

September 23, 2013

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***Subject: Response to Comments for the Ocotillo Wells Solar Major Use Permit  
PDS2012-3300-12-004 – Biological Section of the Initial Study/Mitigated  
Negative Declaration***

Dear Ms. Gungle:

Dudek is providing this letter report to respond to comments related to the biological sections of the Initial Study (IS) and Mitigated Negative Declaration (MND). This letter report is intended to provide clarification of methods, results, impacts analysis, and mitigation provided in the Biological Resources Report for the Ocotillo Wells Solar Project (BRR) (Dudek 2013).

## **PLANTS**

### **Rare Plant Surveys**

Rare plant surveys were planned for the spring and summer of 2012 in order to determine the presence or absence of rare plants on the Ocotillo Wells Solar Project site (project site). The 2011/2012 winter rainfall was below average for the region. Between October 2011 and March 2012, there were 2.12 inches recorded at the Borrego Desert Park weather station (WRCC 2013). For comparison, the same period in 2008/2009 had 4.14 inches; 2009/2010 had 7.51 inches; and 2010/2011 had 6.96 inches. Dudek checked the Anza-Borrego Desert State Park (ABDSP) website for information on the spring blooms and confirmed that flower fields were blooming in low numbers that year (California Department of Parks and Recreation [DPR] 2012). DPR also notes that winter rains are important for bringing forth spring wildflowers, which are the primary focus of the spring survey (DPR 2013a). A reference population check was conducted on March 2, 2012. The reference population check was conducted to check areas where known rare plant populations have been documented that also have potential to occur on the project site, as well as assess the annual plant growth on the project site. No annuals were observed growing on either the reference site or on the project site during the survey. Therefore, focused plant surveys conducted in the spring of 2012 were determined to be unlikely to document representative

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annual plant species on the project site, and negative survey results for special-status species would not be conclusive. This issue was discussed with the County and they concurred with following the alternative methodology provided in the County’s guidelines, described in more detail below.

Some years, the desert experiences summer monsoon rain, which plays an important role in keeping desert plants alive (DPR 2013a). While a summer rare plant survey pass was originally scheduled based on the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), it was determined that even with summer rains, the lack of rainfall during the winter would make it unlikely to detect new species. Dudek proceeded with the alternative methodology provided in the County’s guidelines, described in more detail below. It should also be noted that during vegetation mapping and the jurisdictional delineation, all plant species observed were recorded. This methodology is described in detail in the BRR (Dudek 2013), and included walking 100% of the project site and recording all plant species observed. Therefore, any perennial special-status species would have been detected.

Rainfall in the winter of 2012/2013 was even lower than winter 2011/2012 (1.42 inches between October 2012 and March 2013); additionally, the ABSDP website stated, “this is the second year of lower-than-average rainfall” (DPR 2013b). Therefore, focused plant surveys conducted in the spring of 2012 were determined to be unlikely to document representative annual plant species on the project site, and negative survey results for special-status species would not be conclusive. Therefore, Dudek proceeded with the alternative methodology provided in the County’s guidelines, described in more detail below. With the lack of substantial rainfall between 2011 and 2013 and the likelihood that negative results in either 2012 or 2013 would not be determinative as to the presence or absence of special-status plant species, and in an effort to continue with the biological impacts analysis, a detailed analysis of the potential for species to occur was conducted by Dudek botanist Megan Enright, a San Diego County-approved CEQA consultant for biological resources (County 2011a) (see Appendix 1 for resumes).

### ***Survey Methodology and Protocols***

The County of San Diego (“County”) provides guidance for conducting surveys: “Section 2.2.2 – Content” of the *County of San Diego Report Format and Content Requirements: Biological Resources* provides specific information regarding literature review and field survey methodology (County 2010a, pages 7–9). As reported in the BRR, Dudek follows the County’s suggested literature review of 1) a soils map and 2) a database query of potential special-status species recorded in the California Department of Fish and Wildlife (CDFW) California Natural

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Diversity Database (CNDDDB), and U.S. Fish and Wildlife Service (USFWS) geographic information system (GIS) records for the project vicinity (County 2010a). Additionally, plant records available in the San Diego Natural History Museum's (SDNHM) Plant Atlas were reviewed (SDNHM 2012).

Prior to conducting the reference population check and in preparation for the 2012 spring survey pass, Dudek reviewed the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), which recommends consulting CNDDDB and a Biogeographic Information and Observation System (BIOS) for known occurrences of special-status plants and natural communities (CDFG 2012b). The CNDDDB (CDFG 2012a); California Native Plant Society (CNPS) (CNPS 2012); and the plants identified in the County's Pre-Application Summary Letter (County 2011b) were reviewed. The BIOS results were reviewed but no additional species were found.

The County also describes methods for conducting field surveys in order to record and map biological resources. Moreover, the guidelines provide additional guidance in circumstances where field surveys were not conducted. Specifically, the guidelines state the following (County 2010a, page 8):

In some cases, the Director of Planning and Land Use, Public Works, or Parks and Recreation may choose to postpone or suspend some seasonal focused surveys during a particular calendar year if inaccurate or inconclusive survey results are expected due to unsuitable environmental conditions, such as fires, floods, or droughts. In these cases, staff will work with project applicants to determine the best course of action. Options may include one or more of the following, determined on a case-by-case basis:

- Relying on previous year surveys
- Resurveying the property the following year (assuming proper environmental conditions)
- Using the County's Species Predictive Model to determine presence/absence (access to data from this model is coordinated through the Department of Planning and Land Use (DPLU) staff biologist)
- Reviewing records from the CNPS, CNDDDB, San Diego Plant Atlas, or other reliable sources

In July 2012, Dudek and J. Whalen Associates (JWA) met with the County and discussed the lack of surveys due to limited rainfall. The County agreed to the approach of reviewing multiple

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resources to determine which special-status species have potential to occur and conservatively analyzing impacts to these potentially-occurring species.

In order to move forward with the environmental baseline and analysis, four resources were reviewed to determine the potential for special-status plants to occur on site and conservatively analyze impacts to potentially occurring plants: 1) CNDDDB (2012); 2) CNPS (CNPS 2012); 3) San Diego Plant Atlas (SDNHM 2012); and 4) the plants identified in the County's Pre-Application Summary Letter (County of San Diego 2011).

### ***Habitat Suitability***

Habitat suitability was determined using the vegetation communities, soils, and elevation that the special-status species are known to occur on; and known population ranges documented in CNPS and the University of California, Berkeley's, Jepson Flora Project (2012), and habitat types described in CNDDDB. The life history characteristics of the special-status plant species generated from the above-listed resources were then compared to the project site, and potential to occur for each species on the comprehensive list was determined to be either High, Moderate, or Low Potential, or not expected to occur. The potential to occur is based on a variety of resources for each species, including NatureServe (2011), information on federally-listed species in the Federal Register, CNDDDB (2012), CNPS (2012), and San Diego Plant Atlas (SDNHM 2012).

Habitat suitability models were generated for plant species determined to have high or moderate potential to occur. There are general habitat types listed in CNPS for special-status plant species. These habitat types can include a variety of alliances or associations, which means that using the habitat types provided in CNPS is more conservative than limiting suitable habitat for plants to very specific vegetation communities. For example, Sonoran desert scrub, Mojavean desert scrub, and desert dunes are general habitat types that include more vegetation communities than are present on site but would still be used to determine suitability. Because of the low diversity of vegetation communities, soils, and elevation on site, the habitat models are relatively simple. As clearly stated in the BRR, "The habitat requirements for each of the special-status plant species were compared with the project-specific vegetation community maps to identify the location and acreages of suitable habitat for each special-status species present on site" (Dudek 2013). The habitat models are attached as Appendix B.

For determining whether a species could occur based on elevation and geographic distribution, a buffer of 50 feet was used for elevation (for an additional 100 feet in elevation range consideration); in addition to the records provided in CNDDDB and CNPS, geographic distribution was based on floristic provinces and ecoregions (Jepson Flora Project 2012). The

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Jepson Flora Project is a comprehensive resource for California plant species and is widely adopted by botanists. As noted on the Jepson Herbarium website, “the Jepson Flora Project brings together all of the floristic references and data of the Jepson Herbarium. Resources of the Flora Project are directly linked to the Consortium of California Herbaria, CalPhotos, the California Native Plant Society, California Exotic Pest Plant Council, USDA-Plants database, and many other external sites” (<http://ucjeps.berkeley.edu/jepsonflora/index.html>).

While plants can occur in areas outside of their documented range or known occurrences, plant species do have specific requirements and limitations that can be used to estimate their potential to occur on site. For this reason, the potential to occur table (see Appendix C of the BRR) provides a range from not expected to high potential, so that it does not discount potential for some species to occur on the Project site, even though it is outside their known elevation range or current geographic distribution. As described in the potential to occur tables for special-status plants, plants were not specifically included or excluded solely based on a single factor. Rather, all factors were taken into consideration to make a final determination of not expected, low, moderate, or high potential to occur.

### **Summary**

In summary, while field surveys for rare plants is the preferred method and standard to determine the presence or absence of species, Dudek was unable to conduct surveys that would have been accepted by the County or federal and state agencies based on the environmental conditions (multi-year drought) described above. Rather, Dudek botanist Megan Enright conducted a comprehensive assessment of species with potential to occur on site and conservatively analyzed potential impacts to all areas that could support these species on site. The resources used to prepare the potential to occur table and the analysis methods are clearly described and adequate to determine an environmental baseline under the California Environmental Quality Act (CEQA) and the County of San Diego’s guidelines (County of San Diego 2010a-b). In addition, no additional plant species were described as having potential to occur in the comment letters.

### **Off-Site Mitigation for Plants**

The applicant met with the County and other agencies, including CDFW and USFWS, on several occasions to discuss using the applicant-owned mitigation parcel located adjacent to the project site in Imperial County. They agreed to accept the site as mitigation to offset potential direct and indirect effects associated with the proposed project. The Desert Renewable Energy Conservation Plan (DRECP) Interim Mitigation Strategy (Section 8.9, CDFG 2010) will be utilized to ensure the project will be consistent with conservation objectives and to solicit

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recommended mitigation measures or project alternatives should there be a conflict between the project and the DRECP's conservation goals and objectives. The Interim Mitigation Strategy is intended to provide guidance for the implementation of mitigation actions and ensure proposed projects do not preclude the implementation of the DRECP. The proposed project boundary is located in San Diego County, along the Imperial County line, and the preferred mitigation site is located adjacent to the site within Imperial County. The DRECP provides the only regional conservation planning mechanism to address cumulative biological impacts for a project associated with multiple county boundaries.

Therefore, Option 2 described in Mitigation Measure (MM)–4 of the BRR and in Section 2(A)(2)(b) of the MND should be considered when reviewing the mitigation section. The agreement will entail a review of both project-specific and cumulative impacts in both San Diego and Imperial Counties and mitigation measures consistent with the goals described in the Interim Mitigation Strategy. Because the Imperial County mitigation parcel is located adjacent to the project site, it is a preferred mitigation option based on its similar elevation, soils, and vegetation communities. This mitigation parcel is analyzed in terms of its overall habitat and potential to support similar special-status species as the proposed project site (see Appendix E of the BRR). As described in Appendix E, because the mitigation parcel is so similar to the proposed project site, the mitigation site has the same potential to support the special-status plant and wildlife species that have been observed or have moderate or high potential to occur on the proposed project site.

### **California Native Plant Protection Act**

The Native Plant Protection Act of 1977 (California Fish and Game Code, Sections 1900–1913) directed the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. When the California Endangered Species Act was passed in 1984, it expanded on the original Native Plant Protection Act, enhanced legal protection for plants, and created the categories of "threatened" and "endangered" species to parallel the federal Endangered Species Act. The California Endangered Species Act converted all rare animals into the act as threatened species but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act remains part of the California Fish and Game Code, and mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

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California Food and Agriculture Code, Division 23, Chapter 3, Sections 80071–80075, affords protection to desert native plants under the California Desert Native Plants Act passed in 1981. Sections 1925–1926 of the California Fish and Game Code agree to enforce the provisions of the act. The California Desert Native Plants Act prohibits the harvesting, transport, sale, or possession of designated native desert plants, except for scientific or educational purposes (under a permit) or if the person has a valid permit or wood receipt and the required tags and seals. The provisions are applicable within the boundaries of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Protected plants include: all species of the family Agavaceae (ventury plants, nolin, yuccas); all species of the family Cactaceae (cacti), except for plants listed in subdivisions (b) and (c) of Fish and Game Code Section 80072; smoketree (*Psoralea argophylla*; previously known as *Dalea spinosa*); all species of the genus *Prosopis* (mesquites); all species of the family Fouquieriaceae (ocotillo, candlewood); all species of the genus *Cercidium* (palos verdes); catclaw (*Senegalia greggii*; previously under the genus *Acacia*); desert-holly (*Atriplex hymenelytra*); and desert ironwood (*Olneya tesota*), including both dead and live desert ironwood.

### **Plants Pursuant to the California Desert Native Plants Act on the Project Site**

The project site supports several plants that are protected under the California Desert Native Plants Act, including smoketree, western honey mesquite (*Prosopis glandulosa* var. *torreyana*), ocotillo (*Fouquieria splendens* ssp. *splendens*), palo verde (*Parkinsonia florida*; previously under the genus *Cercidium*), catclaw, desert ironwood, and Wiggin's cholla (*Cylindropuntia echinocarpa*). Smoketree, western honey mesquite, palo verde, catclaw, and desert ironwood all occur within the Sonoran wash scrub on site, which is located within project open space.

Per the Food and Agricultural Code Section 80117, the California Desert Native Plants Act does not prohibit a private landowner from lawfully clearing his/her land in the course of developing a project.

### **SWAINSON'S HAWK**

Swainson's hawk (*Buteo swainsoni*) is a small hawk that is known to migrate seasonally over long distances. The annual round trip for this species, from South America (primarily Argentina) up to North America and back, covers up to 12,500 miles and passes through the Southern California and Baja region (England et al. 1997). As described in the BRR, Swainson's hawk has potential to forage over the site based on their migration patterns, ranges, and records in San Diego (Unitt 2004; CDFG 2011). While there is no project-specific data regarding Swainson's hawk use of the project site during migration, project site is located west of the Borrego Valley

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migration corridor where detailed observations of these birds have been taken during their peak migration months in the region (February to April) (Hopkins 2013). Since 2004, during the month of March observers have seen an average of 3,172 Swainson's hawks per year and an average of 4,489 Swainson's hawks per year over the last 3 years (Hopkins 2013). The hawk's breeding range is no longer considered to encompass San Diego County or Eastern Imperial County due to habitat loss and effects of pesticides in its South American range (Unitt 2004). As a result, no nesting pairs are expected to use the project site (Bloom 1980).

Roosting would not be expected due to the lack of trees and cliffs on the project site; however, the BRR recognizes that Swainson's hawk likely migrates through the project site. Regardless of whether the migration pattern and site use of Swainson's hawk is well-documented or not through focused surveys and bird counts within the project site, the impacts to 331.3 acres of potential foraging habitat is already considered a significant impact (see Impact W-6 in the BRR). The additional information on Swainson's hawk use is provided above; however, the number of Swainson's hawks migrating through the area does not change the impacts analysis for Swainson's hawk, which concludes that there are no impacts to listed species in accordance with the County's Guideline 4.1.A; and that the impacts to foraging habitat for raptors is a significant impact per County Guideline 4.1.F (see BRR at page 3-7). Overall, the information provided to the County, as well as the County biologists' own knowledge of Swainson's hawks in San Diego County, was adequate to disclose, analyze, and mitigate Project impacts to Swainson's hawk.

The loss of potential foraging habitat is mitigated through the on-site and off-site preservation of at least 331.3 acres of native vegetation communities. In addition, the project site is located adjacent to ABDSP, which provides large open space for foraging. No specific direct impacts to Swainson's hawk are anticipated.

## **BURROWING OWL**

The single burrowing owl (*Athene cunicularia*) that was noted as having been observed near the project site, was seen by a biologically non-certified project manager unfamiliar with the exact project area perimeter during a site visit. Consequently, the individual burrowing owl could not be positively confirmed by a biologist, and no burrowing owls were observed during the numerous surveys conducted on the project site. In addition, the individual later confirmed that the owl was detected off-site on Bureau of Land Management (BLM) land. Based on data provided in the San Diego Bird Atlas (Unitt 2004), burrowing owls that have been documented near the project site were presumed migrants and winter records are also sparse throughout the County, including near the project site. Three site visits were conducted between December 2011 and February 2012 to

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survey for wintering raptors, including burrowing owl. In addition, a survey was performed in June 2012, specifically focused on burrowing owl and three additional species (see Section 1.3.2 of the BRR). The surveys entailed walking the site and using binoculars to identify species, as well as looking for sign (e.g., owl pellets, burrows, and whitewash).

The majority of CNDDDB records for burrowing owl are located in the agriculture fields of Coachella Valley and Imperial Valley. Burrowing owls were observed on the Ocotillo Wind project site approximately 21 miles south of the project site on the southern side of Coyote Mountains (BLM 2012), which has more diversity in its vegetation structure, and likely more prey base for burrowing owls. Potential prey species for the burrowing owl in this area includes white-tailed antelope squirrel (*Ammospermophilus leucurus*) and kangaroo rat species (*Dipodomys* sp.), as well as lizards and other small prey species. Unitt (2004) notes that round-tailed ground squirrels (*Spermophilus (Xerospermophilus) tereticaudus*) probably provide burrowing owl's burrows in the Borrego Valley. No round-tailed ground squirrels were observed during the surveys and overall burrow density was low based on the observations made during the flat-tailed horned lizard surveys. The project site and immediately surrounding areas are not known to support breeding pairs of burrowing owl.

While the vegetation, burrows, and potential prey base at the Project site is not as suitable for burrowing owls based on their known preferred habitats, there is potential for these birds to utilize the project site. Accordingly, there are several MMs included in the BRR and MND that avoid and minimize impacts to burrowing owl, including, but not limited to, MM-1, which requires a biological monitor to conduct meetings, be present on site during all vegetation clearing activities, and to minimize impacts to wildlife species; and MM-8 and MM-14, which require pre-construction surveys for nesting birds and require setbacks for active nests/burrows. The MM for burrowing owl in the MND should be clarified as follows to include details required in the management plan:

**MM-14:** Prior to the start of construction, a preconstruction survey for the burrowing owl will be conducted in accordance with the DFG Staff Report (2012). The pre-construction surveys shall identify active burrowing owl burrows and estimate the number of burrowing owls, in addition to determining whether they are considered breeding pairs or migrants. If it is discovered that there is an occupied burrowing owl burrow, then a Burrowing Owl Mitigation and Management Plan will be developed in accordance with the 2012 DFG Staff Report, which outlines the methods of removal (if necessary) and the methods and placement of, replacement burrows. At a minimum, occupied burrows will be replaced at a 2:1 ratio.

The management plan shall include the following information:

- Setbacks, consistent with the existing conditions described in MM-8;
- A description of shelter in place and its purpose to minimize impacts to burrowing owl while allowing existing burrows to remain intact;
- A plan for excavation of inactive burrowing owl burrows, as appropriate;
- A passive relocation plan;
- Additional measures to ensure protection of burrowing owl through construction and during operation and maintenance phases of the project; and
- On-site and off-site mitigation plan for impacts to burrowing owl (if they occur).

## **FLAT-TAILED HORNED LIZARD**

Flat-tailed horned lizard (*Phrynosoma mcallii*) was observed on the project site (refer to Section 1.4.7 of the BRR). Guidance for flat-tailed horned lizard is provided by the Flat-tailed Horned Lizard Rangewide Management Strategy, which was “prepared to provide guidance for the conservation and management of sufficient habitat to maintain extant populations of flat-tailed horned lizards” through establishing management areas (MAs) within California and Arizona (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). This document also includes one research area (RA) to support research in an off-highway vehicle recreation area. The project site is located southwest of the Ocotillo Wells RA and west of the West Mesa MA.

### **Direct Impacts**

As stated in the BRR, there are direct impacts to suitable habitat for flat-tailed horned lizard and potential direct impacts to individual lizards during construction activities.

### **Indirect Impacts**

Indirect effects on flat-tailed horned lizard have been studied. Barrows and Rottenberry (2006) studied the edge effects of various types of suburban environments, including the edge of a golf course community, edge of an abandoned agricultural area and sparse rural housing, and control plots in a preserve. The study explored three potential causal hypotheses to explain flat-tailed horned lizards’ response to edge effects: 1) invasive exotic ants; 2) road avoidance and road-associated mortality; and 3) enhanced predation from avian species. Invasive exotic ants, such as Argentine ants (*Linepithema humile*) are often found near suburban environments and mesic habitats. They are often introduced through planting ornamental species. The study

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plots observed no non-native ant species and hypothesized that the extreme arid environment of the Coachella Valley may preclude these species from the studied areas (Barrows and Rottenberry 2006). The project site is in a similarly arid environment and is not located near any suburban land use, such as golf courses or other areas where non-native ants are typically found. The study concluded that non-native ants did not appear to attribute to the edge effects observed in the horned lizard population (Barrows and Rottenberry 2006). Additionally, the proposed project does not include any plantings of vegetation or similar activities which could introduce or attract these species.

The study also noted that horned lizards will use margins of paved roads and sometimes cross roads, which can result in direct mortality and road avoidance (Barrows and Rottenberry 2006). With respect to these edge effect, lizards are more effected in areas adjacent to four-lane roads than two-lane roads (Barrows and Rottenberry 2006). The proposed project does not include any paved roads, and very minimal human activity associated with the solar farm will occur along the access road. Thus, long-term vehicle collisions are not considered a potential indirect impact to lizards. Potential short-term construction-related impacts are mitigated through MM-2, which limits the speed of vehicles on unpaved roads and the right-of-way access to the construction site (BRR page 3-13).

Increased predation from both native and non-native species is described as a potential causal effect on lizards by Barrows and Rottenberry (2006); this effect is also described in the BRR in Section 2.3.4 (page 2-14) and impacts are analyzed in Section 3.2.8.2 (page 3-8). The increase in native predators observed in the study were attributed to more nesting opportunities in planted palm trees and other “exotic vegetation planted in the neighboring suburban developments,” as well as power poles because they provide perches (Barrows and Rottenberry 2006). As seen on aerial photographs of the project site, there are no suburban land uses nearby that provide increased nesting opportunities or perches. The proposed project does not include any vegetation planting or construction of power poles or towers. The O&M building could provide perches for bird species and there is some potential for birds to perch on the panels, but they are constructed to be slick and vibrate slightly due to their constant shifting to track the sun. Artificially attract predators are mitigated through MM-2, which includes measures such as containing all trash items and prohibit littering.

To ensure the fencing is installed appropriately for flat-tailed horned lizard, MM-1 of the BRR has been clarified as follows; however, the MND MM 2(A)(7) already provides additional detail regarding fencing for horned lizard.

