjunct population of this Southern California species recently was found on south VAFB near the Project area (D. Wilken, Personal Communication). It may grow in some of the wooded areas around the Project components within the LWEP site, but it was not found on any of those sites. It is unlikely on the LWEP site. This native tree may grow along the power line corridor.

Ocellated Humboldt Lily (Lilium humboldtii ssp. ocellatum), CNPS 4. This species is likely to occur in the Project area, most likely in shaded woodland and stream channels. It has been found in the upper watersheds of both Honda and Miguelito Canyon (D. Wilken, Personal Communication). It was not seen on the LWEP site; however, suitable habitat is present on the old road between Signorelli and Scolari benches.

This species potentially could occur in the power line corridor, particularly where the line descends into shaded, moist, north-facing habitats.

Michael's Rein Orchid (Piperia michaelii), CNPS 4. This plant, also known as Purple-flowered Piperia, would be very unlikely in the grassland habitats where most facets of the Project will be located. Keil and Holland, who found it on VAFB, found it in dune swales and scrubby or tall

grassy vegetation. They also found it in dune chaparral/scrub on south VAFB at lower elevations near Mesa Road (Keil and Holland, 1998). This species may grow at lower elevations or farther downstream in Honda Canyon, but the type of habitat where it has been found does not occur on the Project site. Depending on the selected route, this small orchid could be present along the power line corridor.

Santa Cruz Island Oak (Quercus parvula var. parvula), CNPS 4. This species of scrub oak has been reported as an associate of endemic manzanitas in chaparral at lower elevation in lower Sloan and La Salle Canyons, and near Mount Tranquillon. It may grow among the tanbark oaks and in thick coastal scrub, but no scrub oaks were noted on the areas where disturbance could occur on the LWEP site. It could grow along the power line corridor.

Hoffmann's Sanicle (Sanicula hoffmannii), CNPS 4. Hoffmann's sanicle is typically an understory species in woodland and scrub habitats. It may occur in the surrounding woodlands; it has been found on north VAFB (Keil and Holland, 1998), and near Point Sal (Smith, 1998). It has not been reported from the Miguelito Canyon area, although suitable habitat exists there. It was not seen, and is considered only moderately likely to occur, on the power line corridor portions of the LWEP where disturbance would occur.

Plant Species of Local Concern

Plant species of local concern addressed in this document include plants having fewer than 10 occurrences in Santa Barbara County, native trees, and lichens.

Plants with Fewer than 10 Occurrences in Santa Barbara County

The following species listed by the Central Coast Center for Plant Conservation (2005) as having fewer than 10 Occurrences in Santa Barbara County have some potential to occur in the project area (Olson and Rindlaub 2006). Several of the taxa that appear on this list of locally rare species may occur on the Project site; some were found in mesic habitats near the Project site. The following accounts are from Olson and Rindlaub 2006.

Seaside Agoseris (Agoseris apargioides). This species may occur in Middle Corridor, but the identification was doubtful. The elevation of the Project site may exceed the range for this species.

Seaside Heuchera (Heuchera pilosissima). This species was found in two locations, one in a seep along a small stream between Scolari and Signorelli benches and another in coastal scrub in the Sudden Peak area. This plant may be found along the power line corridor.

Pacific Coast Iris (Iris douglasiana). Pacific coast iris, near the southern limit of its range, is known from a site near Honda Canyon on VAFB with Bishop pines (Smith, 1998). It was not found during Project surveys, but could occur in cool, moist habitats crossed by the power line.

Sickle-leaved Rush (Juncus falcatus var falcatus). A small population of this species was found in the grassland/coastal scrub mosaic down slope of a small seep in Middle Corridor – South, where it probably would be traversed by Middle South Road. The limits of the population were not ascertained. This species may also occur downslope of other seep areas in similar soils, such as upper Signorelli Corridor and Middle Corridor - West.

Douglas' Pogogyne (Pogogyne douglasii). This small member of the mint family was recently found in heavy clay soil on a ridge northeast of Mount Tranquillon on VAFB (D. Wilken, Personal Communication). Smith notes another occurrence in serpentine near the head of Lompoc Canyon (Smith, 1998). Pogogyne was not found during the surveys, but could have been missed. It is at its southern distributional limit in the Project area and potentially occurs in poorly drained clay soils on the Project site, particularly those associated with wetland.

Canyon Gooseberry (Ribes menziesii). Gooseberries that could not be identified with certainty may be this species, which has been found in the Project area. Gooseberries were found on the old road linking Scolari and Signorelli benches. This plant may be found along the power line corridor.

California Globemallow (Sidalcea malvaefolia ssp californica). This species was recorded from south Middle Corridor - South, but no voucher was collected (Olson and Rindlaub 2006). Globemallows also were seen in South Corridor - Central and South Corridor - East.

Island Morning-glory (Calystegia macrostegia). This species was not observed during field surveys but it may potentially occur in the Project area within grassland habitats. It could occur in both the LWEP and PG&E power line corridors.

Native Trees

Native trees, including coast live oak (*Quercus agrifolia*), are protected under policies of the County of Santa Barbara. Forest habitat with oaks occurs just east of Sudden Bench - Northeast and north of the Project sites on Middle Corridor - North and Middle Corridor - Flank.

Lichens

The relatively humid coastal environment of the project region (western Santa Ynez Mountains near Point Conception) characterized by moist sea breezes and frequent fog is conducive to the growth of lichens. Lichens come in many colors and forms and may grow on trees, shrubs, rock and soil. Lichens are a combination of a fungus and an alga growing together, the fungus providing the body (thallus) of the plant and the alga doing the photosynthesis. Lacking roots, lichens depend largely or wholly on atmospheric moisture and rainfall. They receive their nutrients from dust deposition and nutrients dissolved in rainfall, or dew, and in water running across the stems, rocks, or soils on which they grow. Lichens have adaptations enabling them to survive prolonged periods of desiccation and temperature extremes during dry conditions and to become metabolically active as soon as they become moist again. Despite this seeming toughness, lichens are very sensitive to air pollution and many species have disappeared in the vicinity of urban areas as a result of air pollution.

Lichen identification in many groups requires detailed microscopic examination and laboratory analysis to identify diagnostic chemical compounds. As a result of the difficulties of identification and the relatively small number of scientists qualified to inventory lichens, lichen floras of different areas are not well known. In contrast to the higher plant flora of California, in which fully 30 percent of the 5,000 species are found nowhere else and many of which have very restricted ranges, the lichen flora of California is comprised of about 1,000 species with a much lower fraction being restricted to California, although some groups of crustose lichens may have a higher proportion of

species with restricted distribution (Hale and Cole 1988). Crustose lichens, in particular, are very poorly known.

3.5.4.2.2 Other Sensitive Wildlife Species

This section includes CDFG California Species of Special Concern, CDFG Watch List Species, CDFG Fully Protected Species, Species protected by the Bald and Golden Eagle Act, and Species Considered to be Locally Rare. The species accounts are arranged by taxonomic group (Amphibians, Reptiles, Birds, Mammals).

Western Spadefoot Toad (Spea hammondii). Similar to the California tiger salamander, the western spadefoot breeds in permanent and seasonal ponds and pools, but spends much of its life underground in small mammal burrows or deep cracks in the ground. The only seasonal pool is an impounded stock pond on the western portion of Sudden Corridor. This is an isolated pool in which only Pacific treefrog larvae were observed during the May 20, 2005, survey. This species is not expected to occur in the Project area due to the substantial distance to other reported occurrences of the western spadefoot toad and the lack of suitable habitat in the area.

Populations in this unit may also require special management or protection due to their potential importance in stabilizing populations in tributaries to the Santa Ynez River. The California red-legged frog is found in a variety of freshwater aquatic habitats, including ponds (natural and artificial), small reservoirs, and portions of streams and rivers with pools or slow-moving water. They are known from a number of locations on VAFB, including upper Honda Canyon, a number of smaller streams in the Lompoc area, and areas along State Route 1 (SR-1) between Lompoc and Las Cruces.

Coast Patch-nosed Snake (Salvador hexalepis virgultea). This species is considered to be locally rare in the western portions of Santa Barbara County. The coast patch-nosed snake is often found in scrub and chaparral habitats, but has a distribution that is generally east of SR-154. There have been recent sightings in the Lompoc region, including one in Vandenberg Village. Although not reported previously in the vicinity of the Project, the occurrence of this species is possible, especially in habitats with a shrub component.

Southwestern Pond Turtle (Emys marmorata pallida). The southwestern pond turtle is a California Species of Special Concern. Similar to red-legged frogs, this species uses areas with permanent surface water, such as ponds, reservoirs, and slow-water pools in streams. Basking sites that protrude above the surface of the water (such as rocks, logs, downed trees, and mats of aquatic vegetation) are an important component of the habitat. Pond turtles are also found occasionally in nearby upland areas during nesting and winter. Loss of and disturbance to wetlands and riparian zones have caused this species to decline in numbers and distribution.

This species is known to occur in creeks and ponds in northern Santa Barbara County. It occurs at a number of locations on VAFB. It is unlikely that southwestern pond turtles occur in or near the Project area due to a lack of permanent surface water.

Two-striped Garter Snake (Thamnophis hammondii). This species is a California Species of Special Concern. Two-striped garter snakes are found in a variety of aquatic habitats, including creeks, streams, ponds, and reservoirs. Aquatic and riparian vegetation is used as cover. This species is

known to occur in coastal northern Santa Barbara County, including VAFB and in the vicinity of the Project site.

Habitat for two-striped garter snakes in and near the Project area is very limited. One area of North Corridor - East would cross over a seasonal drainage that includes marginal habitat for this species. An access road leading to parts of the South Corridor and West Corridor crosses a seasonal drainage with limited riparian scrub habitat. In addition, artificial impoundments on the western portion of Sudden Corridor and on Middle Corridor represent at least seasonal habitat for this species. The occurrence of two-striped garter snakes at the streams is possible, but unlikely; the habitat quality is marginal, and the duration of surface water is unknown. The pond represents better quality habitat, but persistence of surface water in that impoundment is unknown, and the pond is isolated from other areas of potential habitat.

California Horned Lizard (Phrynosoma coronatum). The California horned lizard is a California Species of Special Concern. Habitat loss has occurred in many parts of the range of this species due to residential development and other factors, such as conversion to cultivated agriculture. Horned lizards are active above-ground primarily between April and October with activity concentrated in April through June. Preferred habitat includes loose, sandy loam and sandy-gravelly soils supporting scattered shrubs and an open canopy, including riparian woodland, riparian scrub, coastal sage scrub, open areas in chaparral, and annual grassland.

This species occurs in many habitats on VAFB. In the vicinity of the Project area, California horned lizards could occur at locations that are inland enough to be away from persistent convection fogs that blanket western and southern coastlines of Santa Barbara County. This would include most portions of the Project area that contain combinations of annual grassland and Central Coast scrub.

Silvery Legless Lizard (Anniella pulchra pulchra). The silvery legless lizard is a California Species of Special Concern. There have been recent estimates of the loss of approximately 20 percent of the historic range of this species (Jennings and Hayes, 1994). Factors in habitat loss include urbanization, conversion to intensive agriculture, coastal dune development, and the introduction of non-native plants, such as veldt grass (*Ehrharta calycina*), ice plant (*Carpobrotus edulis* and related species), eucalyptus, and other invasive species that displace native vegetation and create unsuitable microhabitat conditions for silvery legless lizards. This species is very limited in its mobility. It is quite long-lived, having survived in captivity for up to 7 years. Reproductive maturity is reached at 2 to 3 years. Adult females bear from one to four (usually one) live young between September and November (Goldberg and Miller, 1985). Suitable habitat occurs in portions of the Project area that contain Central Coast scrub and annual grassland that has elements of Central Coast scrub.

Golden Eagle (Aquila chrysaetos). This species is a California Species of Special Concern and a fully protected species in California. In addition, it is protected by the Bald and Golden Eagle Act. Golden eagles use open areas and semiopen woodlands. They often forage over large expanses of grassland. This species is considered to be rare in the Lompoc region; however, there are records in the Project vicinity. Three were observed in the Oak Mountain region during August and September 1990. This species occurs year-round on VAFB. Data collected and compiled by Holmgren and Collins in 1999 include sightings primarily around the mouth of the Santa Ynez River and the Point Sal area. However, there were at least six sightings in Miguelito Canyon and

Sudden Canyon, and near Sudden Peak and Oak Mountain, during 1994 and 1995. The 1994 report near Oak Mountain was of a nesting pair.

Tetra Tech reported that golden eagles had nested in the vicinity of an Oak Mountain road repair project (TetraTech, 1999b). VAFB wildlife biologist Nancy Read noted that one or two pairs have nested in that area consistently over the past several years. She indicated that the Oak Mountain area is one of the few locations in northern Santa Barbara County where golden eagles are consistently observed (T. Olson, 2002). A pair was observed while conducting surveys on VAFB in the vicinity of the Project site (Olson and Rindlaub, 2006).

During the Olson and Rinlaub surveys for this Project, five golden eagles were sighted. Two individuals were observed near the junction of San Miguelito Road and Sudden Road. An immature golden eagle was observed on June 20, 2002. The other observation was an adult flying overhead on April 15, 2005. Three individuals were observed in the Signorelli Ridge/South Corridor area in December 2006 and one immature individual was observed over the site on February 18, 2008 by SAIC during a site reconnaissance. This species also was observed during Sapphos' Winter and Spring 2008 surveys. These surveys yielded three golden eagle observations: one immature, one sub-adult, and one adult. These observations were made over three separate surveys. Golden eagles occurred over all habitats throughout the LWEF site, depending on their activities, but were most frequently detected foraging over open habitats such as non-native grassland. Sapphos did not detect any nesting for this species during their 2007-2008 surveys. They report that, although not confirmed, one pair may nest nearby in the vicinity of Tranquillon Peak on VAFB. This species was observed and is expected to fly within wind turbine blade swept heights of approximately 130 to 400 feet at the LWEF site.

Golden eagles were observed to forage over large expanses of open habitat (mostly grassland) throughout the Project area. The foraging habitat for this species within the Project area is small compared to territory size. Natural vegetation within the Project area is about 3,000 acres. Adjacent and nearby properties with significant areas of natural vegetation include south VAFB (about 30,000 acres) and Bixby Ranch (more than 10,000 acres). Studies have shown that golden eagles occupy large territories. Dixon estimated the average size of golden eagle territories in a study conducted in San Diego County to be 93 square kilometers (36 square miles = 23,040 acres) (Dixon, 1937), while another study reported an average territory size of 124 square kilometers (48 square miles = 30,720 acres) for golden eagles in northern California (Olson and Rindlaub, 2006).

White-tailed Kite (Elanus leucurus). This is a locally rare species and a fully protected bird in California. White-tailed kites are an uncommon resident of the Lompoc area. They forage over relatively open areas, including grassland and agricultural land. Communal roosts used in the fall and winter are established in a variety of settings, including stands of oak and eucalyptus trees.

Most nesting occurs between March and July. This species has been observed nesting in the Lompoc region (Olson and Rindlaub, 2006; Holmgren and Collins, 1999). None of the records compiled by Holmgren and Collins were in the vicinity of the Project area. An individual white-tailed kite was observed during Survey 3 at Point 18 from Signorelli Ridge and South Corridor. One white-tailed kite was observed during Spring 2008 surveys by Sapphos. The kite was observed foraging at low heights.

Foraging habitat for this species occurs in annual grassland and agricultural field throughout the Project area, including the vicinities of the Project Substation and maintenance station. Some portions of the Project area are nearby potential roosting and nesting habitat, including the eastern part of Sudden Corridor and portions of North Corridor - East and Middle Corridor - Flank, and Sudden Corridor –Northeast.

Western Burrowing Owl (Athene cunicularia). The burrowing owl is a California Species of Special Concern. Burrowing owls use large expanses of grassland and agricultural areas. The burrows used for roosting and nesting are primarily those initially excavated by California ground squirrels. Lehman (1994) states that the burrowing owl is almost extirpated in Santa Barbara County due to conversion of grassland habitat, rodent control, and pesticide usage. In the petition to list this species under the California Endangered Species Act (CESA), the Center of Biological Diversity, et al. (2003) also described the status of burrowing owls in Santa Barbara County as "nearly extirpated." In the Lompoc area, this species is considered to be an uncommon but regularly observed species during nonbreeding months of the year.

Wintering birds and transients are regularly sighted on VAFB, primarily between November and April (Tetra Tech, 1999b). A previous sighting in 1997 was within 1 mile of the Oak Mountain Road Repair Project site, but not at the time of the work was underway. There have been no reports of burrowing owl nests on VAFB since 1980. Despite the lack of nesting records, Holmgren and Collins indicated there was "significant use of suitable habitat on the base by migrants and winter visitors." During that study, there were 47 sightings at 31 different locations in grassland and coastal scrub habitats. Included among the 31 localities were 4 on East Honda Ridge, 12 on the Sudden Ranch, and 1 sighting at Oak Mountain (Holmgren and Collins, 1999). Suitable wintering habitat occurs in the Project area in annual grassland and Central Coast scrub habitats. Burrowing owls were observed throughout the Sapphos winter surveys with burrows remaining active during the entire Winter 2008 survey, with at least two individuals (based on four observations) observed occupying two separate burrows.

Grasshopper Sparrow (Ammodramus savannarum). The grasshopper sparrow is considered regionally rare; it does not have other sensitive classifications. This species is found in extensive grassland areas with scattered shrubs, often coyote brush. The shrubs and other taller plants are used as perches. It is considered an uncommon and local summer resident in the Lompoc area.

Among observations made in 1995 and 1996 on VAFB, 12 were near Oak Mountain, Sudden Peak, Honda Ridge, and upper Honda Canyon (Holmgren and Collins, 1999). On two occasions, either juveniles or fledglings were observed, including: (1) on a ridgeline between Sudden Peak and Oak Mountain; and (2) west of the junction of Tranquillon Mountain Road and Arguello Boulevard.

During surveys conducted for this study, grasshopper sparrows were observed on May 31, June 30, and July 21, 2002, as well as during four of the 2005 surveys (April 15, May 4, June 12, and June 16). The highest number observed was nine on June 16, 2005. The observations were in grassland areas at the bases of and partway up hills in the following areas: South Corridor - Central, Middle Corridor - North, Quarry Ridge, Sudden Corridor - East, and Sudden Bench - Northeast. The 2006 survey yielded a sighting of this species in annual grassland. Sapphos documented occurrences of grasshopper sparrow during most weeks of their Spring 2008 survey. An explosion in observations occurred in early May, with 55 recorded observations during a three day period. These birds are widely distributed throughout the LWEP site at all elevations.

Northern Harrier (Circus cyaneus). This species is a California Species of Special Concern. Northern harriers use a variety of open habitats, such as grassland, coastal sage scrub, wetland areas, and agricultural lands. In the Lompoc area, this species is considered to be rare during the breeding season and uncommon for the remainder of the year. Holmgren and Collins compiled numerous sightings on VAFB, including several with evidence of nesting. Four of the observations were in the vicinity of the Project area; however, none included signs of nesting (Holmgren and Collins, 1999). Northern harriers were observed on nearby VAFB property and are believed to be present in low numbers in the vicinity (Olson and Rindlaub, 2006).

An adult female was sighted by Olson and Rindlaub on April 15, 2005, soaring low to the ground along Quarry Ridge. This species could occur in the Project area on infrequent occasions but is not expected to nest in the vicinity. Relatively open areas throughout the Project area, including grassland, open Central Coast scrub, and agricultural field, provide potential foraging habitat for this species. In September 2006, a harrier was sighted in annual grassland and Central Coast riparian scrub. Two individuals were seen at Points 5 and 18 at Middle Corridor South and Signorelli Ridge, respectively, during Surveys 2 and 3 in December 2006. This species also was observed along the power line corridor in September 2006. Northern harriers were observed flying low over the ground foraging for food during the Spring Sapphos 2008 surveys.

Long-eared Owl. Nocturnal owls had not been surveyed at the LWEF study area until early February 2008, when a resident pair of great horned owls (*Bubo virginianus*) was documented in the main valley at the western end of the LWEF study area. The nocturnal long-eared owl, which are preyed upon by great horned owls, may occur at the LWEF study area where its probable status is very rare or rare. Only one bird (26 December 1996) has been reported at VAFB, until recently, and one bird was reported on the La Purisima CBC over 10 years from 1998 through 2007. However, a winter roost of 8 to 12 long-eared owls was recently observed at Cañada Honda Creek, but Sapphos reports that the exact area referred is uncertain.

Loggerhead Shrike (Lanius ludovicianus). The loggerhead shrike is a California Species of Special Concern. This species is found in grassland, oak savanna, scrub habitats, open riparian zones, and agricultural areas. It is an uncommon year-round resident along the northern coast of Santa Barbara County. In the Lompoc area, it is considered common in fall and winter and uncommon, but regularly observed, in spring and summer. Among numerous sightings on and near VAFB compiled by Holmgren and Collins were observations in upper Honda Canyon and Sudden Canyon, as well as along lower Honda Ridge Road and near Oak Mountain. The Oak Mountain sighting was reported by Nancy Read and included one to two pairs. The Holmgren and Collins report included nine sightings in 1995 and 1996 with evidence of nesting. None of the observations reported by Holmgren and Collins was in or near the Project area (Holmgren and Collins, 1999).

No loggerhead shrikes were observed during 2002 and 2005 surveys conducted for this study. Suitable foraging habitat occurs in the Project area in areas of open Central Coast scrub and at the margins of that habitat and annual grassland. Based on previously collected data, nesting by this species in or near the Project area is likely. A loggerhead shrike was observed in September 2006 within grassland habitat, and an incidental sighting of one occurred in December 2006 during Survey 2.

Vaux's Swift. An agile aerial insectivore; Vaux's swift is an uncommon spring and autumnal migrant at VAFB. Vaux's swift is anticipated to be an uncommon migrant at the LWEF study area,

even though populations are declining in western North America due to the dwindling old growth forest of the Pacific Northwest, where Vaux's swift breeds. Vaux's swifts were documented by Sapphos in the Spring of 2008. Two observations were made including one observation of three individuals.

Mountain Plover. The mountain plover is a rare nonbreeding visitor in Santa Barbara County, including VAFB where as many as 27 birds have been seen, although it is probably regular on the Santa Maria river plain. The mountain plover may occur at the LWEF study area on short-grass nonnative grasslands where project development would be concentrated or at the three small arable fields. However, the plover would be expected to be a scarce transient at the LWEP study area.

Yellow Warbler (Dendroica petechia). The yellow warbler is a California Species of Special Concern. It breeds in riparian areas, usually in relatively dense willow shrubs. Lehman described this species as a fairly common summer resident in the North Coast region of Santa Barbara County. In the Lompoc area, yellow warblers are considered to be common during spring and summer, especially near riparian and wetland areas (Lehman, 1994).

During surveys for this study, there were observations of yellow warblers on three dates: May 31, 2002; April 13, 2005; and May 20, 2005. A total of four individuals were sighted during the surveys conducted for this Project. All were in arroyo willows along small drainages. Based on survey results, the number of yellow warblers in the construction zone is expected to be small. Potential habitat occurs along small drainages and around some seeps and wetlands in Sudden Corridor, West Corridor, South Corridor, and the West Access Road to North Corridor. Yellow warblers were observed often (during every week but one of the Sapphos 2008 surveys) along Lower Honda Creek. Most observations were of singing males.

Tricolored Blackbird (Agelaius tricolor). The tricolored blackbird is a California Species of Special Concern. This species is usually found in scattered, large colonies that use dense stands of bulrush *(Scirpus* spp) and cattails *(Typha* spp) for roosting and nesting. This species often forages in agricultural fields and grasslands grazed by cattle. Nesting occurs between April and early July. The species is uncommon to common in portions of Santa Barbara County, but highly localized in distribution. In the Lompoc area, tricolored blackbirds are considered rare during breeding season and uncommon during other seasons of the year. Wintering concentrations occur in the Santa Maria Valley and on VAFB.

Important locations for this species on VAFB include Mod III Pond, Punchbowl Pond, Barka Slough, San Antonio Creek, the Santa Ynez River, Wildflower Wetland, Live Oak Spring, and the Waterfowl Management Ponds. Other sightings, including those of groups foraging in upland areas, have been scattered and not repeated. The closest observations to the Project area reported by Holmgren and Collins were in grasslands along Sudden Road, about 0.5 miles south of the base boundary (Holmgren and Collins, 1999). During surveys for this study, a group of approximately 12 was observed on May 31, 2002, in grasslands along the existing access road in Middle Corridor. An earlier sighting included a flock of about 30 on May 6, 2002. No tricolored blackbirds were observed during the 2005 surveys. This species is not expected to breed in the Project area due to a lack of suitable nesting habitat; however, suitable foraging sites occur in the Project area in grasslands on relatively level terrain and on gently sloping hillsides.

Yellow-breasted chat. The yellow-breasted chat breeds in riparian areas in Santa Barbara County, including VAFB in areas such as Cañada Honda Creek where it is uncommon; the yellow-breasted chat also occurs as a spring and autumnal migrant. The LWEF study area likely lacks suitable breeding habitat for yellow-breasted chat because the riparian habitat is not extensive enough to support breeding habitat and has been degraded as a result of cattle grazing. However, the yellow-breasted chat could occur at the LWEF study area as an uncommon migrant. One observation of a yellow-breasted chat was made during the Spring 2008 Sapphos survey.

California Rufous-crowned Sparrow (Aimophila ruficeps ruficeps). The California rufous-crowned sparrow is considered to be rare in the region and is on the CDFG Special Animals List (CDFG 2008) Watch List). It does not have other sensitive classifications. This species uses dry, open areas of scrub and grassland habitats. Shrub cover is usually interspersed with patches of bare ground or grass and forb cover. Rufous-crowned sparrows often are observed around sparsely vegetated areas around road cuts. On South VAFB, this species was frequently observed on south-, east-, and west-facing slopes of hills and ridges, as well as on high ridges between Sudden Peak and Oak Mountain (Holmgren and Collins, 1999).

This species is considered an uncommon resident species in coastal sage scrub in the Lompoc-VAFB area of Santa Barbara County. During 1995 and 1996 surveys conducted for the Holmgren and Collins report, there were 19 rufous-crowned sparrow sightings in the vicinities of Oak Mountain, Honda Ridge, and Sudden Peak. The observations were made in March, April, May, June, and October. Three observations in June 1996 in the Sudden Peak to Oak Mountain area were of fledglings and adults carrying food; these sightings and activities indicate that these birds were nesting in the area. Overall, there were 397 rufous-crowned sparrows and 218 territories identified on South VAFB during the 1995 and 1996 surveys. Among the more abundant sites were the eastern end of North Honda Canyon Ridge and high ridges between Sudden Peak and Oak Mountain (Holmgren and Collins, 1999).

During surveys conducted for this study, rufous-crowned sparrows were observed on May 31, 2002, and September 25, 2002. Both sets of observations were of adults, including two on May 31 along West Corridor and one on September 25 along Sudden Bench – Northeast. In 2005, rufous-crowned sparrows were observed on May 4 and June 16 along North Corridor – Central, North Corridor –East, and Sudden Bench – Northeast.

Suitable habitat also occurs on hillsides with Central Coast scrub along the following corridors: South Corridor, portions of West Corridor, Quarry Ridge, Quarry Flank, and Signorelli Corridor. Two individuals were observed at Middle Corridor at Points 5 and 6 during Survey 1 in December 2006. California rufous-crowned sparrows were observed during the Winter and Spring 2008 surveys by Sapphos.

Sharp-shinned Hawk (Accipiter striatus). The sharp-shinned hawk is a California Species of Special Concern. This species occurs in woodlands and at interfaces between wooded and open habitats. In the Lompoc area, it is an uncommon winter visitor. Lehman reported that only one probable nesting has been documented in Santa Barbara County (Lehman, 1994).

No sharp-shinned hawks were observed during the surveys for this study during 2002 or 2005. This species could potentially occur on an uncommon basis during fall and winter at edges of annual grassland and mixed evergreen forest. Locations are northeast of Middle Corridor and Sudden

Corridor. Nesting by sharp-shinned hawks is not expected in the Project area. In 2006, a sharp-shinned hawk was observed in grassland habitat. Sharp-shinned hawks were observed during the Winter and Spring 2008 surveys by Sapphos. Single birds were observed hunting on three days (February 5, March 13, and March 18) at low heights above ground (< 100 feet) in the Honda Creek valley or along the South Ridge. The single birds were adults, when the age could be determined (2 of 3 times). Sharp-shinned hawks occurred over all habitats throughout the LWEF site depending on their activities. No sharp-shinned hawks were observed to fly within wind turbine blade swept heights of approximately 130 to 400 feet.

Cooper's Hawk (Accipiter cooperi). This species is a California Species of Special Concern. Cooper's hawks use woodlands, riparian areas with openings, and some open habitats, including agricultural fields. In the Lompoc area, this species is a rare breeding species and uncommon during other seasons of the year. During a study of La Purisima Mission State Historic Park in 2004, there were several observations of this species, including one successful nest (Olson and Rindlaub, 2006). Among many reported observations compiled by Holmgren and Collins (1999) were: (1) one along Lower Honda Ridge Road in September 1994; and (2) a probable nesting near Upper Honda Creek (an adult carrying food) in June 1996. During the surveys for this study, one adult was observed on September 25, 2002, and another on May 20, 2005. The 2002 sighting was in mixed evergreen forest northeast of Middle Corridor - Flank. The 2005 sighting was near a small patch of woodland adjacent to a seep on the western portion of Sudden Corridor - West. Suitable habitat for this species occurs in the Project area, primarily in and around areas of mixed evergreen forest northeast of Middle Corridor - Flank and Sudden Corridor - East. In December 2006 during Survey 2, an individual was sighted in Signorelli Corridor flying relatively low to the ground at a height of 4 to 5 meters. During the winter 2008 Sapphos surveys, two observations were made on consecutive weeks. The spring 2008 surveys also by Sapphos, resulted in observations every week. This included a mated pair attending to a nest along Lower Honda Creek. Sapphos reports another nest is likely to be located in oak woodlands along South Miguelito Canyon Road. Additionally, two inactive Cooper's hawk nests have been found on the site.

Ferruginous Hawk (Buteo regalis). The ferruginous hawk is a California Species of Special Concern. This species occurs in open areas, mostly grassland and agricultural areas in parts of Santa Barbara County, where it is uncommon in the fall and winter. Although most county observations are made in the Cuyama Valley, small numbers of ferruginous hawks frequent the Lompoc/VAFB region each winter. This species is not known to nest in Santa Barbara County.

There are 36 observations of ferruginous hawks in and near VAFB in Holmgren and Collins (1999), including an October 1996 sighting by Paul Collins in the Oak Mountain area. There are no nesting records for this species in the vicinity of the Project area. No ferruginous hawks were observed during the Olson and Rindlaub spring and summer surveys conducted for this site. Foraging habitat occurs in open annual grasslands in the Project area. One ferruginous hawk was observed during midday, flying at approximately 40 meters from Middle Corridor – North, during Survey 3 of the December 2006 survey. One adult bird (light-morph) was observed foraging low along the North Ridge during the Sapphos winter 2008 surveys.

Merlin (Falco columbarius). This species is a California Species of Special Concern. Merlins occur in open habitats, such as agricultural fields, grasslands, wooded wetlands, and beaches. This species is a rare winter visitor along the northern coast of Santa Barbara County. Holmgren and Collins (1999)

compiled a list of 25 sightings on VAFB between 1980 and 1996. Most of those observations were either near the mouth of the Santa Ynez River or the waterfowl management ponds. However, one February 1996 sighting by Kathleen Whitney was at Sudden Flats, about 0.5 miles west of Sudden Canyon. There are no records of merlins nesting in Santa Barbara County.

No merlins were observed during the surveys conducted for this study. This species could potentially occur in the Project area on a rare basis during the winter. Nesting by merlins is not expected in or near the Project area.

California Horned Lark (Eremophila alpestris actia). The California horned lark is a California Species of Special Concern. It occurs mostly in open areas with short vegetative cover, including fallowed cropland, dunes, and short grassland. This species is still considered a fairly common nesting species in North Coast areas of Santa Barbara County, especially around Lompoc and Santa Maria. Numbers of this species in the fall and winter are higher due to an influx of migrants from elsewhere.

During surveys conducted for the Holmgren and Collins report, there were several observations of this species on Honda Ridge, Sudden Road (to the base of Tranquillon Peak and near the junction with San Miguelito Road), and near the Oak Mountain gate. The observation near the Oak Mountain gate was of a female with a "broken wing" display, indicating that an active nest was nearby (Holmgren and Collins, 1999).

California horned larks were commonly observed during five of the six Project surveys in 2002 (May 31, June 30, July 21, August 23, and September 25). The highest count for one survey in 2002 was 20 on August 23. Nests were found on May 31 and June 30, 2002, on West Corridor, North Corridor - East, and Middle Corridor - Flank. In general, nests were established on relatively level areas with very short grass cover.

This species was noted in 2005 during surveys conducted on April 15, June 12, June 16, and August 26. During the August 26, 2005, survey, this species was especially common along Middle Corridor - South; a total of 27 California horned larks were observed during that survey. Based on observations made in 2002 and 2005, other areas also contain suitable nesting habitat, including South Corridor - East, South Corridor - Central, the new access road leading from San Miguelito Road to North Corridor, Sudden Bench - Northwest, and Sudden Corridor – West. Several individuals were observed during all three December 2006 surveys at Sudden Bench, and Quarry, Middle, North, Signorelli, South, Scolari, and West corridors. Horned larks were also observed every week (often in large numbers) throughout the Sapphos surveys of 2008, including singing males in some of the ruderal fields. The horned lark was the most frequently recorded species on area search counts (25 of 108 counts, 23 percent). Horned lark was also the most abundant species on area search counts (150 birds), with six counts of flocks of 8 to 33 birds. Horned larks were widely distributed along all surveyed ridgelines on proposed impact areas (except for the northern portion of the Larsen landholding), with flocks as high as 41 birds. Sapphos reports that some horned larks were paired on territory as early as early February.

Bell's Sage Sparrow (Amphispiza belli). This species is a California Species of Special Concern. In the Lompoc area, it is an uncommon and local resident of chaparral on VAFB and La Purisima Mission, as well as in the vicinity of Vandenberg Village. Nearly all observations made during the Holmgren and Collins studies were in Burton Mesa chaparral. By comparison, only one sage

sparrow was sighted in coastal sage scrub. Areas of Burton Mesa chaparral that had burned within the previous 15 years contained the highest densities of individuals. Sightings on La Purisima Mission State Historic Park were mostly in chaparral, but also included some in coastal sage scrub (Holmgren and Collins, 1999; Olson and Rindlaub, 2006).

Most of the sightings made in 1995 and 1996 were on North VAFB. The closest subpopulation to the Project area was on the south slope of the west end of Honda Ridge, off Avery Road (Holmgren and Collins, 1999). There were no new territories identified in the Project area. No Bell's sage sparrows were observed in 2002 and 2005.

Long-billed Curlew (Numenius americanus). The long-billed curlew is generally an uncommon transient in Santa Barbara County, rarer in winter, although important localities along the coast where it can be locally abundant include the Santa Maria River floodplain and river mouth and other beaches along VAFB. During winter avian surveys of resident and temperate zone migrants, Sapphos observed one long-billed curlew flying over low elevation nonnative grasslands outside the project development footprint on February 6, 2008. The long-billed curlew may occur at the LWEF study area at the three arable fields where project development would not occur. The long-billed curlew would be expected to be a scarce transient at the LWEF study area.

American Badger (Taxidea taxus). This species is considered locally rare. Formerly, it was included on the list of California Species of Special Concern. This species is found in a variety of nonwooded habitats, including grassland and scrub habitats. Badgers often dig and use several dens, even in the course of a single month. Areas frequented by badgers are often marked by abundant evidence of digging activity, which includes not only dens, but also attempts to dig out Botta's pocket gophers (*Thomomys bottae*) and California ground squirrels. Those two small mammal species are principal prey items for badgers.

Although declining in general, badgers still occur in many areas of northern Santa Barbara County. During surveys conducted for this study in 2002, badger dens and digging evidence were found in annual grassland habitat on May 31, July 21, and August 23. Inactive burrows were also observed in grassland during 2005 surveys on May 4, May 20, and August 28. The locations of the observations were along West Corridor, Signorelli Corridor, and Sudden Corridor. There is potential for this species to occur in grassland areas throughout the Project area, including the vicinity of Project Substation Alternatives 1 and 2 and the O&M facility.

Western Mastiff Bat (Eumops perotis). The western mastiff bat is a California Species of Special Concern. It occurs throughout much of California up to about 8,900 feet (2,713 meters) elevation. Western mastiff bats frequent a variety of habitats, including desert scrub, oak woodland, chaparral, and ponderosa pine forest (Pierson et al., 2002). They forage mostly on moths while in flight (sometimes up to 1000 feet (304.8 meters) above the ground).

During surveys conducted from 1997 to 1999, this species was detected acoustically on VAFB only three times, all in upper Honda Canyon; one bat was observed flying down canyon. Pierson et al. believe those individuals may have come from a roosting site well away from the base. It appears that the western mastiff bat is not a resident of the base (Piersen et al., 2002). As such, its only potential occurrence in the Project area would be during foraging on very rare occasions. No western mastiff bats were detected during the 2008 surveys conducted by the CCBRG.

Pallid Bat (Antrozous pallidus). The pallid bat is a California Species of Special Concern. This species uses a variety of habitats ranging from deserts to oak and redwood forests. Pallid bats roost in crevices, such as openings in rock outcrops, mines, caves, hollow trees, buildings, and bridges. Within the Central Coast region, they forage in both open woodlands and wooded canyons for arthropods, including beetles and grasshoppers.

During surveys conducted from 1997 to 1999 on VAFB, this species was found at 19 sampling locations (Pierson et al., 2002). It was the sixth most abundant bat species on base. The only significant population was found in Upper Honda Canyon. Swordfish Cave was used as a day and night roost by a maternity colony of about 40 to 50 adult females, a few adult males, and young bats. Bats from Upper Honda Canyon often foraged in tanoak habitat on ridges and in coast live oak (*Quercus agrifolia*) habitat in Honda and Miguelito creeks. This species apparently relies on cave habitat on base. Because cave habitat is lacking, pallid bats are unlikely to roost in the Project area; however, foraging habitat occurs in mixed evergreen forest, especially those locations on hillsides characterized by tanoak. Such areas occur northeast of Sudden Corridor and North Corridor. Two pallid bats were detected during the acoustic sampling site during the 2008 CCBRG studies.

Townsend's Big-eared Bat (Corynorhinus townsendii). The Townsend's big-eared bat is a California Species of Special Concern. It is quite widely distributed through the region, occurring in habitats ranging from deserts to coastal scrub and woodland. It roosts primarily in mines, caves, and buildings. Townsend's big-eared bats feed on small moths and a variety of other insects.

During surveys conducted from 1997 to 1999, big-eared bats were found in 16 day-roosts (Pierson et al., 2002). Most of the roost sites were near oak-dominated drainages and canyons. A total of 29 individuals were captured. No maternity roosts were found on VAFB. This species is not expected to roost in the Project area due to a lack of cave and mine habitat; however, foraging habitat occurs in wooded areas similar to those described above for pallid bat (*Antrozous pallidus*). This species was not detected during the 2008 surveys conducted by the CCBRG.

Western Red Bat (Lasiurus blossevillii). The red bat has been proposed for future listing as a California Species of Special Concern. There are scattered records of red bat occurrence in central and southern California where they use low elevation riparian habitats. They roost under the cover of overhanging leaves of sycamore and cottonwood trees, as well as in orchards. This species forages while in flight on a variety of insects.

During surveys in 1997 to 1999, this species was detected throughout VAFB, primarily in creek drainages along San Antonio Creek, the Santa Ynez River, and lower and upper Honda Canyon. It was also detected in wetland areas and foraging along rows of eucalyptus trees. Due to a lack of riparian habitat, this species is not expected to roost in the Project area. Foraging habitat in the Project area is limited to the eucalyptus groves and seeps along South Corridor, Signorelli Corridor, and Scolari Corridor. No western red bats were detected during the 2008 surveys conducted by the CCBRG.

San Diego Desert Woodrat (Neotoma lepida). The San Diego desert woodrat is a California Species of Special Concern. This species is known to inhabit scrub habitats, such as coastal sage scrub. Its distribution tends to be on the west side of Coast Ranges from San Diego County north to at least San Luis Obispo County. Several individuals were live-trapped at La Purisima Mission State

Historic Park in 2004 (Olson and Rindlaub, 2006). Recently, this species was also live-trapped near Montana de Oro State Park in San Luis Obispo County.

Unlike dusky-footed woodrats, San Diego desert woodrats do not construct large stick nests. This species normally occupies openings in rocks, vegetation (such as openings among patches of cactus), and even debris. Sometimes small stick nests are built within an opening or crevice. Portions of the Project area that contain coastal sage scrub with occasional rocky areas could be used by this species. These areas include West Corridor, North Corridor, Scolari Corridor, Signorelli Corridor, and the slope that links Signorelli and Scolari corridors.

Locally Rare Species

Although no formal Federal or California State designation is attributed, several species present or expected to be present on the LWEF are considered to be locally rare:

- Short-eared owl (Asio flammeus)
- Olive-sided flycatcher *(Contopus cooperi)*
- Rock wren (Salpinctes obsoletus)
- Swainson's thrush *(Catharus ustulatus*)
- Blue grosbeak (Passerina caerulea)
- Common poorwill (Phalaenoptilus nuttallii)

3.5.4.3 Summary of Listed and Other Sensitive Species Occurrences on the Project Site

Listed and other sensitive species observed at the Project site during the various Project surveys are listed in Table 3.5-6. The status and distribution of these species are summarized above in tables 3.5-4 and 3.5-5.

TABLE 3.5-6
Summary of Listed and Other Sensitive Species Observed in the Project Site

Name	2002	2005	2006	2007	2008
Plants					
Gaviota tarplant (*Dienandra increscens* ssp *villosa*)	X	X	X		
Mesa horkelia (*Horkelia cuneata* ssp *puberula*)	X	X			
Kellogg's horkelia (*Horkelia cuneata* ssp *sericea*)	X	X			
Western dichondra (*Dichondra occidentalis*)	X	X			
Seaside agoseris (*Agoseris apargioides*)	X	X			
Sickle-leaved rush (*Juncus falcatus*)	X	X			
California globemallow (*Sidalcea malvaefolia* ssp *californica*)	X	X			
Birds					
White-tailed kite (*Elanus leucurus*)			X		X
Golden eagle (*Aquila chrysaetos*)	X	X	X	X	X
Northern harrier (*Circus cyaneus*)		X	X	X	X
Sharp-shinned hawk (*Accipiter striatus*)	X	X			X
Cooper's hawk (*Accipiter cooperii*)	X	X	X		X
Ferruginous hawk (*Buteo regalis*)			X		
Peregrine falcon (*Falco peregrinus*)			X	X	X
Long-billed curlew (*Numenius americanus*)					X
Western burrowing owl (*Athene (=Speotyto) cunicularia hypugea*)					X
Vaux's swift (*Chaetura vauxi*)					X

TABLE 3.5-6
Summary of Listed and Other Sensitive Species Observed in the Project Site

Name	2002	2005	2006	2007	2008
California horned lark (*Eremophila alpestris actia*)	X	X	X	X	X
Loggerhead shrike (*Lanius ludovicianus*)			X	X	
Yellow-breasted chat (*Icteria virens*)					X
California rufous-crowned sparrow (*Aimophila ruficeps ruficeps*)	X	X	X		X
Bell's sage sparrow (*Amphispiza belli belli*)	X	X	X		
Grasshopper sparrow (*Ammodramus savannarum*)	X	X	X		X
Tricolored blackbird (*Agelaius tricolor*)	X				
Mammals					
American badger (*Taxidea taxus*); den and burrowing evidence	X	X	X		

3.5.5 Wetlands and Other Sensitive Aquatic Features

Wetlands and other sensitive aquatic features described in this section include those areas that may be subject to regulation under Section 404 of the Clean Water Act (CWA) and Section 1600 of the California Department of Fish and Game Code. Wetlands are defined differently by different regulating agencies; however, all definitions are based on the presence of wetland hydrology, hydric soils, and/or hydrophytic plants. The U.S. Army Corps of Engineers (USACE) requires all three indicators to be present; CDFG, County of Santa Barbara, and U.S. Fish and Wildlife Service require only one indicator to be present. Features that are subject to Section 404 of the CWA include those areas that are "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (EPA, 40 CFR 230.3 and USACE, 33 CFR 328.3). Jurisdictional wetlands are a subset of Waters of the U.S., which include, in addition to wetlands as defined above, areas subject to the ebb and flow of the tide; traditional navigable waters; relatively permanent tributaries to traditional navigable waters; and other waters that may affect the chemical, physical, or biological integrity of a traditional navigable waters. Frequently the term "wetlands and other Waters of the U.S." is used when describing areas under USACE jurisdiction.

As noted above, CDFG and the County of Santa Barbara define wetlands by the predominance of hydrophytic plants, the occurrence of undrained hydric soils or well defined wetland hydrology. This broader definition generally includes riparian corridors associated with streams and other less permanent features.

Potential State and Federal wetlands or other jurisdictional features in the vicinity of the proposed project can be characterized as the following: streams and riparian corridors associated with proposed improved road crossings, wetland features at the proposed O&M facility and staging area building sites, and naturally occurring seeps and associated riparian/hydrophytic vegetation within the proposed WTG corridors. Proposed stream crossings were delineated in January 2008 for both State of California and USACE jurisdiction (Sapphos 2008 MFR 10), and the proposed building sites were delineated in 2008 (Sapphos 2008 MFR 16) for the same. Because the locations of specific WTGs would be determined as part of the design phase of the project, no formal delineation has been completed for the WTG corridors; however, potential wetlands have been identified based on project specific vegetation mapping, the National Wetlands Inventory, and field reconnaissance, and represents an adequate baseline for the assessment of impacts. Formal wetland delineations for all areas within the WTG corridor that are potentially subject to CDFG/USACE jurisdiction (based on the presence of hydrophytic vegetation) would be completed following the

final design location of specific WTGs. Wetland features are shown in Figure 3.5-6 and described in more detail below.

3.5.5.1 Stream Crossings

Potential State and Federal wetlands and other Waters of the U.S. were identified and delineated in the vicinity of the proposed project area based on the USACE 1987 delineation manual (Environmental Laboratory 1987), USACE guidance resulting from recent litigation, and CDFG guidance and standards (Sapphos MFRs 10 and 16, 2008). The applicant investigated potentially jurisdictional features in January 2008 at stream crossings that have the potential to be affected by proposed project activities. For each crossing, potential wetland location, vegetation, soils and hydrology were investigated. Wetland delineation reports with forms and a detailed description of the sampling method are included in Appendix B.

All crossings would occur at, or on tributaries to, Canada Honda Creek. The specific proposed crossing locations vary in habitat quality but generally support degraded willow-dominated riparian scrub. Evidence of cattle is present throughout the proposed project area including eroded creek banks, paths, and reduced riparian cover.

3.5.5.2 Development Associated with Facility Siting (Substation, O&M Facility, and Staging Area)

Sapphos reviewed and delineated several areas proposed for development associated with the siting of a staging area, substation, and O&M facility (Sapphos MFR 16). These areas are located in the vicinity of the intersection of San Miguelito and Sudden Roads. The following descriptions of subject area are based on the Sapphos delineation and a field reconnaissance by SAIC biologists and wetland scientists. The originally proposed substation area was located directly southeast of Sudden Road. The Applicant has subsequently relocated the substation site approximately 500 feet west of the intersection of San Miguelito and Sudden Roads. The original substation site is characterized by a large swale (seasonal wetland) dominated by brownheaded rush (*Juncus phaeocephalus*) and disturbed by cattle grazing. The feature occurs on a tributary of San Miguelito Creek (tributary to Santa Ynez River), which is an intermittent stream. Scattered individuals of common rush and California buttercup were also identified within the swale. Because the feature was dominated by hydrophytic plants, exhibited hydric soils, and was associated with a tributary to a True Navigable Water, it was determined to be within USACOE jurisdiction. The feature also conforms to the definition of a wetlands and riparian habitat pursuant to the CDFG code and Santa Barbara County guidelines.

Northeast of the originally proposed substation site, the feature continues via a culvert. The feature starts as a large shallow basin that narrows significantly downstream (to the northeast) where it forms an incised, but heavily degraded, channel. The feature occurs in the annual grassland plant community, dominated by a perennial juncus, brass buttons, California buttercup, and non-native grasses. Because the feature supports hydrophytic plants, hydric soils, and indicators of hydrology sufficient to support a wetland community, this feature was determined to be a wetland subject to USACE jurisdiction under Section 404. The feature also conforms to the definition of a wetlands and riparian habitat pursuant to the California Department of Fish and Game and Santa Barbara County guidelines.

The final feature investigated occurs southwest of the intersection of Sudden and San Miguelito Roads, within the site of the proposed O&M facility. The feature is characterized by a narrow, shallow channel exhibiting an eroded bank caused by a trail used as a cattle crossing. Soils consisted of gleyed hydric soils that formed streaks within the sandy loam. The stream gradually widens as it flows downstream. The area occurs in the annual grassland plant community and is flanked by riparian vegetation dominated by arroyo willow, blackberry, poison oak, and common rush. Wetlands species include plantain and lily. Several coyote brush and non-native grasses were observed in more upland areas. Due to the presence of hydrophytic vegetation, gleyed soils, and wetland hydrology, this feature would be subject to jurisdiction under Section 404. The feature also conforms to the definition of a wetlands and riparian habitat pursuant to the CDFG and Santa Barbara County Environmental Thresholds and Guidelines Manual.

3.5.5.3 Freshwater Seeps, Springs, and Ponds within the WTG Corridors

Vegetation mapping was completed for this project and included the mapping of communities dominated by hydrophytic species, and the authors described features that may be subject to USACE, CDFG, or Santa Barbara County jurisdiction based on the presence of wetland plants (Rindlaub and Olson 2006). A number of seeps and springs are scattered through the Project area, particularly at high elevations in Middle and South WTG corridors. Because of the steep terrain these areas exhibit seasonally saturated soils but generally lack surface water. A small pond is also located on the western slope of the northern part of Middle Corridor, where a landslide apparently created a small basin that collects rainwater runoff. In addition, freshwater marshes develop only in very small areas in the rather steep terrain on the Project sites below the South Corridor ridgeline and around a spring-fed cattle trough on the access route to North Corridor. These features are described in detail in Section 3.5.2.5.

Project-specific plant community mapping provides a conservative measurement of areas subject to jurisdiction by CDFG and Santa Barbara County, because these approaches rely principally on the predominance of hydrophytic species. As a result of mapping, approximately 13 acres of rush seep, riparian scrub, and native grassland seeps occur within the WTG corridors, all of which would likely be subject to regulation by Santa Barbara County and CDFG. Of the 13 acres of features that occur within the WTG corridor, none occur directly within the existing conceptual site layout plans for WTG placement.

3.5.6 Regulatory Framework

3.5.6.1 Federal Regulations

Endangered Species Act of 1973

The federal Endangered Species Act (ESA) and implementing regulations, Title 16 United States Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR §17.1 et seq.), include provisions for the protection and management of federally listed threatened or endangered plants and animals and their designated critical habitats. Section 7 of the ESA requires a permit to take threatened or endangered species during lawful project activities.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC §§703711) includes provisions for protection of migratory birds, including the nonpermitted take of migratory birds, under the authority of the USFWS.

Bald and Golden Eagle Protection Act

The Bald Eagle Protection Act of 1940 (16 USC 668-668d, 54 Stat. 250) provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds.