**MM-1** To prevent inadvertent disturbance to areas outside the limits of grading, all grading located shall be monitored by a biologist. A County-approved biologist

“Project Biologist” shall be contracted to perform biological monitoring during all grading, clearing, grubbing, trenching, and construction activities.

The following shall be completed:

1. The Project Biologist shall perform the monitoring duties before, during, and after construction pursuant to the most current version of the County of San Diego *Biological Report Format and Requirement Guidelines* and this permit. The contract provided to the County shall include an agreement that this will be completed, and a Memorandum of Understanding between the biological consulting company and the County of San Diego shall be executed. The contract shall include a cost estimate for the monitoring work and reporting. In addition to performing monitoring duties pursuant to the most current version of the County of San Diego *Biological Report Format and Requirement Guidelines*, the Project Biologist also will perform the following duties:
  - a. Attend the preconstruction meeting with the contractor and other key construction personnel prior to clearing, grubbing, or grading to reduce conflict between the timing and location of construction activities with other mitigation requirements (e.g., seasonal surveys for nesting birds).
  - b. Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas prior to clearing, grubbing, or grading.
  - c. Discuss procedures for minimizing harm to or harassment of wildlife encountered during construction with the contractor and other key construction personnel prior to clearing, grubbing, or grading.
  - d. Review and/or designate the construction area in the field with the contractor in accordance with the final grading plan prior to clearing, grubbing, or grading.
  - e. Conduct a field review of the staking to be set by the surveyor, designating the limits of all construction activity prior to clearing, grubbing, or grading.
  - f. Ensure fencing is installed per the Fencing and Removal Survey Protocols (Appendix 7 of the Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).

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- g. Be present during initial vegetation clearing, grubbing, and grading.
- h. Flush special-status species (i.e., avian or other mobile species) from occupied habitat areas immediately prior to brush-clearing and earth-moving activities.
- i. To address hydrology impacts, the Project Biologist shall verify that grading plans include a Stormwater Pollution Prevention Plan (SWPPP) (see MM-2 for required best management practices (BMPs)).

To ensure proper removal of flat-tailed horned lizards from the construction area, MM-6 of the BRR has been clarified as follows:

**MM-6** Prior to conducting ground-disturbing construction activities, as defined in MM-5, surveys for, and relocation of, flat-tailed horned lizard will be conducted. Surveys and relocation shall be conducted in accordance with the Fencing and Removal Survey Protocols (Appendix 7 of the Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).

In summary, indirect effects associated with edge effects are analyzed in the BRR and mitigation is provided through a variety of measures, including pre-construction surveys, construction-related measures, and off-site habitat preservation (described in more detail below).

### **Off-Site Mitigation**

As described above, the Imperial County parcel is considered a viable mitigation option (refer to Option 2 described in MM-4 of the BRR and in Section 2(A)(2)(b) of the MND). The Imperial County parcel (APNs 018-170-021, 018-170-033, and 018-170-034) is located approximately 2 miles south/southwest of the southern portion of Ocotillo Wells Resource Area (RA) and 5 miles west of the westernmost portion of West Mesa Management Area (MA) (see Figures 6 and 9 of the Flat-tailed Horned Lizard Rangewide Management Strategy).

Because the Imperial County mitigation parcel is located adjacent to the project site, it is a preferred mitigation option based on its similar elevation, soils, and vegetation communities. This mitigation parcel is analyzed in terms of its overall habitat and potential to support similar special-status species, such as flat-tailed horned lizard, as the proposed project site (see Appendix E of the BRR).

## Summary

The proposed project provides adequate mitigation for flat-tailed horned lizard through a combination of MMs designed to avoid and minimize potential short-term, construction-related impacts, as well as mitigate for long-term impacts associated with habitat loss.

Additionally, the proposed project does not conflict with the goals described in the Flat-tailed Horned Lizard Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003) for the following reasons:

- The project site is not located within any of the MAs.
- The flat-tailed horned lizard surveys were conducted per the survey protocols in the Flat-tailed Horned Lizard Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).
- The MMs are in accordance with Appendices 6 and 7 of the Flat-tailed Horned Lizard Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003).

## DESERT KIT FOX

Per recommendations from the CDFW, MM-12 in the BRR shall be clarified as follows:

**MM-9** Preconstruction surveys for desert kit fox shall be conducted in the project area prior to implementation of any ground-disturbing construction activities (i.e., vehicle use, geotechnical testing, grubbing, clearing, grading). Preconstruction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project. If more than 30 days lapse between the time of the preconstruction survey and the start of ground-disturbing activities, another preconstruction survey shall be completed. The preconstruction surveys shall cover the project area and a 200-foot buffer around the project area. CDFW shall be consulted prior to construction activities to establish the survey method, any passive exclusion techniques, field verification, and monitoring.

1. Preconstruction surveys will identify kit fox habitat features on the project site, evaluate use by kit fox, and if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens will be determined and mapped.

2. If a natal/pupping den is discovered within the project site or within 200 feet of the project boundary, the CDFW shall be notified. A natal/pupping den shall not be disturbed or destroyed while occupied.
3. If avoidance of den destruction is not feasible or practicable, destruction of the den shall be accomplished by careful excavation until it is certain that no kit foxes are inside. The den shall be fully excavated, filled with dirt, and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation a kit fox is discovered inside the den, the excavation activity shall cease immediately, and monitoring of the den will be conducted as described below. Destruction of the den may be completed when, in the judgment of the qualified biologist, the animal has escaped, without further disturbance from the partially destroyed den. Occupied natal/pupping dens shall not be destroyed until vacated by kit foxes and only after consultation with the CDFW. Only when the den is determined to be unoccupied will the den be excavated under the direction of the qualified biologist. Use of spotting scopes and game cameras are encouraged to confirm presence/absence.
4. Because kit foxes are attracted to den-like structures, such as pipes, and may enter stored pipes and become trapped or injured, all construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods will either be capped or covered such that no animal can enter, or be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the CDFW has been consulted. If necessary, and under the direct supervision of the qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the kit fox has escaped.

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## **GLARE EFFECTS ON WILDLIFE**

Comments from the Laborers International Union of North America and the State Parks Department expressed concern that glare from some of the solar technologies attracting migratory waterfowl to land in what appear to be ponds from the air. In response to this comment, Dudek reviewed available literature and occurrences of water bird deaths on solar projects, including:

- Avian Mortality at Solar Energy Power Plant (McCrary et al. 1986)
- Monitoring Migratory Bird Take at Solar Power Facilities: An Experimental Approach (Nicolai et al. 2011)
- Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States (Lovich and Ennen 2011)
- Ecological Light Pollution (Longcore and Rich 2004)
- Polarized Light Pollution: A New Kind of Ecological Photopollution (Horvath et al. 2009)
- Night Migrant Fatalities and Obstruction Lighting at Wind Turbines in North America (Kerlinger et al. 2010)

Two additional environmental impact reports/statements prepared for solar projects were also reviewed: California Desert Conservation Area Plan Amendment/Final Environmental Impact Statement for Ivanpah Solar Electric Generating System (BLM 2010), and Final Solar Energy Development Programmatic Environmental Impact Statement (BLM and DOI 2010). These reports did not specifically analyze glare impacts to wildlife species; however, Dudek reviewed recent news stories of deaths of wetland-associated birds at solar farms, including the Desert Sunlight Solar Farm (north of Interstate 10 between Coachella and Blythe, Riverside County, California – PV trackers) and Genesis Solar Farm (West of Blythe, Riverside County, California – solar thermal plant).

The project site is located in the Pacific Flyway for migratory avian species, which is a broad-front migration corridor that generally focuses along the coast from the Gulf of California, north. Birds that migrate, and in particular water birds, will fly between bodies of waters and other available habitats. The Gulf of California is located approximately 140 miles southeast of the project site, and the Salton Sea is located approximately 17 miles east/northeast of the project site. The project site is located in the Borrego Valley, which is on the western edge of a common migration corridor for species traveling north through the desert region. This is also along the western edge of the primary route between the Gulf of California and the Salton Sea. The

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agricultural fields north and south of the Salton Sea are known to attract large numbers of water birds that migrate through the area, particularly shore birds and wading birds, because the agricultural fields provide an abundance of foraging opportunities (Shuford et al. 2000). Flooded fields provide more resources, along with vegetative food resources. A review of aerial photography reveals a near continuous swath of green irrigated cropland between the Gulf of Mexico and the Salton Sea within the United States. Because the project site is located west of the major route between these water bodies and surrounding agricultural fields, and there are no water resources near the project site, large numbers of species are not expected to fly over the project site. Only occasional errant species might discover it. Additionally, many birds are known to migrate at night (Emlen 1975, Lowery 1951, USGS 2013), which reduces visibility and glare-related impacts to migrants.

While avian collisions with towers and structures have been well-documented, there are few published papers available that study the possibility that large areas of solar photovoltaic (PV) panels in the desert environment may mimic water bodies and inadvertently attract migrating or dispersing wetland bird species. Polarized reflections from solar PV arrays has been observed to attract insects (Horvath et al. 2010), which could in turn attract other sensitive wildlife, such as bats, but the magnitude of this effect is unknown, since no comprehensive scientific studies have been conducted for this potential phenomenon either.

Anecdotal evidence suggests that wetland species may either collide with or become stranded in solar fields resulting in fatalities. Of the two recent publicized deaths associated with the Desert Sunlight and Genesis projects, the Genesis project is a different type of facility that does not rely on PV cells to generate electricity, but instead heat generated by mirrors reflecting and focusing sunlight on a central foci to power a generator. Different types of effects might have killed the birds. Regardless, little is known about the actual percentage of species and individuals that are negatively affected by glare or the pseudo-lake effect of PV arrays. The USFWS recognizes the lack of data on the effects of solar facilities on migratory bird mortality and provided guidance on monitoring migratory bird mortalities at solar facilities (Nicolai et al. 2011). There is currently insufficient research to assess the magnitude or likely risk associated with such events. Based on the evidence available—distance from large water bodies, distance from agricultural areas, typical migration patterns, comparatively few documented deaths—glare and pseudo lake-effect are not expected to result in significant impacts to migrating or local avian species.

## PHREATOPHYTE

In response to comment A48, there are no mesquite bosques on the Project site, nor are there any vegetation communities dominated by phreatophytes. Phreatophytes are plants with deep root systems that allow the plants to tap into groundwater; however, different phreatophytic species have different mechanisms and adaptations for avoiding and tolerating water stress, so it cannot be generalized that all phreatophytes avoid stress through their deep root systems (Nilsen et al. 1983). Many of the plant species found on site could be considered phreatophytes based on this definition and other research on plant species in the Sonoran Desert (Nilsen et al. 1984). The phreatophytes found on the project site that are known to have deep taproots include honey mesquite (*Prosopis glandulosa*), desert ironwood, and palo verde (*Parkinsonia florida*).

Mesquite has deep taproots (as deep as 160 feet) that allow it to access water and is relatively tolerant of adverse conditions (Nilsen et al. 1983). Because the desert ironwood and palo verde are located within the same wash as the honey mesquite, it can be inferred that their root system and water intake is similar. Mesquite have demonstrated that moderate groundwater decreases will substantially stress or kill adult mesquite individuals (Stromberg et al. 1992). Further, Sosebee and Wan (1989) suggest that the deep taproots of honey mesquite play a significant role in water uptake only during extended droughts, but not for normal transpiration functioning of the plant (i.e., the deep taproots are not the primary source of water for this species much of the time). For typical seasonal and diurnal water relations, honey mesquite makes osmotic adjustments and maintains high leaf conductance at low leaf water potential (Nilsen et al. 1984).

As described in Section 4.2.3 of the BRR, a Preliminary Hydrogeologic Assessment was prepared for the proposed project. Groundwater depth was measured on June 2, 2011, at 92 feet, but the water table may be 10 to 20 feet higher in elevation along the southern boundary of the project site (Wiedlin & Associates, Inc., 2013). Based on the project's groundwater demand for construction-related use, the short-term drawdown is expected to be 0.6 feet at the on-site well. Long-term operational demand is expected to be between 0.2 feet and 0.5 feet based on well records (Wiedlin & Associates, Inc., 2013). The phreatophyte species described above are located near the southwestern portion of the project site, and based on the flow of groundwater and the central location of the well, this area is expected to have a higher water table. Additionally, groundwater inflow is expected to be greater than the groundwater production demands (Wiedlin & Associates, Inc., 2013). While phreatophytes are both highly adapted to low groundwater tables in desert conditions, and can be affected by moderate groundwater decreases, the proposed project is not expected to have a high enough water demand to reduce the groundwater table that would adversely affect these species.

## OTHER

In response to comment A3, MM-2 shall be clarified in the MND as shown below:

**MM-2** The SWPPP will include, at a minimum, the BMPs listed below. The combined implementation of these requirements shall protect adjacent habitats and special-status species during construction to the maximum extent practicable. At a minimum, the following measures and/or restrictions shall be incorporated into the SWPPP and noted on construction plans, where appropriate, to avoid impacts on special-status species, special-status vegetation communities, and/or jurisdictional waters during construction. The Project Biologist shall verify the implementation of the following design requirements:

1. No planting or seeding of invasive plant species on the most recent version of the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory for the project region will be permitted.
2. Location and details will be provided for any dust-control fencing.
3. Construction activity will not be permitted in jurisdictional waters of the United States/waters of the State except as authorized by applicable law and permit(s), including permits and authorizations approved by the U.S. Army Corps of Engineers (ACOE), CDFW, and Regional Water Quality Control Board (RWQCB).
- ~~4. Silt settling basins installed during the construction process will be located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes.~~
4. Temporary structures and storage of construction materials will not be located in jurisdictional waters, including wetlands and riparian areas.
5. Staging/storage areas for construction equipment and materials will not be located in jurisdictional waters, including wetlands and riparian areas.
6. Any equipment or vehicles driven and/or operated within a jurisdictional waters of the United States/waters of the State will be checked and maintained by the operator daily to prevent leaks of oil or other petroleum products that could be deleterious to aquatic life if introduced to the watercourse.

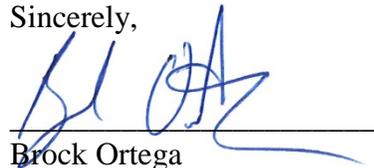
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7. No stationary equipment, such as motors, pumps, generators, and welders or fuel storage tanks will be located within jurisdictional waters of the United States/waters of the State.
8. No oil, petroleum products, debris, bark, slash sawdust, rubbish, cement, or concrete, or washing thereof, will be stored where it may be washed by rainfall or runoff into jurisdictional waters of the United States/waters of the State.
9. When construction operations are completed, any excess materials or debris will be removed from the work area.
10. No equipment maintenance will be performed within or near jurisdictional waters of the United States/waters of the State where petroleum products or other pollutants from the equipment may enter these areas.
11. Fully covered trash receptacles that are animal-proof and weather-proof will be installed and used by the operator to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Littering will be prohibited, and trash will be removed from construction areas daily. All food-related trash and garbage shall also be removed from the construction sites on a daily basis.
12. Pets on or adjacent to construction sites will not be permitted by the operator.
13. Speed limits will be enforced in and around all construction areas. Vehicles shall not exceed 15 miles per hour on unpaved roads and the right-of-way accessing the construction site or 10 miles per hour during the night.

Sincerely,



Brock Ortega  
Principal/Senior Wildlife Biologist

*Att.: Appendix A – Resumes  
Appendix B – Habitat Suitability Model*

*cc: Callie Ford, Dudek  
Rich Geisler, JWA*

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## REFERENCES

- Baldwin, Bruce G., S. Boyd, B.J. Ertter, R.W. Patterson, T.J. Rosatti, and D.H. Wilken. 2002. *The Jepson Desert Manual*. University of California Press.
- Bloom, P.H. 1980. The status of the Swainson's Hawk in California, 1979. Wildlife Mgmt. Branch, Nongame Wildl. Invest, Job II-8.0. Calif. Dept. Fish and Game, Sacramento, California.
- BLM (U.S. Bureau of Land Management). 2010. California Desert Conservation Area Plan Amendment/Final Environmental Impact Statement for Ivanpah Solar Electric Generating System. FEIS-10-31. July 2010.
- BLM. 2012. *Proposed Plan Amendment & Final Environmental Impact Statement/Final Environmental Impact Report for the Ocotillo Wind Energy Facility*. February 2012. State Clearing House Number 2010121055.
- BLM and DOI (U.S. Department of the Interior). 2010. Final Solar Energy Development Programmatic Environmental Impact Statement.
- CDFG (California Department of Fish and Game). 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. Prepared by the California Natural Resources Agency, Department of Fish and Game. November 24.
- CDFG. 2010. *Interim Mitigation Strategy As Required by SB X8 34*. Prepared by CDFG. DRECP-1000-2010-006-F. September 2010.
- CDFG. 2011. *RareFind*, Version 4. Sacramento, California: California Natural Diversity Database. Accessed August 2011. <http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.
- CDFG. 2012a. *RareFind*, Version 4. Sacramento, California: California Natural Diversity Database. Accessed June 2012. <http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.
- CDFG. 2012b. Biogeographic Information & Observation System (BIOS). Access June 2012. <http://imaps.dfg.ca.gov/viewers/bios/app.asp>
- CNPS (California Native Plant Society). 2012. *Inventory of Rare and Endangered Plants*. Online ed. Version 8-01a. Sacramento, California: CNPS. Accessed July 2012. <http://www.rareplants.cnps.org/>.

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County of San Diego. 2010a. *County of San Diego Report Format and Content Requirements: Biological Resources*. Fourth Revision. September 15, 2010.

County of San Diego. 2010b. *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources*. Fourth Revision. Land Use and Environment Group, Department of Land Use and Planning, Department of Public Works. September 15, 2010.

County of San Diego. 2011a. *CEQA Consultants List for Privately Initiated Projects*. Established September 8, 2006. Supplemented June 15, 2012. <http://www.sdcounty.ca.gov/luegdocs/DPLU%20PROCEDURES/REGULATORY%20PLANNING/REFERENCE%20DOCUMENTS/CEQA%20CONSULTANT%20LIST.pdf>

County of San Diego. 2011b. Slovic, M. “3992 11-003(MPA); Gildred Solar MPA.” Letter from M. Slovic (County of San Diego) to J. Whalen (J. Whalen Associates, Inc.). February 15, 2011.

Dudek. 2013. *Biological Resources Report for the Ocotillo Wells Solar Project*. Third Draft. Case Number(s) 3300-12-004 (MUP), 3910-12-12-001 (ER), APN 253-390-57 and 58, KIVA PROJECT: 11-0138055. Prepared for J. Whalen Associates, Inc. and the County of San Diego Department of Planning and Land Use. Prepared by Dudek. January 2013.

Emlen, Stephen T. 1975. The Stellar-Orientation System of a Migratory Bird. *Sci. Amer.* 233, 102–111.

England, A.S., M.J. Bechard, and C.S. Houston. 1997. Swainson’s Hawk (*Buteo swainsoni*). In: A. Poole and F. Gill (eds.), *The Birds of North America*, No. 265. The Academy of Natural Sci., Philadelphia, PA, and The American Ornithologists’ Union, Washington, D.C.

Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. *Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision*. 80 pp. plus appendices.

Hopkins, J. 2013. March Comparisons. *Borrego Valley Hawkwatch*, [blog] April 4, 2013, Available at: <http://www.borregohawkwatch.blogspot.com/search?updated-max=2013-04-04T21:30:00-07:00&max-results=7&reverse-paginate=true> [Accessed : July 30, 2013].

Jepson Flora Project. 2012. *Jepson eFlora*. Berkeley, California: University of California. Accessed May 2012. [http://ucjeps.berkeley.edu/cgi-bin/get\\_JM\\_name\\_data.pl](http://ucjeps.berkeley.edu/cgi-bin/get_JM_name_data.pl)

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---

Lowery, George H. 1951. A Quantitative Study of the Nocturnal Migration of Birds. University of Kansas Publications, Museum of Natural History. Volume 3, No. 2, pp. 361-472

Nicolai, C., S. Abele, H. Beeler, R. Doster, E. Kershner and T. McCabe. 2011. Monitoring Migratory Bird Take at Solar Power Facilities: An Experimental Approach. US Fish and Wildlife Service – Pacific Southwest Region. May 2, 2011.

Nilsen, E. T., M. R. Sharifi, P. W. Rundel, W. M. Jarrell, and R. A. Virginia. 1983. “Diurnal and Seasonal Water Relations of the Desert Phreatophyte *Prosopis glandulosa* (honey mesquite) in the Sonoran Desert of California.” *Ecology* 64:1381-1393.

Nilsen, E. T., M. R. Sharifi, and P. W. Rundel. 1984. “Comparitive Water Relations of Phreatophytes in the Sonoran Desert of California” *Ecology* 65:767-778.

SDNHM (San Diego Natural History Museum). 2012a. Data retrieved from Herbarium and Plant Atlas databases for grid squares G26–29, H26–H29, I26–I29, J26–I29, K27–29, L27–29, M27–29, N27–29 and O27–29. *San Diego County Plant Atlas Project*. Online ed. Accessed June 2012. <http://www.sdplantatlas.org/publicsearch.aspx>.

Shuford, W. D., N. Warnock, K. C. Molina, B. Mulrooney, and A. E. Black. 2000. Avifauna of the Salton Sea: Abundance, distribution, and annual phenology. Contribution No. 931 of Point Reyes Bird Observatory. Final report for EPA Contract No. R826552-01-0 to the Salton Sea Authority, 78401 Highway 111, Suite T, La Quinta, CA 92253.

Sosebee, R. E., and Wan, C. 1989. “Plant Ecophysiology: A Case Study of Honey Mesquite.” In: Wallace, A.; McArthur, E. Durant; Haferkamp, Marshall R., compilers. Proceedings--symposium on shrub ecophysiology and biotechnology; 1987 June 30 - July 2; Logan, UT. Gen. Tech. Rep. INT-256. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station: 103-118.

Stromberg, J. C., J. A. Tress, S. D. Wilkins, and S. Clark. 1992. “Response of Velvet Mesquite to Ground water Decline.” *Journal of Arid Environments* 23:45-58.

Unitt, P. 2004. *San Diego County Bird Atlas*. San Diego, California: San Diego Natural History Museum.

USGS (United States Geological Survey). 2013. Migration of Birds: When Birds Migrate. Accessed at: <http://www.npwrc.usgs.gov/resource/birds/migratio/when.htm>

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Weidlin & Associates, Inc. 2013. Preliminary Hydrogeologic Assessment Ocotillo Wells Solar Project Major Pre-Application Case Number 3992 11-003 (MPA). Prepared for J.Whalen Associates, Inc. March 19, 2013.

APPENDIX A  
*Resumes*



## Kathleen Dayton – Biologist

Kathleen Dayton is a biologist with over 4 years' professional experience in general biological resource surveys, vegetation mapping, rare plant surveys, various wildlife surveys, native grasslands, wetland delineations, data collection and analysis, biological technical report preparation, wetland permitting, and endangered species permitting.

Ms. Dayton has excellent field skills and leads teams of biologists for vegetation mapping, rare plant surveys, and native grassland studies. She has exceptionally strong technical writing skills and is an effective communicator.