3.5.6.2 State Regulations

California Endangered Species Act of 1984

CESA and implementing regulations in the Fish and Game Code, §2050 through §2098, provide for the protection of rare, threatened, and endangered plants and animals, as recognized by CDFG, and prohibit the taking of such species without its authorization. CESA expanded upon protection afforded to rare, threatened, and endangered plants under the earlier California Native Plant Protection Act of 1977.

California Species Preservation Act 1970 (California Fish and Game Code §§900 – 903)

This law includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California, and is administered by the CDFG.

California Fully Protected Wildlife Species (California Fish and Game Code §§3511, 4700, 5050, and 5515)

These sections of the Fish and Game Code prohibit the take or possession of any fully protected bird, mammal, reptile/amphibian, or fish.

California Fish and Game Code §§3503, and 3503.5

These sections of the Fish and Game Code prohibit the take, possession, or destruction of any birds in the orders *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird.

California Native Plant Protection Act of 1977

This act and implementing regulations in Section 1900 et seq. of the Fish and Game Code include provisions that prohibit the taking of listed rare or endangered plants from the wild and establish a salvage requirement for landowners.

3.5.6.3 Santa Barbara County Plans, Policies, and Regulations

Projects within the County are subject to a number of plans, policies, and ordinances intended to protect biological resources, including those contained in the Comprehensive Plan elements,

including the Conservation Element, Environmental Resource Management Element, and Land Use Element. Refer to Section 3.10 for a discussion of the consistency of the Project with these plans and policies.

Additionally, the Santa Barbara County Oak Tree Protection and Regeneration Ordinance[7] was adopted with the goals of sustaining and enhancing oak resources within the county with no net loss of native oak trees and of increasing the number of valley, blue, and live oaks within the county. It provides guidelines and lists permit requirements for oak tree removal and replacement for agricultural and nonagricultural purposes (County, 2005).

3.5.7 Project Impacts, Mitigation, and Residual Impacts

3.5.7.1 Impact Assessment Methodology

The significance of impacts to biological resources was assessed by comparing the potential changes resulting from the Project to the County significance thresholds, taking into consideration such factors as:

- Type of impact (Would the Project directly or indirectly adversely affect wildlife through mortality, injury, displacement, and habitat loss or adversely impact vegetation through native tree removal or destruction of a sensitive plant population?)
- Timing (Would the impact occur at a critical time in the life cycle of a special-status plant or animal, such as breeding, nesting, or flowering periods?)
- Whether the impact is temporary or permanent

Additionally, the potential for bird and bat fatalities resulting from collisions with WTGs and the significance of such an impact were based on the review of numerous reports on bird and bat baseline and monitoring studies, as well as risk and fatality assessments for various wind farms across the United States (Curry and Kerlinger, 2001; Erickson et al., 2000; Erickson et al., 2001; Johnson et al., 2000a; Johnson et al., 2000b; Johnson et al., 2002; Orloff and Flannery, 1992; Thelander and Rugge, 2001; West, Inc., 2002; West, Inc., 2004; Young et al., 2002; and W.P. Erickson, Personal Communication). These reports identified standards for bird impact assessments across the United States. The following guidelines also were reviewed to identify methods of mitigating potential Project-related impacts to bird and bat species:

- California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (California Energy Commission and CDFG, 2007, Final Committee Report)
- Guidelines for Assessing and Minimizing Impacts to Bats at Wind Energy Development Sites in California (California Bat Working Group, 2006)
- Avian Protection Plan (APP) Guidelines (Avian Power Line Interaction Committee [APLIC] of the Edison Institute and USFWS, 2005)
- Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines (USFWS, 2003)

7 Updated January 24, 2006.

- Mitigation Toolbox (National Wind Coordinating Collaborative [NWCC] and Jennie Rectenwald, 2007)

3.5.7.2 Thresholds of Significance

The County of Santa Barbara Environmental Thresholds and Guidance Manual (County, 2006) includes thresholds of significance for biological resources. According to this manual, disturbance to habitats or species (including impacts to birds and bats) may be significant, based on substantial evidence in the public record, if it would substantially affect significant resources in the following ways:

- Substantially reduce or eliminate species diversity or abundance
- Substantially reduce or eliminate quantity or quality of sensitive species nesting areas
- Substantially limit reproductive capacity through losses of individuals or habitat
- Substantially fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources
- Substantially limit or fragment the geographic range or dispersal routes of species
- Substantially interfere with natural processes, such as fire or flooding, upon which the habitat depends

Project-related impacts to biological resources would be considered less than significant where there is little or no significance attached to a given habitat. For example, disturbance to cultivated agricultural fields or small acreages of non-native, ruderal habitat would be considered less than significant, as would disturbance of small acreages of non-native grassland where wildlife values are low; individuals or stands of non-native trees if not used by important animal species such as raptors; and small pockets of habitats that are already significantly fragmented or isolated and degraded or disturbed.

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

The Environmental Thresholds and Guidelines Manual also contains habitat-specific impact assessment guidelines.

For wetlands, the following types of impacts may be considered significant:

- Net loss of important wetland area or wetland habitat value, either through direct or indirect impacts to wetland vegetation, degradation of water quality, or threatening the continuity of wetland-dependent animal or plant species
- Substantial interruption of wildlife access, use, and dispersal in wetlands areas
- Loss of wetlands function and value due to changes in hydrology
- For riparian areas, the following types of impacts may be considered significant:
- Direct removal of riparian vegetation
- Disruption of riparian wildlife habitat, particularly animal dispersal corridors and/or understory vegetation

- Intrusion into the upland edge of the riparian canopy (generally within 100 feet in rural areas), leading to potential disruption of animal migration, breeding, etc. through increased noise, light and glare, and human or domestic animal intrusion
- Disruption of a substantial amount of adjacent upland vegetation where such vegetation plays a critical role in supporting riparian-dependent wildlife species (for example, amphibians), or where such vegetation aids in stabilizing steep slopes adjacent to the riparian corridor, thereby reducing erosion and sedimentation potential
- Construction activity that disrupts critical time periods (nesting, breeding) for fish and other wildlife species

For purposes of resource evaluation in Santa Barbara County, native grassland is defined as an area where native grassland species comprise 10 percent or more of the total relative cover[8]. Removal or severe disturbance to a patch or patches of native grasses less than 0.25 acres, which is clearly isolated and is not a part of a significant native grassland or an integral component of a larger ecosystem, is usually considered less than significant.

For oak woodlands and forests, the following types of impacts may be considered significant:

- Habitat fragmentation
- Removal of understory
- Alteration to drainage patterns
- Disruption of the canopy
- Removal of a significant number of trees that would cause a break in the canopy or disruption in animal movement in and through the woodland

For individual native trees, the following type of impact may be considered significant:

- The loss of 10 percent or more of the trees of biological value on a project site.

3.5.7.3 Project Impacts

Overview of Construction Impacts

Direct impacts to biological resources from construction activities include the potential for wildlife injury and mortality, the temporary and permanent loss of individual plants, and the loss of habitat used by wildlife species. Approximately 127 acres would be temporarily disturbed by construction with an additional 43 acres permanently disturbed by roads, turbine foundations, underground power collection cables, and facilities including substation and O&M facilities. Although the exact placement of WTGs and power poles is not known (Figure 3.5-2), most of the area that would be disturbed is composed of annual grasslands; therefore, most impacts would occur to this vegetation community, although others could be affected as well, depending on the final placement of facilities. Plant communities that are considered wetland and non-wetland Waters of the U.S. and

8 The CDFG uses the 10 percent relative cover figure in determining acreages of remaining native grasslands. (Relative cover is the cover of a particular species as a percentage of total plant cover of a given area). Native grasslands that are dominated by perennial bunch grasses tend to be patchy (the individual plants and groups of plants tend to be distributed in patches). Where a high density of small patches occurs in an area of 1 acre, the whole acre should be delineated if native grassland species comprise 10 percent or more of the total relative cover, rather than merely delineating the patches that would sum to less than one acre.

County of Santa Barbara County wetlands would be affected at several proposed creek crossings, proposed O&M facility siting location, and potentially within the WTG corridor if the current configuration changes. Additionally, a small percentage of the soil seed bank would be lost to construction, grading, and paving. Areas that were disturbed during construction but would not be permanently used for Project components would be revegetated. Some temporarily impacted areas, particularly in annual grassland on flat terrain, likely would be returned to near pre-Project conditions fairly quickly. Other areas where temporary impacts would result from excavation, such as around WTG footings and along road cuts in shrubby vegetation or rocky terrain, would probably require more time to recover compared to the annual grassland. Indirect impacts to biological resources during construction could result from increased human activity, the introduction of non-native, invasive species, night lighting, dust, noise, and vehicle emissions.

Overview of Operation and Maintenance Impacts

Direct impacts include the loss of individual animals during the O&M phase primarily as a result of (1) collisions by birds and bats with power line poles, lines, WTGs, and WTG blades; and (2) being struck by vehicles. Direct impacts to vegetation include the minor, temporary loss of individual plants during road maintenance and facility repairs. Additionally, some tree trimming may be required in the vicinity of power lines. Indirect impacts during the O&M phase would be similar to those occurring during construction, but would be less severe because less disturbance and vehicular traffic would occur, and fewer people would be present.

Impact No.	Impact Description	Phase	Impact Classification
BIO-1	Approximately 127 acres of vegetation and wildlife habitat will be temporarily impacted by construction, with an additional 43 acres being permanently disturbed (e.g., by construction of roads, pads, facilities sites). The temporarily disturbed areas would be available to be revegetated upon completion of construction. Although most of the habitat is relatively common in the region, the affected habitat includes areas that qualify for special regulatory protection, including Central Coast riparian scrub and may include areas with a prevalence of native perennial grasses and other native grassland species.	Construction	Class II
	Only minor disturbances to common vegetation are expected during O&M.	Operations	Class III

Impact BIO-1: Vegetation and Wildlife Habitat. Construction of the Project would cause both short-term and long-term impacts to vegetation and wildlife habitat. Long-term disturbances are associated with installation of turbines, foundations, roads, and facilities including the O&M facility and the substation. Short-term disturbances are associated with additional clearing or disturbance to existing vegetation and wildlife habitat during construction of project facilities, installation of underground power collection cables, and preparation of staging areas that would be revegetated or allowed to recover upon completion of construction. Temporary and long-term impacts on vegetation are summarized in the Table 3.5.7-1 below.

Table 3.5.7-1
Summary of Temporary and Long-term Impacts of Construction on Vegetation and Wildlife Habitat

Habitat Type	Total on Property	Temporary disturbance		Long-term disturbance	
	(acres)	(acres)	(% of Total)	(acres)	(% of Total)
Agricultural Field	59.4	0.4	0.7%	0.6	1.0%
Annual Grassland	1,581.3	101.0	6.4%	41.1	2.6%
Central Coast Scrub	856.1	17.7	2.1%	4.8	0.6%
Cent. Coast Riparian Scrub	87.5	0.6	0.7%	0.1	0.1%
Eucalyptus	36.2	0.1	0.2%	<0.1	0.1%
Central Coast scrub/grassland Mosaic	138.3	6.8	4.9%	1.6	1.2%
Native Grassland	5.1	0.0	0.0%	0.0	0.0%
Oak Woodland	197.6	<0.1	<0.1%	0.1	<0.1%
Total	2,961.5	126.6	4.3%	42.9	1.6%

In addition to the impacts identified above, approximately 33.2 acres would be disturbed by power pole installation (184 poles assumed) with 1.33 acres of this constituting permanent disturbance. Most impacts to vegetation and wildlife habitat including development and use of staging areas would occur in grazed grasslands, which are dominated by introduced annual grasses and are relatively easy to revegetate. Portions of the WTG corridors, power line corridor, O&M facility, and roads also would be located in areas containing Central Coast scrub and Central Coast riparian scrub. Areas vegetated by riparian scrub may fall under federal, state, or local regulatory jurisdiction as discussed under impacts BIO-3 and BIO-4.

Annual grassland is the most abundant habitat type mapped on the site (Table 3.5.7-1, above) and is also the most heavily impacted habitat on the site. Approximately 6.4 percent of the mapped grassland on site would be temporarily affected by construction with approximately 2.6 percent affected by permanent structures including roads, foundations, and facilities. In a number of areas, native perennial grasses and herbs are interspersed with invasive, non-native grasses, which are the dominant cover type. Some areas, however, support more diverse and numerous populations of native perennial grasslands and herbs (particularly in the southwest portion of the Signorelli property). In such cases, native grassland species may comprise a minimum of 10 percent of the cover and, thus, have higher habitat value. Based on the County Environmental Thresholds and Guidelines Manual, areas of native grasslands over 0.25 acres in size qualify for special protection. Approximately 5.1 acres of native grasslands have been previously mapped on the site. With the current layout, impacts on previously mapped native grasslands are not identified (Table 3.5.7-1). Given the uncertainties in recognizing native grassland over large areas (for example they may be difficult to recognize if they have recently been grazed); there is some likelihood that additional unmapped areas that could qualify as native grassland under the County definition may occur on site. Should this be the case they would be accounted for and mitigation applied as described below. It is expected that any impact on native grassland would represent a relatively small proportion of the native grasslands on site, given that less than 6.4 percent and 2.6 percent of all grasslands on site would be subject to temporary and long-term disturbance, respectively. Pre-construction surveys would be conducted in the actual proposed project footprint during the appropriate season. Such surveys have the potential to identify additional native grasslands or cause previously identified boundaries to be adjusted. In such a case, impacts would be quantified and mitigation applied as described in this document (see Section 3.5.7.5).

Because of the magnitude of the disturbances to native vegetation and wildlife habitat, the propensity to erosion related to the steepness of the terrain in many parts of the site, and the role of the habitat in supporting wildlife, including declining native wildlife species dependent on open grassland habitats, the impacts of construction on vegetation and wildlife habitat are classified as significant but mitigable (Class II Impact).

Only minor disturbances to common vegetation are expected during O&M; impacts from these would be adverse, but less than significant (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-2	Tree trimming or removal may be required during transport of WTGs or power line installation. A small portion of the proposed roadway network would affect tree-dominated vegetation; power line construction would occur close to wooded areas.	Construction	Class II
	Only minor disturbances to common vegetation are expected from ongoing vegetation clearances for fire management and safety.	Operations	Class III

Impact BIO-2: Woodland and Forest. Construction activities in the WTG area generally would avoid tree-dominated vegetation, although a small portion of the roadway alignment proposed for the Larsen property would affect such an area. Tree trimming along San Miguelito Road may be required during transport of the WTGs to the Project site, especially where trees overhang the road. Depending on final load sizes and transport vehicles selected, some trees at the tighter curves along San Miguelito Road may need to be removed.

Power line construction would occur close to wooded areas, particularly at lower elevations, where it would run along the margins of oak woodland in the lower east-facing, unnamed drainage and along San Miguelito Road. Where feasible, power poles would be placed to avoid tree removal, and in some areas, including Larsen Ranch and San Miguelito Canyon, lines would be strung over dense oak stands in order to minimize both impacts to trees and trampling of vegetation by construction vehicles. However, some oak trees may need to be removed to allow power line installation.

Tree trimming, when performed by qualified personnel, likely would not result in the loss of oak trees or a significant loss of habitat values; however, excessive pruning could damage the trees. It is not likely that 10 percent of the trees of biological value on the Project site would be removed, but depending on the number of trees that would be removed during power line and roadway (Larsen) construction or to facilitate truck passage, the Project could result in habitat fragmentation and disruption of the canopy. The removal of oak trees during power line installation and excessive tree trimming could result in a significant, but mitigable impact (*Class II*).

Ongoing vegetation clearances for fire management and safety would include maintaining a 10-foot radial clearance of flammable fuels around the base of each wood power pole during fire season, as required under Public Resources Code Sec. 4292, and a minimum 15 feet of clearance between vegetation and conductors is required for safety and to minimize tree-related outages. Only minor

disturbances to common vegetation are expected during vegetation clearances for fire management, which would result in an adverse, but less than significant impact (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-3	Direct loss of wetlands and seeps would occur at creek crossings and the proposed O&M facility. Direct loss of wetlands and seeps within the WTG corridor are not expected; however, there is potential for loss should the project configuration change. Additionally, soil erosion or spills could reduce water quality during construction.	Construction	Class II

Impact BIO-3: Wetlands, Seeps, and Springs, and Features Subject to Regulation by the USACE, Santa Barbara County, or CDFG. The direct loss of jurisdictional wetlands and seeps would occur in association with proposed crossings over tributaries to Honda Creek, and with the siting of the O&M facility. An estimated 0.045 acre of habitat within the footprint of the proposed crossings was determined to be Santa Barbara County defined wetlands and federally jurisdictional (non-wetland) Waters of the U.S. These areas would also be regulated under Section 1600 of the CDFG code as State wetlands and be subject to a Streambed Alteration Agreement. Approximately 0.19 acre of Federal wetlands would be lost associated with the siting of the proposed O&M facilities (Sapphos MFR 16, Appendix B). This loss also represents an impact to Santa Barbara County wetlands and features subject to regulation under CDFG code. Wetland features in the vicinity of the proposed staging area and substation would be avoided based on current facility siting and construction plans. No formal wetland delineations were completed for the WTG corridors and proposed configurations for specific WTG locations because these areas may be modified in the future as part of the final site layout process. However, plant community mapping was completed for this project and included the mapping of communities dominated by hydrophytic species, which would likely be subject to jurisdiction by the State and Santa Barbara County. Approximately 13 acres of rush seep, riparian scrub, and native grassland seeps occur within the WTG corridors. However, based on the approximated current WTG configuration, direct impacts to wetland features within the corridor would not occur and all regulated wetland areas could be avoided as part of the final WTG layout. Nonetheless, without mitigation, there is a potential for direct impacts to wetlands to occur as a result of construction and siting activities.

In addition to the direct loss of wetland habitat associated with proposed creek crossings and the O&M facility, and potential direct loss of wetland features within the WTG corridor, erosion from construction and siting in the vicinity of sensitive habitats could deposit sediment within or near wetlands, seeps, and springs, thereby reducing water quality, degrading plant communities, and reducing the overall function and value of these areas. Accidental spills of hazardous materials used during construction, including but not limited to fuels, concrete wash-water, or other materials, could also diminish surface water quality.

Because the direct loss of wetland features and other Waters of the U.S. would occur, and there is a potential for indirect impacts resulting from sedimentation and alteration of water quality, impacts would be significant, but mitigable (*Class II*). No additional impacts are expected during O&M.

Impact No.	Impact Description	Phase	Impact Classification
BIO-4	A minor amount of riparian vegetation (several square feet) would be removed during bridge construction at Honda Creek; soil erosion would result in minor impacts on water quality.	Construction	Class III

Impact BIO-4: Riparian Vegetation. An incidental amount of riparian vegetation would need to be removed during construction of the bridge over Honda Creek, and construction activities have the potential to cause soil erosion, resulting in minor impacts to riparian vegetation such as exposing roots or burying annual plants. All construction would occur outside of the riparian zone; however, incidental removal of vegetation associated with construction could occur nonetheless. Additionally, a small amount of riparian vegetation would be removed associated with the siting of the O&M facility. The loss of vegetation at these locations is also addressed under impact BIO-3. These potential impacts to the riparian community from the bridge construction are considered adverse, but less than significant (*Class III*) because of the limited disturbance (several square feet and the temporary nature of the impacts. Any disturbed vegetation would quickly re-colonize. Impacts to riparian vegetation as it pertains to Section 1600 of the CDFG code are addressed under Impact BIO-3. No additional impacts are expected during O&M.

Impact No.	Impact Description	Phase	Impact Classification
BIO-5	Construction would result in 10.3 acres (8.1 % of site total) of permanent and 22.3 acres (17.4% of site total) of temporary loss or disturbance to Gaviota tarplant and its habitat.	Construction	Class II
	Occasional disturbance to small areas of Gaviota tarplant habitat may occur as a result of operations or maintenance activities involving clearing or vehicle operation in occupied habitat.	Operations	Class II

Impact BIO-5: Gaviota Tarplant. The construction of WTGs in portions of Middle Corridor, Sudden Corridor, North Corridor, and Signorelli Corridor could result in the loss or disturbance of Gaviota tarplant, as could construction of new roads or the widening of existing roads, particularly in the North Corridor parcel. Construction of the O&M facility and the nearby Project Substation also could similarly affect Gaviota tarplant, as could power line construction, depending on the placement of individual power poles in the vicinity of the site of its known location.

Of approximately 128 acres known to be occupied by Gaviota tarplant onsite, the Project would temporarily disturb about 22.4 acres (17.4% of the total) and permanently disturb an additional 10.3 acres (8.1 % of the total) (see Figure 3.5-3).

The Project would not substantially eliminate access to food sources or habitat for pollinators of the tarplant because the undisturbed habitat that would surround the finished Project components would continue to support a mixture of grassland, shrubland, and woodland habitats, and would thus continue to provide habitat for pollinators. The Project also would not substantially reduce or

eliminate species diversity or abundance on a regional level. Recent surveys of the distribution of this species on private land conducted in 2002 near Point Sal, near Orcutt, on both north and south VAFB, and on the Bixby Ranch, documented new, large populations and demonstrated that the plant is probably distributed more-or-less continuously on suitable habitat between Point Sal and Gaviota (Olson and Rindlaub, 2006). Nonetheless, depending on the placement of individual Project structures, the Gaviota tarplant habitat would become more fragmented due to the elimination or disturbance of some populations, which would be a significant, but mitigable impact (*Class II)*.

Occasional disturbance to small areas of Gaviota tarplant habitat could occur from time to time during the operations phase of the Project if maintenance and repairs necessitate work beyond permanent disturbance areas. This would be adverse and significant (*Class II*) if damage to the plants or habitat occurs. Operation of a light truck or automobile on dry soil outside the growing season of the tarplant would have less than significant (*Class III*) impacts.

Impact No.	Impact Description	Phase	Impact Classification
BIO-6	A number of other special-status plant species may be present onsite or in the power line corridor and could be lost during construction.	Construction	Class II

Impact BIO-6: Other Special-status Plant Species. Besides Gaviota tarplant (discussed above, Impact Bio-5), no other federally-listed plant species, including Gambel's water cress, Lompoc yerba santa, or seaside bird's beak, is known or expected from the site and no impacts on these species are anticipated from construction or operation of the Project.

As shown on Table 3.5-5, a number of special-status plant species that are not federally or state-listed have been found on the LWEF site, and some of these may be present in the power line corridor. Additionally, conditions on the site are favorable to lichen growth and it is possible that lichen species recognized as rare may be present within the project footprint. Although construction may avoid special status vascular plants and lichen species, if populations were lost during construction, impacts would be significant, but mitigable (*Class II).* No additional impacts are expected during O&M.

Impact No.	Impact Description	Phase	Impact Classification
BIO-7	Individual animals could be injured or killed by vehicles, equipment, explosives, or large holes during construction.	Construction	Class III

Impact BIO-7: Common Wildlife. Impacts associated with potential collisions with WTGs, meteorological towers, and power lines are described under Impact BIO-11 and BIO-12. Individual animals could also be injured or killed through collisions with vehicles and equipment during construction and maintenance activities. Due to the limited occurrence of wetland and aquatic habitats in the Project area, direct loss of fish is not expected, and direct loss of amphibians would involve a small number of common species, such as Pacific treefrog. Reptiles, birds, and mammals could be injured or killed by moving vehicles and construction equipment. Those most susceptible to such effects are common terrestrial species, including Botta's pocket gopher, California ground

squirrel, and brush rabbit. If explosives were required to construct WTG foundations, rock could be projected several hundred feet and injure or kill wildlife in the immediate area. Additionally, the large holes dug for the WTG foundations constitute potential pitfalls for wildlife that could become entrapped and perish. The Project site is composed primarily of annual grassland and coastal sage scrub, and the amount of habitat that would be disturbed would be small (Table 3.5.7-1). Temporarily disturbed habitat would amount to an estimated 126.6 acres (approximately 4.3 percent of the total habitat on the property) whereas permanently disturbed habitat would amount to an estimated 42.9 acres (1.6 percent of the total habitat on the property). Impacts would be adverse, but less than significant (*Class III*), because the Project would not substantially reduce local populations or substantially disrupt foraging areas and/or access to food sources.

Impact No.	Impact Description	Phase	Impact Classification
BIO-8	Nesting birds could potentially lose nests through destruction or abandonment.	Construction and Operations	Class II

Impact BIO-8: Nesting Birds. Ground- and tree-nesting birds, as well as those nesting in shrubs, could potentially lose nests through destruction or abandonment as a result of construction and maintenance activities occurring during the nesting season (generally between February 1st and August 31st). Similarly, some nests in trees could be lost if construction or maintenance required removal or trimming of trees. Nesting birds are considered a sensitive resource, because they are protected under the MBTA and several CDFG codes that prohibit their take. If construction or maintenance occurred during the nesting season, impacts to nesting birds could be significant, but mitigable *(Class II*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-9	Direct and indirect impacts may occur to special-status wildlife species. Those with higher potential for injury or fatalities by vehicles or equipment, loss of habitat, or disturbance of burrows and nests include reptiles, raptors, and passerines (*Class II*) and mammals (*Class III*).	Construction and Operations	Class II/Class III

Impact BIO-9: Construction and Maintenance Impacts to Special-status Wildlife Species. **Over 30** endangered, threatened or otherwise recognized sensitive wildlife species have the potential to occur in the Project area, as described in Section 3.5.4 and the tables therein. Based on site surveys and review of previously collected information, several species are not expected to occur in the Project area or may occur on rare to infrequent occasions. Due to the scarcity of expected occurrences, the Project is not expected to significantly affect the following species:

- California tiger salamander – Not expected in the Project area due to very limited amount of habitat and distance to nearest known occurrence.
- California red-legged frog – Not expected in the Project area due to a lack of suitable habitat.
- Steelhead - Not known or expected to occur on or in proximity to the site.
- Unarmored threespine stickleback – Not expected in the project area due to lack of permanent water and suitable habitat onsite.

- Southwestern pond turtle – Not expected in the Project area due to a lack of permanent water.
- Western spadefoot toad – Not expected in the Project area due to limited amount of habitat and distance to nearest known occurrence.
- Two-striped garter snake – Potential occurrence is limited due to limited habitat and distance to nearest known occurrence.
- California condor – Expected in the project area only on rare occasions, if at all, due to distance from habitats used for foraging and breeding. Any occurrence would most likely be an overflight with no contact with project construction activities.
- Sharp-shinned hawk – Expected to occur only on an uncommon basis as a migrant and winter resident at the margins of grassland and woodland. Not expected to nest in the Project area.
- Mountain plover – Expected as a scarce visitor to the project site. Does not breed in the region.
- Ferruginous hawk – Expected to occur on a rare to uncommon basis during migration and winter. Not expected to nest in the Project area.
- Merlin – Expected to occur only on rare occasions during winter months. Not expected to nest in the Project area.
- Vaux's swift – Expected to fly over site infrequently during migration. Does not nest in the project region.
- Southwestern Willow flycatcher – Expected to occur only on an uncommon basis as a migrant due to lack of suitable habitat on site.
- Yellow-breasted chat – Expected to occur in riparian habitat on an infrequent basis. Not expected to nest in project footprint.
- Bell's sage sparrow – Potential occurrence is limited because the Project area lacks Burton Mesa chaparral, the vegetation type in which most observations of this species have been made.
- Western mastiff bat – Expected to occur in the Project area only on rare occasions during foraging.
- Townsend's big-eared bat – Due to a lack of cave habitat, this species is expected to occur only on an occasional basis during foraging.

The following describes potential impacts to other special-status species with a higher likelihood of occurrence, focusing on the potential for injury or fatalities resulting from collisions with vehicles or equipment, loss of habitat, disturbance of burrows, or impacts to nests. Impacts specifically associated with potential collisions with WTGs, meteorological towers, and power lines are described under Impacts BIO-10 and BIO-11.

Invertebrates - Construction of WTGs, related facilities, and new roads as well as the widening of existing roads could result in the loss or disturbance of El Segundo blue butterfly (ESBB) habitat and mortality to individuals. Approximately 5.5 acres of the 30.8 acres of potential ESBB habitat identified on the site would be directly affected by construction in the short term, with approximately 0.07 acres permanently lost. The affected habitat is concentrated in the southern portion of the Project property. The anticipated short- and long-term losses represent approximately 16 percent and 0.2 percent of the total habitat on the property, respectively. For comparison, it is estimated that 17,470 acres of ESBB habitat exist on VAFB, which borders the Project property. Based on the fact that the adjacent property on VAFB is occupied by ESBB, it is assumed that the habitat on the Project site is occupied by ESBB and it is likely that an

undetermined number of individuals (larvae, pupae, adults, eggs) of this sedentary species would be affected by construction.

During operations, occasional disturbance to small areas of El Segundo blue butterfly habitat may occur as a result of operations or maintenance activities involving clearing or vehicle operation in occupied habitat. Impacts of construction and operations on this species and its habitat would be significant, but mitigable (*Class II*).

Vernal pool fairy shrimp could possibly occur on site in temporary ponded water (e.g., in depressions and slumps). Such seasonal wetland features are absent from the ridgelines where most of the project facilities would be sited. Project plans call for avoidance of recently discovered seasonal wetlands, which could possibly contain this species, near the substation and O&M facility sites. Should it be impossible to avoid wetlands and water-related features under federal, state, or County jurisdiction, appropriate permits state or federal permits and approval from the County would be necessary and documentation of the findings of site-specific surveys conducted during the appropriate season would be required for consideration in the approval process (see Mitigation Measure BIO-9).

Reptiles – Potential impacts to California horned lizards, silvery legless lizards, and coast patch-nosed snake include direct loss of individuals through collisions with vehicles or equipment and the temporary and permanent loss of habitat. The amount of grassland or scrub habitats that would be temporarily or permanently disturbed (approximately 130.6 acres or 4.4 percent of the total habitat on the site and 47.4 acres or 1.6 percent, respectively) would be small in relation to that in the overall area. The Project would not substantially reduce habitat, but could lead to habitat fragmentation and substantially reduce local populations. Impacts would be significant, but mitigable (*Class II*).

Raptors – Several special-status raptor species either were observed or have the potential to occur in the Project area, including white-tailed kite, golden eagle, peregrine falcon, Cooper's hawk, northern harrier, long-eared owl, and western burrowing owl. The loss of nests and disruption of nesting behavior are not likely, because these species are not known to nest in the Project area. Additionally, most golden eagle nests are built in large trees, rock outcrops, or overhanging ledges. There are few wooded or outcrop areas that would be disturbed from the construction and operation of this Project. Potential impacts to these species include direct loss of individuals due to strikes by vehicles and equipment, and the permanent and temporary losses of foraging habitat. Additionally, these birds may be displaced, and foraging behavior may be altered. Potential impacts to burrowing owls could result from crushing while in burrows. Such impacts to these species would be significant, but mitigable (*Class II*).

Passerines – Several special-status passerine species were either observed or have the potential to occur in the Project area, including California horned lark, loggerhead shrike, California rufous-crowned sparrow, grasshopper sparrow, yellow warbler, and tricolored blackbird. Potential impacts to these species include direct loss of individuals due to strikes by vehicles and equipment, and permanent and temporary losses of foraging habitat due to construction. Additionally, these birds may be displaced, foraging and nesting behavior may be altered, and active nests may be destroyed during construction and maintenance. Impacts to these species would be significant, but mitigable (*Class II*).

Shorebirds – Several long-billed curlews were observed on the project site during the 2008 Sapphos surveys and during the 2008 SAIC site visits. This species is often observed foraging in open grassland habitat and could be expected regularly on the site in low numbers. Potential impacts to these species include direct loss of individuals due to strikes by vehicles and equipment, and permanent and temporary losses of foraging habitat due to construction. Impacts to this species would be significant, but mitigable (*Class II*)

Mammals – Three special-status mammal species may be present in the Project area. Pallid bats (*Antrozous pallidus*) may be present, but given the occasional use of the area by this species, they are not expected to be affected by construction and maintenance activities. Collisions with vehicles and equipment are not expected, nor is the loss of roost sites. Foraging behavior may be altered during construction.

San Diego desert woodrats and American badgers also may be present in the Project area. Potential direct impacts to these species during construction include loss of individuals due to strikes above-ground by vehicles and equipment, as well as crushing of burrows and loss of individuals in the burrows. Noise and ground disturbance from construction activities also could flush these animals from work areas and reduce woodrat and badger activity near construction sites. Loss of habitat also would occur. A potential indirect impact to badgers would be the loss of prey if ground squirrels were trapped and removed from the Project area to reduce raptor collision threats.

Although no live-trapping was done as part of the surveys for this Project, San Diego desert woodrats potentially occur in Coastal Scrub habitat, particularly where overhanging rocks and rock outcrops occur. This type of habitat was noted along the lines of WTGs that included West Corridor and South Corridor – West. This species is likely to use the area along the drainage that separates the Signorelli and Scolari Benches, the slope that connects Scolari and Signorelli Corridors, and possibly along the North Corridor East and West roads. Populations are expected to be low, however. Based on survey results, badgers occur in the Project area, but in low densities. The Project would not have a substantial adverse effect on these species because of the low likelihood of their occurring onsite, and the amount of habitat lost would be small in relation to that available in the surrounding area. Direct impacts would be adverse, but less than significant (*Class III*).

Considerable amounts of similar habitat are available for badgers and woodrats in adjacent areas, however, and the Project would not result in a substantial reduction in local populations of either species. Indirect impacts from their implementation would be adverse, but less than significant (*Class III*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-10	Unknown numbers of special status and non-sensitive birds and bats are at risk of dying through collisions with the WTGs over the duration of the Project.	Operations	Class I

Impact BIO-10: Avian and Bat Collisions with WTGs. Wind power has been associated with avian fatalities caused by collisions with WTGs and other wind plant structures (Orloff and Flannery, 1992; Erickson et al., 2000; Erickson et al., 2001; Johnson et al., 2002; Bio Resource, 2004). Studies indicate that raptors and passerines appear to be the most susceptible to WTG collisions in the United States (AWEA, 1995). Although avian mortality associated with wind power development

has been of primary concern, recent studies have found that bat mortality also occurs at wind plants (Erickson et al., 2000).

Groups of birds potentially at risk include raptors, migrating passerines, migrating seabirds, waterfowl, nocturnal species, and other resident species. Factors that affect the risk of the various groups to wind energy facilities, particularly WTGs, are:

- Relative level of use by avian species. (For example, in areas with greater raptor use, the risk to those species is higher.)
- Availability of prey species (such as the availability of California ground squirrels for golden eagles and red-tailed hawks).
- Availability of potential perches on the WTGs – Older style WTGs with structures that could be used as perches by raptors may increase the susceptibility of raptor fatalities.
- WTG size and rotor height – Older style WTGs were shorter with rotors that were lower to the ground, which brought a greater percentage of raptors foraging in the area into the same height as the rotors. Larger, modern WTGs are taller with rotors higher off the ground; thus, foraging raptors are less likely to collide with rotors.
- Rotor blade tip speed and rotational speed – Newer WTGs with slower speeds may be associated with lower avian fatality rates.
- Lighting—Nighttime lighting of turbines and met towers as well as exterior lighting at facilities may attract or disorient birds and increase mortality rates.
- Operating time – Although not tested quantitatively, more continuous operating time would seem to increase the risk of avian species fatalities.
- Overall number of WTGs and design of placement – The modern, larger WTGs result in fewer WTGs overall, which reduces the number of potential bird collisions with WTGs. Because there are fewer WTGs, they are spaced at wider intervals, further reducing the number of potential collisions.
- Power line height and electrocution – Power lines hang within the foraging and flying altitudes of raptors and bats and may result in electrocution should these species contact the lines. Additionally, the poles may serve as perches or nest sites for raptors and other avian species.

Based on results of surveys and literature and database review conducted for this study, bird species put most at risk by the Project are raptors (primarily red-tailed hawks, and American kestrels), migrating passerines, and other year-round resident species. Due to a lack of suitable habitats, such as ponds and wetlands, some groups of birds, including waterfowl and shorebirds, are not expected to be significantly affected.

Migration - The Gauthreaux Nexrad radar study conducted to characterize patterns of nocturnal bird migration over the project area and region (Appendix B) concluded that the overall level of nocturnal migration above the project site in both fall and spring migratory seasons in 2006-07 was very low compared to approximately 70 other U.S. sites previously analyzed by the authors. The maximum bird density recorded over the LWEP Site was 86 birds per cubic kilometer (km3) on one day in May, 2006. Density was much lower on most days during the peak migration period.

In terms of regional migration, the Gauthreaux study reports that the highest densities of birds observed in the region flew at high altitude (e.g., 2,000 to 5,000 feet) and followed trajectories just west of the Sierra Madre and San Rafael Mountains which would mean that the majority of the

spring and fall migration along the Pacific Flyway was occurring approximately 20 to 40 miles east of the LWEP Site. Regional observed bird densities were typical of the Pacific Coastline but are low compared to other regions of the U.S. analyzed by the authors: maximum densities exceeding 100 birds per km3 were detected on only 22 occasions during the four migratory periods analyzed. By comparison, peak bird densities observed in other studies described in the report ranged from 400 to 1,148 birds per km3.

The results indicated that most overland migration in Santa Barbara County follows an inland route, cutting diagonally north-northwest from the Gaviota coast, rather than following the coastline around Point Conception or above the coastal ridges and project site.

Adverse weather conditions (e.g., fog, overcast, low ceiling, drizzle, and rain) could lead to resulted in migration at lower altitudes over the project area, low enough for birds to potentially collide with wind turbines. However, the analysis also indicated that on days with adverse weather, little or no migration occurred. Of the 142 nights with adverse weather, bird densities of 25 birds per km3 or greater were detected on only 27 occasions.

The most relevant results from the Nexrad data analysis were that (1) most of the nocturnal migration events occurring in the general LWEP Site region was located 20 to 40 miles inland of the project site; (2) a majority of those birds that did fly directly over the LWEP site did so at altitudes too high to be affected by WTGs; and (3) adverse weather conditions may cause birds to fly lower over the site, but those same weather conditions also substantially reduced the amount of flyovers. The Gauthreaux report concludes: "Based on the analysis presented in this report, the Lompoc Wind Energy Project should have minimal impact on migrating birds."

Raptors – Sapphos 2007 and 2008 reports eight species of hawks, two species of falcons, four species of owls, and turkey vultures all being observed in various abundances on the LWEP site. Most of the sightings during the Olson and Sapphos surveys were of turkey vultures, red-tailed hawks, and American kestrels. Other species of raptors were observed less frequently. The red-tailed hawk, American kestrel, great horned owl, and red-shouldered hawk all nested on or in the vicinity of the Project area during the 2002 and 2008 surveys. Although red-shouldered hawks were found nesting in the vicinity of the Project area, they were only infrequently observed during surveys. Red-tailed hawks and kestrels are the raptors with the highest potential to collide with WTGs or wires.

Summarizing the data included in the 2006 Olson report focusing on the Point Count Survey results, Olson reports observing an average of 1.46 raptors for every 20 minutes of survey, which equals an adjusted rate of 2.19 raptors per 30-minute survey. This data was collected in only one season (winter) for only one year; raptor counts in this portion of southern California are typically elevated during the fall and winter, likely making the Olson average higher than a typical yearly average; therefore, some caution is warranted using these results. Out of the 11 windfarm sites that were included in Appendix G: "Estimating Impacts to Raptors Using Bird Count and Fatality Data from Existing Projects" of the CEC Guidelines that used standardized methods to collect data and were located in the western United States, the LWEP site is on the high end of the comparative values (the LWEP site has more raptor observations per 30-minute survey than nine of the eleven sites used in Table 3.5.7-2 and more than 27 out of 29 wind energy sites depicted in Figure 4 of the Appendix). For the 11 Site Comparisons in Table 3.5.7-2, the range of raptor observations was from 0.15 to 5.25 raptors per 30 minute count. Only two sites (High Winds, California and Diablo Winds,

California) have substantially higher raptor counts (High Winds = 5.25 and Diablo Winds = 4.35 raptors per 30 minute count). These two sites represent the two highest fatality rates per MW for raptors in the analysis.

The CEC Guidelines caution that the specific species mix at a particular site could alter expected mortality rates. The LWEP Site has a large percentage of raptor observations made up of turkey vulture sightings. This species is reported to have less vulnerability to collisions with towers. Removing turkey vultures from the analysis lowers the raptor use value, but the LWEP Site remains on the high end of the relatively low-fatality sites that were analyzed.

The CEC Guidelines include a regression plot which compares raptor use to adjusted fatality rates. However, this regression plot uses only 11 sites (relatively small sample size) and there is a large separation between the high raptor-use sites and the low raptor use sites, meaning this comparison should only be used to make general statements about predicting raptor mortality at a site. Using this regression plot, the LWEP Site falls in the high end of the low-use raptor sites with a range of 0.10 to 0.15 raptor fatalities per MW per year (or approximately 10 to 15 raptor fatalities each year for the 65 WTGs, slightly lower than that if consideration is made that only winter data was used).

Based on the December 2006 point count surveys, the red-tailed hawk was the second-most abundant raptor in the Project area (after turkey vulture) and, during winter months, is the raptor most at risk to collide with WTGs relative to other species, especially along the Sudden Bench/ Quarry Ridge, Middle Corridor, and Signorelli Corridor/South Corridor areas (Figure 2-2).

Studies show that species such as the turkey vulture, red-tailed hawk, red-shouldered hawk, and ferruginous hawk, among others, may be in the Project area in higher numbers during the winter (Root, 1989). In many areas of California, the density of birds is greater during fall and winter than during spring and summer; and avian assemblages during the winter are typically different from other seasons. This variation in species composition can be especially true of raptors. Raptor populations take advantage of the high prey populations found in the more temperate climates during the winter. Some raptors use the Project area only during migration or winter. Raptor numbers are augmented during those time periods by individuals traveling from elsewhere and include species like sharp-shinned hawk and Ferruginous hawk. Great horned owls, burrowing owls, and western screech owls were all recorded by Sapphos 2007 winter or 2008 spring surveys.

Peregrine falcons, golden eagles, and Cooper's hawk are expected to be present on the site regularly but in low numbers, and rare during breeding season. Nesting golden eagles have been reported in recent years in the vicinity of the Project. Recent observations have included up to four pairs.

An additional concern is that California condors (*Gymnogyps californianus*) have been released both south in Ventura County and north at the Pinnacles in San Benito County. There is a possibility that condors could be found in the Project vicinity while traveling between the two population areas or while foraging, especially during fall and winter.

As noted above, mortality risk to raptors at newer wind energy projects may be lower than earlier projects due to newer WTG design and placement (Erickson et al., 2001; Young et al., 2002). Given the results of surveys for this Project and a review of the literature for newer projects with designs applicable to the Project, estimates of raptor mortality loss could be substantial with up to roughly ten individuals a year. Most of the raptor fatalities at the Altamont Pass Wind Resource Area

consisted of red-tailed hawk, American kestrel, and golden eagle. The kestrel was three times more likely to be killed than predicted by abundance, the red-tailed hawk, six times more likely, and the golden eagle, nine times more likely to be killed than predicted. Other studies have shown species of passerines to be most frequently killed, with raptors quite low in fatalities (BioSystems Analysis, 1992). However, take of species protected by the Migratory Bird Treaty Act and California Fish and Game Code 3503.5 is prohibited. Golden eagles are protected under the Bald Eagle Protection Act of 1940.

Red-tailed Hawk: Red-tailed hawks were recorded on every one of the 27 survey dates and three to four pairs were observed to nest at the LWEP property. A count of four birds was regularly recorded with counts up to seven individuals being observed during the SAIC site visit. Birds were reported to fly below, within, and above wind turbine blade heights, with an appreciable percentage (>30 percent) within wind turbine blade heights of approximately 130 to 400 feet. Red-tailed hawks occurred over all habitats throughout the LWEP site. They prefer foraging in open and semi-open habitats or along woodland and forest edges; they may roost in eucalyptus groves, oak woodland, or other tall closed habitats at the LWEP site. The red-tailed hawk is common to abundant in appropriate habitat throughout Southern California and North America. An appreciable percentage of red-tailed hawks flew within wind turbine blade swept heights of 130 to 400 feet at the LWEP site; therefore this species is at risk of suffering injuries or fatalities resulting from collisions with WTGs.

American Kestrel: Single female American kestrels were repeatedly recorded at the LWEP property during all surveys of the project site. Observations during the 2008 spring declined from winter counts. Kestrels were observed to fly below and within wind turbine blade swept heights with fewer than 20 percent of individuals within wind turbine blade swept heights of 130 to 400 feet. Breeding activities was not observed at the LWEP Site during April and May, 2008. American kestrels occurred over all habitats throughout the LWEP site, although females in particular prefer foraging in open and semi-open habitats and may occur in other habitats depending on their activities at the LWEP site. This species is at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Turkey Vulture: Turkey vultures were recorded on every one of the 27 survey dates in April and May. The largest number of 15 birds, less than the maximum number of 25 birds in winter, formed nocturnal roosts at the largest (or second largest) eucalyptus grove near the western boundary of the LWEP site, adjacent or close to VAFB. The largest number of birds observed foraging in a single flock on the LWEP property was 10 to 11 birds, also less than the 14 to 17 birds in winter. Birds flew below (<135 feet), within (135 to 400 feet), and above wind turbine blade heights (> 400 feet), with an appreciable percentage (>30 percent) within wind turbine blade heights of 135 to 400 feet. They prefer foraging in open and semi-open habitats, although they roost in eucalyptus groves or other closed habitats and a few pairs may nest in closed or dense habitats at the LWEP site. This species is reported to have less vulnerability to collisions with WTGs than other raptors, so the threat to this species would not be substantial.

Sensitive Species - Eleven special status species and eleven species of local concern (or CDFG Watch List species) were observed during the avian surveys within the LWEP Site.

Of the total of four federally or state listed species that were determined to have the potential to be present within the LWEP property as a result of the literature review, only the peregrine falcon was

observed to be present on the proposed project site. The remaining three listed species (yellow-billed cuckoo, willow flycatcher, and least Bell's vireo) have only a low potential to be present at the proposed project site.

The eleven special status species observed during the avian surveys included: peregrine falcon, golden eagle, northern harrier, white-tailed kite, Vaux's swift, olive-sided flycatcher, yellow warbler, yellow-breasted chat, loggerhead shrike, burrowing owl, and grasshopper sparrow.

Peregrine Falcon: This species was regularly observed in low numbers (one to two individuals) during all of the surveys and site visits. One adult bird was observed hunting on May 29, 2008, at various heights above ground (40–500 feet) over the North Ridge. These individuals were probably local breeding residents from VAFB, which is adjacent to the LWEP property. Peregrine falcons do not nest at the LWEP site, but several pairs nest at VAFB. Peregrine falcons may occur over all habitats throughout the LWEP site for foraging, although they generally avoid closed forest and are most frequently detected foraging over open habitats such as non-native grassland. Peregrine falcons fly within wind turbine blade heights of 130 to 400 feet at the proposed LWEP site; therefore, this species is at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Golden Eagle: Single birds (immature, sub-adult, age unknown) were regularly observed over the LWEP Site, over non-native grasslands and central coast scrub at heights below and within the rotor sweep altitudes (130–400 feet). Golden eagles occurred over all habitats throughout the LWEP site, depending on their activities, but were most frequently detected foraging over open habitats such as non-native grassland. Golden eagles may fly within wind turbine blade heights of 130 to 400 feet at the LWEP site, and under certain foraging conditions, such as when suitable prey like California ground squirrels are concentrated. Golden eagles are at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Northern Harrier: Four single northern harriers were observed hunting at low heights above ground (< 100 feet) within the proposed project boundary on April 8, April 10, May 3, and May 4, 2008. These birds were probably overwintering individuals rather than spring migrants. About 12 pairs of northern harriers are known to nest nearby at VAFB, but no birds were detected within the LWEP site after early May. Northern harriers may fly over all habitats throughout the LWEP site, although they prefer foraging in open and semi-open habitats and generally avoid forested closed habitats. Although this species is expected on the site in low numbers for much of the year, northern harriers are at risk of suffering injuries or fatalities resulting from collisions with WTGs.

White-tailed Kite: One white-tailed kite was observed perched on a fence post in a pasture on April 22, 2008 and other individuals have occasionally been observed during previous surveys of the site. White-tailed kites may fly over all habitats throughout the LWEP site, although they prefer foraging in open and semi-open habitats and generally avoid forested closed habitats. The white-tailed kite is listed as a fully protected species by the California Department of Fish and Game (CDFG). Listing as a fully protected species means that white-tailed kites may not be taken at any time and no licenses or permits may be issued for their take. This species is expected on the site in low numbers for much of the year, and are at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Vaux's Swift: One Vaux's swift was observed on April 16, 2008, and a flock of three birds was observed on April 30 flying over the LWEP property at various heights above ground elevation

(40–500 feet). Vaux's swifts may fly over all habitats throughout the LWEP site (2,950 acres). Vaux's swift, an aerial insectivore, frequently migrates at altitudes (135–400 feet) that could result in collisions with wind turbine blades. Vaux's swift is primarily a diurnal (not nocturnal) migrant, so it is less vulnerable to collisions with wind turbine blades during migration events.

Olive-sided Flycatcher: One olive-sided flycatcher was observed in a willow thicket and eucalyptus grove on May 30, 2008, within the proposed project boundary. Olive-sided flycatchers during spring migration may occur in all wooded habitats on the LWEP site, particularly where snags are present in well-wooded canyons. This species is expected in relatively low numbers and in habitat not affected by WTGs and is unlikely to be affected by collisions with WTGs.

Yellow Warbler: This species has been observed in the willow riparian habitat on the LWEP Site but rarely flies at altitudes high enough to be affected by WTGs. This species is expected in relatively low numbers and in habitat not affected by WTGs and is unlikely to be affected by collisions with WTGs.

Yellow-breasted Chat: This species has been observed in the willow riparian habitat on the LWEP Site. One singing male was present along lower Honda Creek on the LWEP property at the boundary with VAFB on May 14 and 15, 2008. This species is expected in relatively low numbers and in habitat not affected by WTGs and is unlikely to be affected by collisions with WTGs.

Loggerhead Shrike: This species has been observed in low numbers, predominantly during the winter. Shrikes typically fly at heights lower than the rotor sweep area and therefore, due to their low numbers and typical flight behavior, are not likely to be affected by collisions with WTGs.

Burrowing Owl: Two burrowing owls were observed during the Sapphos winter surveys from February 26 through March 12, 2008. This species was observed in annual grassland on the North Ridge within approximately 100 feet of a proposed WTG site. Two burrows showed evidence of repeated activity. This species is not known to nest on the property. Although this species is expected in low numbers during the winter, the proximity of a proposed WTG to known wintering habitat, and the fact that this species has been recorded as being susceptible to collisions at other windfarm sites, this species is at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Grasshopper Sparrow: Many grasshopper sparrows occurred in non-native grasslands, annual grasslands, and grassland coastal scrub mosaic habitats at the LWEP site during April through June, 2008. Like other scrub species, the grasshopper sparrow rarely flies above 30 feet. This species is expected unlikely to be affected by collisions with WTGs.

Seven locally important species were observed during the avian surveys within and/or near the boundary of the proposed project: Cooper's hawk, sharp-shinned hawk, horned lark, rufous-crowned sparrow, Bell's sage sparrow, Swainson's thrush, and blue grosbeak. Only one Swainson's thrush was observed on the LWEP Site and is therefore not expected to be impacted by collisions with WTGs.