### PROJECT EXPERIENCE

#### Development

**Santa Barbara Ranch, Santa Barbara County, California.** Assisted with a native grassland assessment that involved recording quantitative data along transects. Analyzed data and presented findings in a report.

**Dos Pueblos Naples Property, Santa Barbara County, California.** Assisted in preparation of a biologist constraints report including an assessment of native grasslands that synthesized quantitative transect data to determine compliance with different resource agency criteria.

**Pacific Coast Homes, City of Fullerton, California.** Reviewed and provided responses to comments on revised versions of the public environmental impact report (EIR). Also conducted vegetation mapping in the field and wrote the vegetation descriptions to be included in the report documenting survey results.

**Ferber Ranch (Trabuco Canyon), The Planning Center, Orange County, California.** Assisted with special-status plant species surveys on a proposed development project. Involved hiking in steep, rough terrain and collecting standardized data on field maps.

**The Ranch at Yaqui Pass Viking Ranch Project, Giachino Development Company, San Diego County, California.** Assisted with special-status plant species surveys on a proposed development project in the desert region of San Diego County.

**University Villages, Otay Ranch, San Diego County, California.** Assisted with vegetation mapping on areas proposed to be exchanges between development and preserve. Mapping was conducted in accordance with Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (1986). Conducted surveys for Otay tarplant (*Deinandra conjugens*) and other special-status species, and drafted a report that included the methods, results, and impact analysis for different resources over several years of surveying.

**Copley Press 25 Acres, City of San Diego Development Services, San Diego County, California.** In 2011, Ms. Dayton provided biological resources monitoring for geotechnical activities conducted on a proposed development site to ensure avoidance and minimization of impacts to sensitive biological resources to the maximum extent feasible and to ensure specific measures for the protection of sensitive habitats. Monitoring included holding an environmental awareness meeting with the crew prior to work activities, photo documentation, and completion of a site observation report (SOR).

#### EDUCATION

University of California, San Diego  
BS, Environmental Systems: Ecology,  
Behavior, and Evolution, 2007

#### CERTIFICATIONS

CDFG Rare, Threatened, and  
Endangered Plant Voucher Collection  
Permit No. 2081(a)-09-31-V – exp.  
1/31/2012

#### PROFESSIONAL AFFILIATIONS

California Native Plant Society  
Southern California Botanists

**Otay Ranch Village I3 Resort Site, San Diego County, California.** In 2009 and 2010, Ms. Dayton monitored geotechnical studies to limit impacts to biological resources by determining the least impactful access route to a geotechnical boring/trenching location in areas with native vegetation, jurisdictional waterways, and/or Quino checkerspot (*Euphydryas editha quino*) host plant. Project lasted two seasons for approximately 2 weeks each time.

**Tejon Mountain Village Project, Tejon Ranch Company, Kern County, California.** Compiled data used to prepare the biological technical report, researched background information on different vegetation communities and special-status species, and wrote portions of the biological technical report, draft EIR, framework resource management plan, and 2081 permit for state-listed species.

**Tejon Industrial Complex, Tejon Ranch Company, Kern County, California.** Prepared a proposal outlining the tasks to be completed for a resource management and monitoring plan (RMMP) and property analysis record (PAR) for proposed mitigation sites. Assisted in preparing the RMMP and PAR and collected relevant biological reconnaissance data in the field.

**Roselle Street Project Site, CLL-Roselle LLC, San Diego, California.** Assisted in preparation of a biological resources letter report that addressed the development of a storage yard on a site with sensitive wetland habitat.

**International Traders Center Biological Services, International Traders Center, San Diego, California.** Assisted in preparation of a biological resources letter report for the maintenance of an enterprise that contains sensitive wetland habitats. The report included recommendations to improve the quality of biological resources on site, including wetlands restoration and enhancement.

**Levie Tentative Parcel Map, Laret Engineering, Rancho Santa Fe, California.** Assisted with preparation of the biological technical report for a proposed residential development in an area considered sensitive under San Diego's Multiple Habitat Conservation Plan.

## Education

**Eastside Center and Westside Center Project, Victor Valley Community College District, San Bernardino County, California.** Assisted in conducting special-status plant species surveys at both the Eastside Center and Westside Center project sites in the Mojave Desert.

## Energy

**Tehachapi Renewable Transmission Project, Southern California Edison (SCE), Los Angeles and San Bernardino Counties, California.** Served as biological monitor during 2011 for construction-related activities for the Tehachapi Renewable Transmission Project. Attended construction monitoring workshop and Worker Environmental Awareness Program/safety training. Construction monitoring activities included morning and evening sweeps of the construction areas and monitoring crews for compliance during tower setup activities. Other activities include establishing environmentally sensitive areas for active nests, and monitoring and updating active nests. Reported new nests observed. FRED reports were completed each day to discuss daily monitoring activities and nest updates.

**Mohave Generating Station, SCE, Laughlin, Clark County, Nevada.** In 2009, conducted a general biological resources assessment of the approximately 2,500-acre project site that included the use of wildlife cameras and Anabat equipment for detection of bat species. Desert tortoise (*Gopherus agassizii*) was a species of concern for this project, although no burrows or individuals were detected during the assessment.

**Hazard Tree Removal Project, SCE, San Bernardino and San Jacinto Mountains, San Bernardino County, California.** Conducted nocturnal and diurnal surveys for arroyo toad (*Bufo californicus*), California red-legged frog (*Rana draytonii*), and mountain yellow-legged frog (*Rana muscosa*) in selected drainages within the San Bernardino Mountains and San Jacinto. The surveys support implementation of a bark beetle tree removal project along existing power lines within San Bernardino County. The surveys were conducted to ensure avoidance of impacts to special-status amphibian species and their habitats. Surveys were negative.

**Proposed Grid Reliability Maintenance Project, Intake 16-Kilovolt (kV) Cutover, SCE, Kern and Tulare Counties, California.** Prepared for and conducted botanical surveys along a transmission route requiring maintenance.

**Tehachapi Renewable Transmission Project, SCE, Southern California.** Performed focused surveys for special-status plant species and conducted vegetation mapping and tree inventory. This included familiarity with the local flora and use of specific field mapping and rare plant forms, as well as use of a YUMA Geographic Positioning System.

**Deteriorated Pole Replacement Project, SCE, San Bernardino County, California.** Independently conducted a special-status plant species survey at Newberry Springs on lands administered by the Bureau of Land Management (BLM). Involved conducting a literature review and revising the report based on findings.

**Doble Transmission Line, SCE, San Bernardino County, California.** Assisted with special-status plant species surveys along an existing transmission line to provide data in cases where emergency work that impacted special-status plant species would need to be conducted. Involved working in sensitive habitat areas, including pebble plains and areas with carbonate soils.

**Devers–Palo Verde No. 2 500 kV Transmission Line, SCE, Riverside County, California.** Conducted focused burrowing owl (*Athene cunicularia*) surveys that included a habitat assessment and resulted in visual observation of the species and active burrows. Maintained a database of collected data, reviewed data collected, and prepared various reports that discussed the results of surveys.

**Devers–Palo Verde No. 2 500-kilovolt (kV) Transmission Line, SCE, Riverside County, California.** In 2009, conducted jurisdictional delineations in the desert region of Riverside County. Maintained a database of vegetation data collected, reviewed data collected, and prepared various reports that discussed the results of surveys.

**Devers–Palo Verde No. 2 500 kV Transmission Line, SCE, Riverside County, California.** In 2008, assisted in field surveys for desert tortoise, Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), and Coachella Valley fringe-toed lizard (*Uma inornata*). Although surveys for these species were negative, future surveys on this project resulted in incidental detection of desert tortoise. Additionally, assisted in field surveys for special-status plants (2008 and 2009), burrowing owl (2008), and bats (2008).

**Gildred Solar Major Use Permit Project, J. Whalen Associates Inc., San Diego, California.** Conducted a jurisdictional delineation for this desert project for the creation of a 369-acre solar energy system and prepared a draft biological resources report detailing the methods and results of this and other surveys conducted on site as well as evaluating the potential for special-status species to occur on site.

**Desert Renewable Energy Conservation Plan (DRECP), California Energy Commission and Aspen Environmental Group, Southern California.** Contributed to development of a plan in which renewable energy and transmission development projects in California's deserts will conserve natural communities and species pursuant to the California Natural Community Conservation Planning Act and the federal Endangered Species Act. Wrote sections of the baseline biology report, developed a species matrix used to determine species coverage, researched species information to write detailed species profiles, and reviewed species habitat models that were created in a geographic information system.

**Hazard Tree Removal Project, SCE, Southern California.** From 2008 to 2011, Ms. Dayton provided monitoring for the cutting of hazard trees to protect biological resources in the surrounding areas for this project. Biological resources include sensitive vegetation communities, as well as habitat for special-status wildlife and plant species.

### Resource Management

**Malibu Campgrounds, County of Los Angeles, California.** Assisted with special-status plant species surveys for the development of an interconnected system of trails.

**Simon and Gower Preserves, County of San Diego, California.** Assisted with special-status plant species surveys on a preserve in San Diego County. Also assisted in synthesizing the data collected and preparing a biological resources report.

**Otay Preserve, County of San Diego, California.** Assisted with special-status plant species surveys on a preserve in San Diego County. Involved hiking in steep, rough terrain and collecting standardized data on field maps. Prepared a draft of the existing conditions report.

**Spineflower Conservation Plan, Newhall Land and Farming Company, Los Angeles County, California.** Researched the potential threats to the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) and wrote sections of the adaptive management plan designed to protect this special-status species. In 2011, organized and assisted in plant surveys to document the extent of and conditions of spineflower populations and will prepare a report describing the methods and results of these surveys.

**Foothill Trabuco Specific Plan, Property Owners Consortium, Orange County, California.** Compiled a list of species proposed for coverage under a habitat conservation plan as well as the data contributing to the analysis of the selection criteria.

**Initial Management Action Plan, Rancho Mission Viejo Land Trust, Orange County, California.** Performed vegetation pilot-study monitoring within riparian/wetland, oak woodlands, and coastal sage scrub habitats following an established protocol involving various methods and quantitative assessments of vegetation characteristics.

**Nelson-Sloan Quarry Reclamation Project, City of San Diego, San Diego County.** Performed focused surveys for special-status plant species and coordinated vegetation mapping and a jurisdictional delineation. The methods and results of these studies were then incorporated into a biological technical report.

**Del Dios, Escondido Creek, and San Luis Rey Preserves, County of San Diego, California.** Coordinated and assisted with special-status plant species surveys on three preserves in San Diego County. Also assisted in organizing the data collected and preparing existing conditions biological reports that included all surveys conducted.

## Transportation

**Mid-Coast Corridor Transit Project, San Diego Association of Governments and California Department of Transportation, San Diego County, California.** Assisted in preparation of a conceptual alternatives biological resources screening analysis, which involved synthesizing information gathered from various databases. In addition, conducted special-status plant species surveys and a jurisdictional delineation for portions of the project area.

**Mid-Coast Corridor Transit Project, San Diego Association of Governments and California Department of Transportation, San Diego County, California.** Assisted in a jurisdictional delineation for portions of the project area.

## Tribal

**Tribal Environmental Assessment, Sycuan Band of the Kumeyaay Nation, San Diego County, California.** Assisted in a jurisdictional delineation to determine the extent of areas along an approximately 5,000-linear-foot reach of the North Fork Sweetwater River that may be subject to the regulations of the U.S. Army Corps of Engineers (ACOE).

## Water/Wastewater

**San Timoteo Creek Alternative Discharge Outfall, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California.** In 2011, Ms. Dayton conducted biological construction monitoring for the construction of the non-potable water outfall on San Timoteo Creek to ensure compliance with conditions within the Section 1602 Streambed Alteration Agreement. Monitoring included photo documentation and completion of a detailed SOR.

**Regional Brineline Extension Project, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California.** Assisted in preparation of permit applications to the ACOE, California Department of Fish and Game (CDFG), and Regional Water Quality Control Board for extension of the existing Santa Ana Regional Interceptor pipeline by approximately 14 miles where proposed directional drilling would create potential temporary impacts to jurisdictional water resources.

**San Diego River and San Vicente Creek Biological and Groundwater Resources Baseline Study, Public Utilities Department, City of San Diego, California.** Conducted vegetation mapping along a riparian corridor to facilitate future monitoring and management of biological and groundwater resources during operation of planned groundwater production wells. Prepared a draft of the botanical report to be included as an appendix to the baseline study.

**Seeley Wastewater Reclamation Facility Improvements Project, Imperial County, California.** Assisted with special-status plant species surveys along the New River on a project in which upgrades to the Wastewater Treatment Plant would affect discharges to the river.

**North Agua Hedionda Interceptor Project, City of Carlsbad, California.** In 2009, Ms. Dayton was the lead biological monitor for the installation of underground sewer piping. She conducted preconstruction vegetation mapping and assisted in California gnatcatcher (*Polioptila californica*) monitoring during the breeding season. She attended weekly construction meetings when necessary and submitted regular site observation reports as well as a final monitoring report demonstrating compliance with permits. The project required monitoring for approximately 2 months, and monitoring served to protect native vegetation and an active gnatcatcher nest.

**Cornerstone Lands at Lower Otay Reservoir, City of San Diego Public Utilities Department, California.** Organized and conducted vernal pool plant surveys and documented the methods and results of the surveys in a letter report.

**Coastal Treatment Plant Export Sludge Force Main Project, South Orange County Wastewater Authority (SOCWA), Orange County, California.** Assisted with special-status plant species surveys at Aliso and Wood Canyons Wilderness Park.

**Tijuana River Valley Emergency Maintenance Project, Stormwater Department, City of San Diego, California.** In 2010, served as a project biologist and was responsible for conducting construction monitoring and ensuring permit compliance for channel maintenance activities. Maintenance activities included using large earthmoving machinery to remove a vast amount of trash and several hundred thousand tons of sediment material from the river valley, and create new, large drainage channels within the Tijuana River Valley to better direct stormwater and reduce flooding during storm events. In addition, wrote weekly site observation reports based on other biologists' daily notes and wrote a final monitoring report that included impact analyses and demonstrated permit compliance. Field monitoring on the project totaled approximately 1 week.

**Plano-Tijeras Force Main Spill Site Project, County of Orange, California.** In 2010, conducted construction monitoring to ensure permit compliance for sewage spill site-remediation activities and berm reconstruction. Wrote daily site observation reports and provided photo documentation. Participation in project lasted less than a week.

### **Relevant Training**

“Wetland Delineation.” Wetland Training Institute Inc. July 25–29, 2011.

Vegetation Mapping Workshop. California Native Plant Society (CNPS), CDFG, and Aerial Information Systems (AIS). January 31–February 2, 2011.

Tehachapi Renewable Transmission Project (TRTP) Construction Monitoring Workshop. ICF International. December 1, 2010.

Worker Environmental Awareness Program (WEAP)/Safety Training Session. Burns & McDonnell Engineering Inc. December 9, 2010.

“Plant Terminology and Identification in San Diego County.” Friends of the Jepson Herbarium. March 21–22, 2008. Instructor: Michael G. Simpson.

“Plant Families Identification.” Rancho Santa Ana Botanical Garden. March 8, 2009. Instructor: Bob Allen.

“Introduction to Morphology and Identification of Flowering Plants.” April 10–13, 2009. Instructors: Anna Larsen and Bianca Knoll Nakayama.

“Field and Herbarium Identification of Southern California Manzanitas.” Rancho Santa Ana Botanical Garden. February 6, 2010. Instructor Bart O'Brien.

“Conifers of Southern California.” Rancho Santa Ana Botanical Garden. March 6, 2010. Instructor: Lorrae Fuentes.

“Flora of Joshua Tree National Park.” Desert Institute. March 20–21, 2010. Instructor: Allan Schoenherr.

## Megan Enright – Biologist

Megan Enright is a senior project manager with over 12 years' experience in environmental planning, specializing in biological resource analyses for environmental documents, regulatory compliance, and botanical surveying. Ms. Enright has served in a variety of project management and lead biologist roles for a diverse client base, including cities, counties, special districts, joint powers authorities, and land development companies. In her project work, Ms. Enright solves biological and regulatory challenges and leads interagency coordination efforts to facilitate the entitlement and environmental permitting process. Additionally, Ms. Enright conducts wetland delineations and endangered species surveys and evaluates mitigation sites.

Ms. Enright serves as the botanical services manager for Dudek and is trained and skilled in botanical surveying, including vegetation mapping, rare plant surveys, and wetland delineations, and she is experienced in the identification of Southern California flora.

Ms. Enright has served as extension of staff for several agencies, including water and wastewater districts and the Western Riverside County Regional Conservation Authority (RCA), a joint powers authority tasked with implementation oversight of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Ms. Enright understands the benefits of allowing a municipal agency to augment its staff and the complexities of building a team environment. As a result, she is adept at meeting clients' extension-of-staff needs.

### PROJECT EXPERIENCE

#### Development

**Tejon Mountain Village, Tejon Mountain Village LLC, Kern County, California.** The Tejon Mountain Village project consists of 28,000 acres of undeveloped land on the southern border of Kern County. Ms. Enright is the project director responsible for a team of environmental planning experts. Dudek is assisting Tejon Mountain Village with multiple environmental planning services to prepare an environmentally sensitive development. Dudek's services include preparation of a comprehensive biological database through vegetation mapping and focused wildlife and plant surveys. Biological resources work has included vegetation mapping; special-status botanical survey over 3 survey periods; focused surveys for over 20 special-status bird species; focused surveys for a variety of upland and aquatic reptile and amphibians; focused surveys for bats, small mammals, and ringtail; and a multifaceted analysis of local and regional wildlife movement. Ms. Enright oversaw the development of survey methods for each of these resource areas and coordinated field surveys and documentation among a staff of over 30 biologists. Once the biological baseline data was assembled, Dudek coordinated with the land planning team to develop avoidance and minimization measures that would avoid impacts to key sensitive biological resources. Coordination included in-depth use of geographic information system (GIS) tools to demonstrate the relationship of each resource to the land plan.

Ms. Enright and the Dudek team prepared the Biological Resources section of the Draft Environmental Impact Report (EIR), including the Alternatives Analysis for biological resources and

#### EDUCATION

University of California, San Diego  
BS, Biology/Ecology, 1997

#### CERTIFICATIONS

Federal Permit to conduct fairy shrimp surveys, Permit No. TE022524-0 (exp. 8/31/2013)

CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit, Permit No. 05006 (exp. 1/31/2012)

#### PROFESSIONAL AFFILIATIONS

California Native Plant Society  
Association of Environmental Professionals  
Southern California Botanists

supporting technical reports, including a Biological Resources Technical Report, Condor Management Plan, Wetlands Mitigation Plan, Oak Resources Management Plan, an overall Resources Management Plan, and Fire Protection Plan. Dudek played an integral role in preparing the response to comments on the Draft EIR, the Kern County Planning Commission hearing, and the Kern County Board of Supervisors hearing. The EIR was certified on October 5, 2009.

During preparation of the Draft EIR, Dudek also prepared an MSHCP for the Tehachapi Uplands area for Tejon Mountain Village LLC and the Tejon Ranch Company. The Tehachapi Upland MSHCP project consists of approximately 138,000 acres of undeveloped land on the southern border of Kern County, including the 28,000-acre Tejon Mountain Village project study area. Ms. Enright serves as a lead biologist for the MSHCP.

Currently, Ms. Enright is the lead permitting specialist for the Tejon Mountain Village project. Ms. Enright prepared and is currently processing wetlands permit applications for a Section 404 Individual Permit, Section 401 Water Quality Certification, and Master Streambed Alteration Agreement for impacts to waters of the U.S./state. The Section 401 Water Quality Certification was issued 2 months following permit application submittal. Dudek prepared a conceptual wetlands mitigation and monitoring plan that provides compensatory mitigation. In addition, Ms. Enright and the Dudek team prepared a 2081 Incidental Take Permit application for the California Department of Fish and Game (CDFG) in accordance with the California Endangered Species Act for the following: (1) permit coverage for the 7 state-listed species that have a potential to be impacted by the Tejon Mountain Village project, (2) provisional language allowing the permit to be amended to allow take to be authorized should any of the 55 unlisted special-status species that are not “fully protected” become listed in the future, and (3) concurrence that the Tejon Mountain Village project has been designed to avoid the 6 state "fully protected" species that may occur on site.

**Chevron West Coyote Hills Field Closure and Development Project, Chevron USA Production Company and Chevron Pacific Coast Homes, Fullerton, California.** Served as lead botanist for the 580-acre project. Conducted vegetation mapping in 2009 to update the vegetation map to reflect the existing conditions on site. Vegetation communities on West Coyote Hills were mapped to the alliance level in accordance with CDFG’s 2007 published the List of California Vegetation Alliances. Data for each vegetation community was collected. Specifically, field data collected focused on the level of disturbance using California Native Plant Society (CNPS) disturbance codes that corresponded to standardized cover classes. Ms. Enright was responsible for consistency in field mapping among the biologists and quality control and quality assurance of data and reporting for mapping.

**Campground and Trail Development Program, Mountains Recreation and Conservation Authority, Los Angeles County, California.** Served as senior biologist for project. Conducted vegetation mapping and rare plant surveys on property owned and managed by the Santa Monica Conservancy for the purposes of siting proposed campground facilities and trail connectors in the City of Malibu, California. Assisted in the preparation of a biological resources technical report for the City of Malibu and the California Coastal Commission in support of a Local Coastal Plan (LCP) amendment.

**Rancho Santa Fe Association Project, Rancho Santa Fe Association, County of San Diego California.** Served as project manager to provide environmental services pertaining to a 1.5-acre site located in San Diego County. Dudek’s biologists determined if a jurisdictional wetlands delineation was needed for the site in accordance with policies of the CDFG, U.S. Army Corps of Engineers (ACOE), California Regional Water Quality Control Board (RWQCB), and the County

of San Diego Resource Protection Ordinance. Dudek then provided recommendations regarding additional biological studies required, as necessary.

**Yaqui Pass and Viking Farms, San Diego County, California.** Served as lead botanist for the project. Conducted rare plant surveys in spring 2008 for two desert sites near Borrego Springs, California. Managed team of eight botanists to collect rare plant location data using handheld Global Positioning System (GPS) units with a data dictionary to standardize data-collection procedures.

**Trabuco Canyon, The Planning Center, County of Orange, California.** Served as project manager for the Trabuco Canyon Project. Ms. Enright and the Dudek team prepared biological technical reports for California Environmental Quality Act (CEQA) documentation for the Trabuco Canyon Project, which encompasses over 1,110 acres. Conducted vegetation mapping, jurisdictional wetlands delineation, and focused rare plant surveys in 2005 and 2006. Managed the wildlife corridor study (2.5-year program), focused surveys for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*), focused surveys for arroyo toad (*Bufo californicus*), habitat assessments and focused surveys for burrowing owl (*Athene cunicularia*), focused California gnatcatcher (*Polioptila californica*) surveys, nesting raptor surveys, and focused oak tree surveys. Project also includes preparation of a fire management plan, as well as wetland and Endangered Species Act permitting.

**Stebbins Property, Granada Sanitation District, City of Half Moon Bay, County of San Mateo County, California.** Served as biologist for the development of a 12,000-square-foot parcel, which includes the construction of a 4,346-square-foot single-family residence with an attached 496-square-foot garage, and the extension of a 90-foot sewer main and a 45-foot water main. Conducted a formal jurisdictional delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB, and prepared vegetation map for the project site. Assessed the potential for special-status species to occur on site. Prepared the biological resources section of the mitigated negative declaration (MND). Biological issues included wintering monarch butterflies (*Danaus plexippus*) due to presence of eucalyptus trees. However, avoidance and minimization measures for this species that included clearing trees outside of the wintering period for Monarch butterflies were provided in the MND.

**Riverview Office Development Project, Gatzke, Dillon & Ballance, City of Del Mar, California.** Served as project manager for 2.6-acre Riverview Office Development project. Provided oversight of and quality control for the biological technical reports for the CEQA document.

**Assessor Parcel Number 670-180-01, City of San Diego Neighborhood Code Compliance, City of San Diego, California.** Served as project manager and conducted vegetation mapping to assess impacts associated with unauthorized fill resulting in impacts to Diegan coastal sage scrub. Prepared a biological resources report and impact assessment.

**El Camino Real Properties, Patel Properties, City of Oceanside, California.** Served as project manager and prepared the biological resources report and impact assessment for the 2.0-acre project site. A particular challenge for this project is that the entire project site lies within the Wildlife Corridor Planning Zone of the Oceanside Draft Subarea Plan. Properties within this zone must be planned to maintain and enhance wildlife habitat quality and connectivity, particularly as part of a regional north-south movement corridor for coastal California gnatcatcher. If 25% of the site could be developed and the project would still remain economically viable, the remaining portion of the site must be preserved. Ms. Enright coordinated with the City of Oceanside regarding these requirements, and it would consider measures to offset the adverse economic

impacts of these policies, including clustering development and increasing maximum allowable building heights.

**Arbor Creek Residential Project, D. R. Horton, Oceanside, California.** Served as the lead botanist for the 80-acre proposed residential project in Oceanside, California. Conducted rare plant surveys on the 80-acre site. Collected rare plant location data for the federally listed threatened and state-listed endangered thread-leaved brodiaea (*Brodiaea filifolia*) and other special-status plant species, including small-flowered morning glory (*Convolvulus simulans*) and Blochman's dudleya (*Dudleya blochmaniae*).

**Seal Beach Project, Celebrate Homes, City of Seal Beach, California.** Served as project manager on the 10-acre project site. Conducted vegetation mapping, and a biological reconnaissance survey to determine the potential for special-status species to occur on the project site was evaluated. Prepared a biological resources letter report suitable for submittal to the City of Seal Beach.

**Meadow Lake Golf Villages Project, Centex Homes, County of San Diego, California.** Served as senior biologist on the 13.1-acre project site. Conducted a formal jurisdictional delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, RWQCB, and County of San Diego, and prepared vegetation mapping for the project site. Conducted a focused rare plant survey and assessed the potential for special-status species to occur on site. Assisted in the preparation of the biological constraints analysis.

**Warner Ranch EIR, Shapouri & Associates, San Diego County, California.** Served as biologist for a 500-acre residential development in northern San Diego County in the community of Pala. Conducted rare plant surveys on the 500-acre site. Collected rare plant location data for three special-status plant species: Parry's tetracoccus (*Tetracoccus dioicus*), Englemann's oak (*Quercus englemannii*), and Rainbow manzanita (*Arctostaphylos rainbowensis*).

**El Fuerte Street Project, Banker Realty, City of Carlsbad, California.** Served as botanist for the 4-acre proposed residential project. Conducted rare plant surveys on the site. Collected rare plant location data for sea dahlia (*Coreopsis maritima*), a CNPS List 2 species, and Nuttall's scrub oak (*Quercus dumosa*), a CNPS List 1B species.

**Vineyards Specific Plan EIR, City of Vista, California.** Served as lead biologist for the project, which included the development of a mixed-use work/live community within the City of Vista. Conducted biological surveys of the property to assess existing conditions, mapped vegetation communities, conducted a tree inventory focused on coast live oaks (*Quercus agrifolia*), and determined the potential for sensitive plants and wildlife to exist on site. The EIR was certified in 2007.

**Target Commercial Center, Target Corporation, City of Vista, California.** Served as senior biologist for the project for a commercial retail development project on an 18.6-acre former agricultural property. Conducted vegetation mapping and a formal jurisdictional delineation of water of the U.S./state under the jurisdiction of the ACOE, CDFG, and RWQCB. Prepared the biological resources technical report to support the EIR. The EIR was certified and project obtained wetlands permits.

**Mar Vista Project, Mar Vista LLC, City of Vista, California.** Served project manager for 1.8-acre Mar Vista project that included the construction of three single-family homes, associated roads/driveways, and utilities in the City of Vista, California. Conducted vegetation mapping and a

formal jurisdictional delineation of water of the U.S./state under the jurisdiction of the jurisdiction of ACOE, CDFG, and RWQCB. The potential for special-status species to occur on the project site was evaluated. Prepared the biological resources letter report for submittal to the City of Vista.

**Via Centre Drive Project, City of Vista, California.** Served as project manager for 10.3-acre project site. Conducted a focused rare plant survey for the federally listed threatened and the state-listed endangered thread-leaved brodiaea. Prepared the biological resources letter report for submittal to the City of Vista, U.S. Fish and Wildlife Service (USFWS), and CDFG.

**Alpine Marker Property, County of San Diego, California.** Served as lead botanist for development project. Conducted vegetation mapping and a formal jurisdictional delineation of water of the U.S./state under the jurisdiction of the jurisdiction of ACOE, CDFG, RWQCB, and County of San Diego. The potential for special-status species to occur on the project site was evaluated. Following initial site visits, a focused rare plant surveys was conducted. Prepared a biological resources map and presented it to the County of San Diego.

**Newhall Ranch Project, Newhall Land and Farming Company, Counties of Los Angeles and Ventura, California.** Served as lead biologist for focused surveys for the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) and other special-status plants starting in 2002 on up to 14,500 acres of land. Designed data collection methods, including survey protocols and a data management system, that satisfied CDFG and provided data to support the 2,700-page biology section of the EIR/environmental impact statement (EIS) for the ACOE and CDFG. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch. Conducted vegetation mapping on over 17,000 acres using the CDFG Classification System. Conducted vegetation mapping and jurisdictional wetlands delineation for verification request letters in accordance with the ACOE permit issued on the Natural Rivers Management Plan.

**Stallion Ridge Residential Development Project, Bonsall, San Diego County, California.** Served as lead botanist for residential development project along Bonsall Creek in the County of San Diego, California. Conducted rare plant surveys on 165 acres.

**Planning Area I, The Irvine Company, County of Orange, California.** Project manager for environmental documentation. Prepared the biological technical reports for CEQA documentation for the Planning Area I Project, which encompasses over 4,200 acres, within which the northern half (approximately) would be permanent open space as part of a larger natural resources preserve, and the southern half (approximately) would be developed as a new community that includes residential, commercial, institutional (i.e., schools), agricultural, and open space uses. Prepared vegetation map and conducted rare plant surveys within the 4,200-acre project site. Assisted in the preparation of wetlands permitting data.

**Planning Areas 18 and 39, The Irvine Company, Irvine, California.** Project manager for environmental documentation, including the assembly of the biological resources database. Conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB, and prepared vegetation map within the 1,200-acre project site. Developed wetlands permitting strategies with the Irvine Company. Managed the focused surveys for least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

**Villages of San Jacinto Project EIR, City of San Jacinto, California.** Served as biologist to support the preparation of the EIR for a 1,900-unit residential subdivision in the City of San Jacinto. Conducted a formal jurisdictional delineation of the project site and conducted vegetation mapping.

Assisted in the preparation of the biological resources technical report that also demonstrated consistency with the Western Riverside County MSHCP, a regional resource conservation program. Key issues addressed in the EIR included biological resources and consistency with the Western Riverside County MSHCP. The project has received approval from the City of San Jacinto Planning Commission and goes before the City Council in February 2010 for final approval and certification.

**High Meadow Ranch Residential Development Project, Vicar Ventures, Community of Lakeside, County of San Diego, California.** Served as lead permitting specialist. Performed wetlands delineation and wetlands permitting, including preparation of wetlands permit applications, including conceptual mitigation plan, for this 800-acre residential development project. Coordinated and negotiated with wetlands resource agencies and the USFWS regarding sensitive species issues on site.

**Fanita Ranch, Barratt American, Santee, California.** Served as botanist and conducted rare plant surveys on approximately 2,000 acres.

**Otay Ranch Village 13/Resort Site, Otay Ranch Company, County of San Diego, California.** Served as biologist for vernal pool branchiopods. Conducted a wet season presence/absence survey for vernal pool branchiopods. The survey focused on the determination of the presence/absence of two federally listed endangered vernal pool branchiopod species: Riverside fairy shrimp (*Streptocephalus woottoni*) and San Diego fairy shrimp (*Branchinecta sandiegonensis*). Assisted in the preparation of the focused survey report providing methods and results.

**Quantum Estates II Projects, Quantum Estates II LLC, County of San Diego, California.** Served as botanist and conducted focused surveys for the state-listed endangered and federally listed threatened Encinitas baccharis (*Baccharis vanessae*) on approximately 40 acres.

**Village 3 Project, Otay Ranch Company, Chula Vista, California.** Served as botanist and conducted rare plant surveys, including focused surveys for the federally listed threatened and state-listed endangered Otay tarplant (*Deinandra conjugens*), on 263 acres.

**St. Jerome Church Project, Catholic Diocese, San Diego, California.** Served as biologist and conducted a wet season presence/absence survey for vernal pool branchiopods for a 17-acre site for the construction of a church and school. The survey focused on the determination of the presence/absence of two federally listed endangered vernal pool branchiopod species: Riverside fairy shrimp and San Diego fairy shrimp. Survey results are key data to support the wetlands permitting and Section 7 consultation to address impacts to federally listed fairy shrimp.

**Lusardi Creek Lake Modification/Vector Control Plan, Newland Communities/4S Kelwood, GP, County of San Diego, California.** Served as biologist and permitting specialist and conducted field surveys and prepared environmental documentation. Delineated wetlands and prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands. Impacts were associated with the vector control program. Prepared functional values assessment and biological resources report.

**Manzanita Partners Project, City of Carlsbad, California.** Prepared a conceptual mitigation plan for vernal pool restoration and enhancement within 15 vernal pools located on a 6.8-acre open space preserve site. Project involvement included delineating existing vernal pools for enhancement, mapping historical vernal pools for restoration, and preparing monitoring methodology that would satisfy the USFWS permitting requirements. Conducted botanical surveys in 2003.

**Vista Hacienda Project, Celebrate Homes, Vista, California.** Served as project manager for endangered species act permitting. Prepared and processed a 4(d) Habitat Loss Permit within the City of Vista for the USFWS and CDFG. Managed the focused survey for coastal California gnatcatcher.

**Camelot Project, Western Pacific Housing, San Diego, California.** Conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB for the approximately 39-acre site.

**Durian Street Project, Cal Sun Development, Vista, California.** Served as project manager for wetlands permitting. Conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB for the approximately 5-acre site. The jurisdictional delineation was conducted to determine the biological constraints on the site during the due diligence phase of the project.

**Tucalota Creek Flood Control Project, Winchester Square LLC, County of Riverside, California.** Project manager for wetlands permitting for the construction and future maintenance of a proposed a flood control project. Prepared Section 401 Water Quality Certification, Section 404 Individual Permit, and I603 Streambed Alteration Agreement applications for impacts to non-tidal, adjacent wetlands. Impacts were associated with the flood control measures and proposed maintenance activities. Prepared functional values assessment and a flood control maintenance plan to be adopted by the Riverside County Flood Control and Water Conservation District. Project included extensive coordination with the ACOE, CDFG, RWQCB, USFWS, and the Riverside County Flood Control and Water Conservation District. Challenges included developing a permitting strategy that avoided Section 7 consultation to address impacts to federally listed California gnatcatcher, which occurred off site but adjacent to the project. Ultimately, a design solution that avoided impacts to waters of the U.S./state but that still provided the commercial development 100-year flood protection was chosen. Following the design changes, the Section 7 consultation and the continuation of wetlands permitting was not required.

**Rancho Santalina Project, City of San Marcos, California.** Served as biologist. Conducted a delineation of waters of the U.S. under the jurisdiction of the ACOE, CDFG, and RWQCB; prepared vegetation map; and conducted focused rare plant surveys that included the federally listed threatened and state-listed endangered thread-leaved brodiaea. Prepared biological resources report for CEQA documentation.

**Cupertino Project, Ryland Homes, Vista, California.** Project manager for wetlands permitting effort, which consisted of a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB, as well as preparation of permit applications for a Nationwide Permit 39 from the ACOE, Section 401 Water Quality Certification from the RWQCB, and a I603 Streambed Alteration Agreement from the CDFG.

**Bryn Glen Project, D. R. Horton, City of San Diego Future Urbanizing Area Subarea IV, California.** Served as wetlands permitting specialist. Assisted in the preparation of the ACOE Section 404 Nationwide permits 12, 14, and 26; RWQCB Section 401 Water Quality Certification; and CDFG I603 Streambed Alteration Agreement for the 65-unit residential subdivision. Assisted in the preparation of the conceptual wetlands mitigation and monitoring plan.

**Bella Del Sol Subdivision, Standard Pacific Homes, Chula Vista, California.** Served as project manager for environmental documentation. Prepared an assessment of potential biological impacts from two discharges to Telegraph Canyon Creek from the intersection of Paseo Ladera and Telegraph Canyon Road to the San Diego Bay. As required by the RWQCB, Ms. Enright

submitted a technical report in April 2003 that included an analysis of potential downstream impacts to Telegraph Canyon Creek due to the discharge, as well as the location and nature of the discharge, methods, results, and conclusions. This technical report also included a habitat assessment of the affected portion of Telegraph Canyon Creek. The habitat assessment identified areas of silt and sediment within the creek that appeared to have been deposited during the 2003 rainy season in order to estimate the impacts to riparian habitat incurred from the two discharges.

**Native Grassland Mapping Project, Rancho Mission Viejo Company, California.** Served as biologist for mapping project. Conducted large-scale native grassland mapping study on the 22,815-acre Rancho Mission Viejo (RMV) located in southern Orange County. The native grassland mapping study was conducted in support of the Southern Orange County Natural Communities Conservation Program (NCCP) and Habitat Conservation Plan (HCP), which provides for the conservation of the native habitats on RMV. Reviewed existing native grassland mapping information for RMV that had been collected in 1989 and late 1990s in selected areas. Four major focus areas totaling approximately 4,800 acres were selected for the mapping effort. Consistent with the Orange County Vegetation Classification System, grasslands were mapped as eight basic types: annual (non-native), wild rye, needlegrass, deergrass, oak savanna, ruderal, mixed perennial, and sumac savanna. Needlegrass grasslands were mapped as "high quality" (grassland with greater than 25% cover of needlegrass or a dominant cover of other native perennial annual grasses and forbs); "moderate quality" (grasslands with between 10% and 25% cover of needlegrass or other native perennial annual grasses and forbs); and "low quality" (grasslands with less than 10% cover of needlegrass or other native perennial annual grasses and forbs). Identified areas of annual grassland that had restoration potential based on the presence of suitable clay soils. Following the field work, Dudek prepared a GIS coverage of mapped grasslands along with depictions of quality ratings and restoration potential. This project has been completed.

**Surfer's Point, Surfer's Point LLC, Encinitas, California.** Served as project manager for environmental documentation. Conducted vegetation mapping and prepared biological resources report for CEQA documentation for the 34-unit timeshare resort project. Project dealt with coastal issues because it was located directly adjacent to Batiquitos Lagoon just east of Coast Highway 101. Managed the California gnatcatcher surveys.

**Silverado Senior Living Project, Encinitas, California.** Served as project manager for wetlands permitting. Conducted a jurisdictional wetlands delineation and consulted with the resource agencies regarding wetlands buffer issues on the 1.8-acre Silverado Senior Living proposed project site located north of Saxony Lane and east of Saxony Road in the City of Encinitas. According to the City of Encinitas Municipal Code (Section 30.34.040 B3b), a minimum buffer width of 50 feet is required unless the applicant demonstrates that a buffer of lesser width will protect the wetland resources on site. Based on the size of the on-site wetlands (0.1 acre), the constituent species, and the highly disturbed nature of the site and the surrounding development, Ms. Enright concluded that the 50-foot-wide buffer required could be reduced while still protecting the functions and values of the wetlands on site. Dudek consulted with CDFG, the USFWS, and ACOE regarding the width of the buffer. After coordination and negotiation with the resource agencies, it was determined that a buffer that varied between 25 and 48 feet, extending to the top of the slope adjacent to the on-site wetland resources, would be adequate to preserve the functions and values of the habitat.

**Deer Springs Road Project, Catholic Diocese of San Diego, County of San Diego, California.** Served as project biologist and conducted a delineation of waters of the U.S. under the jurisdiction of the ACOE, CDFG, and RWQCB and prepared vegetation map. The jurisdictional

delineation and vegetation mapping was conducted to determine the biological constraints on the site during the due diligence phase of the project.

**Torrey Del Mar Project, D. R. Horton, City of San Diego Future Urbanizing Area Subarea I, San Diego, California.** Prepared a conceptual wetland mitigation and monitoring plan for the Torrey Del Mar Project within the City of San Diego Future Urbanizing Area Subarea I, California.

**Lower Rosan Off-Site Wetland Mitigation Project, City of San Juan Capistrano Redevelopment Agency, San Juan Capistrano, California.** Served as biologist and assisted in the preparation of a conceptual wetland mitigation and monitoring plan for off-site wetlands mitigation for Lower Rosan Ranch.

**Kern Valley Sanitary Landfill Closure and Embankment and Scour Protection, Kern County Waste Management Division, Kern County, California.** Project manager for the regulatory permitting for the landfill closure. Delineated jurisdictional waters of the U.S./state, including wetlands, and prepared applications for a Section 401 Water Quality Certification, Section 404 Letter of Permission, and 1601 Streambed Alteration Agreement permit applications for impacts to non-tidal, adjacent wetlands. Impacts were associated with the embankment and scour protection. Prepared functional values assessment and conceptual wetlands mitigation and monitoring plan.

**Hohn Property Landfill Mitigation, AVMGH Properties, City of Corona, California.** Served as project biologist. Conducted vegetation mapping to assess impacts associated with unauthorized dumping as part of a landfill operation along Temescal Creek in Riverside, California.

## Education

**Mesa View Middle School Access Road Project, Yucaipa-Calimesa Unified School District, City of Calimesa, California.** Served as project manager for biological resources technical report and regulatory permitting. Prepared biological technical reports for CEQA document. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB.

**Proposed Elementary School No. 17 Project, Palms Springs Unified School District, City of Desert Hot Springs, California.** Served as senior biologist for biological resources technical report. Provided oversight of and quality control for the biological technical reports for the CEQA document.

**Rancho Santa Fe New School Project, Rancho Santa Fe Unified School District, County of San Diego, California.** Served as project manager and provided peer review services for the district. The work included review an EIR for the Rancho Santa Fe New School. In addition, managed nesting bird surveys conducted in accordance with the federal Migratory Bird Treaty Act for the district.

**Joli Ann Leichtag Elementary School Project, San Marcos Unified School District, County of San Diego, California.** Served as project manager for CEQA documentation and regulatory permitting. Prepared biological technical reports for EIR. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Conducted focused surveys for rare plants, including thread-leaved brodiaea, San Diego thornmint (*Acanthomintha ilicifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), and San Diego goldenstar (*Muilla clevelandii*). Managed the focused surveys for the state- and federally listed least Bell's vireo and state-listed

endangered southwestern willow flycatcher. Advised the district on resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act, Section 1600 of the California Fish and Game Code, and the federal Endangered Species Act. Prepared and processed a Section 401 Water Quality Certification, a 1602 Streambed Alteration Agreement, a Section 404 Individual Permit, a Section 7 formal consultation with the USFWS and the ACOE, and a 2081 CDFG Take Permit. In addition, Dudek prepared supporting documents including a habitat management plan, adaptive management plan for thread-leaved brodiaea (state and federally listed), and a property analysis record. Dudek's subsidiary, Habitat Restoration Sciences, implemented the wetlands and rare plant mitigation designs. Particular challenges for the district included discovery of potential setbacks in the form of endangered plants, protected wetlands, and cultural resources after selecting the 22-acre proposed elementary school's location. The proposed 22-acre school site is located adjacent to Agua Hedionda Creek, a former nursery, and an underground San Diego Gas and Electric (SDG&E) easement. Potential issues with developing the elementary school at this site included hazards associated with constructing a school within a 100-year floodplain, impacts to jurisdictional wetlands, hazardous materials/waste associated with former agricultural fields, hazards associated with the proximity of a power easement, cultural resources, and endangered species. Avoidance, minimization, and mitigation of impacts and early coordination with the resource agencies were key elements that resulted in certification of the EIR, processing all necessary permits over a 2-year period, and the school being completed and opened in fall 2008.

**Dual Magnet High Schools Project, Vista Unified School District, Oceanside, California.**

Served as project manager for preparation of biological technical reports for CEQA documentation and wetlands and Endangered Species Act permitting. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Managed the focused surveys for the state- and/or federally listed least Bell's vireo, arroyo toad, and southwestern willow flycatcher, as well as special-status plant species. Prepared biological resources report for CEQA documentation. Advised the district on resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act, Section 1600 of the California Fish and Game Code, and the federal Endangered Species Act. Prepared and processed a Section 401 Water Quality Certification, a 1602 Streambed Alteration Agreement, a Section 404 Nationwide Permit 39, a Section 7 formal consultation with the USFWS, and a 2080.1 Fish and Game Consistency Determination. In addition, Dudek prepared supporting documents, including a habitat management plan for uplands mitigation and California gnatcatcher. Particular challenges for the district included the inability to utilize a 4(d) Habitat Loss Permit for impacts to California gnatcatcher since the district was not enrolled in the NCCP/HCP program. In addition, the project site was located in federally designated critical habitat for least Bell's vireo and was required to mitigate for loss of critical habitat. However, through careful negotiations with the resource agencies regarding impacts and mitigation, permits were issued and the school is under construction.

**St. Jerome Church Project, Catholic Diocese, San Diego, California.** Served as biologist and conducted a wet season presence/absence survey for vernal pool branchiopods for a 17-acre site for the construction of a church and school. The survey focused on the determination of the presence/absence of two federally listed endangered vernal pool branchiopod species: Riverside fairy shrimp and San Diego fairy shrimp. Survey results are key data to support the wetlands permitting and Section 7 consultation to address impacts to federally listed fairy shrimp.