Cooper's Hawk: Adult breeding individuals of Cooper's hawk were observed in Sapphos 2008 surveys in central coast riparian scrub and evergreen forest and woodland habitats. Individual birds were recorded flying at both low heights above ground for foraging and at higher altitudes

during male display flights. Cooper's hawks occurred over all habitats throughout the LWEP site during foraging. Nest sites of Cooper's hawk were observed over 2,000 feet away from proposed wind turbine locations at the LWEP site. Due to its location downslope along Honda Creek and 2,000 feet away from the WTC boundary and approximately 2,200 feet from the nearest proposed wind turbine, impacts to active Cooper's hawk nest within the LWEP property are not anticipated as a result of construction, operation, and maintenance of the proposed project. However, Cooper's hawks do fly at altitudes within the rotor sweep area of the WTGs and are therefore, are at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Sharp-shinned Hawk: Single birds were observed hunting on two days (April 15–16, 2008) at low heights above ground (< 100 feet) in the Honda Creek valley. The single birds were adults. Like Cooper's hawk, sharp shinned hawks occurred over all habitats throughout the LWEP site during foraging. Although this species is expected on the site in low numbers for much of the year, sharp-shinned hawks are at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Horned Lark: Horned larks were widely distributed along all surveyed ridgelines on proposed impact areas (except for the northern portion of the Larsen landholding). The largest flock size in spring, 2008 was less than 10 birds, a sharp decline from the maximum flock size of 41 in winter, and flock formation ceased after early April. The number of horned larks remaining in spring at the LWEP site was greater than documented previously. Except for one singing male temporarily on territory in the largest arable field, the horned lark was recorded only on non-native annual grassland and grassland-central coast scrub mosaic habitats. Horned larks are susceptible to collisions with wind turbines, especially breeding males during display flights; therefore, this species is at risk of suffering injuries or fatalities resulting from collisions with WTGs.

Blue Grosbeak: Several pairs of this species were observed in old field edges of central coast scrub, central coast riparian scrub, and agricultural field habitats in April through June 2008. This species typically flies below the rotor sweep zone of the WTGs and is unlikely to be substantially affected by collisions with WTGs.

Rufous-crowned Sparrow: Three singing males were recorded at three sites within the proposed project boundary on April 10, April 21, and May 5, 2008; two of these three birds were not recorded thereafter. These two birds may have nested in the vicinity, but because they did not remain at these sites for any length of time, they are likely dispersing individuals. Rufous-crowned sparrows will typically occur within central coast scrub habitat (< 852.7 acres). All three occupied areas, on steep hillsides that contain rocky knolls, are located away from proposed project impact areas. Like other scrub species, the rufous-crowned sparrow rarely flies above 30 feet. The low number, behavior, and habitat specificity of rufous-crowned sparrow where they do not occur within proposed project impact areas suggests that implementation of the proposed project is not anticipated to result in significant impacts to this species.

Bell's Sage Sparrow: This species was observed in chaparral and coastal scrub mosaic habitats near the LWEP site during previous surveys of the site (Sapphos did not report seeing this species during the 2007-2008 surveys). Like other scrub species, the sage sparrow rarely flies above 30 feet. Due to the lack of this species' preferred habitat, this species is not expected to be substantially affected by collisions with WTGs.

Passerines – Passerines have comprised the vast majority of fatalities at previously studied wind energy projects (Erickson et al., 2000; Johnson et al., 2000; Young et al., 2002). At some sites, passerines have accounted for more than 80 percent of all fatalities. Horned larks (*Eremophila alpestris*) were the most commonly observed fatality at the Vansycle and Foote Creek Rim projects (Erickson et al., 2001; Young et al., 2002). Passerines made up a majority of sightings during surveys for this Project. Horned larks were quite common in the heavily grazed annual grassland (Olson and Rindlaub, 2006). During the December 2006 point count surveys, the western bluebird, yellow-rumped warbler, white-crowned sparrow, and golden-crowned sparrow represented the largest numbers of passerines (Olson, 2007).

Other migratory passerines, such as the Say's phoebe and Western bluebird may increase in numbers during the winter months. Say's phoebe were observed in high, open points with non-native grassland or Central Coast scrub on West and Scolari ridges during winter and were absent during breeding season. The Western bluebird increased in flock size over winter and was also observed during nesting season (Olson, 2007). This species was observed in mostly grassland areas near ridge tops (Signorelli and South Ridge) and "saddles" between ridges. Large flocks of golden-crowned and white crowned sparrows (up to 76 and 86 individuals, respectively) were observed during point count surveys in December 2006, sometimes in mixed flocks of both species. Sightings occurred on Sudden Bench, Quarry Ridge, Scolari Ridge, and West Ridge (Olson, 2007). Numbers of lark sparrows increased in winter, suggesting use of the area by migrating individuals. Up to 38 individuals were observed per survey along the grassland hillsides on Scolari and West Ridges. This species is known to nest in the area, but in smaller numbers. The Western meadowlark is a common nesting species in the project area, but was also observed in flocks during the December 2006 point count survey and in September 2002 and August 2005 (Olson 2007). This species was often observed on grassland hillsides, sometimes on grassland ridgetops and saddles (Sudden, Middle, Quarry, Signorelli, and South Ridges).

Limited observations of the American pipit were made in December 2006 as incidental sightings only (not during the timed counts). This species was observed in grassy areas that were crossed by small drainages with a small amount of standing water, especially in the North Ridge area. This species was not observed during nesting season, indicating that it may be a transitory species in the area (Olson, 2007).

As such, fatalities of passerines in general and of California horned larks (*Eremophila alpestris actia*), in particular, are expected during the operation phase.

Bats – At least ten species of bats (including four sensitive species) were recorded in the project area during the 1997/1998 surveys on VAFB. Three of these species were again recorded during the 2008 bat surveys on the LWEP. Pallid bats are the most likely sensitive species to be present on the site with any regularity.

WTGs can cause bat fatalities; however, the potential for bat collisions varies among locations (Johnson et al., 2003 and 2004; Johnson, 2004), and the reasons for the collisions are poorly understood (Kunz, 2004). Bat mortality at wind farms has been documented in 11 states (Johnson, 2004 and 2005) with the highest rate of mortality occurring in the Eastern United States. Migratory species, such as hoary bat, red bat, and silver-haired bat, have comprised the vast majority of bat fatalities at previously studied wind energy projects; susceptibility appears to be highest in the fall. WTGs located on and near ridgelines or in areas that would support bat foraging which is typically

associated with open water (stockponds) or riparian areas that would have large concentrations of invertebrates, would have the greatest potential to cause impacts to bats.

Studies at the Foote Creek Rim and Vansycle Ridge projects yielded estimates of 1.5 and 0.7 bat fatalities per WTG per year, respectively (Erickson et al., 2000; Young et al., 2002). A recently released monitoring report for the High Winds project in Solano County has documented 279 bat fatalities between 2004 and 2005 (Kerlinger et al., 2006). The actual number of fatalities at the Project could be lower or higher depending on use of the area, particularly by migrating bats.

Night lighting on the WTGs may disorient or distract nocturnal avian species and bats. Additionally, lighting may attract insects, which in turn, may attract bats to forage upon the insects, increasing the potential for collisions with the WTGs.

Impact Significance – As discussed in Section 3.5.3, a number of federal and state regulations prohibit the nonpermitted take of any migratory birds, golden eagles, white-tailed kites, or threatened or endangered species. Several bats are considered California species of special concern and are given consideration during the environmental review process by CDFG. Because unknown but potentially substantial numbers of protected birds and bats are at risk of dying through collisions with the WTGs over the duration of the Project, and currently there is no proven method to prevent such collisions, this impact is considered significant and unavoidable (*Class I*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-11	Birds and bats may collide with power poles and meteorological towers.	Operations	Class II

Impact BIO-11: Avian and Bat Collisions with Power Lines and Meteorological Towers. Birds may collide with power poles and meteorological towers, resulting in fatalities, or they may collide with power lines and become electrocuted. The susceptibility of bats to such collisions is not well understood. Collisions with power lines can occur when bat roosts are located nearby. Apparently, the strikes occur when bats first come out of the roost in large numbers (H. Johnson, Personal Communication). Because substantial losses could occur over the Project duration, the loss of birds and bats due to collisions with the power lines would be a significant, but mitigable impact (*Class II*).

Impact No.	Impact Description	Phase	Impact Classification
BIO-12	Birds with habitat within 200 feet of WTG towers may be displaced.	Operations	Class III

Impact BIO-12: Avian Displacement from WTGs. Studies conducted in the United States, particularly at Buffalo Ridge, Minnesota, have shown displacement of some groups of birds at distances of 100 to 180 meters from WTGs. The birds affected included shorebirds, waterfowl, woodpeckers, and some passerines (Olson and Rindlaub, 2006; Leddy et al., 1999; Johnson et al., 2000a). Beyond the 100- to 180-meter distance, densities of birds evened out again. With a few exceptions such as mountain plovers (*Charadrius montanus*), no group of birds appeared to be displaced by the construction and operation of the Foote Creek Rim wind energy plant (Johnson et al., 2000b). Based on review of previous studies, displacement impacts to some groups of birds utilizing grassland and chaparral habitats, including passerines, are expected to be limited to areas within several

hundred feet of the WTGs. The loss of avian and bat aerial habitat surrounding each wind turbine would include the loss of foraging habitat for raptors and other avian species, the loss of sensitive species habitat, and the potential impacts on natural wildlife movement corridors.

The loss of aerial habitat to any particular bird or bat is the amount of space no longer available for that bird or bat due to the presence of any individual WTG or any group of WTGs. It is expected that different bird and bat species will react differently to the presence of an obstacle in their flight trajectory, especially with the different angles birds or bats might approach the turbines, the difference in topography throughout the site, and with the variety of different weather conditions possible on the site that could influence direction and height of bird or bat flight.

Although the turbines are expected to predominantly face the direction of the prevailing winds from the north-west, the turbines can move in a complete circle around the tower axis. The aerial loss of habitat would include the area in front of, behind, and on both sides of every WTG that a bird or bat would have to avoid in order to avoid a collision with the turbine. If an individual bird was to alter its course above, below, or around a turbine tower it would need to alter its course several hundred feet (approximated at 200 feet) before that obstacle in order to avoid collision without flying at an acute angle. To avoid a collision if the bird was flying on a trajectory in the same plane as the turbine blades approximately 130 feet long, the bird would have to alter its course several hundred feet before the tip of the rotor sweep area.

At present, there is no generally accepted method or model to compute the loss of aerial habitat at wind farms. For purposes of this analysis, we assume that the loss of aerial space for each WTG is represented as a column of air around each WTG roughly 400 feet in diameter. This calculation includes a buffer zone to compensate for the loss of aerial habitat that results when several WTGs are located in a string (as proposed), creating a "wall effect" that could cause birds to fly around the end of the WTG string. These assumptions are conservative, in that the entire vertical air column, including a buffer zone around each WTG, is counted as lost aerial habitat[9].

Base on this approach, the loss of aerial habitat on the LWEP site has been estimated as follows:

pi x r^2 = the area of a circle.

3.14 x $(400)^2$ = 70,650 square feet

= 2.88 acres per turbine

x 65 turbines

= a loss of 187.2 acres.

This loss of aerial habitat would interfere with normal avian and bat behavior and impede wildlife movement of species of birds and bats that fly through the LWEP Site including several sensitive species. The estimated 187 acres of lost aerial habitat comprises approximately 6.3 percent of the total aerial habitat (2,950 acres) available to bird and bat species on the project property. The surrounding area, including VAFB property on the south and west and sparsely populated rural areas to the north and east, offers abundant aerial habitat for bird and bat species. According to the applicable thresholds (Section 3.5.7.2), the loss of aerial habitat would be considered significant if it

9 The area calculation is very sensitive to assumptions on the buffer area dimensions, as area equals pi x r^2 .

would substantially fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources, or substantially limit or fragment range and movement. The reduction in aerial habitat is a minor change, given the amount of similar habitat in the vicinity. Therefore, the impacts are considered to be adverse but less than significant (Class III).

Impact No.	Impact Description	Phase	Impact Classification
BIO-13	Indirect impacts to wildlife during construction would result from a variety of sources, which could result in temporary displacement. During operations, increases to impacts compared to pre-Project levels would be minor.	Construction and Operations	Class III

Impact BIO-13: Indirect Impacts (Wildlife). Indirect impacts during construction would result from a variety of sources, including increases in human activity, noise, dust, and vehicle emissions, that could potentially result in the displacement of wildlife species. However, impacts would be temporary and localized and would not result in a significant disruption to wildlife, which would be expected to return upon the completion of construction. Temporary lighting may be required if construction occurred during nighttime hours. Impacts from lighting would continue into the O&M phase with required lighting and/or flashing beacons placed on top of WTGs and met towers. Lighting is known to disorient nocturnal species of migrating birds. Spills of hazardous materials, such as diesel, oil, grease, and ethylene glycol, and eroded soil may be deposited into nearby surface water sources after rainfall events, leading to impacts to wildlife that depend on these sources of water. Construction equipment and O&M trucks would be properly maintained to minimize leaks of motor oils, hydraulic fluids, and fuels. Major vehicle maintenance would be performed offsite at an appropriate facility. Gasoline and diesel powered vehicles and equipment would be refueled onsite at designated locations by a mobile fuel service truck using spill containment measures. Handling of hazardous liquids would be subject to a Hazardous Materials Management Plan and Fire Protection Plan approved by the County Fire Department. Additionally, the environmental compliance program would cover avoidance of sensitive areas during construction, waste handling and storage, stormwater management, spill prevention and control, and other components required by state and county regulation.

These potential impacts would continue into the O&M phase; however, following construction, on site activities during Project O&M would be relatively minor. Thus, increases compared to pre-Project levels would be minor.

Indirect impacts would be adverse, but less than significant (*Class III*), because they would not substantially reduce or eliminate species diversity or abundance.

Impact No.	Impact Description	Phase	Impact Classification
BIO-14	Invasive species carried from other work sites may establish on site and displace native plant species or interfere with revegetation; and topsoil removal and equipment operation may reduce the ability of soils to support vegetation.	Construction and Operations	Class II

Impact BIO-14: Indirect Impacts (Vegetation). Equipment and vehicles brought onto the Project site during construction and maintenance activities may harbor seeds of invasive plant species from other work sites, which may result in the introduction of these species to the Project site. These invasive species may displace native plant species and lower habitat values for wildlife. Topsoil also would be removed from some areas and be compacted in others resulting in reduced capacity to support vegetation or revegetation. These impacts would be significant, but mitigable *(Class II)*.

3.5.7.4 Mitigation Assessment Methodology

Mitigation measures for impacts to biological resources were developed by reviewing the type of impacts identified (direct versus indirect and temporary versus permanent) and the timing of actions that would result in an impact to biological resources. Applicant-proposed mitigation measures are considered part of the Project description, but they have been refined and augmented to reflect the County Standard Conditions of Approval and Mitigation Measures (Santa Barbara County, 2002), including the addition of plan requirements, timing, and monitoring actions that will be required. In addition, avoidance and protection measures to be implemented by PG&E during the design, construction, and operation of the 115 kV power-line are provided in Section 2.8.5.

Project-specific mitigation measures are described in Section 3.5.7.5 followed by a discussion of residual impacts remaining after mitigation are included in Section 3.5.7.6.

3.5.7.5 Mitigation Measures

Mitigation measures are organized into the following categories: (1) education and awareness, (2) vegetation and habitat, (3) wetland and riparian habitat, (4) general wildlife (5) special-status wildlife, and (6) avian and bat aerial habitat loss and mortalities. The plan requirements, timing, and monitoring are identified for each measure. The measures shall be implemented by a County-approved biologist or botanist, or both, with demonstrated experience in construction monitoring and familiarity with the sensitive resources of concern at the Project site.

Education and Awareness Mitigation Measure

Mitigation Measure BIO-1: Worker Education and Awareness Program. The Applicant shall fund a County-approved biologist to develop and implement a worker education and awareness program (WEAP) specific to the Project. The program shall be presented to all individuals involved in the construction and O&M phases of the Project. The program shall include information focused on sensitive habitats and species and shall include, but not be limited to, the following:

- The natural history, including sensitive species and habitats, shall be described as well as the current status, reasons for decline, and protection measures relevant to the species and habitats.
- Contact points shall be provided for workers to report sightings of sensitive biological resources such as Gaviota tarplant, active bird nests, badger dens, and roosting bats and raptors in the vicinity of Project facilities.
- Workers shall be provided with photographs of sensitive biological resources including sensitive wildlife and plant species, den and burrow entrances, and nest structures. Qualified biologists, familiar with El Segundo blue butterfly (ESBB) and Gaviota tarplant, will provide a brief educational program for all

personnel prior to initiation of any construction activities within the project site. The program will include identification of ESBB, its host plant, coast buckwheat, and Gaviota tarplant; the general provisions and protections afforded to ESBB and Gaviota tarplant by the Endangered Species Act; and measures to be implemented during the Project to avoid and minimize adverse effects to ESBB and Gaviota tarplant.

- Workers shall be informed verbally and in writing of the various Project tasks that require biological surveys and monitoring for resource protection.
- Workers shall be provided with a photograph or description of the markers for active bird nests, trees, salvaged topsoil piles and windrows, or other mitigation areas, so that they shall know these are not to be disturbed without a biological monitor present.
- Workers shall be provided with photographs of invasive weeds and instructed to report to the biologist any new populations observed near Project facilities.
- Workers shall be informed not to litter. All trash and litter shall be picked up and removed from the construction sites at the end of each day.
- Workers shall be informed to obey a speed limit of 15 miles per hour while traveling on the Project site to avoid collisions with wildlife.
- Workers shall avoid driving over or otherwise disturbing areas outside the designated construction areas.

Plan Requirements: The Applicant shall submit the WEAP to the County for review and approval 30 days prior to implementation. All workers, contractors, and visitors shall attend the WEAP prior to entering the Project site and performing any work. The Applicant shall provide copies of the training attendance sheets to County staff as a record of compliance with this measure on a monthly basis. Trained crew members shall receive a sticker for their hardhat from the County EQAP Inspector demonstrating WEAP training.

Timing: The WEAP shall be reviewed and approved by the County prior to zoning clearance. Implementation of WEAP training shall occur prior to the start of construction and as new crew members are added to the project.

MONITORING: The County will ensure compliance with the WEAP throughout all phases of construction and operation by review of attendance sheets and hardhats, inspection of the site, and interviewing workers, as appropriate. *This mitigation addresses all impacts related to initial habitat disturbances, which encompasses Impacts BIO-1 through BIO-9, and BIO-14.*

Vegetation and Habitat Mitigation Measures

Mitigation Measure BIO-2: Ground Disturbance. The Applicant shall minimize the amount of disturbance to the extent feasible including areas devoted to WTGs; power line poles; temporary and permanent access roads; stockpiles; staging, parking and lay down areas; areas where spoil shall be used to control erosion; and areas for associated facilities. Construction activities shall avoid sensitive areas, such as riparian zones, forests, etc., where feasible. Construction shall avoid all wetlands regulated by Santa Barbara County, CDFG, and USACE (see Mitigation Measure BIO-9) where feasible. Parking, lay down, storage areas, and other sites of superficial disturbance shall be located in previously disturbed areas or in annual grassland (except in Gaviota tarplant habitat) and will be mowed, versus graded, where feasible to keep root structures in place; thereby, facilitating future revegetation. Permanent access roads shall follow routes used for construction access to reduce the

amount of new road construction. Vehicles and equipment access shall follow marked routes. Indiscriminant cross-country vehicle travel shall not be allowed.

Plan Requirements: The detailed plans, showing the limits of the grading, ground disturbance, and installation of facilities will be reviewed and approved by County staff.

Timing: The plans shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site, as well as review the restoration plan to ensure compliance with this measure as appropriate. County staff will monitor construction and revegetation activities to ensure the plan is fully implemented. *This mitigation addresses all impacts related to initial habitat disturbances, which encompasses Impacts BIO-1 through BIO-9 and BIO-14.*

Mitigation Measure BIO-3: Site Restoration and Revegetation Plan. The Applicant shall retain a County-approved botanist to prepare and implement a site restoration and revegetation plan. The plan shall include the following requirements and other provisions as appropriate:

- Top soil, and the seed bank it contains, shall be conserved on areas where soil is excavated such as WTG sites, access roads, and transmission pole locations. Salvage shall be accomplished by:
- Woody material shall be removed from the soil surface and piled in an area that will be out of the way during construction. The upper 6 to 8 inches of soil shall be scraped from the disturbance footprint and piled into a windrow in an area that will not be disturbed during construction.
- Topsoil stockpiles shall be clearly marked for avoidance.
- Windrows shall be immediately protected from wind erosion by covering them or hydromulching them to protect the pile from wind erosion. Wind erosion protection shall be renewed as needed.
- Salvaged topsoil shall be respread on areas that will be revegetated following construction. Salvaged topsoil versus subsoil shall be used for this purpose unless the location is very weedy.
- At final grade, the last few inches shall not be compacted to more than 75 percent to facilitate penetration by plant roots. Salvaged topsoil shall be spread over the finish grade. The grade shall not be completely smoothed. Small ridges shall be provided for seedling wind protection and to collect moisture from rain and fog. Hydroseed with soil stabilization seed mixture shall be applied between October 1 and mid-November. The hydroseed mix shall contain a mulch and binder to retard wind erosion by providing a crust over the soil surface. Native plant seeds shall be added to the hydroseed mixture or hand broadcasted onto the site just prior to hydroseeding. Care shall be taken to avoid premature germination of native species caused by prolonged immersion in the hydroseeder. On slopes, the Applicant shall augment the erosion control seed mixture with seed of native coastal scrub species native to the site and collected from the Project region. Appropriate seed mixtures for use on grassland and coastal scrub areas shall be developed in consultation with and approved by CDFG and County staff using seed of native species originating from the area between the Santa Ynez River and Hollister Ranch, and inland as far as California State Highway 1. Recommendations from USDA Natural Resources Conservation Service for reseeding of agricultural grazing areas will be sought and incorporated as approved by the above agencies. The use of non-native species considered detrimental to agricultural grazing will be avoided.
- For localized areas dominated by weedy species not palatable to livestock, the plan should consider a "grow-kill" approach that would include cycles of irrigation followed, after a suitable delay, by physical or chemical weed control methods to reduce the seedbank of weedy species by germinating them and killing the resulting seedlings prior to final seeding of the treated area.

- Where central coast scrub or central coast scrub/grassland mosaic has been removed by construction, revegetation will include coast buckwheat in the seed mix.
- The restoration areas shall be monitored for a minimum of 3 years by a qualified botanist. Weed control shall be started within 3 months of planting, or earlier if weeds have begun to flower. Weeding shall proceed as frequently as necessary to prevent weeds from spreading off the Project site into the adjacent area and to prevent seed set. An effort shall be made to cut weeds before they develop seeds to minimize the spread of invasive weeds. Cut mustard shall be hauled off the site and disposed of where the toxins in the stems shall not affect other plants. Any new weed species not present in the Project area prior to construction shall be eradicated. At the end of the three year monitoring period the qualified biologist shall prepare a monitoring report detailing the success of the restoration efforts and shall provide recommendations, if needed. This monitoring report shall be submitted to the County for review and approval.

Plan Requirements: The detailed grading plan, showing the limits of the grading, will be reviewed and approved by the County staff prior to approval of the tentative Project map. The Applicant shall prepare a restoration plan and submit it to County staff for approval. The plan shall be designed to address restoration during all phases of development of the site and shall include success criteria to determine whether restoration is proceeding as expected. The Applicant shall file a performance security with the County to complete restoration.

Timing: The plan shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases. The plan shall be implemented during and after construction of the first and all subsequent Project phases. Seed application using a hydroseeder shall occur between October 1 and mid-December. Other methods of applying native seed (e.g., drill seeding, broadcast seeding followed by incorporation) can be implemented at other times, however it is preferable to apply the seed to coincide with the onset of the fall-winter rainy season. The monitoring report shall be submitted to the County at the end of the three year monitoring period.