**Site Number 10, Stacco Project, Vista Unified School District, County of San Diego, California.** Project manager for preparation of biological technical reports for CEQA documentation. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Prepared biological resources

report for CEQA documentation. Advised the district on resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act, Section 1600 of the California Fish and Game Code, and the federal Endangered Species Act. Due to the biological constraints, identified early on by Dudek, the district decided to reject this site as an alternative the building their Dual Magnet High Schools Project.

**Rancho Minerva Middle School, Vista Unified School District, Vista, California.** Project manager for preparation of biological technical reports for CEQA documentation. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Assisted the Vista Unified School District in resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act and Section 1600 of the California Fish and Game Code. Prepared biological resources report for CEQA documentation. Dudek conducted a focused survey for coast live oak trees in accordance with the City of Vista's guidelines regarding oak trees. The school opened in 2007.

**Site Number 3, Foothill Project, Vista Unified School District, Vista, California.** Project manager for preparation of biological technical reports for CEQA documentation. Prepared a vegetation map and conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Assisted the Vista Unified School District in resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act and Section 1600 of the California Fish and Game Code. Prepared biological resources report for CEQA documentation.

## Energy

**Devers to Palo Verde No. 2 Transmission Line Project, Southern California Edison, Riverside and San Bernardino Counties, California.** Served as the lead botanist on the Devers to Palo Verde Project in California, which is approximately 170 miles. Conducted vegetation mapping in accordance with the CDFG along the proposed transmission line corridor from Hemet, Riverside County, to Blythe, Riverside County. Conducted focused surveys for the federally listed plant Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*).

**Hazard Tree Removal Project, Southern California Edison, San Bernardino and San Jacinto Mountains, Riverside and San Bernardino County, California.** Serves as the lead botanist for Edison's Hazard Tree Removal Project occurring in the San Bernardino National Forest and surroundings. Responsible for conducting botanical surveys, if necessary, along Edison circuits within the San Bernardino and San Jacinto Mountains prior to removal of bark-beetle-infested trees, drought-stressed trees, and other damaged trees from the vicinity of its poles, lines, and other facilities. The project area encompasses 106 square miles, an estimated 62,000 acres of tree removal, more than 22,000 power poles, and 538 linear miles of utility lines. Responsibilities include coordinating botanical teams to conduct surveys, overseeing the preparation of technical reports, and conducting the final quality control and quality assurance procedures on botanical components of the projects. Ms. Enright coordinates with Edison personnel and U.S. Forest Service (USFS) botanists regarding site-specific sensitivities within San Bernardino National Forest (SBNF) and writing Biological Assessments for the USFS. Specifically, Ms. Enright led the botanical teams on the following Edison Hazard Tree Removal Projects:

- Doble Circuit, San Bernardino National Forest
- Fingal Line, San Jacinto Mountains
- Hydro-KRI Upgrade Poles, Kern
- Mountain View 220kV Reconductor Vista-San Bernardino GO131D Project.

**Southern California Edison As-Needed Services Project, Southern California Edison, Riverside and San Bernardino Counties, California.** Serves as senior biologist for Southern California Edison's as-needed project. Ms. Enright is responsible for review of Biological Assessments/Biological Evaluations prepared by Dudek biologists for the this project. The goal of Ms. Enright's review is to ensure quality control and quality assurance for biological components of the deliverables prior to distribution of draft reports to Southern California Edison.

### Healthcare

**Scripps San Marcos Project, Scripps Hospital, City of San Marcos, California.** Served as lead botanist for the Scripps San Marcos Project. Conducted surveys for the federally listed and state-listed endangered San Diego thornmint, the federally listed endangered and state-listed threatened thread-leaved brodiaea, and the federally listed threatened spreading navarretia (*Navarretia fossalis*), as well as those species commonly accepted as regionally sensitive by the CNPS, including Orcutt's brodiaea, and smooth tarplant (*Centromedia (Hemizonia) pungens* ssp. *laevis*). Prepared a report documenting survey results, methods, and potential impacts to species.

### Military

**Camp Pendleton Button-Celery Inventory Project, Engineering–Environmental Management Inc. (e2M), San Diego, California.** Served as the project manager for the Camp Pendleton Button-Celery Inventory Project on the U.S. Marine Corps Base Camp Pendleton (Base). Conducted focused survey for Pendleton button-celery (*Eryngium pendletonensis*), a CNPS List 1B.1 species and a narrow endemic, on approximately 250 acres of the Base in the northwestern portion of San Diego County. Dudek conducted surveys to find new populations and more accurately and precisely map existing populations of Pendleton button-celery in the areas on the Base where the species is known to occur. Mapped the survey routes using a GPS unit, and field data associated with each plant polygon were collected using a data dictionary loaded on the GPS unit. Dudek submitted the existing conditions report to the Base in May 2006, along with a geodatabase developed for the project that included species data, survey route data, and associated metadata. Specific training for radio communication between Dudek and the Base was required.

**Brand's Phacelia Monitoring Plan Project, Engineering–Environmental Management Inc. (e2M), San Diego, California.** Served as the project manager for the Brand's Phacelia Monitoring Plan Project on the Base. Prepared an inventory and monitoring plan for Brand's phacelia (*Phacelia stellaris*), a CNPS List 1B (3-3-2) species. A compendium of all known information, primarily literature, on this species was also prepared. The inventory portion of the plan involved determining potential habitat of Brand's phacelia on the Base and developing inventory survey methods to establish baseline occurrence data for the species. For the monitoring portion of the plan, established monitoring survey methods for those occurrences of Brand's phacelia that may be identified during the inventory phase. Monitoring data to be collected included changes in population numbers and distribution, phenology, reproduction, and threats. Dudek created a geodatabase to track inventory and monitoring data. The final inventory and monitoring plan was completed November 2008.

### Municipal

**L-Ditch Remediation Project, Port of San Diego, San Diego County, California.** Served as the lead biologist and permitting specialist for the Port of San Diego's L-Ditch Project. Prepared necessary environmental permits for the filling of the L-Ditch, which contains saltmarsh habitat, under a Regional Board Cleanup Order. Permits include Nationwide Permit 38 from the ACOE and a 401 Water Quality Certification from the RWQCB, which is considered precertified due to the cleanup order. The proposed habitat replacement site for impacts to the L-Ditch is located at

the “D Street fill site,” which the USFWS has designated as Critical Habitat for western snowy plover (*Charadrius alexandrinus nivosus*) as part of the Sweetwater National Wildlife Refuge Subunit. The habitat replacement plan is designed to avoid direct impacts to special-status plants and special-status migratory bird nesting sites. Successful permitting strategies have included preapplication meetings with the resource agencies and biologists who have been monitoring the D Street fill site for wildlife use to ensure the habitat replacement plan enhances nesting habitat for the California least terns (*Sternula antillarum browni*) and improves access to existing and newly established foraging locations for western snowy plover.

**Hahamonga Watershed Park Improvement Project, City of Pasadena, California.** Served as lead botanist to the City of Pasadena’s Parks and Recreation Department to provide biological services as part of subsequent environmental impact analyses to support habitat restoration and park improvements within the 116-acre park area located in the City of Pasadena. Conducted vegetation mapping and habitat suitability assessments for rare plant species. Provided quality control/quality assurance for botanical elements of project, including vegetation mapping and rare plant surveys. Biological surveys were successfully completed in 2009.

**Forrestal Trails Nature Preserve, Palos Verdes Peninsula Land Conservancy, Rancho Palos Verdes, California.** Served as senior biologist for biological resources report and impact analysis. Provided oversight of and quality control for the report.

**Dos Pueblos Golf Links, CPH Dos Pueblos LLC, County of Santa Barbara, California.** Served as biologist for the 202-acre project site, including special-status resources such as wetlands, sensitive species, and native grasslands. Conducted biological studies and tree inventory. Key issues for the project include wetlands, endangered species act, and California Coastal Act permitting.

**Kumeyaay Campground Project, City of San Diego Parks and Recreation Division, San Diego, California.** Served as wetlands permitting specialist for project. Prepared after-the-fact permits in accordance with Section 401 and 404 of the federal Clean Water Act and Section 1600 of the California Fish and Game Code for a campground project located within Mission Trails Regional Park.

## Resource Management

**Western Riverside County MSHCP, County of Riverside, California.** Served as biologist for project. Prepared species accounts for Covered Species addressed in the MSHCP.

**Western Riverside County MSHCP Ongoing Assistance, RCA, County of Riverside, California.** Ms. Enright is the lead biologist responsible for providing ongoing and as-needed assistance to the Western Riverside RCA in implementing the Western Riverside County MSHCP. Dudek functions as extension of staff to the RCA, providing resource planning specialists, biologists, and GIS analysts. Ms. Enright’s role at the RCA includes the following:

- Report drafting, including the MSHCP annual report
- Facilitation of joint wildlife agency and RCA meetings and workshops
- Biological expertise, including review of survey protocols and assistance to project applicants and permittees
- Training for permittees, biologists, and consultants on compliance with MSHCP
- Document review, including preparation of the RCA’s Joint Project Reviews, which includes reviews of development applications presented to permittees within the MSHCP Criteria Area to ensure MSHCP implementation is consistent.

**Simon Preserve Baseline Biodiversity Surveys, County of San Diego, California.** Served as project biologist for vegetation mapping and sensitive plant surveys on the County of San Diego's 617-acre Simon Preserve located in the community of Ramona, California. Challenges included developing project-specific mapping and survey protocols and rapid deployment of staff and resources to meet seasonal timing requirements and budgetary constraints.

**Southern Orange County Subregion HCP Initial Management Action Plan (IMAP), Rancho Mission Viejo Company, Orange County, California.** Served as biologist and assisted in the preparation of the IMAP with respect to data collection on vegetation communities for monitoring and management activities in the Habitat Reserve from 2009 through 2013. The IMAP is currently under final review by the USFWS, and implementation of monitoring and management activities is anticipated to occur in 2010.

## Transportation

**Mid-County Parkway, Jacobs Engineering, Riverside County, California.** Served as lead botanist for the Mid-County Parkway study area, which ranges from approximately 1.1 to 4 miles in width and is approximately 32 miles in length. Conducted focused rare plant surveys in accordance with the requirements of the Western Riverside County MSHCP. In the Lake Mathews area, conducted surveys for plant species covered by the Lake Mathews HCP.

**Barham Drive Street Improvements Project, City of San Marcos, California.** Served as project manager for wetlands permitting. Conducted vegetation mapping and delineation of wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Prepared and processed a Section 404 Nationwide Permit, Section 401 Water Quality Certification, and Section 1602 Streambed Alteration Agreement for project impacts to waters of the U.S./state, including wetlands.

**Pala Road Extension Project, Bureau Veritas Group, City of Oceanside, California.** Served as project manager for environmental documentation for a proposed 4,500-foot extension of Pala Road with an 84-foot right-of-way near the San Luis Rey River in the City Oceanside. Biological resources were a specific concern, particularly within the Park Pond, a flood control pond built by the ACOE as a part of a levee flood control system along the San Luis Rey River. Ms. Enright conducted biological surveys including vegetation mapping and a wetlands delineation and managed the general wildlife surveys. Ms. Enright prepared the biological resources technical report for the project, as well as the wetlands and endangered species permits. Dudek prepared an initial study in accordance with CEQA, and monitored geotechnical work conducted by others. Dudek assisted the City of Oceanside with public scoping of environmental issues.

**Oceanside to Escondido Sprinter Rail Project, North County Transportation District, Cities of Oceanside, Vista, San Marcos, and Escondido, and County of San Diego, California.** Served as lead biologist and permitting specialist for the 22-mile-long sprinter project. Delineated wetlands and prepared vegetation map within the Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek watersheds. Prepared Section 401 and Section 404 permit applications and 1601 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands; impacts were associated with the rail system. Evaluated off-site mitigation opportunities by conducting a wetlands delineation of a 50-acre riparian habitat area on Escondido Creek and identified areas where habitat restoration and enhancement could occur. Conducted jurisdictional determination with ACOE staff. Prepared alternatives analysis, functional values assessment, and Conceptual Wetlands Mitigation Plan. Assisted in the preparation of an exotics removal plan, uplands mitigation plan, brown-headed cowbird (*Molothrus ater*) trapping plan, and a California gnatcatcher and least Bell's vireo habitat

management and monitoring plan in accordance with the Biological Opinion issued by the USFWS. Assisted in the preparation of the biological resources report and CEQA and National Environmental Policy Act (NEPA) documentation. Provided continued regulatory permitting assistance and environmental service support on a bimonthly basis.

**El Camino Real Widening Project, City of Carlsbad, California.** Served as biologist. Conducted vegetation mapping and delineation of wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB. Provided oversight on resource agency permitting.

**Oceanside to Escondido Bikeway Project, City of San Marcos, Cities of Oceanside, Vista, San Marcos, and Escondido, California.** Project manager for the City of San Marcos in permitting under Section 401 and Section 404 of the federal Clean Water Act and the California Fish and Game Code for impacts to non-tidal, adjacent wetlands. Assistance included preparation of several amendments to the permits following issuance due to project changes and construction monitoring services.

**Union Valley Parkway Project, City of Santa Maria and County of Santa Barbara, City of San Maria, California.** Served as lead biologist of the Union Valley Parkway Project. Prepared vegetation map for the proposed roadway corridor. The project consisted of the construction of a four-lane roadway from Hummel Drive to State Route (SR) 135, construction of an at-grade connection at SR-135, and the extension of a new four-lane roadway from SR-135 to Blosser Road. Prepared biological resources report for CEQA documentation.

**Sorrento-Miramar Curve Realignment and Second Main Track, North County Transit District, City of San Diego, California.** Served as the lead biologist for the Sorrento-Miramar Curve Realignment and Second Main Track Project. Conducted a delineation of waters of the U.S. under the jurisdiction of the ACOE, CDFG, and California RWQCB and assisted in the preparation of the biological resources report for CEQA documentation. Project study area occupies approximately 180 acres along the linear rail corridor.

**San Marcos Creek Roadway Improvements Project, City of San Marcos, California.** Served as biologist for the project. Conducted a delineation of waters of the U.S. under the jurisdiction of the ACOE, CDFG, and California RWQCB; prepared vegetation map; and conducted rare plant surveys along San Marcos Creek from SR-78 to Lake San Marcos. Assisted in the preparation of environmental documentation.

**Camino Ruiz Road Alignment, Western Pacific Housing, City of San Diego Future Urbanizing Area Subarea IV, California.** Served as permitting specialist for the Camino Ruiz Road Alignment project. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared Section 401 and Section 404 permit applications and 1603 Streambed Alteration Agreement for impacts to non-tidal, adjacent wetlands. Impacts were associated with the roadway corridor. Prepared functional values assessment.

**El Cuervo Norte Mitigation Project, City of San Diego, California.** Served as lead biologist for project. Conducted a delineation of waters of the U.S. and wetlands under the jurisdiction of the ACOE, CDFG, and RWQCB for the 24-acre wetlands mitigation site for SR-56 located within the Los Peñasquitos Canyon Preserve along Los Peñasquitos Canyon Creek.

**SR-125, California Department of Transportation (Caltrans), San Diego, California.** Served as a biologist for the SR-125 project. Assisted in the research and documentation for

mitigation alternatives for SR-125. Focused on mitigation through the restoration of habitat for the federally listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*).

### Tribal

**Sycuan Pow-Wow Project, Sycuan Band of the Kumeyaay Nation, San Diego County, California.** Served as lead biologist for the Sycuan Pow-Wow Project in support of a CEQA document. Conducted a formal jurisdictional wetlands delineation and a biological reconnaissance survey that included mapping vegetation communities and identifying biological constraints to the project, including endangered species issues.

**Casino Expansion Project, Sycuan Band of the Kumeyaay Nation, San Diego County, California.** Served as permitting specialist for the Sycuan Casino Expansion project. Advised the Sycuan Nation and its consultants on resource agency permitting strategies in accordance with Section 404 and 401 of the federal Clean Water Act, Section 1600 of the California Fish and Game Code, and the federal Endangered Species Act.

### Water/Wastewater

**North Norco Channel Stage II, Riverside County Flood Control and Water Conservation District, Riverside County, California.** Served as senior biologist and wetlands permitting specialist for project. Conducted jurisdictional wetlands delineation of resources under the jurisdiction of the ACOE, CDFG, and RWQCB for the approximately 5,400 linear feet of stream channel, which is a tributary to the Santa Ana River. Developed permitting strategies for the district that would provide flood protection for the adjacent properties, including residential development, but that would reduce wetlands permitting requirements for the district. This project is currently in the planning stages.

**Las Vegas/San Pedro Creeks Capacity Improvement Project, County of Santa Barbara Flood Control Division, Santa Barbara County, California.** Provided quality assurance and quality control for the environmental document for the proposed capacity improvements at both creek crossings at Calle Real, Highway 101, and the Union Pacific Railroad bridges. Project involves extensive coordination with Caltrans, City of Goleta, and City of Santa Barbara.

**Cañada Gobernadora Multipurpose Basin, Santa Margarita Water District, Orange County, California.** Project manager for preparation of technical reports for CEQA documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys that included a focused survey for San Diego tarplant (*Deinandra (Hemizonia) paniculata*), southern tarplant (*Centromadia parryi* spp. *Australis*), and many-stemmed dudleya (*Dudleya multicaulis*). Project also included focused surveys for least Bell's vireo, southwestern willow flycatcher, and southwestern arroyo toad.

**Perris Valley Channel Lateral "B" State 2 Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California.** Served as botanist and conducted rare plant surveys along 9,600 linear feet of the Perris Valley Channel.

**Buena Vista Creek Channel Maintenance Project, City of Carlsbad Engineering Division, Cities of Carlsbad and Oceanside, California.** Project manager for preparation of technical reports for CEQA documentation and wetlands permitting. Delineated wetlands, prepared vegetation map, and conducted rare plant surveys. Prepared biological resources report for CEQA documentation. Facilitated preapplication agency meetings with the ACOE, CDFG, and the RWQCB. Prepared a 1601 Memorandum of Understanding in accordance with Section 1600 of

the California Fish and Game Code and assisted in the preparation of an exotics removal plan. Key issues for the project included developing a channel design that would provide 100-year flood protection but that would avoid and minimize impacts to wetland resources. Ms. Enright worked with City of Carlsbad engineering staff to avoid and minimize impacts to wetlands and sensitive species, developing a schedule of vegetation removal. This included the removal of half of the vegetation in the channel, in five reaches over a period of 5 years. In this way, only 10% of the creek channel vegetation was removed each year on a rotating basis to maintain flood control capacity and protect adjacent properties. To avoid impacts to wildlife, the vegetation removal work took place after the bird breeding season ended each year. Because only vegetation was removed and no soil was disturbed, the ACOE and California RWQCB did not regulate this activity, and the CDFG considered the impacts to CDFG-jurisdictional riparian habitat temporary. Ms. Enright prepared and processed a Memorandum of Understanding from the CDFG. Because the impacts were considered temporary, CDFG accepted exotics removal as mitigation for the channel maintenance activities.

**Salt Creek Channel Stage 6 Channel Widening Project, Riverside County Flood Control and Water Conservation District, County of Riverside, California.** Served as biologist and delineated wetlands, prepared vegetation map, and conducted rare plant surveys that included a focused survey for smooth tarplant (*Centromadia (Hemizonia) pungens*). Prepared biological resources report for CEQA documentation.

**Old Mission Dam Project, City of San Diego Parks and Recreation Division, San Diego, California.** Lead regulatory specialist for wetlands permitting for the proposed dredging project. Prepared wetland delineation and vegetation map upstream of the historic Old Mission Dam. Prepared biological resources report for CEQA documentation. Coordinated with regulatory agencies regarding proposed dredging. Prepared permit applications in accordance with Section 404 of the federal Clean Water Act and Section 7 of the Endangered Species Act. The proposed project dredged sediment that accumulated behind the historic Old Mission Dam in Mission Trails Regional Park. Primary challenges for the project included developing a dredging plan that would qualify for an ACOE Nationwide Permit, which resulted in a more streamlined permitting process for the City of San Diego.

**Tucalota Creek Flood Control Project, Winchester Square LLC, County of Riverside, California.** Project manager for wetlands permitting for the construction and future maintenance of a proposed flood control project. Prepared Section 401 Water Quality Certification, Section 404 Individual Permit, and 1603 Streambed Alteration Agreement applications for impacts to non-tidal, adjacent wetlands. Impacts were associated with the flood control measures and proposed maintenance activities. Prepared functional values assessment and a flood control maintenance plan to be adopted by the Riverside County Flood Control and Water Conservation District. Project included extensive coordination with the ACOE, CDFG, RWQCB, USFWS, and the Riverside County Flood Control and Water Conservation District. Challenges included developing a permitting strategy that avoided Section 7 consultation to address impacts to federally listed California gnatcatcher, which occurred off site, but adjacent to the project. Ultimately, a design solution that avoided impacts to waters of the U.S./state but that still provided the commercial development 100-year flood protection was chosen. Following the design changes, the Section 7 consultation and the continuation of wetlands permitting were not required.

**Ferry Ranch, Palmtag–Davis Communities, County of San Diego, California.** Served as wetlands permitting specialist for project. Conducted wetlands delineation and prepared and processed permits from the ACOE, RWQCB, and CDFG for the 41-unit residential development

in the unincorporated community of Lakeside. Prepared conceptual wetlands mitigation plan and coordinated with San Diego County Flood Control District regarding development of an on-site flood control channel.

**San Marcos Creek Specific Plan, City of San Marcos, California.** Served as biologist and conducted a formal jurisdictional delineation, prepared vegetation mapping, and conducted rare plant surveys along San Marcos Creek from SR-78 to Lake San Marcos.

**Hale Avenue Resource Recovery Facility (HARRF) Flood Control Project and Escondido Creek Enhancement, City of Escondido Engineering Department, City of Escondido, California.** Served as biologist for environmental documentation and permitting for the proposed Escondido Creek enhancement and flood protection project adjacent to the HARRF. The proposed project consisted of raising the existing levees and widening the existing stream channel, resulting in impacts to 4.49 acres (approximately 2,500 linear feet) of wetlands. Prepared the conceptual wetland mitigation and monitoring plan in accordance with ACOE, CDFG, and RWQCB requirements.

**North Reservoir Stormwater Prevention Plan Monitoring, Laguna Beach County Water District, Laguna Beach, California.** Served as biologist and inspected the North Reservoir, which included erosion/sediment methods to verify the project was in accordance with the stormwater pollution prevention program for the Laguna Beach County Water District in the City of Laguna Beach, California. Project included weekly monitoring visits to assess the function of the installed best management practices for erosion control and subsequent observation reports, water quality sampling, and storm event monitoring.

**Carlsbad Desalination Plant EIR, City of Carlsbad, California.** Served as biologist for project and conducted biological reconnaissance surveys to support EIR, which was certified in 2006. It is expected that the plant will be operating in 2012.

**Wastewater Treatment Plant Expansion, Valley Sanitary District, Indio, California.** Lead biologist for the expansion of the treatment plant in response to increasing flows due to local building activity. The project required expansion of the outfall structure that resulted in impacts to the Coachella Valley Stormwater Channel. Conducted biological reconnaissance surveys to determine biological constraints and necessary biological studies to support CEQA document. Conducted vegetation mapping and jurisdictional wetlands delineation. Prepared the biological resources technical report that included an analysis of the project's relationship to the Coachella Valley MSHCP. Coordinated with the Valley Sanitary District to develop a permitting approach that would meet the project's needs. Provided oversight for wetland permitting pursuant to state and federal requirements. The project was completed in 2006.

**Aliso Creek Emergency Sewer and Park Improvements, Moulton Niguel Water District, County of Orange, California.** Served as lead botanist for project that included conducting focused rare plant surveys for the federally listed threatened and state-listed endangered thread-leaved brodiaea.

**Rancho Santa Fe Waste Water Treatment Plant Expansion Project, County of San Diego, California.** Served lead biologist on the 5.5-acre Rancho Santa Fe Waste Water Treatment Plant Expansion Project in the community of Rancho Santa Fe. Conducted vegetation mapping and evaluated a biological reconnaissance survey to determine the potential for special-status species to occur on the project site. Prepared a biological resources letter report for the MND.

**Water and Sewer Capital Improvement and Emergency Projects, Rainbow Municipal Water District, County of San Diego, California.** Served as lead biologist on as as-needed basis. Provided biological constraints analysis services for the Rainbow Municipal Water District. Constraints analyzed included sensitive habitat areas, endangered species, and wetlands. In addition, provided resource agency permitting assistance for water and sewer capital improvement and emergency projects.

**Pipeline 6 Project, Metropolitan Water District of Southern California, County of Riverside, California.** Served as biologist and lead botanist for the Pipeline 6 Project. Conducted wetlands delineation and assisted in permit coordination for the following permits: Section 401 Water Quality Certification with the RWQCB, Section 404 permits from the ACOE, and 1601 Streambed Alteration Agreement. Conducted initial site reconnaissance, rare plant survey, and fairy shrimp survey for the proposed alignment. In addition, assisted in siting geotechnical activities.

**Wild Rose Reservoir II, Lee Lake Water District (LLWD), Corona, California.** Served as lead biologist for LLWD, addressing the biological issues associated with the construction and operation of a proposed water reservoir located adjacent to an existing reservoir in the Corona area of Riverside County. Prepared biological resources technical report for the CEQA document. Key issues addressed in the CEQA document included the federally listed coastal California gnatcatcher and wetlands.

**Miramar Trunk Sewer Canyon Replacement and Permanent Access Project, City of San Diego Metropolitan Wastewater Department, San Diego, California.** Served as biologist and conducted the wet season presence/absence surveys for vernal pool branchiopods. The survey focused on the determination of the presence/absence of two federally listed endangered vernal pool branchiopod species: Riverside fairy shrimp and San Diego fairy shrimp.

**Yucaipa Non-Potable Water Distribution System, Yucaipa Valley Water District, Counties of San Bernardino and Riverside, California.** Served as biologist and conducted biological surveys including vegetation mapping, wetlands delineation, and rare plant surveys within a project study area that included the construction of five reservoirs, four pump stations, and 39,120 linear feet of pipelines. Conducted focused surveys for the state- and federally listed Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*) and slender-horned spineflower (*Dodecahema leptoceras*).

**Sorrento Valley Utilities Improvement Project, City of San Diego Metropolitan Wastewater Department, City of San Diego, California.** Served as biologist and conducted monitoring during the mitigation construction phases. Monitored construction to minimize and avoid impacts to populations of Coulter's salt marsh daisy (*Lasthenia glabrata*), a sensitive salt marsh species. Once mitigation was installed, Ms. Enright conducted long-term monitoring of revegetation of salt marsh, brackish marsh, freshwater marsh, and southern willow scrub habitats. Conducted data analysis to determine success of restoration and enhancement efforts in terms of predetermined performance standards. Prepared subsequent monitoring reports, which included the assessment of revegetation efforts and recommendations for further remedial actions.

**Tijuana River Emergency Channel Wetland Mitigation Project, San Diego Engineering and Capital Projects Department, City of San Diego, California.** Served as biologist and conducted long-term monitoring of the mitigation site once the emergency work was completed. The wetlands mitigation project created approximately 14 acres of riparian wetlands habitat and additional wetlands buffer habitat and at project signoff supported two pairs of least Bell's vireo, a

listed species. Conducted data analysis to determine success of restoration and enhancement efforts in terms of predetermined performance standards. Prepared subsequent monitoring reports, which included the assessment of revegetation efforts and recommendations for further remedial actions.

**City of San Diego Metropolitan Wastewater Department As-Needed Biological Services Contracts, City of San Diego, California.** Served as biologist for the City of San Diego Metropolitan Wastewater Department As-Needed Biological Services Contracts for 1998–2000 and 2000–2005. Many of these tasks included emergency sewer repair projects where sewage was flowing into live stream conditions, requiring immediate response. Other tasks included monitoring sewer cleaning activities where temporary equipment access was needed in native canyon areas. Worked directly on sewer replacement, relocation, and permanent canyon access projects throughout the Metropolitan Wastewater Department service area.

**Moreno–Lakeside Pipeline Project, County Water Authority, San Diego, California.** Served as biologist and performed construction monitoring. Work performed included conducting a contractor education session at the preconstruction meeting, reviewing project survey staking and environmental fencing prior to clearing and grubbing work, monitoring during clearing and grubbing work within sensitive habitat and wetland areas, and preparing summary monitoring reports to ensure that the project was implemented in accordance with the resource agency permits, the project EIR, and the project mitigation and monitoring plan.

### Relevant Training

“Fairy Shrimp Identification Class,” instructed by Dr. Denton Belk, January 10–13, 2000.

“Basic Wetland Delineation,” presented by the Wetland Training Institute Inc., March 13–17, 2000.

“The Endangered Species Act and Habitat Conservation Planning,” presented by CLE International, June 21–22, 2001.

“How to Manage Stormwater in the San Diego Region: Regulations and Management Practices for Developers, Contractors, and Industry,” May 10, 2001.

“Vegetation Rapid Assessment Protocol,” presented by California Native Plant Society, instructed by Todd Keeler-Wolf, February 25, 2002.

“2002 Nationwide Permits,” presented by Wetlands Training Institute Inc., March 18, 2002.

“California Wetlands,” presented by CLE International, April 18–19, 2002.

“CEQA Nuts and Bolts,” presented by the California Association of Environmental Professionals, November 2003.

“Botany of Spring Wildflowers,” Palomar College: Botany I 10, Spring Semester 2003.

“California Anostraca and Notostraca Identification Class,” instructed by Mary Schug Belk, August 16–18, 2004.

“Biogeography and Endemic Plant Communities of the Big Bear Valley Area,” presented by the Jepson Herbarium, instructed by Tim Krantz, May 20–23, 2004.

“Poaceae,” presented by the Jepson Herbarium, instructed by Travis Columbus, May 14–15, 2005.

“A Closer Look at the Flora of San Diego County: Otay Mesa and Otay Mountain,” presented by the Jepson Herbarium, instructed by Scott McMillan, April 21–24, 2005.

“Compositae (Asteraceae, Daisy Family): Especially Tarweeds,” presented by the Jepson Herbarium, instructed by Bruce Baldwin and John Strother, August 27–28, 2005.

Wildflower Macrophotography: Close-up and in the Field” presented by the Jepson Herbarium, instructed by David J. Gubernick, April 14–16, 2006.

“Flora of the Mojave Desert” presented by the Jepson Herbarium, instructed by Bruce Baldwin, April 27–30, 2006.

Vegetation mapping workshop; presented jointly by the CNPS, CDFG, and Aerial Information Systems; November 7–10, 2006.

“Arid West Supplement, Wetlands Delineation,” presented by the Wetland Training Institute Inc., August 13, 2007.

“Current Status of Implementing the Rapanos/Carabell Supreme Court Decision and Overview of April 2008 Final Rule on Compensatory Mitigation for Wetlands Permits,” presented by the ACOE Los Angeles District Regulatory Division Staff, January 29, 2009.

“Flora of San Jacinto Mountains,” presented by the Jepson Herbarium, instructed by Tim Krantz, May 28–32, 2009.

## Callie Ford – Biologist, Environmental Analyst

Callie Ford is a biologist with over 5 years' professional experience as an environmental analyst specializing in field surveys and report preparation.

Ms. Ford is committed to professional management of environmental resources, including land conservation. As a biologist with Dudek, she has conducted research and prepared biological sections for environmental impact reports (EIRs), biological technical reports (BTRs), and focused survey reports. She has also performed jurisdictional delineations and wildlife and plant surveys throughout Southern California.

### EDUCATION

California Polytechnic State University,  
San Luis Obispo  
BS, Environmental Management and  
Protection/Minor in GIS, 2006, *Cum Laude*

### PROFESSIONAL AFFILIATIONS

The Wildlife Society – Western

## PROJECT EXPERIENCE

### Development

**Otay Ranch, JPB Development, San Diego County, California.** Served as project assistant. Assisted in writing a multiproject BTR and preparing permits for 401 Water Quality Certification, 404 Pre-Construction Notification for a Nationwide Permit, and 1600 Streambed Alteration Agreement. Organized data from multiple years of focused surveys and coordinated graphics for the permit applications. Assisted in general biological surveys and monitoring.

**Warner Ranch, Capstone Advisors, San Diego County, California.** Served as project assistant. Primary author of the BTR, written in compliance with the County of San Diego's guidelines for format and determining significance. Prepared the Conceptual Resource Mitigation Plan. Attended multiple County meetings and assisted in additional research for the project. Conducted surveys for special-status plants and conducted formal jurisdictional wetland delineations in 2010 over approximately 80 acres within the 566-acre project site.

**Tejon Mountain Village, Tejon Mountain Village LLC, Kern County, California.** Served as project assistant and biologist. Performed surveys for special-status plant surveys, including population counts and mapping with Global Positioning System (GPS) units on the 28,000-acre project site in 2007. Assisted in preparation of the biological resources report for California Environmental Quality Act (CEQA) documentation, including wildlife species, and portions of the draft EIR.

**Newhall Biological and Environmental Documentation, Newhall Land and Farming Company, Santa Clarita, California.** Served as project assistant. Assisted in writing numerous BTRs and biological sections of EIRs with detailed information about special-status wildlife species. Assisted in preparing the Comprehensive Mitigation Implementation Plan, which consisted of organizing multiple data sets and mitigation measures. Coordinated and performed biological surveys for spineflower (*Chorizanthe*), a state-endangered and sensitive plant species, which included population counts and using GPS to locate the boundaries of the populations. Also performed biological monitoring of known spineflower populations, including population counts and point-intercept transects, and performed vegetation mapping for multiple vegetation classes.

**Rough Acres Ranch, Hamann Companies, San Diego County, California.** Conducted two focused survey passes for rare plants, and mapped large populations of Jacumba milk-vetch (*Astragalus douglasii*), as well as sticky geraea (*Geraea viscida*) and Tecate tarplant (*Deinandra floribunda*); conducted vegetation mapping to Holland classification system.

**Yokohl Ranch, Yokohl Ranch Company, Visalia, California.** Performed quadrat surveys along 50-meter (164-foot) transects to collect species density information for spiny-sealed button celery (*Eryngium spinosepalum*) in June 2011.

**City of San Marcos, County of San Diego, California.** Served as project biologist. Conducted focused surveys for least Bell's vireo (*Vireo bellii pusillus*) along San Marcos Creek. Several special-status species were detected, including least Bell's vireo, yellow-breasted chat (*Icteria virens*), and yellow warbler (*Dendroica petechia*). Assisted in preparation of a Regional General Permit for the City.

**Hallmark Project, Hallmark Communities Inc., San Diego County, California.** Served as project lead to conduct biological reconnaissance surveys and prepared a biological constraints analysis and BTR for the proposed residential development project.

**Camelot Property, Integral Communities, San Diego County, California.** Served as project assistant. Conducted general biological reconnaissance surveys throughout the 67-acre site. Several special-status species were mapped, including white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), and California adolphia (*Adolphia californica*). Conducted a formal wetlands jurisdictional delineation and mapped wetlands and stream channels.

**ARCO AM/PM, Bonsall Service Station, San Diego County, California.** Served as project assistant. Conducted general biological reconnaissance surveys throughout the site. Prepared a biological resources letter report summarizing the results and proposed impacts from the project.

**Sumida Property, San Diego County, California.** Served as field biologist. Conducted general biological reconnaissance surveys throughout the site. Prepared a biological resources letter report summarizing the results and proposed impacts from the project. Mapped the extent of California Department of Fish and Game (CDFG) riparian habitat.

**Trabuco Canyon, The Planning Center, County of Orange, California.** Served as project biologist. Conducted focused surveys for least Bell's vireo on the 1,110-acre project site in Orange County. Involved hiking in steep, rough terrain and collecting standardized data on field maps.

**Buena Vista Creek Channel Maintenance, City of Carlsbad, San Diego County, California.** Served as field biologist to conduct a formal wetlands jurisdictional delineation and mapped wetlands and waters under the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and California Coastal Commission.

**Buena Vista Creek, San Diego County, California.** Served as a field biologist to conduct weekly nesting bird surveys during invasive species removal. Identified the nest of Anna's hummingbird (*Calypte anna*) and established a buffer around the nest until it was inactive.

**Santa Clara River Watershed Basin Analysis, Counties of Ventura and Los Angeles, California.** Served as project assistant. Researched permits issued by the ACOE and CDFG and other documents related to the Santa Clara River Watershed Basin Analysis project regarding impacts to jurisdictional waters and any sensitive plant or wildlife species and the mitigation for these impacts. This analysis was part of the Newhall Land and Farming Company project.

**City of San Diego, Pamo Valley Control Site, San Diego County, California.** Conducted riparian bird and nesting bird surveys along Santa Ysabel Creek.

**Rancho Mission Viejo, Orange County, California.** Conducted focused coastal cactus wren (*Campylorhynchus brunneicapillus*) surveys within suitable habitat. Multiple cactus wrens were observed and mapped.

**Brown-Headed Cowbird Trapping Program, Oceanside-to-Escondido Rail Project, North County Transit District, City of Oceanside, San Diego County, California.** Responsible for daily operation and maintenance of a brown-headed cowbird (*Molothrus ater*) trapping program along Loma Alta Creek in the City of Oceanside. The trapping program is a U.S. Fish and Wildlife Service (USFWS) requirement as mitigation for impacts to habitat for federally listed species, including least Bell's vireo, southwestern willow flycatcher (*Empidonax traillii extimus*), and California gnatcatcher (*Polioptila californica*).

**Brown-Headed Cowbird Trapping Program, The Crossings at Carlsbad Golf Course, City of Carlsbad, California.** Responsible for daily operation and maintenance of brown-headed cowbird (*Molothrus ater*) trapping within the golf course. The trapping program is a USFWS requirement as mitigation for impacts to habitat for federally listed species, including least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

**Ferber Ranch (Trabuco Canyon), Orange County, California.** Served as project assistant. Assisted with special-status plant species surveys and focused surveys for least Bell's vireo on a proposed development project in Orange County. Involved hiking in steep, rough terrain and collecting standardized data on field maps.

**Championship Off-Road Racing Project, City of Chula Vista, California.** Conducted monitoring during races to assess the impacts of race activity on known occurrences of special-status bird species. Yellow-breasted chat was observed.

## Education

**High Tech Project, High Tech High Learning, City of Chula Vista, California.** Served as field assistant. Reviewed southwestern willow flycatcher and least Bell's vireo survey records and assisted with writing the focused survey report for the High Tech High School Development project.

## Energy

**Devers Transmission Line, Southern California Edison (SCE), Riverside County, California.** Served as field assistant. Performed mapping of jurisdictional drainages and vegetation for future transmission line towers in the Sonoran Desert. This task included familiarity with the local flora and fauna of the desert, vegetation keys, and specific field mapping forms. Over 500 towers were mapped in a 4-month period. In addition, monitoring was conducted for the geotechnical testing over a 3-month period to assist with avoidance of sensitive areas and monitor for desert tortoise (*Gopherus agassizii*), Coachella Valley fringe-toed lizard (*Uma inornata*), and nesting raptors.

**Tehachapi Renewable Transmission Project (TRTP), SCE, Los Angeles and San Bernardino Counties, California.** Served as biological monitor in 2011 for construction-related activities for the TRTP. Attended construction-monitoring workshop and Worker Environmental Awareness Program/Safety training. Construction-monitoring activities included morning and evening sweeps of the construction areas, and monitoring crews for compliance during vegetation removal, mobilization, and tower setup activities. Other activities included establishing Environmentally Sensitive Areas (ESAs) for active nests, and monitoring and updating active nests. Reported new nests observed. Field Reporting Environmental Database reports were completed each day to discuss daily monitoring activities and nest updates. In addition, assisted senior botanists in conducting surveys for special-status plant species and vegetation mapping for Segments 8 and 11 in 2010. This included mapping vegetation communities and plant species using the Trimble Yuma geographic information system (GIS)/GPS Data Collection System. Worked on this project for 2 weeks in 2010.

**East County (ECO) Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS), California Public Utilities Commission (CPUC) and Bureau of Land Management (BLM), San Diego County, California.** Served as project assistant. Assisted in review of environmental and focused survey reports for multiple years and various project sites. Assisted in the preparation of EIR/EIS biological resources section as required by the CPUC and BLM for San Diego Gas & Electric's ECO Substation project, which includes a 500-/230-/138-kilovolt (kV) substation, approximately 14 miles of new 138 kV transmission line, and rebuild of the Boulevard Substation. In addition to addressing the new substation project, the EIR/EIS also addresses as "connected actions" a 200-megawatt (MW) wind energy project encompassing approximately 15,000 acres and a generation tie-in required for a 500/230 kV transmission line to connect an approximately 1,200 MW wind energy project in Baja California, Mexico. Also attended project planning meetings and provided guidance on key biological issues. The Draft EIR/EIS was prepared in December 2010. In 2011, assisted in response to comments and revisions to the Draft EIR/EIS.

**Daggett Ridge Wind Energy Project EIS/EIR, BLM and County of San Bernardino, San Bernardino County, California.** Served as project assistant for preparation of the joint EIS/EIR for the proposed Daggett Ridge Wind Energy Project, which involves an 82.5 MW wind energy-generating facility on approximately 2,000 acres of federal and private lands in the Barstow/Daggett unincorporated area of San Bernardino County.

**Hazard Tree Removal Project, SCE, San Bernardino and San Jacinto Mountains, San Bernardino and Riverside Counties, California.** Serves as biologist for SCE's Hazard Tree Removal Project occurring in the San Bernardino National Forest and surroundings. The project area encompasses 106 square miles, an estimated 62,000 acres of tree removal, more than 22,000 power poles, and 538 linear miles of utility lines. Performs biological monitoring for trees affected by bark beetle infestations, including special-status plant surveys and nesting wildlife species, and provides recommendations for removing trees in environmentally sensitive areas (i.e., riparian zones). In addition, assisted in biological monitoring for trees affected by the 2007 fires in the Lake Arrowhead area.

**Focused Field Surveys and Monitoring, SCE, San Bernardino County, California.** Serves as a field assistant. Performs focused surveys for special-status species, including burrowing owl (*Athene Cunicularia*) and desert tortoise in areas designated for new tower construction. Serves as a construction monitor for pole removal and replacement. Monitoring includes conducting an environmental tailboard meeting, documenting special-status species, avoiding vegetation and special-status species, and ensuring removal of all microtrash.

**Borrego Springs Property, J Whalen & Associates Inc., San Diego County, California.** Performed a formal jurisdictional delineation and mapped a series of ephemeral stream channels throughout the property for a proposed solar project.

**Prado 12 kV, SCE, Riverside County, California.** Served as field biologist. Conducted a general biological reconnaissance survey for a series of proposed pole maintenance activities. Conducted a formal wetlands jurisdictional delineation for ACOE wetlands and waters. Prepared a preliminary jurisdictional report.

**Holcomb Valley Boy Scout Ranch Emergency Tower Repair, SCE, San Bernardino County, California.** Served as biological monitor for pole installation activities in biologically sensitive areas to ensure avoidance of impacts to potentially occurring U.S. Forest Service threatened, endangered, and sensitive species such as ash-gray paintbrush (*Castilleja cinerea*), southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*), and California dandelion (*Taraxacum californicum*). Project lasted two seasons for approximately 1 to 2 weeks each season.

**Fingal Transmission Line, SCE, Riverside County, California.** Assisted with special-status plant species surveys along an existing transmission line to provide data in cases where emergency work that impacted special-status plant species would need to be conducted.

**Focused Wildlife Surveys, Yaqui Pass and Viking Farms, Borrego Springs, California.** Served as field assistant. Conducted general nocturnal and diurnal surveys with a focus on special-status wildlife species on two proposed development properties in Borrego Springs. Conducted general plants surveys with a focus on special-status plant species on two proposed development properties in Borrego Springs.

**Upper Santa Ana River Wash Plan, Riverside County, California.** Served as field assistant. Revised the BTR and response to comments for the Upper Santa Ana River Wash Plan. This included compiling data from multiple sources, conducting habitat suitability models for special-status species, coordinating graphics, and writing the report.

### Resource Management

**Salton Sea Species Conservation Habitat Project, Cardno ENTRIX, Imperial County, California.** Served as project assistant. Assisted in species research for designing a series of ponds adjacent to the Salton Sea that will provide habitat for target bird species. Assisted in preparing the biological assessment.

**Colton Reclamation Facility, CalPortland Company, Riverside County, California.** Served as project manager for collecting vegetation data for future reclamation of the mining facility. Conducted vegetation mapping for the undeveloped project site and collected data for density, percentage cover, and species richness along 50-meter transects. Prepared a summary memorandum describing the methods and results.

**Habitat Assessment, Riverside Conservation Agency, Riverside County, California.** Served as field assistant. Perform a habitat assessment for the Quino checkerspot butterfly (*Euphydryas editha quino*), a federally endangered species. The habitat assessment consisted of documenting butterfly species and surveying for Quino checkerspot host plants.

**Morro Bay National Estuary Program, Morro Bay, California.** Served as a water quality testing volunteer. Performed water quality testing, including testing for nitrogen, phosphates, dissolved oxygen, turbidity, pH, and flow (using FloMaster).

**Multiple Species Conservation Program Section, City of San Diego, California.** Performed biological surveys for native vegetation using a hand-held GIS and uploaded new GIS information into the database. Reviewed plans with property within the Multiple Habitat Plan area, ensuring that the correct guidelines were followed for a given plan (e.g., riparian buffer zones, landscape plans). Revised management plans per comments from local organizations and agencies. Organized property information for land put into a trust as part of mitigation measures.