MONITORING: County staff will inspect the Project plans and site as well as review the restoration plan and final monitoring report for compliance with this measure as appropriate. County staff will monitor construction and revegetation activities to ensure the plan is fully implemented. *This mitigation addresses all impacts related to the loss of habitat, which encompasses Impacts BIO-1 through BIO-6.*

Mitigation Measure BIO-4: Tree Protection and Replacement Plan. The Applicant shall retain a County-approved botanist or arborist to design and implement a tree protection and replacement plan in order to protect existing native trees and minimize adverse effects of grading and construction. No ground disturbance, including grading for buildings, access ways, easements, and subsurface grading, shall occur within the critical root zone of any native tree unless specifically authorized by the approved tree protection and replacement plan. The tree protection and replacement plan shall include the following measures:

a. The plan shall show the location, diameter at breast height (DBH), and critical root zone of all native and specimen trees that are potentially subject to disturbance due to Project construction and operational activities, including transport of large loads on San Miguelito Road or onsite access roads.

b. The tree protection plan shall clearly identify any areas where grading, trenching, or other construction related activities would encroach within the critical root zone of any native or

specimen tree and within 6 feet of the drip line for blue oaks and valley oaks. All encroachment is subject to review and approval by the County.

c. Fencing of all native and specimen trees shall be installed to protect the critical root zone. (All onsite oaks shall be fenced outside of the critical root zone and all blue oaks and valley oaks shall be fenced at least 6 feet beyond the drip line). Fencing shall be at least 3 feet in height of chain link or other material acceptable to the County and shall be staked every 6 feet. The Applicant shall place signs stating "tree protection area" at 15-foot intervals on the fence. Fencing and signs shall be shown on the tree protection exhibit, shall be installed prior to zoning clearance, and shall remain in place throughout all grading and construction activities.

d. Any encroachment within the critical root zone of native trees and within 6 feet of the drip line for blue oaks and valley oaks shall adhere to the following standards:

   i Any paving shall be of pervious material (gravel, brick without mortar, or turf block).

   ii Any trenching required within the critical root zone of a protected tree shall be done by hand.

   iii Any roots 1 inch in diameter or greater encountered during grading or trenching shall be cleanly cut and sealed.

e. Construction equipment staging and storage areas shall be located in designated staging and lay-down areas depicted on Project plans submitted for zoning clearance. No construction equipment shall be parked, stored, or operated within the protected areas. No fill soil, rocks, or construction materials shall be stored or placed within the protected area.

f. All utility corridors and irrigation lines shall be shown on the tree protection exhibit. New utilities shall be located within roadways, driveways or a designated utility corridor such that impacts to trees are minimized.

g. Any tree wells or retaining walls shall be shown on the tree protection plan exhibit as well as grading and construction plans and shall be located outside of the critical root zone of all native trees and 6 feet beyond the drip line for blue oaks and valley oaks unless specifically authorized by the County.

h. Access routes for equipment shall be checked for clearance prior to bringing any equipment onto the site. All trees and shrubs that require limbing or pruning shall be prepared at least 2 days prior to the arrival of the equipment and adhere to the following standards:

   i All limbing shall be done under the supervision of a licensed arborist or qualified biologist.

   ii Any inadvertently broken limbs shall be cleanly cut under the direction of a licensed arborist or qualified biologist.

   iii In the event that damage to a native tree is so severe that its survival is compromised, the tree shall be replaced in kind as mentioned below for native trees.

i. Only trees designated for removal on the approved tree protection plan shall be removed. Any native trees which are removed, relocated, or damaged (more than 20 percent encroachment into the critical root zone or drip line for blue oaks and valley oaks) shall be replaced on a 10:1 (15:1 for blue oak and valley oak trees) basis with 1 gallon size saplings of the same species

grown from seed obtained from the same watershed as the Project site. Where it is necessary to remove a tree and feasible to replant, trees shall be boxed and replanted. A drip irrigation system with a timer shall be installed. No permanent irrigation shall occur within the critical root zone of any native or specimen tree and within 6 feet of the drip line of blue oak and valley oak trees. Drainage plans shall be designed so that tree trunk areas are properly drained to avoid ponding. Trees shall be planted, irrigated, and maintained until established (up to 5 years). The plantings shall be protected from predation by wild and domestic animals and from human interference by the use of staked, chain link fencing, and gopher fencing during the maintenance period.

j. Any unanticipated damage that occurs to trees resulting from construction activities shall be mitigated in a manner approved by the County. This mitigation shall include, but is not limited to, posting of a performance security, replacing native trees on a 10:1 (15:1 for blue oak and valley oak trees) ratio, and hiring a County-qualified arborist/ biologist to evaluate all proposed native tree and shrub removals within 25 feet of potential ground disturbances. The arborist/biologist report shall present biologically favorable options for access roads, utilities, drainages, and structure placement, taking into account native tree and shrub species, age, and health with an emphasis on preservation. All development and potential ground disturbances shall be designed to avoid the maximum number of native trees feasible. The required mitigation shall be undertaken immediately under the direction of the County, and a specific and detailed plan for replacement of all affected trees, including location and timing, shall be approved by the County prior to any further work occurring on site. Any performance securities required for installation and maintenance of replacement trees shall be released by the County after its inspection and approval of such installation.

Plan Requirements: This requirement shall be recorded with the final Project plans. The Applicant shall submit grading plans, building plans, and the tree protection and replacement plan to the County for review and approval. All aspects of the plan shall be implemented as approved. The Applicant shall post a performance security that is acceptable to the County to guarantee tree replacement.

Timing: The Tree Protection and Replacement Plan shall be approved by the County, and evidence of having obtained the performance security shall be provided to the County prior to zoning clearance for the first and all subsequent Project phases. Timing on each measure shall be stated where applicable; where not otherwise stated, all measures must be in place throughout all grading, construction, and operational activities.

MONITORING: The County will inspect the plans and site throughout all phases of development to ensure compliance with and evaluation of all tree protection and replacement measures. *This mitigation addresses all impacts related to the loss of trees, which includes Impacts BIO-2 and BIO-4.*

Mitigation Measure BIO-5: Pre-construction Plant Surveys. The Applicant shall retain a County approved botanist to conduct appropriately timed pre-construction surveys for sensitive native plant species, including lichens, in all areas to be disturbed, including power line pole locations and access roads. In the unlikely event that a federally listed plant species is found on or near an area to be disturbed by the project, the FWS will be notified and the project will be adjusted to avoid impact and other species protection measures recommended by the Service will be implemented. If a substantial portion of a "stand" of CNPS-listed or locally rare species shall be removed for the Project and

adjustment of the disturbance area boundaries to avoid the impact is not feasible, the loss will be mitigated by collection of seeds or other propagules from the plants during the appropriate time of the year. The seed or propagules shall be used for restoration in the immediate area (if suitable habitat continues to be present) or on a nearby, suitable location. In the case of lichens having regional significance, the lichenologist shall make recommendations of feasible methods to relocate and re-establish the lichens at a suitable nearby site, if avoidance is not feasible. Methods may include collecting, moving, and emplacing a sample of substrate supporting the lichen at a suitable site nearby. The upper 3 to 6 inches of soil (topsoil and seedbank) shall be salvaged in all areas where the terrain allows it. Topsoil shall be windrowed and marked to keep it separated from other spoil. Topsoil piles shall be stabilized by covering the windrows or by spraying with hydromulch and binder to protect the soil from wind erosion. Salvaged topsoil shall be spread over all restored areas.

Plan Requirements: The detailed grading plan, showing the limits of the grading, shall be reviewed and approved by County staff prior to approval of the tentative Project map. If surveys indicate that replacement of sensitive native plants is necessary, the Applicant shall prepare a detailed mitigation plan and submit it to the County for approval. The Applicant shall file a performance security with the County to complete restoration.

Timing: The mitigation plan shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the mitigation plan to ensure compliance with this measure as appropriate. County staff will monitor construction and revegetation activities to ensure the plan is fully implemented (*This mitigation addresses Impact BIO-5, and 6)*.

Mitigation Measure BIO-6: Gaviota Tarplant Disturbance. The Applicant shall retain a qualified botanist approved by CDFG and the County to address impacts to Gaviota tarplant and oversee flagging of the perimeter of all approved work areas in Gaviota tarplant habitat. Gaviota tarplant habitat will include all areas of previously identified habitat plus any additional areas that are discovered during preconstruction surveys prior to ground disturbance. Gaviota tarplant will be assumed to be present within all areas where it had been previously mapped even if it is not evident during preconstruction surveys (because seedbank may be present that could germinate and establish under different environmental conditions). The Project design shall continue to be refined to minimize Gaviota tarplant habitat disturbance, the size of temporary excavation areas, and the size of areas where permanent loss shall occur. A determination shall be made of the total areas of (1) permanent habitat loss, (2) temporary excavations, and (3) surface disturbance for the construction phase of the Project. Mitigation measures shall be developed, in consultation with CDFG botanists, to minimize the extent of habitat disturbance and to minimize potential "take" of individuals of this species which is protected under the California Endangered Species Act (CESA). Measures and procedures shall be developed that address potential future impacts during the operations phase of the Project. Areas of temporary disturbance shall be mitigated at 1:1 ratio using the measures described below. A CESA permit from CDFG and a mitigation monitoring and reporting plan meeting the requirements of CESA will be required.

Where construction activities may impact occupied Gaviota tarplant habitat during the growing season (between the first rain and the middle of September), standing drying plants that still have

ripening seed during the late fall of the year shall be collected prior to construction. Plants shall be collected by hand or in a basket mounted behind a mower. The collected material shall be dried immediately and stored dry to preserve the seeds. The salvaged plant material shall be spread on restored habitat prior to final soil stabilization. The "triple-lift topsoil salvage" procedures described below shall be employed to conserve the soil profile and soil seed bank. All topsoil handling in Gaviota tarplant habitat shall be monitored by a qualified botanist approved by CDFG and the County to work with Gaviota tarplant. Seedbank material shall be developed using the following procedures:

a. All woody vegetation shall be cleared and stockpiled separately in a location where it shall be out of the way during construction.

b. A 3- to 6-inch lift of soil shall be scraped from the area of Gaviota tarplant habitat where soil shall be excavated. The seedbank shall be stored in a location where it shall be out of the way during construction. The seedbank stockpile shall be clearly marked for identification and avoidance.

c. A second 6- to 8-inch lift of the sandy soil horizon (shallower if bedrock or other soil type is encountered, such as clay) shall be scraped from the area. The topsoil lift shall be stockpiled in a location where it shall not be disturbed during construction and shall be clearly marked for identification and avoidance. The stockpiles shall be shaped to maximize water runoff.

d. The stockpiled seedbank shall be kept dry and protected from wind erosion and disturbance per the measures for topsoil conservation throughout construction and until it is replaced on the restored sites. The stockpiles will be covered or treated with hydromulch and binder to form a crust over the soil and reduce loss to wind erosion, but the spray shall not be heavy enough to soak into the pile (to avoid soaking seeds and triggering seed germination).

e. If the salvaged seedbank is being eroded by the wind, it shall be stabilized by spraying it with an organic soil binder used for hydroseeding.

f. Following excavations and other types of temporary ground disturbance in Gaviota tarplant habitat, the soil profile shall be rebuilt using salvaged and stockpiled materials by replacing them in reverse order as described below. The salvaged and dried Gaviota tarplants shall be spread on top. Procedures to be followed are:

    i The layers beneath the final seedbank layer shall be well compacted.
    ii The seedbank layer shall be more loosely compacted by spreading it dry or with minimal water. Tracking, rather than spraying, shall be used to pack the seedbank layer into place.
    iii Soil stabilization shall follow immediately.
    iv The replacement of seedbank and topsoil stockpiles shall be monitored by a botanist acceptable to CDFG and the County for work with Gaviota tarplant.
    v Restored Gaviota tarplant sites shall be stabilized with a hydraulically applied mixture of biodegradable soil binder and wood fiber. The mulch shall be minimized so that light shall not be blocked from the tarplant seeds in the salvaged and replaced seed bank. No seed is required since the top layer on the restored site shall be composed of salvaged seed bank.

    Permanent Gaviota tarplant habitat loss shall be mitigated by continuing to contribute toward the understanding of the taxonomy and ecology of this species by:

a) Contributing to the accumulation of additional data on the range and size of subpopulations.

b) Contributing to taxonomic research to clarify limits and relationships of Gaviota tarplant populations versus close relatives.

c) Requesting that CDFG review the status of this species in light of recent discoveries of extensive populations.

d) Contributing to baseline ecological research, such as germination or pollinator studies, that shall be useful for future management decisions.

Plan Requirements: The detailed grading plan, showing the limits of the grading shall be reviewed and approved by County staff prior to approval of the final plans. The Applicant shall prepare a detailed mitigation plan that conforms to the above requirement and submit it to the County for approval. The Applicant shall file a performance security with the County to complete restoration. A separate mitigation plan for Gaviota tarplant is likely to be required by the CDFG. That mitigation plan should address ongoing impacts during the operations phase of the Project as well as the more extensive impacts that will result from Project construction.

Timing: The mitigation plan shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the mitigation plan to ensure compliance with this measure as appropriate. County staff will ensure the flagging of the perimeter of all approved work areas in Gaviota tarplant habitat prior to ground disturbance and will monitor construction and revegetation activities to ensure the plan is fully implemented (*Addresses Impact BIO-5 and 14*).

Mitigation Measure BIO-7: Kellogg's and Mesa Horkelia Habitats. For Kellog's and Mesa Horkelia habitats identified during pre-construction surveys (see Mitigation Measure BIO-5, above), the Applicant shall track over Kellogg's and Mesa Horkelia habitat, where the terrain shall safely allow it, rather than widening roads beyond the permanent road width to minimize plant removal. The seedbank shall be salvaged and stockpiled separately from other spoil along roads and adjacent to other facilities constructed in Kellogg's and Mesa Horkelia habitat as described for Gaviota tarplant. Salvaged stockpiles shall be covered or sprayed with hydromulch and binder to crust the surface to minimize soil loss to wind erosion. Salvaged seedbank shall be spread over restored areas as described for Gaviota tarplant except that a normal mixture of mulch and binder shall be used. If the area is within Gaviota tarplant habitat, methods for the latter shall be used.

Plan Requirements: The detailed grading plan, showing the limits of the grading will be reviewed and approved by County staff prior to approval of the tentative Project map. If surveys indicate that replacement of Horkelia is necessary, the Applicant shall prepare a detailed mitigation plan and submit it to the County for approval. The Applicant shall file a performance security with the County to complete restoration.

Timing: The mitigation plan shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases.

MONITORING: County staff shall inspect the Project plans and site as well as review the mitigation plan to ensure compliance with this measure as appropriate. County staff shall monitor

construction and revegetation activities to ensure the plan is fully implemented (*Addresses Impact BIO-6)*.

Mitigation Measure BIO-8: Native Perennial Bunchgrass. The Applicant shall retain a County-approved botanist to resurvey the potentially affected area during the appropriate season and determine the total area with at least 10 percent cover by native grassland species on the site (=native grassland habitat). If the total area of native grassland habitat that would be permanently removed is less than 10 percent of the total area of native grassland habitat within the Project area, loss of native grasses shall be mitigated by seedbank salvage and replacement as described for Horkelia.

If the total area of native grassland habitat that would be permanently removed for the Project exceeds 10 percent of the total area of native grassland habitat within the Project area, seed shall be collected from the populations of native grasses and native grassland species on the Project sites prior to the start of construction. The seed shall be stored dry and included in the seed mixture applied to the restored areas. Drill seeding shall be performed for mixtures that include native grass seed.

Plan Requirements: The detailed grading plan, showing the limits of the grading will be reviewed and approved by County staff. If surveys indicate that replacement of native perennial bunchgrass is necessary, the Applicant shall prepare a detailed mitigation plan and submit it to the County for approval. The Applicant shall file a performance security with the County to complete restoration.

Timing: The mitigation plan shall be approved by the County prior to zoning clearance for the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the mitigation plan to ensure compliance with this measure as appropriate. County staff will monitor construction and revegetation activities to ensure the plan is fully implemented (*Addresses Impact BIO-1)*.

Wetland and Riparian Habitat Mitigation Measures

Mitigation Measure BIO-9: Protection of Creeks, Springs, and Wetlands. The Applicant shall make every effort to minimize the area and degree of impact to State and Federal wetlands and other Waters of the U.S. associated with placement of bridges, siting of the O&M facility, and other construction-related tasks. Additionally, all potential jurisdictional areas that may be disturbed by construction shall be delineated following all applicable standards associated with features regulated by the State of California, Santa Barbara County, and USACE for regulated wetlands, including documentation of specific surveys for presence of listed plant, invertebrate, or wildlife species that may occur there. The delineations shall apply the Arid West Supplement to the USACE Wetland Delineation Manual guidelines and shall map all features using a sub-meter dGPS. Based on the delineation, the Applicant shall consult with a wetland hydrologist and botanist to design construction, so that direct loss of wetland communities shall be minimized and hydrological conditions supporting the wetland shall be conserved to the maximum extent feasible consistent with project objectives. All final construction design plans and mapped wetland features shall be clearly presented in a wetland avoidance plan for approval by the County. The avoidance plan for the WTG corridor shall be included as part of the wetland restoration and avoidance plan for other project components and shall also present an approach for the restoration of lost and/or disturbed

features associated with bridge crossings and siting of the O&M facility including calculations, proposed restoration locations, cattle or other disturbance barriers, plant mixes, quantitative restoration goals (maximum criteria for weedy species and minimum criteria for native hydrophytic plants), and temporal and native plant composition success criteria. At a minimum, any temporarily disturbed wetlands associated with bridge crossings or siting of the O&M facility shall be restored to its former condition at an aerial ratio of 1:1 with a clearly defined temporal goal and success criteria. If any jurisdictional feature is permanently lost, it shall be mitigated by the creation of the same type of wetland in the Project area at an aerial ratio of 2:1. Additionally, all wetland areas within 50 feet of ground disturbance shall be protected from siltation by placement of silt fence, straw bales (composed of certified weed-free straw), or other barriers. Barriers shall be in place prior to ground disturbance.

No fueling of vehicles or equipment shall occur within 100 feet of the top of any creek bank or within 100 feet of any seep or spring. Further, spill containment measures shall be implemented at all refueling sites. In the event that petroleum products escape into a creek, seep, or spring, every effort will be made to immediately remove the material using plastic sheets, absorbent blankets, or other materials, as necessary.

Runoff from fresh concrete shall be directed away from the top of any creek bank and from any seep or spring into a plastic-lined hollow. Any washout from concrete trucks shall be collected within a designated contained and lined area and removed from the site. Dried concrete scraps shall be removed and all trash and litter shall be picked up and removed from the construction sites at the end of each day.

Plan Requirements: The detailed wetland avoidance/restoration plan and grading plan, showing the limits of the grading will be reviewed and approved by County staff prior to approval of the tentative Project map. The wetland delineation and grading plan shall be submitted to the County for approval prior to any project construction that may affect wetlands. The Applicant shall also file a performance security with the County to complete restoration. This condition shall be printed on all Project plans.

Timing: Any proposed removal or temporary disturbance to jurisdictional features shall be approved by the County, CDFG, and the USACE prior to any construction that may affect wetland features. Site-specific wetland creation/restoration plans shall be developed and approved by the County, in consultation with CDFG, and USACE as appropriate, prior to final land use clearance . The applicant shall independently consult with CDFG and USACE as necessary. The plan shall be implemented within one year of the disturbance and in consultation with CDFG and County staff. This measure shall be implemented throughout the first and all subsequent Project phases.

MONITORING: County will inspect the Project plans and site, as well as review the mitigation plan to ensure compliance with this measure as appropriate. A biological/wetland monitor shall be present for all activities that have the potential to directly or indirectly affect regulated wetland features and County staff will monitor construction and revegetation activities to ensure the plan is fully implemented (*Addresses Impact BIO-3 and 4*).

Mitigation Measure BIO-10: Riparian Habitat Restoration. During consultation with the USACE and CDFG for impacts to Honda Creek (and other crossings, if applicable), a determination shall be made regarding whether a riparian habitat restoration plan will be required. If so, the Applicant shall

retain a qualified ecologist to prepare and implement a site-specific creek restoration plan. The plan shall include, but not be limited to, the following elements:

- Restoration shall include native riparian species from locally obtained plants and seed stock.
- The new plantings shall be monitored for a period of 2 to 3 years to ensure successful establishment. Dead plants shall be replaced in kind.
- The new plantings shall be irrigated with drip irrigation on a timer and shall be weaned off of irrigation when root zones are established.
- Removal of native species in the creek shall be prohibited.
- Non-native species located in the work area shall be removed from the creek.

Plan Requirements: The Applicant shall submit a creek restoration plan if required to County, CDFG, and USACE staff for review and approval. The Applicant shall file a performance security with the County to complete restoration.

Timing: The plan shall be approved by the County, CDFG, and USACE prior to final land use clearance for the first and all subsequent Project phases.

MONITORING: County staff will inspect the Project plans and site as well as review the restoration plan for compliance with this measure as appropriate. The County staff will monitor plan implementation to ensure compliance. Permit compliance signature is required for performance security release (*Addresses Impact BIO-4 and 14*).

General Wildlife Mitigation Measures

Mitigation Measure BIO-11a: Pre-construction Wildlife Surveys. The Applicant shall retain a County-approved biologist to perform a wildlife survey prior to the excavation of the WTG sites. The biologist shall survey the surrounding area out to a 300-foot radius from the WTG site, the WTG footings, access roads, and staging, parking, and lay down areas prior to grading or the use of any explosives. Surveys shall be completed within 3 days before the start of initial vegetation clearance or ground disturbance in any affected area. If any wildlife species are found, they shall be relocated to similar habitat at least 300 feet away from construction activity.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and relocation activities.

Timing: This measure shall be implemented throughout all ground disturbances for the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site, as well as review the monthly reports to ensure compliance with this measure, as appropriate (*Addresses Impact BIO-7, 8, 9, and 13*).

Mitigation Measure BIO-11b: Fencing. To minimize the amount of disturbance to wildlife habitat, the Applicant shall clearly define in the field: the project construction areas, including areas devoted to WTGs; power line poles; temporary and permanent access roads; stockpiles; staging, parking and

lay down areas; areas where spoil shall be used to control erosion; and areas for associated facilities. Project boundaries shall be clearly marked with fencing or staking that shall be replaced as needed.

Plan Requirements: The detailed fencing plan, showing the location of required fencing shall be reviewed and approved by County staff prior to approval of the tentative Project map. This condition shall be printed on all Project plans.

Timing: The detailed fencing plan, showing the location of required fencing shall be reviewed and approved by County staff prior to approval of the tentative Project map.

MONITORING: County will inspect the Project plans and site, to ensure compliance with this measure as appropriate. County staff will monitor construction monitoring reports to ensure the plan is fully implemented (*Addresses Impacts BIO-1, 7, 8, 9, and 13 and supplements BIO-2 through 6*).

Mitigation Measure BIO-11c: Biological Monitoring. The Applicant shall fund a County-approved, Environmental Monitor during Project construction to monitor construction activities and to ensure compliance with all mitigation measures. The Environmental Monitor shall be present onsite during all vegetation removal and during all of the initial ground disturbance activities for all aspects of the project, and shall regularly inspect the project site as needed after the initial ground disturbances to ensure that all mitigation measures are being implemented. The biologist shall ensure that wildlife do not become entrapped in the excavations during installation of the WTGs and associated underground collection system from the WTGs to the substation (i.e., open trenches). Safeguards shall be implemented during daytime periods of non-activity and overnight, such as a placing a platform over the entire excavation site, flush with the ground surface, or exclusionary fencing. A form of egress (such as a ramp) shall be placed within the excavated area to provide an exit to accidentally trapped wildlife. The biologist shall be responsible for ensuring these safeguards are in place on a daily basis.

Plan Requirements: The Environmental Monitor shall work closely and cooperatively with County staff and County's consultants on a daily basis or as needed.

Timing: The Environmental Monitor shall be designated prior to the start of construction and shall be retained throughout all construction phases.

MONITORING: County staff will confirm that the Environmental Monitor is employed prior to start of construction and continues throughout all construction phases . *This mitigation addresses all impacts related to initial habitat disturbances, which encompasses Impacts BIO-1 through BIO-9, and BIO-14.*

Mitigation Measure BIO-11d: Monitoring Report. On a bi-weekly basis, the County-approved, Environmental Monitor shall provide the County a Construction Monitoring and Biological Resources Mitigation Report. This report shall include a description of the activities that have occurred onsite, wildlife species encountered, relocation efforts, wildlife mortalities and injuries, violations or issues with construction activities, and any project-related resolutions.

Timing: The Environmental Monitor shall submit the Construction Monitoring Report on the first and third week of each month to detail the previous two week's activities. This report may be submitted electronically.

Plan Requirements: The Applicant shall consult and obtain any necessary permits from the appropriate regulatory agencies and provide copies to County staff. On a bi-weekly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and monitoring activities.

MONITORING: County staff will confirm that the Environmental Monitor is submitting the required Construction Monitoring Report throughout all construction phases. *This mitigation addresses all impacts related to initial habitat disturbances, which encompasses Impacts BIO-1 through BIO-9, and BIO-14.*

Mitigation Measure BIO-12: For Impacts to Nesting Birds and Roosting Bats (for Impact BIO-8)

Mitigation Measure BIO-12a. Schedule ground disturbance to avoid nesting season. All construction-related activities that include vegetation removal and initial ground disturbances in habitats where biological monitor does not have a clear view of the ground, shall be scheduled, as feasible, to avoid the bird nesting season (February 1 through August 31) to reduce impacts to nesting birds in the project vicinity. If construction activities are scheduled to begin during the nesting season, the applicant shall still attempt to remove or mow vegetation before the onset of nesting season to reduce the threat of violating the Migratory Bird Treaty Act.

Plan Requirements: This condition shall be printed on all Project plans. The Environmental Monitor shall be designated to monitor the implementation of this mitigation and shall be retained throughout all construction phases.

Timing: Construction-related activities that include vegetation removal and initial ground disturbances shall be scheduled, as feasible, from August 31 through February 1.

MONITORING: County staff will inspect the Project plans and review the monthly reports for compliance with this measure as appropriate (*Addresses Impact BIO-8).*

Mitigation Measure BIO-12b. Buffer Zones. If ground disturbance or vegetation removal is scheduled to occur during the avian nesting or bat roosting season (from February 1 through August 31) the Applicant shall fund a County-approved biologist to survey for active avian nests and roosting bats immediately prior to the start of construction in a given area (including removal or trimming of trees and shrubs). The survey shall occur at the sites of construction activity, as well as up to 500 feet away. If an active raptor nest is found, no construction activity shall occur within 500 feet of the nest unless otherwise directed by CDFG. The County-approved biologist shall conduct a study to collect more detailed information on nesting raptors in the Project area. Areas of dense vegetation, including the riparian corridors along Miguelito Creek, the eucalyptus groves onsite, and mixed evergreen forest within 500 feet of Project facilities shall be surveyed at weekly intervals to collect data on nesting activities.

If any other active avian species nest or roosting bats are found, construction activity shall not occur within 150 feet of the area or as directed by the County-approved biologist unless otherwise directed by CDFG. The CDFG shall be consulted prior to any disturbance of bat maternity roosts. During the breeding season (February 1 through August 31) efforts shall be made and directed by the biological monitor to dissuade birds from using facilities and construction equipment. Active nests and roosts shall be temporarily marked with flagging to warn workers; and monitored by a

biologist to ensure that construction activities do not impact these sites. The applicant shall provide all workers on the site an updated map of active nests so that construction activities within the buffers can be avoided. Construction activities and timing shall be modified to avoid impacts to nesting avian species, and bat maternity roosts. Buffer areas shall be maintained until fledglings have left the nest and the biological monitor has cleared the area.

Plan Requirements: The Applicant shall consult and obtain any necessary permits from the appropriate regulatory agencies and provide copies to County staff. On a bi-weekly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and monitoring activities.

Timing: The Environmental Monitor shall submit the Monitoring Report on the first and third week of each month to detail the previous two week's activities. This report may be submitted electronically.

MONITORING: County staff will inspect the Project site as well as review the bi-weekly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-8)*.

Special-status Wildlife Mitigation Measures

Mitigation Measure BIO-13: Pre-construction Surveys and Conservation of El Segundo Blue Butterfly (ESBB). The applicant shall retain a qualified, County-approved entomologist to conduct directed surveys for the ESBB during the flight season (approximately mid-June to August) within all areas of coast buckwheat known on the LWEP site, including areas that would be affected by construction, operation, or maintenance of the project. The surveys shall be documented including a description of methodology, description and maps of the surveyed areas, and identification of locations of any ESBB observed within the proposed Project area (including maps and GPS coordinates). Conditions the sites where ESBB are located shall be described by the entomologist including vegetation, soils, exposure, and other factors that may influence the occurrence of ESBB at that site.

A plan to restore and/or enhance ESBB habitat shall be prepared by a County-approved botanist with input from a County-approved entomologist. The goal of the plan shall be to establish coast buckwheat with other Central coast scrub species on areas having sandy soils and judged suitable for this type of restoration or enhancement by the project biologist and County-approved entomologist. The restoration or enhancement would preferably occur in or adjacent to an area of existing habitat supporting coast buckwheat on sandy soils or it could occur in an area disturbed by the project. The plan shall identify sites to be restored or enhanced and the approach to restoration and enhancement, including proposed density of coast buckwheat plants, which shall be generally consistent with the density of coast buckwheat in occupied ESBB habitat in the Project region and performance criteria shall reflect that density. Restoration or enhancement will be conducted on an acre-for acre- basis. If ESBB has been found on the site, the plan shall be submitted to USFWS for approval, prior to implementation.

Suitable ESBB habitat adjacent to construction areas shall be clearly marked for avoidance (e.g., by orange plastic construction fencing). The delineation shall be directed and approved by a county-approved biologist.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on surveying and monitoring activities.

Timing: This measure shall be implemented during the first and all subsequent Project phases.

MONITORING: County staff will inspect the Project plans and site as well as review the monthly reports for compliance with this measure as appropriate (*Addresses Impact BIO-9 and supplements Mitigation Measure BIO-3 (Site Restoration and Revegetation Plan)*

Mitigation Measure BIO-14: For impacts to Sensitive Wildlife Species

Mitigation Measure BIO-14a: California Horned Lizard. The Applicant shall fund a County-approved biologist to survey construction areas, including the sites of footings for WTGs and power poles, access roads, and staging, parking, and lay down areas, for California horned lizards. Surveys shall be completed within 3 days before the start of initial vegetation clearance or ground disturbance in any affected area. The survey may be done in conjunction with surveys for ground-nesting birds. However, the survey for horned lizards shall be performed regardless of season of the year. If horned lizards are found, they shall be relocated to similar habitat at least 300 feet away from construction activity.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and relocation activities.

Timing: This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site, as well as review the monthly reports to ensure compliance with this measure, as appropriate (*Addresses Impact BIO-9)*.

Mitigation Measure BIO-14b: Silvery Legless Lizard. The Applicant shall retain a County-approved biologist to survey for silvery legless lizards that could potentially occur in areas with Central Coast scrub and annual grassland with a shrub component. The biologist shall work with the equipment operator during initial vegetation clearance to identify those areas that would require legless lizard mitigation, and then to salvage and relocate exposed animals. The following technique shall be employed to avoid impacts to the silvery legless lizard:

- Following initial vegetation clearance in pre-identified areas, grading shall be done in two consecutive 6-inch layers.
- With each lift, the biologist shall check the areas for possible relocation of silvery legless lizards. If any are found, they shall be moved to similar habitat near shrubs at least 100 feet from the construction sites.
- Monitoring for legless lizards shall be discontinued when grading reaches depths greater than 12 inches.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on monitoring and relocation activities.

Timing: This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the monthly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-9)*.

Mitigation Measure BIO-14c: San Diego Desert Woodrat. The Applicant shall retain a County-approved biologist to survey the locations of WTGs and access routes prior to construction, as well as for a distance of 50 feet away for signs of the San Diego desert woodrat. The following technique shall be employed to avoid impacts to the San Diego desert woodrat:

- If signs of this species are found at or near the areas to be disturbed (such as a small stick nest within a rock overhang), it shall be evaluated for potential impact due to construction activities.
- If disturbance to a nest is likely to occur, the animal shall be live-trapped and relocated to a distance of 300 feet from Project activities and within similar habitat.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and relocation activities.

Timing: This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the monthly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-9)*.

Mitigation Measure BIO-14d: American Badger. The Applicant shall retain a County-approved biologist to survey, prior to construction, for badger dens in the Project area, including areas within 250 feet of all Project facilities, WTG sites, and access roads. The survey shall be performed regardless of season of the year. If badger dens are found, each den shall be classified as inactive, potentially active, or definitely active.

Inactive dens shall be excavated by hand and backfilled to prevent reuse by badgers.

Potentially and definitely active dens shall be monitored for 3 consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) at the entrance. If no tracks are observed in the tracking medium after 3 nights, the den shall be excavated and backfilled by hand. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next 3 to 5 nights to discourage the badger from continued use. The den shall then be excavated and backfilled by hand to ensure that no badgers are trapped in the den.

Plan Requirements: This condition shall be printed on all Project plans. On a monthly basis, the Applicant shall report compliance with this measure in writing to County staff on survey and burrow excavation activities.

Timing: This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site as well as review the monthly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-9)*.

Mitigation Measure BIO-14e: Sensitive Avian Species. The County-approved biologist shall conduct a study in the spring season prior to the onset of construction activities to assess the density of special status passerines and other ground-nesting birds in areas of the project site potentially subject to disturbance. Plots shall be established in various habitats and checked at weekly intervals to monitor for new nests of ground-nesting birds that are sensitive species, including California horned lark, California rufous-crowned sparrow, grasshopper sparrow, and burrowing owls. The surveys shall be conducted as long as birds are nesting in the Project area between February 1 and August 31. The surveys shall be discontinued when it is apparent that nesting has ceased for the season. Surveys for burrowing owls shall be conducted prior to construction in the Project area, including areas within 300 feet of all Project facilities, WTG sites, and access roads. The survey shall be performed regardless of season of the year due to this species' being present in the winter.

If construction is to occur between February 1 and August 31, all sites to be disturbed shall be surveyed for ground-nesting and shrub-nesting birds immediately prior to construction in a given area. The emphasis shall be on California horned lark, western burrowing owl, California rufous-crowned sparrow, and grasshopper sparrow. The survey shall occur at the sites of construction activity, as well as up to 300 feet away. If an active nest is found, no construction activity shall occur within 300 feet of the nest or as determined by the biological monitor and updated maps showing active nesting locations shall be distributed to the biological monitors, EQAP inspector, and crew foreman on a weekly basis. The nest shall be monitored to record any potential construction-related effects. Construction activities and timing may be modified as directed by the County to avoid impacts to nesting passerines or other ground-nesting birds.

Frequent disturbance (every few days) may be initiated in some Project areas just prior to the nesting season to discourage nesting in the construction corridor.

During both the construction and O&M phases, a speed limit of 15 mph shall be established and enforced. The speed limit shall reduce the potential for loss of bird species, including passerines, due to collisions with vehicles.

Plan Requirements: This condition shall be printed on all Project plans. On a bi-weekly basis, the Biological Monitor shall report compliance with this measure in writing to County staff on survey results and buffer area design.

Timing: This measure shall be implemented throughout the first nesting season from February 1 through August 31 for nesting species and year-round for western burrowing owls and all subsequent nesting seasons during the construction phases. The Environmental Monitor shall submit the Monitoring Report on the first and third week of each month to detail the previous two week's activities. This report may be submitted electronically.

MONITORING: County staff will inspect the Project plans and site as well as review the bi-weekly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-8 and 9)*.

Avian and Bat Operational Impacts Mitigation Measures

Mitigation Measure Bio-15: Bird and Bat collisions with turbines, power lines, or met towers (for Impacts Bio-10 and Bio-11)

Mitigation Measure Bio-15: Bird and Bat Collisions with WTGs, Power Lines, or Meteorological Towers (for Impacts Bio-10 and Bio-11)

Mitigation Measure BIO-15a: Siting. The turbines shall be sited so that each tower is located at least 500 feet away from critical biological resources identified in preconstruction surveys, specifically: active raptor nest sites, active state or federally listed species' nests, open water which would attract birds or bats (including stock-ponds), thicker riparian habitat in Canada Honda and Miguelito creeks, eucalyptus tree groves, or vernal pools, if present. The turbines shall be sited so that each tower is located at least 250 feet from the un-named intermittent tributaries containing Central Coast Riparian Scrub habitat located up-gradient of major streams. Preconstruction surveys (described in MM Bio-11a) shall identify existing raptor nests and other sensitive resources. The Applicant shall, in consultation with the CDFG, attempt to dissuade raptors from building new nests within 500 feet of any turbine.

Plan Requirements: This measure shall be printed on all Project plans.

Timing: During the preconstruction and construction phases, the Applicant shall provide the County with weekly written survey results and buffer area design, which may be provided electronically. This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site and review the monthly reports to ensure compliance with this measure as appropriate (*Addresses Impact BIO-10 and 11)*.

Mitigation Measure BIO-15b: Appropriate WTG and Project-Element Design. To minimize the likelihood of collisions of birds with WTGs and onsite power poles and collection lines[10], the design features of all WTGs and project related facilities shall include the following:

a) Underground (rather than overhead) collection lines shall be used to minimize perching locations and electrocution hazards to birds, except where undergrounding would create potential for serious erosion (e.g., crossing steep canyons) or other serious impacts that could be avoided with overhead lines.

b) All overhead collection lines shall be spaced to minimize the potential for raptor electrocution using the latest APLIC (2006) guidelines for line spacing. Further, construction and work procedures shall be consistent with the APLIC guidelines "*Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*."

c) WTGs with low rotational speed (approximately 10 to 23 revolutions per minute [RPM]) and tubular towers shall be used. WTG blades shall not rotate when the WTG is not in operation.

[10] Note: These provisions are applicable only to 34.5 KV collection lines at the project site. Avoidance and Protection Measures for the proposed 115 KV PG&E power line are covered separately in Section 2.8.5.

d) All permanent meteorological towers shall be unguyed.

To reduce impacts from lighting on WTGs and facilities Mitigation Measure LU-1 requires compliance with FAA regulations but also requires that lighting shall not exceed those requirements and regulations.

Plan Requirements: These measures shall be printed on Project plans. The Applicant shall provide the County final plans including design element plans for review and approval.

Timing: This measure shall be implemented throughout the first and all subsequent construction phases.

MONITORING: County staff will inspect the Project plans and site to ensure compliance with this measure as appropriate (*Addresses Impact BIO-10 and 11)*.

Mitigation Measure Bio-16: Monitoring and Adaptive Management Plan (for Impacts Bio-10, Bio-11, Bio-12):

A Monitoring and Adaptive Management Plan is required, due to the uncertainty of the project's operational impacts on protected and special-status bird and bat species. The Plan shall be developed and implemented in an effort to provide maximum feasible mitigation for those impacts. Monitoring studies of bird activity and fatalities at the site shall be required to collect information on bird activity and fatalities caused by wind farm operations. In addition, an Adaptive Management Plan (AMP) shall be implemented if the bird or bat mortalities trigger specified thresholds.

The County will enforce the following measures unless CDFG adopts them as part of a Sec. 2081 incidental take permit or Sec. 1602 streambed alteration agreement.[11,12] In reviewing and approving the final plan and applying the required measures, the County will consult with CDFG and USFWS, as appropriate.

The Plan shall be prepared by a County-approved biologist and be subject to County approval. The Plan shall include outlined in subsections 16.a to 16.d below, which comprise the following components:

- **Before-after/Control-impact (BACI) Study.** Required study to compare pre- and post-construction bird use on the site.
- **Bird/Bat Mortality Study.** Required study to estimate bird and bat mortality rates during wind farm operations and to identify WTGs causing unanticipated levels of mortalities.
- **Reduce Prey Base Near Turbines.** Program to reduce the densities of burrowing mammals in the Project area, for the purpose of reducing the attraction of raptors to the Project area.
- **Adaptive Management Program.** Additional mitigation measures to be required if specific thresholds of bird or bat mortality are reached.

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11 Section references are to sections of the California Fish and Game Code.

12 If CDFG, as a Responsible Agency, enforces Mitigation Measure Bio-Wildlife-15, the County would not be involved in oversight or monitoring. The measure is written assuming it is under County jurisdiction, but if CDFG assumes responsibility references to the County would be replaced with CDFG.

Mitigation Measure BIO-16a: Before-After/Control-impact (BACI) Study.

Conduct BACI surveys under direction of a County-approved biologist. The purpose of the BACI surveys is to compare pre- and post-construction bird use on the site; to assess the effects of the project on avian species; to assist in determining whether additional mitigation elements are necessary; and to collect research data to better understand wind power industry impacts and provide regulatory agencies with data for future projects. Study reports shall include estimates of average bird usage on the site and information on the location of species within the site, flight elevations and patterns of activity, and WTG avoidance behavior. The study data and reports shall be provided to the County for review. The surveys shall be conducted from the time of project approval through each project construction phase and for two years following first delivery of power for that phase.

The methodology shall include methods for interpreting and summarizing the data, and the contents, format and schedule for reports. The methodology should follow the recommendations of the CEC Guidelines (2007)[13], insofar as feasible without causing delays to the project construction schedule or start of operations. The methodology may incorporate the Applicant's current BACI methods as appropriate and explain any substantive changes between the studies currently being conducted by the Applicant and the methodology proposed for approval. The methodology could be modified during the course of the BACI study, with concurrence of the County and project operator.

Mitigation Measure BIO-16b: Bird/Bat Mortality Study.

Conduct a bird and bat mortality study under direction of a County-approved biologist. The purpose of mortality surveys is to estimate mortality rates for different species on the site attributable to collisions with WTGs and to identify individual WTGs or groups/strings of WTGs that cause unanticipated levels of mortality. The information will be used to determine whether the mortality thresholds of the Adaptive Management Plan (see AMP, below) have been reached. In addition, the collected data will add to the body of knowledge to provide regulatory agencies with data for future projects. Brief quarterly reports including tabulated search data and annual reports including analysis of the year's data shall be prepared. The study data and reports shall be provided to the County for review. Monitoring shall be conducted for the first full 2 years after all WTGs are in operation for each project construction phase. Additional years of monitoring could be required if the mortality of special status bird and bat species exceeded thresholds (see AMP, below).

The general design of the study should follow recommendations of the CEC Guidelines (2007), or improved methodologies if appropriate, including methods for carcass search surveys, scavenger studies, evaluation of researcher efficiency, data analysis and reporting methodology. Specifically, carcass searches shall occur once every two weeks at 30% of the WTGs, as recommended in the CEC Guidelines. Reports shall include mean estimated fatalities and 90% confidence intervals for species or appropriate bird and bat groups. The plan shall include training of project operations staff in handling and reporting avian fatalities encountered in the course of their regular activities. The selection of which WTGs to monitor may be adjusted from year to year (or as appropriate).

[13] California Guidelines for Reducing Impacts To Birds And Bats From Wind Energy Development (2007)

Sampling methodology and sample locations to be approved by the County. If the AMP were triggered by excess fatalities, the frequency or design of carcass searches could be modified, as provided in the AMP.

Mitigation Measure BIO-16c: Reduce Prey Base Near Turbines.

Conduct a program under direction of a County-approved biologist to reduce the densities of California ground squirrels, rabbits, and other small mammals in the Project area. Limiting the number of burrowing mammals is intended to reduce the attraction of raptors to the Project area, and thus lower the potential for mortality resulting from collisions with WTGs and power lines on the project site. The program plan should emphasize, but not be limited to existing, mapped small mammal colonies. The plan shall be subject to County approval. Brief quarterly reports including the study data shall be provided to the County for review. The reports may be provided electronically. The program shall begin during the construction phase and continue for 2 years of Project operation. The County could modify or discontinue the program if new information indicates it is ineffective or harmful.

Minimum program elements:

a) Monitoring within the permanent disturbance area around WTGs and collection line pad locations for small mammal (including California ground squirrel) activity. If burrows are found at the pads, those holes shall be filled. Pad overhangs shall be filled with soil. Gravel shall be placed in a perimeter at least 5 feet out from the edges of the pad to discourage small mammals from burrowing.

b) Removal of accumulated material under and near WTGs and collection line power poles, such as piles of rocks from construction and extra equipment or parts. Such accumulated material may attract prey for raptors such as California ground squirrels and brush rabbits.

c) Implementation of other feasible measures to control small mammal populations could be required, based on recommendations of the biologist and results of the Bird/Bat Mortality Study, described below.

Mitigation Measure BIO-16d: Adaptive Management Plan (AMP).

Develop an Adaptive Management Plan (AMP) to be activated in the event that bird or bat mortality exceeds specified threshold levels. The AMP provides a structured framework to guide response, in case project operations result in excessive mortality that was unforeseeable at the time of EIR certification and project approval. The AMP defines two impact categories and corresponding response options, as described below. Table 3.5.7-2 summarizes the thresholds that will trigger Level 1 and Level 2 actions by the County. Level 2 actions may also be triggered by annual mortality statistics, as described below.

Level 1 – First Alert and Enhanced Survey.

If recorded bird or bat fatalities reach the threshold criteria for Level 1 (Table 3.5.7-2), the project operator shall notify the County within 24 hours and make any required notifications to CDFG and USFWS.

The carcass search frequency shall be increased in the vicinity of the specific WTG(s) suspected of being responsible, to determine whether WTG(s) are at cause and to better understand the causal factors and circumstances contributing to the fatalities. Carcass search patterns and extent may be modified, survey frequency may be increased up to twice per week, and supplementary field observations may be required for up to six months, if necessary to assess the pattern or frequency of fatalities. The additional information would facilitate a more informed response in the event that mortality levels reach Level 2. The project operator shall provide wind velocity data for the area of the fatalities if the County determines that the data are important for assessing the cause of fatalities or for designing enhanced search patterns.[14] Details of the enhanced monitoring program will be subject to County approval.

Mortality monitoring shall conclude if fatalities remain below Level 2 thresholds for 2 consecutive years. If Level 2 thresholds are reached or exceeded, the County may require additional year(s) of monitoring until fatalities fall below Level 2 thresholds.

Level 2 – Response Options.

If recorded bird or bat fatalities reach the threshold criteria for Level 2 (Table 3.5.7-2), the project operator shall notify the County within 24 hours and make any required notifications to CDFG and USFWS. The Level 2 thresholds might also be reached based on the annual mortality statistics, which would be reported in the annual reports of the mortality study.

The cause of bird and bat fatalities at wind farms is often indeterminate, due to the condition of the carcasses, activity of scavengers, and wide radius of land-fall. The County shall require Level 2 response options only if it determines with reasonable certainty that the fatalities are caused by wind farm operations and which WTGs are at cause. The determination must be based on substantial evidence. Changes in bird use of the site observed in the BACI studies should be taken into account in the evaluation of impacts and response options.[15] Measures required must be reasonable, feasible, and specifically targeted to reduce fatalities at the particular problem WTG(s).

The following Level 2 response options should be considered by the County, in consultation with CDFG, and implemented if determined to be feasible and likely to reduce or compensate for further fatalities similar to those that triggered the Level 2 response. Such measures shall not be undertaken without appropriate environmental review, if applicable. Less extreme, less costly measures shall be exhausted before more extreme or costly measures are required.[16]

1. Habitat modifications to make the site less attractive to impacted species, including intensified efforts to reduce the prey base (e.g., ground squirrels), weed control, grazing management.

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14 The data may be provided as hourly average wind speed and direction in the project area, or as otherwise agreed with the County. If the data is considered proprietary, it may be provided under a confidentiality agreement with the County.

15 One of the primary objectives for operations monitoring stated in the CEC Guidelines is to determine whether the avoidance, minimization, and mitigation measures implemented for the project were adequate or whether additional corrective action or compensatory mitigation is warranted.

16 If excessive fatalities of endangered or protected bird or bat species, as determined by CDFG or USFWS, were to occur, these agencies could require curtailment of operations of the offending WTG(s). In such a case, any negotiations with the Applicant or possible enforcement actions would be the responsibility of CDFG and USFWS, and not the County.

2. Project modifications. Modifications must have a sound scientific basis, but need not be proven definitely effective, such as installing "dummy towers" at end of WTG rows; painting of WTG blades on selected WTGs to increase their visibility; audible warnings on towers; or other new or experimental technologies to divert birds/bats or react to the presence of at-risk species. If appropriate, a modification may be implemented as a controlled experiment to test efficacy in reducing mortality.
3. Implementation of a mitigation research component at the LWEP site at an appropriate department of a local college or university (e.g., Environmental Science or Wildlife Biology department); species-related research to improve knowledge of a species and conservation needs.
4. Contribution to a program to enhance recovery of the special status species impacted by the project; contribution to research program on wind project impacts to birds and bats.

If any of these measures are implemented, the project operator, in consultation with the County, should implement an effectiveness evaluation program to assess the intended and unintended effects of the measure. The measure should be reversed, discontinued, or modified if little or no reduction in mortality is demonstrated within a reasonable time or if it leads to unintended, adverse consequences, as determined by the County.

Plan Requirements and Timing: Approval of the entire Plan by the County, in consultation with CDFG, is required prior to land use clearance for the first and subsequent project phases.

MONITORING: The County will ensure that the BACI, mortality monitoring, and prey base reduction measures are implemented. The County will review all monthly, quarterly, and annual reports provided pursuant to the Avian and Bat Mitigation Plan and ensure that appropriate adaptive management measures are undertaken if AMP thresholds are reached (*Addresses Impact BIO-10, 11, and 12)*.

These thresholds apply to the actual numbers of carcasses attributable to project facilities or operations recovered in the regular weekly carcass searches. However, incidental finds of carcasses attributable to the project of federally or state listed bird or bat species or California FPS shall also count toward the thresholds. The numbers assume the carcass searches comprise a 30% random sample of the 65 WTG locations, or 20 WTGs. If the number of WTGs constructed is substantially different or a different number of WTGs is sampled, the thresholds shall be adjusted accordingly.

TABLE 3.5.7-2.
Adaptive Management Threshold Criteria (Actions required if number of fatalities caused by WTGs reaches these thresholds in any consecutive 12-month period)

	Level 1	**Level 2**
	• Notify County • Increase carcass search frequency in specified area(s)	• Notify County • Adaptive measures to reduce fatalities
Federal or Calif. listed species or Calif. Fully Protected Species	1 fatality	2 fatalities
Non-listed Sensitive Species (CSC, WL, and Local Species of Concern)	2 fatalities (birds) 2 fatalities (bats)	3 fatalities (birds) 3 fatalities (bats)
Non-sensitive Raptors	3 fatalities	5 fatalities

Alternative Level 2 Threshold Criteria Based on Annual Mortality Statistics

In addition, Level 2 measures shall be triggered if the estimated, project-wide mortality rates of non-listed sensitive species, for fatalities attributable to the project, adjusted for searcher efficiency and scavenger removal, exceed 0.08 per WTG per year (at the 90% confidence level[17]) in any 12-month period. The equivalent Level 2 trigger for non-sensitive raptors shall be 0.15 fatalities per WTG per year. Level 2 measures shall also be triggered by large-scale mortality of non-sensitive bird or bat species at thresholds of 4 and 12 fatalities per WTG, per year, respectively.

Basis of Thresholds

Given the current state of the science, mortality rates of birds and bats at proposed wind sites cannot reliably be predicted, except in the case of new wind farms nearby existing ones in similar settings. Mortality of passerines due to collisions with WTGs is not strongly correlated with bird usage of a site, and many interrelated and species-dependent factors contribute to raptor mortalities, apart from number of birds at the site. The relationship between bat usage and fatalities is not understood. (CEC Guidelines, 2007)

Listed and Sensitive Species

The Level 1 threshold for federally or state listed species and California FPS was set at one individual fatality, due to the required coordination with CDFG or USFWS in case of a single fatality. A second fatality within a year would trigger Level 2. The necessary additional mitigation would be provided by adaptive management options, which the County would require, as appropriate. Thresholds for non-listed sensitive birds or bats were set higher than for listed species, in keeping with their lower protection status.

Non-Sensitive Raptors

The estimated average raptor mortality rate for wind farms in the U.S. is 0.006 per WTG per year; the overall average rate in the U.S. is 0.033 per year.[18] Maximum raptor mortality for modern wind farms in the U.S. outside California is estimated to be 0.07 raptors in the Northwest. Raptor mortality at wind farms in California ranges from 0.01 to 0.24 fatalities per WTG per year (average of 0.15 per WTG or 1.37 per MW per year).[19] This data is based on older wind farms, which include large numbers of small-sized WTGs (hence the high mortality rate expressed on a per-MW basis). The high raptor mortality at these facilities is associated with high raptor use. The results of the winter 2006-07 avian survey at the Lompoc Wind Energy project site indicate raptor use of the site may be slightly higher than that of most wind projects in U.S., but much lower than projects in Solano County and the Altamont Pass Wind Resource Area.[20] However, raptor mortality rates may prove to be lower than expected on the basis of observed raptor use at LWEP, because the most

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17 The estimates of adjusted mortality involve complex statistics due to the small sample sizes and uncertainty in adjustments for searcher efficiency and scavenger removal bias. The estimated rates are approximate and involve uncertainty that can be estimated as a confidence interval using Monte Carlo methods or other appropriate statistical approach. (For example, see Stateline Wind Project Wildlife Monitoring Final Report, FPL Energy, Stateline Technical Advisory Committee, 12/04. p.4 *et seq*.) The Level 2 Thresholds shall be triggered by estimates of the annual, site-wide mortality rate only if the stated threshold rate is exceeded with 90% confidence, based on a 1-sided statistical hypothesis test.

18 Erickson, W.P., et. al, *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons of Avian Collision Mortality in the United States*, 10/01, pp. 2 & 39.

19 National Wind Coordinating Committee, Wind Turbine Interactions with Birds and Bats: A summary of research results and remaining questions, 11/04, p.4.

20 CEC Guidelines, 2007, Appendix G, Figures 1 and 4.

frequently observed raptors at the site are turkey vultures, which are known to have low mortality rates at wind farms.