### Transportation

**Mid-County Parkway Project, County of Riverside, California.** Served as field biologist for the Mid-County Parkway study area, which ranges from approximately 1.1 to 4 miles in width and is approximately 32 miles in length. Performed multiple focused surveys for least Bell's vireo (and other special-status wildlife surveys for the mitigation areas in 2008. Identified nests for Cooper's hawk (*Accipiter cooperi*) and red-tailed hawk (*Buteo jamaicensis*). Conducted general plants surveys with a focus on special-status plant species for the mitigation areas.

## Water/Wastewater

**South Orange County Wastewater Authority, Laguna Niguel, Orange County, California.** Conducted biological construction monitoring for the emergency repair of export sludge, force main pipelines adjacent to Aliso Creek to ensure compliance with conditions within the Coastal Development Permit and Regional General Permit.

**San Timoteo Creek Alternative Discharge Outfall, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California.** Conducted biological construction monitoring for construction of the non-potable water outfall on San Timoteo Creek to ensure compliance with conditions within the Section 1602 Streambed Alteration Agreement. Monitoring included photo documentation and completion of a detailed Site Observation Report.

**San Joaquin Marsh Natural Treatment System, Irvine Ranch Water District, Orange County, California.** Served as a field biologist and project assistant. Performed survey for special-status wildlife species and mapped white-tailed kite, Caspian tern (*Hydroprogne caspia*), and osprey (*Pandion haliaetus*). Assisted in preparation of permit applications for the proposed project.

**San Vicente Dam Project, San Diego County, California.** Served as a biological monitor and conducted environmental training for new employees. Performed construction monitoring for removal of vegetation, including relocating snakes and common poorwill (*Phalaenoptilus nuttallii*). Construction monitoring and environmental training is ongoing.

**Cañada Gobernadora Multipurpose Basin Project, Santa Margarita Water District, Rancho Santa Margarita, California.** Served as project assistant. Assisted writing the BTR for the Cañada Gobernadora Multipurpose Basin, which is located next to the Cañada Gobernadora Creek and north of the Gobernadora Ecological Reserve Area.

**City of Carlsbad Sewer Extension, City of Carlsbad, California.** Served as project manager. Managed and conducted the biological reconnaissance survey and prepared the BTR for two sewer extension projects within the San Diego Multiple Species Habitat Conservation Plan (MSHCP) areas. Coordinated construction monitoring during the construction activities to avoid impacts to nesting birds, jurisdictional waters, and California adolphia.

**Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Wastewater Department (MWWD), San Diego, California.** Served as field assistant. Performed construction monitoring for the sewer replacement in Rose Canyon. Monitored for special-status wildlife species.

**As-Needed Biological Services, San Diego MWWD, San Diego, California.** Served as project assistant. Reviewed and analyzed plant survey forms and incorporated pertinent information into a biological report.

**Aliso Creek Water Quality SUPER Project, South Orange County Wastewater Authority, Laguna Niguel, California.** Served as project assistant. Reviewed southwestern willow flycatcher and least Bell's vireo survey records and assisted with writing the focused survey report for the Aliso Creek area.

**Relevant Studies**

- Association of Environmental Professionals CEQA Workshop. November 2006.
- Friends of the Jepson Herbarium. “Introduction to the Morphology and Identification of Flowering Plants.” University of California, Berkeley Sciences Building. March 18–19, 2007.
- Friends of the Jepson Herbarium. “Plant Terminology and Identification in San Diego County.” San Diego State University and Field. April 10–13, 2008.
- Sea & Sage Audubon Society. “Observing Birds Workshop.” Huntington Beach, California. January–March, 2008.
- Sea & Sage Audubon Society. “Birds of Southern California.” Huntington Beach, California. November 2008 through January 2009.
- San Diego Natural History Museum. “Rhamnaceae.” San Diego, California. February 2009.
- Sea & Sage Audubon Society. “Basic Raptor Identification: Southern California Diurnal Raptors.” Huntington Beach, California. February 2009.
- Orange County Trackers. “Basic Tracking and Observing Class.” Irvine, California. October 2009.
- Wildlife Society Conference – Western Section. 2010 Annual Conference. Visalia, California. January 2010.
- Rancho Santa Ana Botanical Garden. “Plant Families Identification: Series IV.” Claremont, California. 2010.
- Desert Institute. “Flora of Joshua Tree.” Joshua Tree National Park, California. 2010.
- Wildlife Society Conference – Western Section. 2011 Annual Conference. Riverside, California. February 2011.
- Wetland Training Institute. “40-hour Wetland Delineation Training.” July 2011.
- Desert Tortoise Council Workshop. “Introduction to Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop.” Ridgecrest, California. November 7–8, 2011.

## Mike Howard – Senior Biologist

Mike Howard is a senior biologist with over 14 years' experience and a diverse background in regional conservation planning, natural resource assessment, and regulatory permitting. He has experience performing wetlands delineation, regulatory compliance and permitting, flora and fauna inventories, habitat conservation planning, and endangered species management.

Mr. Howard conducts and oversees biological surveys throughout California, including general biological assessments, vegetation community mapping, focused rare plant surveys, and focused special-status wildlife surveys. He has completed the U.S. Army Corps of Engineers (ACOE) wetland delineation and management training and has been conducting wetland delineations for over 14 years. He has extensive regulatory compliance experience and frequently obtains project authorizations under Section 401 and 404 of the Clean Water Act, Section 1600 of the California Fish and Game Code, and Section 7 of the federal Endangered Species Act. He has managed and served as lead conservation planner on numerous regional habitat conservation plans throughout California. Mr. Howard has land management planning experience and has developed management plans, conservation easements, and property analysis records (PARs) for numerous preserves and open space areas across the state.

### EDUCATION

University of California, Santa Barbara  
MESM, Applied Ecology, 1998

University of California, Santa Barbara  
BS, Environmental Studies, 1996

University of California, Santa Barbara  
BS, Ecology, 1996

### CERTIFICATIONS

ACOE Wetland Delineation  
Certification Program, 2002

MSHCP Training Course, County of  
Riverside, 2006

Center for Natural Lands Management  
Property Analysis Record 3 Training, 2008

CDFG Scientific Collecting Permit, current

### PROFESSIONAL AFFILIATIONS

Society for Conservation Biology

Society of Wetland Scientists

## PROJECT EXPERIENCE

### Development

**Rough Acres Ranch, Hamann Companies, McCain Valley, California.** Project manager and lead biologist for several projects on numerous parcels on over 2,100 acres in the McCain Valley of east San Diego County. Conducted a ranch-wide biological constraints analysis through aerial photo interpretation and reconnaissance surveys. Developed a biological constraints map identifying the extent of vegetation communities, County wetlands, and rare plant occurrences. Prepared a constraints analysis report to be used in planning for future uses of the land. Conducted a general biological survey and oversaw a habitat assessment for Quino checkerspot butterfly (*Euphydryas editha quino*) for an access road improvement project through Bureau of Land Management (BLM) land. Developed a biological resources technical letter report to support an environmental assessment for the project. Worked with the BLM El Centro office to gain approval for a road improvement project. Project manager and principal investigator for biological studies on a proposed two-mile-long road project between Ribbonwood Road and McCain Valley road, which includes focused Quino surveys, focused rare plant surveys, wetland delineation, and general wildlife surveys.

**Otay Quarry, Otay Valley Rock LLC, Chula Vista, California.** Task manager for the rare plant survey on the approximately 500-acre Otay Quarry property located in south San Diego County. Mapped the extent and estimate population size of numerous federally-listed and other special-status plant species, including Otay tarplant (*Deinandra conjugens*), San Diego barrel cactus (*Ferocactus viridescens*), and San Diego County viguiera (*Viguiera laciniata*).

**Big Country Ranch, Bluegreen Communities, McCain Valley, California.** Served as the project manager responsible for coordinating biological surveys and technical document production for this 2,200-acre rural residential development in the McCain Valley of eastern San Diego County. Worked with the project engineer and the prime consultant to ensure compliance with County requirements. Acted as the team's biological resources consultant during project review and attended meetings at the County to resolve outstanding issues on the project and obtain project approval. Served as the senior biologist and planner in the development of a habitat management plan for the project, which covers an on-site, 1,500-acre open-space system. Identified permitted and prohibited uses for the open space, defined management and monitoring specifications, and developed public use guidelines and a trail plan.

**San Diego Border Infrastructure Project, ACOE, Fort Worth District, California.** Project manager responsible for providing local technical and regulatory expertise for this multi-state Immigration and Naturalization Service Project planned by the ACOE, Fort Worth District. Managed focused protocol surveys for California gnatcatcher (*Polioptila californica*), Least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and Quino checkerspot butterfly for a 14-mile segment of the project area. Conducted rare plant surveys along the border and identified populations of Shaw's agave (*Agave shawii*), Orcutt's dudleya (*Dudleya attenuata* ssp. *Orcuttii*), cliff spurge (*Euphorbia misera*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder (*Iva hayesiana*), Leopold's Rush (*Juncus acutus* ssp. *Leopoldii*), Snake cholla (*Opuntia parryi* var. *serpentina*), Baja birdbush (*Ornithostaphylos oppositifolia*), Coulter's Matilija poppy (*Romneya coulteri*), and San Diego County viguiera. Developed a biological assessment for impacts to endangered vernal pool species and produced a conceptual vernal pool restoration plan for the project. Principal wetland scientist responsible for conducting a formal delineation of wetlands and mapping of waters of the U.S. for a 14-mile segment of the secondary border fence. Led and trained a team of biologists on Southern California wetland delineation and mapping techniques. Developed and obtained regulatory approval of the wetland mitigation plan for the creation, restoration, and enhancement of five acres of wetland and riparian habitat in Spring Canyon to satisfy the special conditions of the permit authorization.

**Mockingbird Canyon Estates Project, Pacific Scene Homes, Riverside, California.** Lead wetland scientist for the wetland delineation and riparian mapping of this 150-acre site on Mockingbird Creek in Riverside. Prepared a riparian study according to County of Riverside standards under the Western Riverside Multiple Species Habitat Conservation Program (MSHCP). Developed a comprehensive wetland mitigation program and prepared findings of a Determination of Biologically Equivalent or Superior Preservation (DBESP). Currently preparing applications for an individual permit, a water quality certification, and a streambed alteration agreement.

**Roselle Street Project, CLL Roselle LLC, San Diego, California.** Project manager and lead biologist for a 10-acre development project in San Diego. Conducted a formal delineation of wetlands, mapping of vegetation communities, and focused rare plant surveys. Developed a full biological resources technical report to address wetland impacts to Carroll Canyon Creek, wetland buffer issues, and to address mitigation for impacts to Environmental Sensitive Lands (ESLs) under City of San Diego regulations. Oversaw the preparation of a wetland mitigation and monitoring plan for the project. Attended team meetings and meetings with City of San Diego staff to obtain project approval.

**Bernardo Industrial Park North, Granum Partners, Rancho Bernardo, San Diego, California.** Project manager and lead biologist for this proposed 25-acre commercial office development in the Rancho Bernardo area of San Diego. Conducted a formal delineation of wetlands, mapping of waters of the U.S., rare plant survey, vegetation mapping, and general biological survey.

Prepared constraint maps, acreage calculations, and a biological resources technical report consistent with City of San Diego requirements. Identified project modifications to avoid impacts to perennial native grassland and the narrow endemic plant species variegated liveforever (*Dudleya variegata*). Developed upland and wetland conceptual mitigation and monitoring plans for the restoration of a 10-acre, off-site property as mitigation for the proposed project. Successfully obtained regulatory approval of wetland impacts associated with the project under Clean Water Act Section 401, Clean Water Act Section 404, and California Fish and Game Code Section 1600. Additionally, assisted the City of San Diego in the preparation of the initial study (IS) and the mitigated negative declaration (MND) for the project. Currently serving as biological construction monitor during project implementation and preparing to implement habitat mitigation on the off-site property.

**Kearny Tech Way Project, Meridian Development, San Diego, California.** Project manager and principal biologist for this 14-acre proposed office development in the Kearny Mesa area of San Diego. Conducted a general biological resources assessment, vegetation mapping, wetland delineation, and vernal pool floral inventory. Mapped vernal pools and other wetland features using sub-meter Trimble global positioning system (GPS) units. Prepared existing conditions summary. Will oversee protocol fairy shrimp surveys over the next season.

**Oceanside El Camino Real Project, Hawkes-Holdings LLC, Oceanside, California.** Project manager and principal biologist for this 3.5-acre office development in Oceanside. Conducted a general biological resources assessment, vegetation mapping, and wetland delineation. Conducted impact analysis and prepared biological resources technical letter report for the project. Currently preparing applications for a nationwide permit, water quality certification, and streambed alteration agreement. Additionally, prepared a biological assessment to facilitate a Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) for impacts to occupied coastal California gnatcatcher habitat.

**Muroya Property, Muroya Growers, Carlsbad, California.** Conducted a general biological survey, rare plant survey, and constraints analysis for this 20-acre property in coastal Carlsbad. Mapped sensitive upland communities and wetland habitats to identify potential development constraints. Information used by client to identify potential future uses of the property.

**Oceanside Gateway Project, bkm Development LLC, Oceanside, California.** Project manager and lead biologist for this 25-acre commercial/industrial development in Oceanside. Conducted biological construction monitoring to ensure that the construction project was implemented consistent with city and regulatory agency conditions, including monitoring wetland avoidance and implementation of best management practices (BMPs). Oversaw and monitored the removal of exotics, planting of container plants, and installation of the irrigation system in the wetland mitigation area by the landscape contractor. Currently conducting horticultural monitoring and will be conducting biological monitoring over the 5-year monitoring period.

**University Commons Birchwood Project, Skandia Development and Camden Development, San Marcos, California.** Project manager responsible for all aspects of regulatory compliance for this 40-acre multifamily development in San Marcos. Successfully obtained Section 404 compliance under the ACOE's nationwide permit program, a Section 401 water quality certification, and a Section 1600 streambed alteration agreement for the project. Developed the biological assessment and coordinated the Section 7 consultation between the ACOE and the USFWS for potential impacts to California gnatcatcher. Worked with the client and the USFWS to transplant 50 individual wart-stemmed ceanothus (*Ceanothus verrucosus*) from the site before construction. Developed a wetland mitigation plan for jurisdictional impacts.

**Moreno Marketplace Project, Empire Commercial, Moreno Valley, California.** Project manager overseeing biologists conducting MSHCP-protocol burrowing owl (*Athene cunicularia*) surveys for an 18-acre site in Moreno Valley. Developed the client relationship, prepared the scope of work, coordinated the field visits, and conducted senior review of documentation. Pre-construction burrowing owl and raptor survey to be conducted prior to the construction phase.

## Energy

**East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects Environmental Impact Report/Environmental Impact Statement (EIR/EIS), California Public Utilities Commission (CPUC) and BLM, San Diego County, California.** Task leader for biological resources and responsible for preparation of EIR/EIS biological resources section as required by the CPUC and BLM for San Diego Gas & Electric's East County Substation project, which includes a 500/230/138-kilovolt (kV) substation, approximately 14 miles of new 138 kV transmission line, and rebuild of the Boulevard Substation. In addition to addressing the new substation project, the EIR/EIS also addresses as "connected actions" a 200-megawatt (MW) wind energy project encompassing approximately 15,000 acres and a generation tie-in required for a 500/230 kV transmission line to connect an approximately 1,200 MW wind energy project in Baja California, Mexico. Also attended project planning meetings and provided guidance on key biological issues. The Draft EIR/EIS was prepared in December 2010.

**Daggett Ridge Wind Energy Project EIS/EIR, BLM and County of San Bernardino, San Bernardino County, California.** Served as biological resources analyst for preparation of the joint EIS/EIR for the proposed Daggett Ridge Wind Energy Project, which involves an 82.5 MW wind energy-generating facility on approximately 2,000 acres of federal and private lands in the Barstow/Daggett unincorporated area of San Bernardino County.

**Devers–Palo Verde No. 2 Project, Southern California Edison (SCE), Riverside County, California.** Served as principal investigator for the wetland delineation and waters mapping of this proposed SCE 500 kV transmission line from Perris, in western Riverside County to Blythe, at the California–Arizona border. Conducted the jurisdictional determination on 284 proposed tower locations covering over 5,100 acres and spanning nearly 170 linear miles. Developed the methods and criteria for identifying potential jurisdictional features for complex desert landscapes. Provided the training and oversight of eight biologists in the field. Conducted quality assurance and quality control (QA/QC) on all dataforms and mapping, and oversaw the digitizing and attributing of over 1,100 ACOE, Regional Water Quality Control Board (RWQCB), and/or California Department of Fish and Game (CDFG) features in a geographic information system (GIS). Produced a jurisdictional determination report and mapbook for SCE to use in obtaining regulatory agency permits for the project.

**Tule Wind Project, Iberdrola Renewables, McCain Valley, San Diego County, California.** Project manager and principal investigator on a habitat suitability assessment for Quino checkerspot butterfly for Iberdrola Renewables' proposed Tule Wind Project. The proposed project would include wind turbines, access roads, utility lines, and substations on federally owned lands managed by the BLM, state-owned lands, and Native American lands in McCain Valley in eastern San Diego County. Responsible for developing the survey methodology, obtaining access permissions, and mobilizing a team of biologists to conduct the assessment of over 1,100 acres in the McCain Valley. Oversaw vegetation community mapping, canopy cover estimation, and plant and animal species inventories within the study area, with a focus on butterfly species and host and nectar plant species. Prepared a full habitat assessment report that identified the methods, results, and conclusions of the survey. The report identified exclusion areas not considered to require focused surveys for Quino checkerspot butterfly.

**Tierra del Sol Project, Invenergy LLC, Tierra del Sol, California.** Served as project manager and principal investigator on a biological reconnaissance survey and habitat suitability assessment for Quino checkerspot butterfly for proposed meteorological towers on a 150-acre parcel in the Tierra del Sol area of east San Diego County. Conducted vegetation community mapping, canopy cover estimation, and plant and animal species inventories within the study area, with a focus on butterfly species and host and nectar plant species. Prepared a biological resources letter report that identified the methods, results, and conclusions of the surveys. The report identified exclusion areas not considered to require focused surveys for Quino checkerspot butterfly.

## **Military**

**Military Family Housing Projects, Clark Real Estate, San Diego, Tulare, and Ventura Counties, California.** Project manager overseeing biologists conducting nesting bird surveys at multiple military family housing sites for compliance with the Migratory Bird Treaty Act. Pre-construction nesting bird surveys have been conducted for facilities at Miramar, Coronado, Point Loma, Lemoore, Camarillo, Bayview Hills, and Chesterton. Surveys included attending pre-construction meetings with base biologists and contractor staff to describe the survey methodology and to establish the procedures for clearing areas for construction. Prepared monitoring reports with updated nest status weekly and submitted to the contractor and the base until all sites were cleared for construction.

**Marine Corps Air Station (MCAS) Miramar Perimeter Road Project, U.S. Marine Corps, San Diego, California.** Conducted a formal delineation of wetlands, including vernal pools, for a roadway improvement of the perimeter road surrounding MCAS Miramar. Mapped and delineated this complex project site dominated by jurisdictional vernal pools, non-jurisdictional vernal pools, and jurisdictional seasonal herbaceous wetlands. Identified sensitive vernal pool plant species and inventoried and mapped species locations.

## **Resource Management**

**Desert Renewable Energy Conservation Plan (DRECP), Desert Region, California.** Lead conservation planner responsible for all aspects for technical analysis, report preparation, and stakeholder and agency communication on this seven-county, 22.5 million-acre Natural Community Conservation Plan/Habitat Conservation Plan being developed for renewable energy development in the California deserts by the California Energy Commission. Oversaw the development of a project GIS database; developed expert-based species models and profiles for over 50 species; developed environmental setting and structure to the plan in the DRECP Framework Conservation Strategy Report; and led the development of the Preliminary Conservation Strategy. Currently preparing biological goals and objectives, effects analysis approaches, and alternative conservation strategy approaches.

**Northeastern San Luis Obispo County Habitat, San Luis Obispo County, California.** Project manager and lead conservation planner responsible for permittee and agency coordination, analysis, document preparation, and stakeholder and public outreach on this 800,000-acre plan covering the northern and eastern interior regions of San Luis Obispo County. Developed the GIS database to establish the baseline conditions for the Plan's environmental setting. Assisted in assembling a stakeholder group of representatives for a wide range of interest groups including farmers and ranchers, environmental groups, developers, and public agencies. Currently developing species profiles and species models to inform development of the Plan's conservation strategy, as well as defining the Covered Activities for the plan.

**Multiple Habitat Conservation Program (MHCP) Subregional Plan and Subarea Plans, San Diego Association of Governments (SANDAG) and Cities of Encinitas, Escondido, and Oceanside, California.** Project manager responsible for all aspects of technical analysis, policy development, agency negotiation, document preparation, client interaction, subconsultant coordination, QC, and financial and contractual management during the final phases of the MHCP Subregional Plan project. Produced and circulated a public review draft of the multi-volume document, and in 2000, managed the project team in conducting an update of the analysis and completing the lengthy response to comments phase. A complete biological analysis was conducted and species coverage determinations were made. Successfully obtained approval of the plans by the SANDAG Board in 2003. In addition to developing the subregional document, currently serving as the project manager and lead regional planner responsible for overseeing the development of three subarea plans for three of the participating cities: Encinitas, Oceanside, and Escondido. Working with the cities and wildlife agencies to identify final plan revisions to obtain approval and incidental take permits.

**Open Space Management Plan, City of Oceanside, California.** Project management and lead biologist in the development of a city-wide open space management plan for the City of Oceanside (City). Developed the client relationship, assisted the City in preparing the grant application for funding, prepared the proposal, led the interview process, and participated in contract negotiations after the selection. Developed an inventory and GIS database of the existing and planned habitat preserves in the City. Worked with the wildlife agencies to identify area specific management directives for key City-owned lands. Prepared PARs on the City's open spaces to estimate the management and monitoring costs. The City will use the plan as their handbook for natural land management.

**Los Peñasquitos Watershed Management Plan, City of San Diego, California.** Lead biologist and planner responsible for all biological resources data collection, including a landscape-level wetland delineation, riparian habitat mapping, and a wetland function assessment for the entire 170-square-mile watershed. Led a team of biologists and GIS specialists in aerial interpretation and field reconnaissance to identify all wetland and riparian resources in the watershed. Developed a functional assessment methodology to assess the hydrologic, water quality, and biological integrity of 137 sub-basins within the watershed. Worked closely with hydrologists and engineers to identify water quality stressors, prescribe BMPs, and develop an urban runoff management program. The results of the landscape-level delineation and functional assessment identified sites where potential wetland restoration activities should be focused. This technical work was developed into the watershed management plan.

**Borden Ranch Additional Parcels Operation and Maintenance Plan, AKT Development, Sacramento County, California.** Task manager responsible for developing an operation and maintenance plan for a habitat preserve in southern Sacramento County. Developed the plan according to ACOE standards for a habitat preserve area supporting wetlands, vernal pools, and vernal pool invertebrates. Developed a conceptual grazing plan that allowed continued livestock grazing on the preserve but established use guidelines and increased monitoring. Additionally, developed conservation easement documentation and PAR for the preserve.