Based on this information, it is expected that raptor mortality rates at the project will be less than 0.10 fatalities per WTG per year. This amounts to approximately 6-7 raptor fatalities per year expected for the entire site (65 WTGs), or 2 for a random sample of 20 WTGs. The Level 1 threshold for non-sensitive raptors is set at 3 fatalities per year for the 20 WTGs sampled. The Level 2 threshold is set at 1½ times the Level 1 threshold, which rounds to 5 fatalities per year for the 20 WTGs sampled.

3.5.7.6 Residual Impacts

Implementation of mitigation measures described above would reduce most impacts to biological resources to less than significant levels, with the exception of Impact BIO-10, Avian and Bat Collisions with WTGs, which is considered significant and unavoidable *(Class I)*.

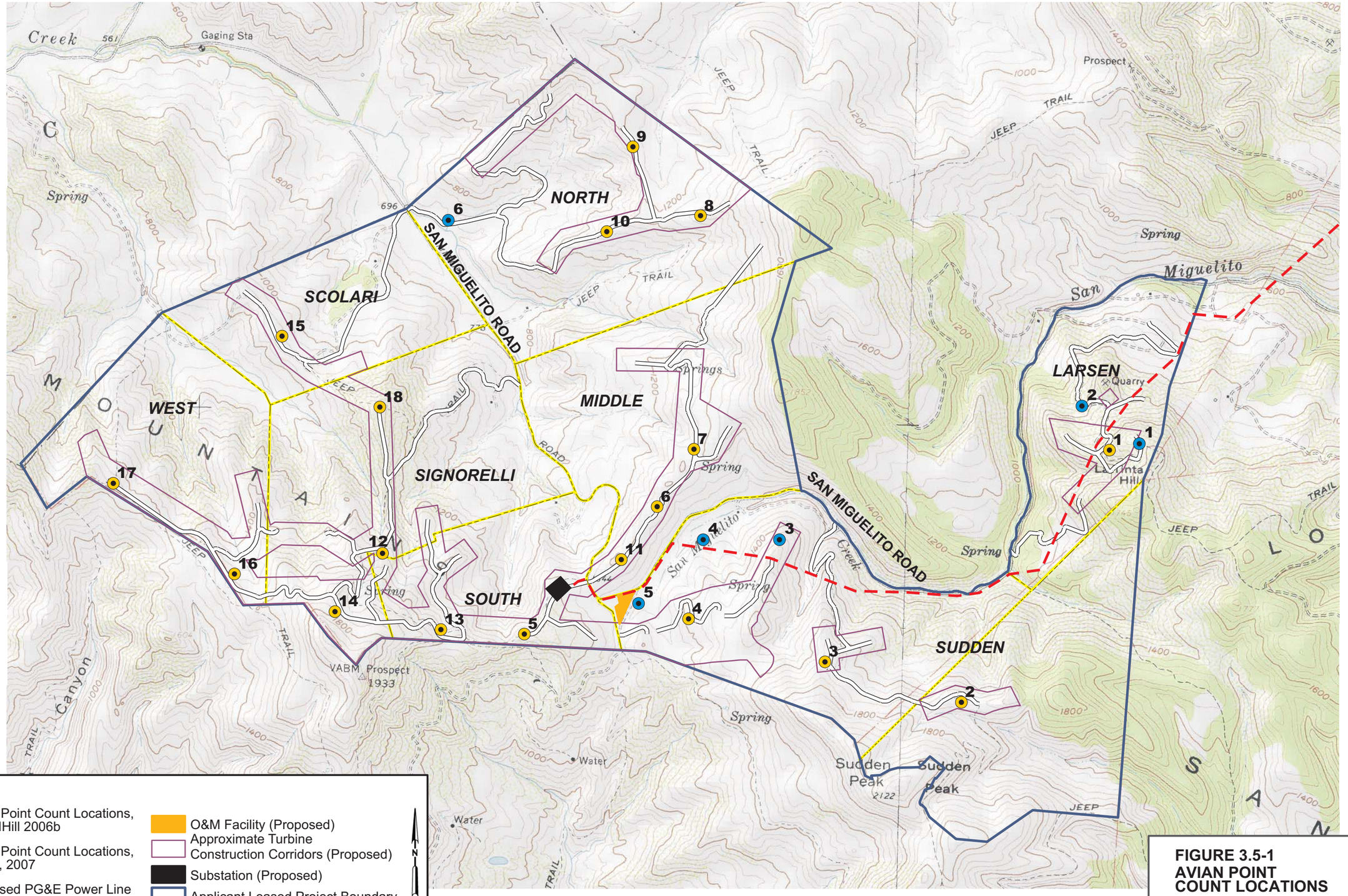

FIGURE 3.5-1
AVIAN POINT COUNT LOCATIONS

LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA
Source: Adapted from figure prepared by CH2MHill

Agricultural Field
Central Coast Scrub
Central Coast Riparian Scrub
Eucalyptus
Annual Grasslands
Mosaic
Native Grasslands
Oak Woodlands

NORTH
SCOLARI
WEST
MIDDLE
SIGNORELLI
SOUTH
SUDDEN
LARSEN
SAN MIGUELITO ROAD
SAN MIGUELITO ROAD
Gaging Sta
Spring
JEEP TRAIL
JEEP TRAIL
Prospect
Spring
Miguelito
Spring
Spring
VABM Prospect
1933
Water
Water
Peak
2122
Canyon
N C E P C I O N
S A N

LEGEND

- Proposed PG&E Power Line and 100' Buffer
- Roads (Proposed)
- Lot Boundary Lines
- State Coastal Zone Boundary
- Turbine Temporary Impact
- O&M Facility (Proposed)
- Staging Areas (Proposed)
- Approximate Turbine Construction Corridors (Proposed)
- Substation (Proposed)
- Applicant Leased Project Boundary
- Stream Corridor

0 3,000 Feet

N

FIGURE 3.5-2
PLANT COMMUNITIES AND WILDLIFE HABITAT WITHIN THE PROPOSED LWEF SITE
LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA
Source: Adapted from figure prepared by Sapphos (2008).

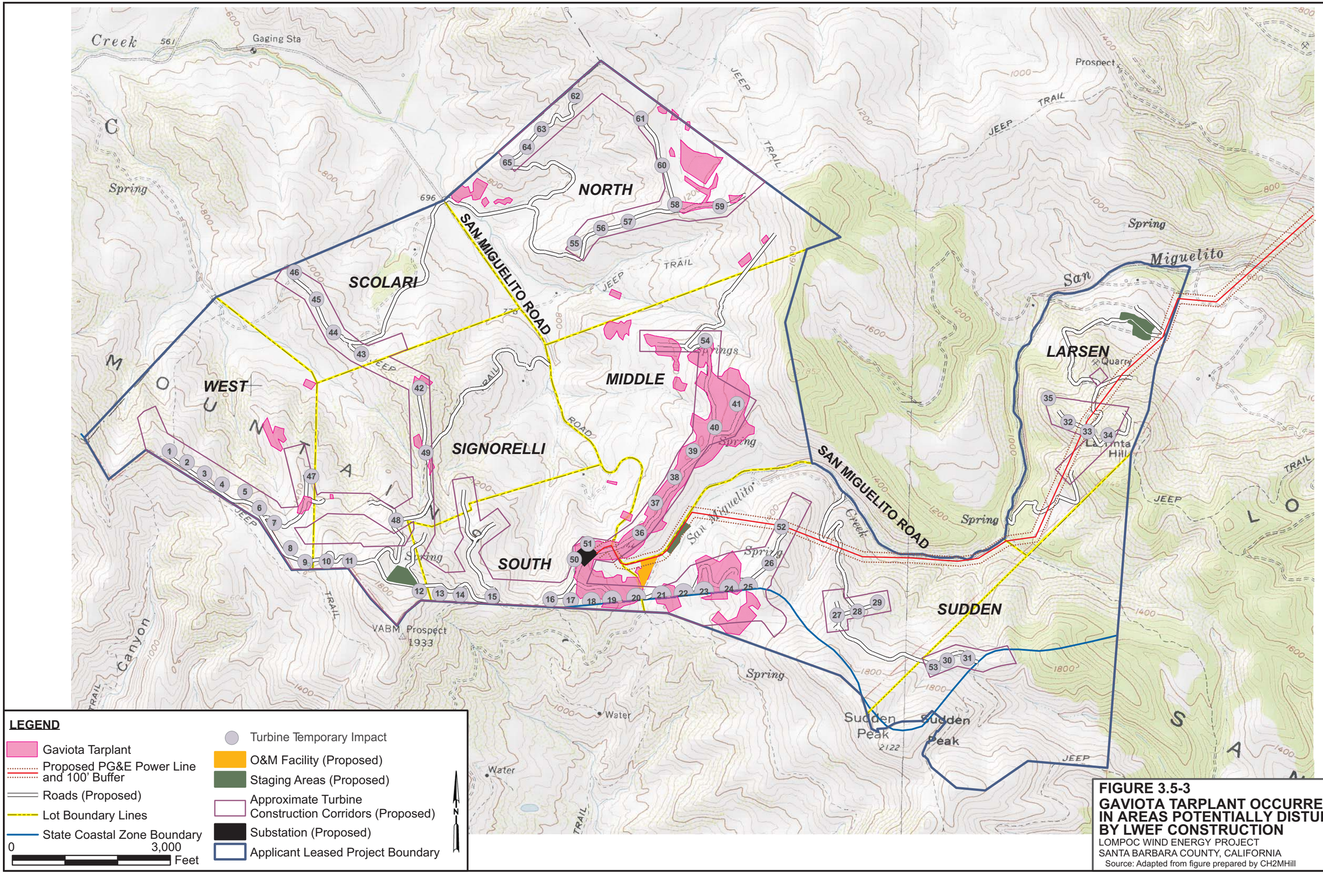

FIGURE 3.5-3
GAVIOTA TARPLANT OCCURRENCE IN AREAS POTENTIALLY DISTURBED BY LWEF CONSTRUCTION
LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA
Source: Adapted from figure prepared by CH2MHill

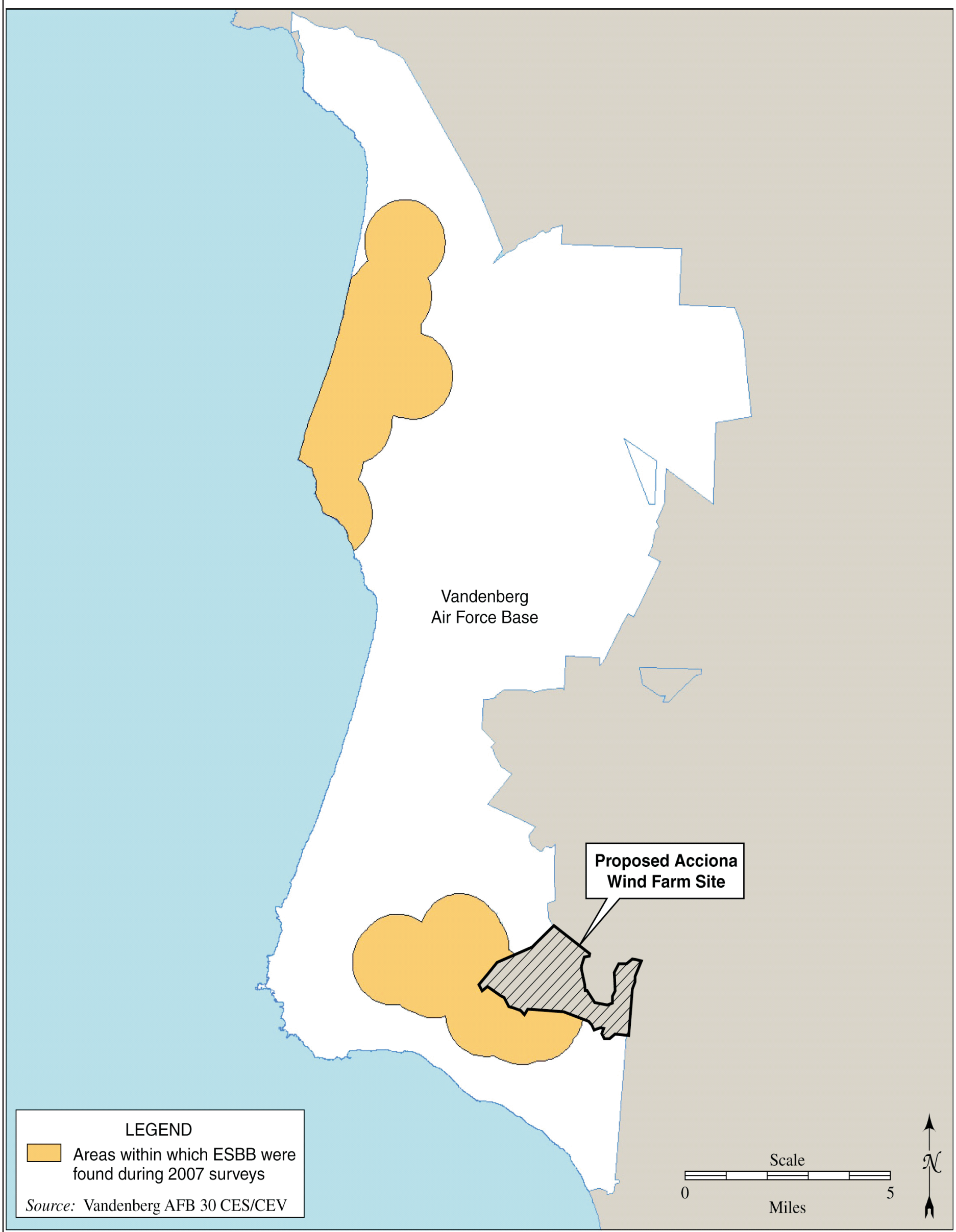

FIGURE 3.5-4
AREAS WITHIN WHICH EL SEGUNDO BLUE BUTTERFLIES (ESBB) WERE DOCUMENTED ON VANDENBERG AIR FORCE BASE DURING THE 2007 FLIGHT SEASON

LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA

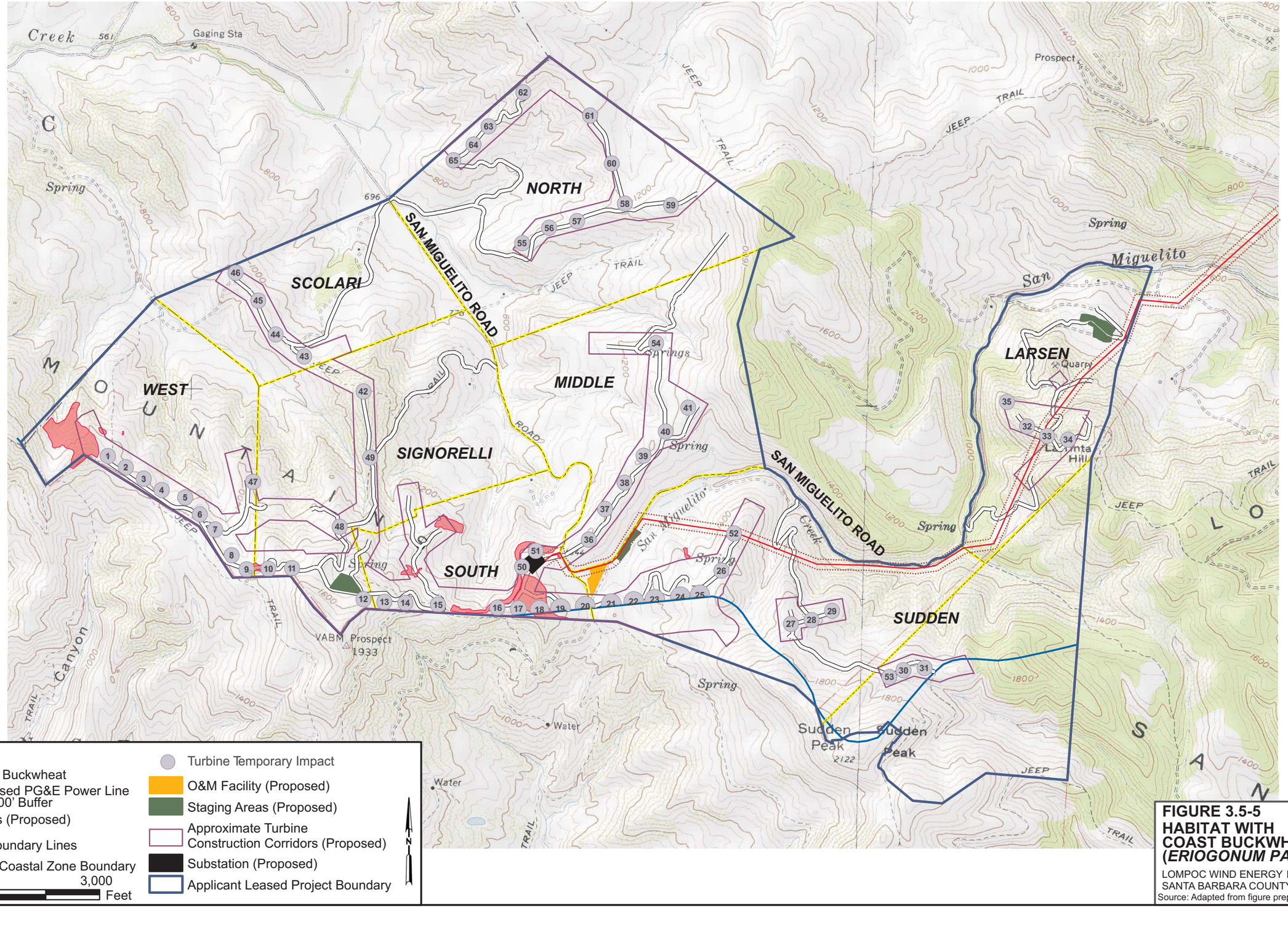

FIGURE 3.5-5
HABITAT WITH COAST BUCKWHEAT (*ERIOGONUM PARVIFOLIUM*)

LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA
Source: Adapted from figure prepared by Sapphos (2008).

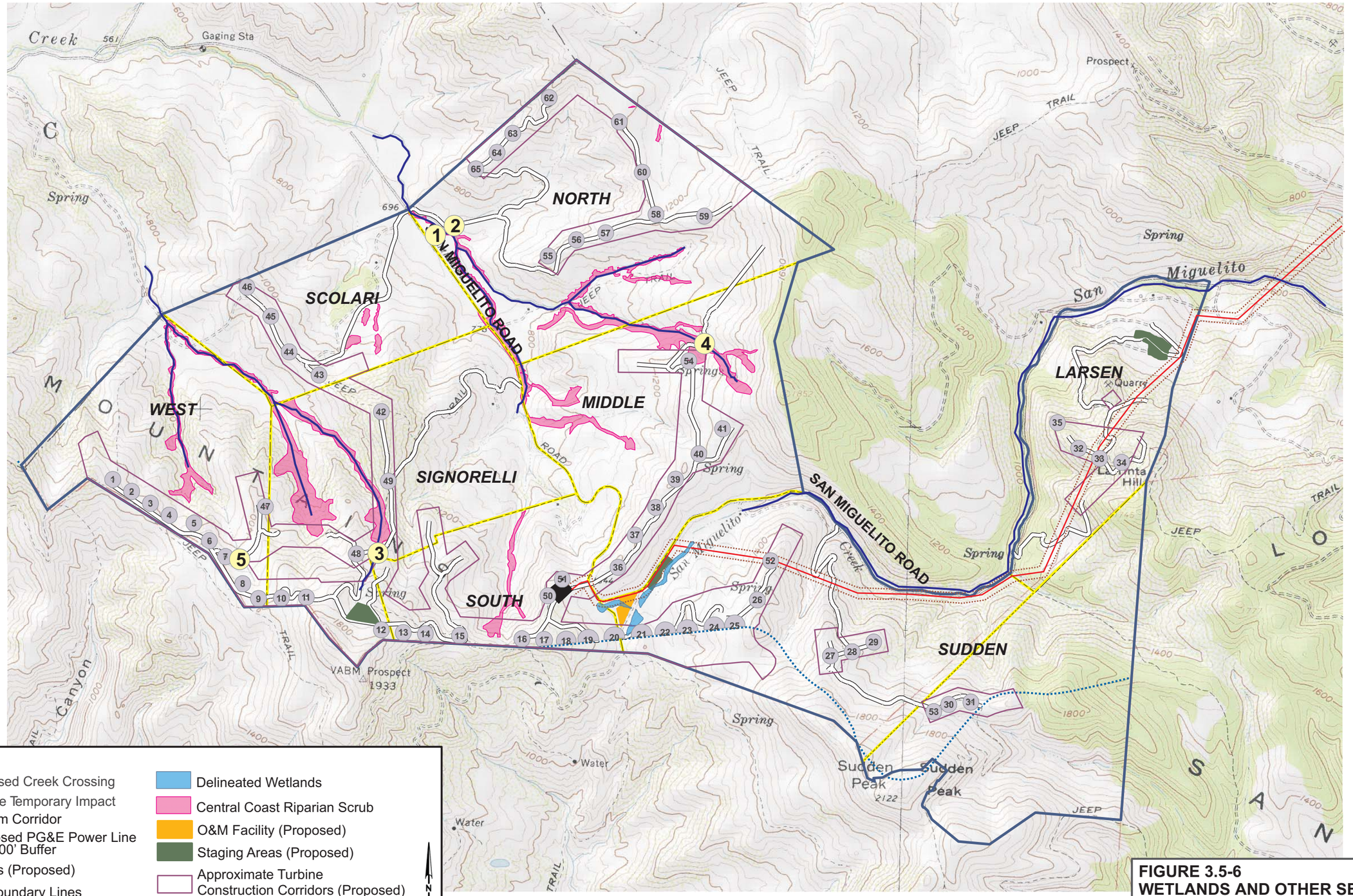

FIGURE 3.5-6
WETLANDS AND OTHER SENSITIVE HABITATS WITHIN THE PROJECT AREA
LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA

Source: Adapted from figure prepared by Sapphos (2008).

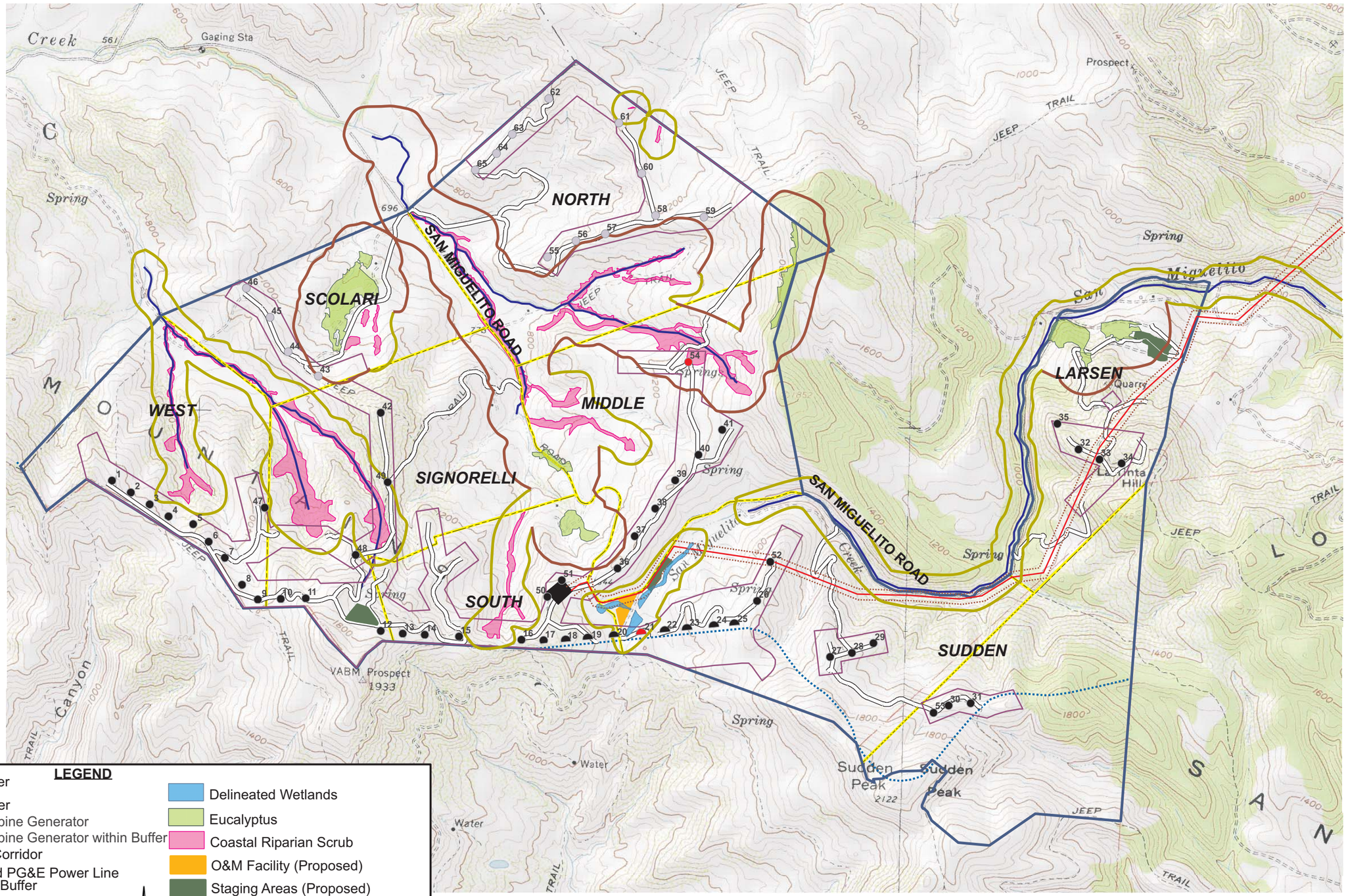

FIGURE 3.5-7
BIOLOGICAL BUFFERS AROUND SENSITIVE BIOLOGICAL FEATURES
LOMPOC WIND ENERGY PROJECT
SANTA BARBARA COUNTY, CALIFORNIA