**Oaks at Willow Springs Operation and Maintenance Plan, Palisades Properties, Folsom, California.** Task manager responsible for developing an operation and maintenance plan for an on-site habitat preserve in Folsom. Developed the plan according to ACOE standards for a habitat preserve area supporting wetlands, oak woodlands, and federally-listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) habitat. Additionally, developed conservation easement documentation and PAR for the preserve.

**Rocklin Quarry Operation and Maintenance Plan, River West Investments, Rocklin, California.** Task manager responsible for developing an operation and maintenance plan for an on-site habitat preserve in Rocklin. Developed plan according to ACOE standards for a habitat preserve area supporting wetlands and oak woodlands. Additionally, developed conservation easement documentation and PAR for the preserve.

## Transportation

**Baughman Road Improvement Project, Public Works Department, Imperial County, California.** Project manager and principal biologist for this 2-mile road widening project in Imperial County. Conducted a biological resources assessment, wetland delineation, burrowing owl survey, and farmland assessment. Prepared natural environment study and farmland study in accordance with California Department of Transportation (Caltrans) standards. Responsible for all aspects of project management, including proposal preparation, contract negotiations, invoicing, and client communication. Biological construction monitoring and burrowing owl exclusion tasks to be conducted during the construction phase.

**Bautista Canyon Road Project, Riverside County Transportation Department, Riverside County, California.** Biological task leader responsible for all aspects of biological data collection, analysis, documentation, and agency coordination for this 8-mile Federal Highway Administration (FHA) roadway improvement project through the San Bernardino National Forest between Hemet and Anza, California. Conducted a jurisdictional delineation of wetlands and mapping of waters of the U.S. Conducted a field verification of the wetland delineation with the ACOE and successfully obtained a jurisdictional determination. Worked with U.S. Forest Service (USFS) biologists and conducted the analysis of biological data necessary to prepare a biological assessment/biological evaluation. Conducted a formal Section 7 consultation with the USFWS for impacts to 12 federally-listed and 36 USFS sensitive species. Prepared biological resources sections of the EIS/EIR. Currently developing conceptual wetland mitigation designs.

**Ramona Expressway Widening and Gap Closure Projects, City of San Jacinto, California.** Project manager and lead biologist responsible for managing the completion of all biological surveys and reports associated with these road projects in San Jacinto. Conducted general biological surveys, developed vegetation community maps, conducted formal wetland delineations, conducted focused rare plant surveys, and conducted protocol burrowing owl surveys over 6 miles of road study corridor associated with these projects. Prepared full biological resources technical reports to support the California Environmental Quality Act (CEQA) documentation for the projects. Ensured that all surveys and documentation were conducted and prepared in accordance with the specifications of the Western Riverside MSHCP. Supported the City of San Jacinto through the MSHCP Joint Project Review process for these projects. Currently conducting pre-construction surveys for the Widening Project.

**Scott Road Improvement Project, Riverside County Transportation Department, Riverside County, California.** Lead wetland scientist for this 4.5-mile road improvement project in southwestern Riverside County. Conducted a formal delineation of wetlands and mapping of waters of the U.S. Produced a formal jurisdictional waters and wetlands report according to the requirements of the County of Riverside Department of Transportation and Caltrans. Conducted a verification of the delineation in the field with staff from the ACOE.

**State Route 78 Acceleration Lane Project, Caltrans, Oceanside, California.** Principal investigator in the delineation of approximately 1.5 miles of Buena Vista Creek along State Route 78 between El Camino Real and College Boulevard in Oceanside. Data generated from this delineation and mapping effort was used early in the planning process to allow Caltrans to modify designs to ensure maximum levels of impact avoidance and minimization.

**State Route 76 Corridor Rare Plant Surveys, Caltrans, San Diego County, California.** Rare plant surveys for planned right-of-way of the Caltrans State Route 76 project. Surveyed entire corridor on foot to identify and map locations of San Diego Ambrosia (*Ambrosia pumila*), thread-leaved brodiaea (*Brodiaea filifolia*), sticky dudleya (*Dudleya viscida*), and San Diego goldenstar (*Muilla clevelandii*), among others. Known locations of these species were verified to confirm phenology and survey timing.

## Water

**Eastern Transmission Line Replacement, Moulton Niguel Water District, Orange County, California.** Task manager for the biological surveys, wetland delineation, biological resources technical letter report, and biological construction monitoring for this water line replacement project located in southern Orange County. This water line relocation project was situated in a complex location bounded by Metrolink tracks, Interstate 5, an Orange County Flood Control channel, and numerous other underground utilities. Assisted the Moulton Niguel Water District in ensuring avoidance of sensitive biological resources, including riparian habitat, through close coordination with Caltrans and Moulton Niguel Water District contractors. Dudek provided weekly site observation reports to document environmental compliance throughout project construction.

**Pump Station 45 Project, Lee & Ro Inc., San Diego, California.** Conducted biological field surveys and prepared a biological resources technical report for this City of San Diego sewer pump station replacement project. The project was located on the bluffs of the Torrey Pines area and involved the abandonment of three existing pump stations and the replacement of existing sewer lines, which involved both trenching and micro-tunneling. The project was located in an extremely sensitive biological area, and focused surveys were required for California gnatcatcher, Pacific pocket mouse (*Perognathus longimembris pacificus*), and rare plants. Coordinated the focused surveys and developed the report consistent with City of San Diego Biology Guidelines. Assisted in the preparation of construction specifications to minimize and avoid impacts to biological resources. Conducted an impact analysis and identified mitigation measures for unavoidable impacts to maritime succulent scrub and coastal sage scrub.

## Brock Ortega – Principal, Senior Wildlife Biologist

Brock Ortega has over 21 years' experience as a wildlife biologist. He brings extensive expertise to his project teams in many areas, including mitigation monitoring, permitting issues related to wetland resources and threatened or endangered species, wildlife biology and management, ecological assessment, environmental impact assessment and mitigation, habitat remediation, endangered species management plan authorship, and project management. Mr. Ortega has conducted over 20,000 hours of focused and general wildlife surveys during his professional career.

Mr. Ortega is a recognized qualified surveyor for a number of listed and rare amphibian and mammal species and has federal permits for several species. He is U.S. Fish and Wildlife Service (USFWS)–authorized as an arroyo toad (*Bufo californicus*) emergency handler; USFWS and California Department of Fish and Game (CDFG)–qualified to survey San Joaquin kit fox (*Vulpes macrotis mutica*) throughout its range; and USFWS and U.S. Forest Service (USFS)–qualified to survey arroyo toad, California red-legged frog (*Rana draytonii*), mountain yellow-legged frog (*Rana muscosa*), and Coachella Valley fringe-toed lizard (*Uma inornata*) throughout their ranges.

### PROJECT EXPERIENCE

#### Development

**Tejon Mountain Village, Tejon Mountain Village LLC, Kern County, California.** Lead biologist and phase manager for wildlife corridor, ringtail cat (*Bassariscus astutus*), sensitive reptile and amphibian, and small mammal studies. Designed and implemented study design for wildlife corridor and ringtail cat studies.

For the wildlife corridor study, reviewed 20 crossing locations under and in the vicinity of Interstate 5 along a 10-mile stretch of highway; directed review and analysis of over 16,000 camera station photographs from undercrossings; directed game trail field work; directed implementation of a project-wide geographic information systems (GIS)-based permeability modeling effort to determine preferred wildlife usage and movement across the site and estimate post-project wildlife usage and movement across the site.

For the ringtail cat study, designed, sited, and directed implementation of a baited-station camera study that used a rotating group of 20 digital infrared/motion-sensing game cameras to determine the presence/absence of ringtail cat. Over 200 stations were run across the project area for a period of 16 days each. These camera stations were successful at capturing a variety of large, medium, and small mammals, along with a variety of avian species. Performed habitat assessments for sensitive amphibian and reptile species. Was responsible for designing and implementing both studies. Performed as a project biologist for this project, conducting focused surveys for arroyo toad, California red-legged frog, southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii pusillus*), yellow-billed cuckoo (*Coccyzus americanus*), sensitive butterflies, raptors, and general wildlife.

#### EDUCATION

Humboldt State University  
BS, Wildlife Biology and Management, 1991

#### CERTIFICATIONS

USFWS Federal 10a Survey Permit No.  
TE-813545-5 (exp. 03/15/2016):

- California gnatcatcher surveys
- Least Bell's vireo surveys/nest monitoring
- Southwestern willow flycatcher surveys
- Quino checkerspot butterfly surveys
- Fairy shrimp surveys

Mohave Ground Squirrel Chief  
Survey Permit

#### PROFESSIONAL AFFILIATIONS

American Ornithologists' Union  
Association of Field Ornithologists  
Cooper Ornithological Society  
Wilson Ornithological Society  
The Wildlife Society

#### PROFESSIONAL REPRESENTATION

Board member of the Southern California  
Chapter of The Wildlife Society

**Master-Planned Community, Santa Barbara County, California.** Supervisory biologist for environmental surveys. Conducted initial habitat assessments for vernal pools and special-status wildlife species, including California red-legged frog and tiger salamander (*Ambystoma tigrinum*). Developed strategy for conducting vegetation mapping, jurisdictional wetland delineation, and focused surveys for special-status plants and animals on approximately 4,000 acres of land. The master-planned community project consists of a large development with several thousand homes with associated schools, professional offices, shopping areas, and safety facilities. Dudek is assisting with multiple environmental planning services to prepare an environmentally sensitive development.

**Landmark Village Project, Newhall Land and Farming Company, Los Angeles County, California.** Supervisory biologist for habitat assessments and focused surveys in 2007 for California gnatcatcher (*Polioptila californica*) and vernal pool surveys on 145 acres of land. Assisted in study design, focused surveys, and analysis.

**Mission Village Project, Newhall Land and Farming Company, Los Angeles County, California.** Supervisory biologist for habitat assessments and focused surveys in 2007 for vernal pool species and California gnatcatcher on 520 acres of land. Assisted in study design, focused surveys, and analysis.

**High Country Project, Newhall Land and Farming Company, Los Angeles and Ventura Counties, California.** Lead biologist for habitat assessments and focused wildlife surveys in 2005 for vernal pool species, large mammal usage, California gnatcatcher, southwestern pond turtle (*Actinemys marmorata*), arroyo toad, owls, and special-status birds and reptiles on 23,000 acres of land. Determined species survey methods and biologist coverage areas, and performed analysis on the data collected.

**4S Kelwood/4S Ranch, Newland Communities, San Diego County, California.** Served as primary wildlife biologist for this project. Conducted habitat assessments and surveys for least Bell's vireo, California gnatcatcher, clapper rail (*Rallus longirostris*), southwestern pond turtle, and Quino checkerspot butterfly (*Euphydryas editha quino*). In addition, conducted a wildlife movement analysis across the property and monitored construction and removal of vegetation.

**Trabuco Canyon, The Planning Center, Orange County, California.** Lead wildlife biologist for preparation of biological technical reports for California Environmental Quality Act (CEQA) documentation for the Trabuco Canyon Project, which encompasses over 1,110 acres. Managing and conducting a 2.5-year wildlife corridor study program, focused surveys for least Bell's vireo and southwestern willow flycatcher, focused surveys for arroyo toad, habitat assessments and focused surveys for burrowing owl (*Athene cunicularia*), focused California gnatcatcher surveys, nesting raptor surveys, California red-legged frog surveys, and fairy shrimp surveys.

**Retrofit Project, Palm Springs Aerial Tramway, Riverside County, California.** Managed the biological resources portion of this project, which proposed to install new larger trams. The new tram cars required rock and tree removal adjacent to the tram alignment to ensure safe usage. Initial tasks included conducting focused surveys for mountain yellow-legged frog and golden eagle (*Aquila chrysaetos*), vegetation mapping, reporting, and coordination with the resource agencies. Was later responsible for determining the best way to convey peninsular bighorn sheep (*Ovis canadensis cremnobates*) across the Tram Road and onto the adjacent alluvial fan. This required interviewing numerous state, federal, academic, and field bighorn sheep biologists, devising alternative methods to avoid impacts to sheep, determining likely sheep crossing points, determining potential habitat bridge locations, and submitting a synopsis report.

**Yokohl Ranch, Yokohl Ranch LLC, Tulare County, California.** Served as a lead wildlife biologist for the project to perform initial habitat assessments for pond turtles, ringtail cats, wildlife movement, and mammals. Dudek is preparing biological resources reports and an environmental impact report (EIR) for an approximately 4,800-acre site that will be developed within the 36,000-acre Yokohl Ranch located in Tulare County. The planned development area lies within valley, foothill, and Sierra Nevada mountain habitats.

## Energy

**Hazard Tree Removal Project, Southern California Edison (SCE), San Bernardino and San Jacinto Mountains, Riverside and San Bernardino Counties, California.** Project manager responsible for SCE's Hazard Tree Removal Project in the San Bernardino National Forest and surroundings. Responsible for conducting biological surveys along all SCE circuits within the San Bernardino and San Jacinto Mountains prior to removal of bark beetle-infested trees, drought-stressed trees, and other damaged trees from the vicinity of its poles, lines, and other facilities. The project area encompasses 106 square miles, an estimated 62,000 acres of tree removal, 22,000+ power poles, and 538 linear miles of utility lines. Responsibilities include serving as project manager, obtaining weekly survey priorities, devising work schedules, coordinating with SCE personnel and USFS biologists regarding site-specific sensitivities, conducting biological surveys of all lines within San Bernardino National Forest, and writing biological assessments for the USFS.

**Pole and Utilities Replacement Project, SCE, Riverside and San Bernardino Counties, California.** Served as project manager and primary wildlife biologist. Responsibilities included conducting habitat assessments for sensitive wildlife species at multiple locations in Riverside and San Bernardino counties. These locations range from the Santa Ana Mountains and western valleys of Riverside County to San Jacinto Mountain, Palm Springs, Coachella Valley, the southern slopes of San Bernardino County, San Bernardino Mountains, and Apple Valley region of San Bernardino County.

**Daggett Ridge Wind Farm EIR/EIS, AES Wind Generation (Daggett Ridge Wind Farm LLC), San Bernardino, California.** Served as the lead biologist for the Daggett Ridge Wind Farm project responsible for coordination with the Bureau of Land Management (BLM) and survey design and reporting. Dudek was contracted by Daggett Ridge Wind Farm LLC, a subsidiary company of AES Wind Generation, to prepare required CEQA and National Environmental Policy Act (NEPA) documentation associated with the proposed Daggett Ridge Wind Farm located on public (BLM) and private land in San Bernardino County, California. Dudek initially worked with the County of San Bernardino (California lead agency) staff and the BLM (federal lead agency) to prepare a project management plan to produce a detailed project task schedule, detailed outline of the draft environmental impact report/environmental impact statement (EIR/EIS), a public outreach plan, and a mechanism for regular project updates. Dudek then prepared a combined Environmental Assessment/Initial Study (EA/IS) to focus the environmental analysis required for the EIR/EIS to critical resource areas.

**Desert Renewables Energy Conservation Plan, California Energy Commission, Southern California.** Served as a project biologist, providing analysis and coordination with species experts. Dudek was selected by the California Energy Commission and the California Natural Resources Agency (California Department of Fish and Game) to prepare the Natural Community Conservation Plan (NCCP) for the Desert Renewables Energy Conservation Plan (DRECP). The DRECP was established by Governor Schwarzenegger's Executive Order S-14-08, which identifies targets for increasing California's renewable energy portfolio. The DRECP, when completed, is expected to further these objectives and accelerate the processing of renewable projects in the California desert (Mojave and Colorado deserts), encompassing parts of six counties.

The DRECP is an NCCP that will help provide for effective protection and conservation of desert ecosystems while allowing for the appropriate development of renewable energy projects. It will provide long-term endangered species permit assurances to renewable energy developers and provide a process for conservation funding to implement the DRECP. It will also serve as the basis for one or more habitat conservation plans under the federal Endangered Species Act.

**San Diego Gas & Electric Cleveland National Forest Electric Safety and Reliability Project, California Public Utilities Commission, San Diego County, California.** Serves as the lead biologist for the project. Responsible for coordination with the USFS, determination of species impacts, study design, and monitor management. Dudek was contracted by the California Public Utilities Commission (CPUC) to prepare environmental documents pursuant to CEQA and NEPA for the San Diego Gas & Electric (SDG&E) Cleveland National Forest Electric Safety and Reliability Project. SDG&E proposed to submit an application to the USFS for a Master Special Use Permit, which combined approximately 70 special-use permits and other approvals for various electric transmission and distribution facilities located throughout the Cleveland National Forest (CNF) into one master permit under one 20-year authorization. The project also proposed activities on non-CNF lands, including private lands that are near the CNF and fall under the jurisdiction of the CPUC and other federal lands not under the jurisdiction of the USFS. For activities on private lands, SDG&E submitted an application for a Permit to Construct in accordance with CPUC General Order 131-D.

The project will also include maintenance, replacement or relocation, and operation of existing, active 69-kilovolt (kV) transmission and 12 kV distribution lines; installation or removal of 12 kV distribution lines; maintenance, relocation, or construction of access roads; and maintenance or widening of existing rights-of-way (ROWs) or acquisition of ROWs. The power lines included in the project traverse CNF land, BLM land, California State Parks land, County of San Diego land, tribal land, and private land holdings.

**Mountain View IV Wind Energy EIR/EIS Project, City of Palm Springs/Bureau of Land Management, Riverside, California.** Served as lead project biologist for the project. Dudek prepared a joint EIR/EIS for the City of Palm Springs and the BLM. The project consists of two development options for a 1,659-acre site. The first development option consists of 49 1,000-kilowatt (kW) turbines. The second includes 58 850 kW turbines. Both alternatives involve the installation of support facilities, including gravel-surfaced access roads, an electrical substation, and an electrical transmission line to connect the turbines to the substation. The project also included a compatibility analysis with the recently adopted Coachella Valley Multi-Species Conservation Plan.

The project site is within the City of Palm Springs corporate boundaries; however, the western half of the project site is composed of BLM land, and the eastern half is private land under the management of the Coachella Valley Water District (CVWD). Consultation and coordination with both lead agencies (City of Palm Springs and BLM) and CVWD played a vital role in the planning process and ultimate certification of the EIR/EIS. The Final EIR/EIS was ultimately certified and adopted by the lead agencies in December 2008.

**Borrego Solar Project Characterization Study, Confidential Client, San Diego, California.** Served as lead project biologist for analysis. Dudek was contracted to provide environmental services for the 187-acre Borrego Springs Solar Project in San Diego County, California. Located on former agricultural lands, the project would include an interconnection to a 69 kV Borrego Substation located 1.3 miles away, along Borrego Valley Road.

The characterization study will be used to determine site constraints, affecting schedule and possible delays associated with development and environmental permitting. The study was presented showing methods used to determine site constraints, findings that discuss both engineering and environmental constraints, and a site constraints map using geographic information systems (GIS) mapping.

**Solar Siting Studies and As-Needed Extension of Staff Services, Confidential Client, San Diego County, California.** Lead project biologist for analysis. A solar developer contracted with Dudek to provide as-needed environmental services to assist in identifying sites for solar energy development throughout Southern California. An interactive process with the solar developer staff, the goal was to ensure that all potential environmental constraints were identified when selecting potential development sites based on siting parameters developed by the solar developer. Dudek's studies targeted identifying sites that met the selection criteria to secure options for solar development.

**Solar Farm Initial Site Constraints and Fatal Flaw Analysis, Concentrix Solar Inc., San Diego County, California.** Serves as lead project biologist for analysis. Dudek was contracted by Concentrix Solar Inc. to conduct an initial site constraints analysis for a proposed solar renewable energy development within the County of San Diego, near the unincorporated community of Boulevard. In addition to conducting a regulatory/environmental constraints survey for this project, Dudek's environmental scientists provided a comprehensive "fatal-flaw" environmental analysis that will allow Concentrix Solar to better make key decisions about developing other solar energy sites within the County of San Diego. To date, these projects include nearly 1,000 acres in San Diego County and involve a variety of resource issues.

**Southern California Edison Demolition of Mohave Generating Station, Destrier Inc., Laughlin, Nevada.** Served as project manager and lead biologist for project. Dudek subcontracted to Destrier Inc., of Irvine, California, to assist in the demolition process (i.e., providing quality assurance and technical support) for the demolition of Southern California Edison's (SCE's) Mohave Generating Station, located in Laughlin, Nevada, near the Colorado River. Dudek initially assisted Destrier Inc. in the Demolition Bid Review process, reviewing contractor bids regarding responsiveness, completeness, and technical approach. The review included bid compliance with state, federal, and local permits and regulations related to asbestos abatement, hazardous materials waste transportation and disposal, soil and samplings. Later, Dudek provided biological coordination regarding a variety of federally listed threatened and endangered species and other special-status species issues including desert tortoise (*Gopherus agassizii*), Yuma clapper rail, bald eagle (*Haliaeetus leucocephalus*), golden eagle, burrowing owl, relict leopard frog (*Lithobates onca*), gila monster (*Heloderma suspectum*), razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*). Dudek was requested to provide recommendations to avoid attractive nuisance habitat on site, to identify potential nesting issues related to the structure, and to coordinate with the USFWS regarding listed species – obtaining a Section 10 concurrence letter from the local USFWS office in less than 2 months.

**Tule Wind Project As-Needed Environmental Services, Iberdrola Renewables Inc; San Diego County, California.** Serves as lead biologist and task manager. Dudek was initially contracted to conduct a habitat assessment for Quino checkerspot butterfly at the Tule project site in McCain Valley, in southeastern San Diego County. According to USFWS guidelines, habitat assessments are required to identify suitable vegetation structure and determine the presence/absence of suitable host and nectar plant species used by the Quino. Areas identified as suitable habitat then required focused surveys, according to USFWS protocol, by Dudek's USFWS-permitted biologists.

Dudek conducted Quino surveys within the Cuyapaipa, BLM, and state lands along approximately a 10-mile, 1,000-foot-wide corridor of proposed wind turbines and access roads, as well as two, 10-acre substation sites and a 100-foot-wide corridor for 10 miles in McCain Valley, proposed for overhead transmission lines. The survey results mapped and characterized the vegetation communities using GIS technology, and all suitable Quino habitat was mapped, identified, and described in a project report. The Quino survey work was later expanded to include approximately 400 additional acres located on Rough Acres Ranch north of McCain Road, and an additional 1,000-foot-wide corridor designated as an anticipated “action area” for wind turbine projects.

**Tierra del Sol Project Biological Surveys, Invenergy Wind Development LLC, San Diego County, California.** Serves as lead biologist and task manager. Dudek was contracted to conduct a biological constraints-level survey of the 150-acre Tierra del Sol parcel located in San Diego County. Vegetation communities were mapped in accordance to Holland nomenclature and County of San Diego requirements. A general inventory of plant and animal species was compiled as well as a determination of potential special-status species that could occur on the site. All data were compiled in GIS digital format and added to a Biological Resources Map. Also, specifically, a Quino checkerspot butterfly survey was conducted on the site, and Dudek biologists assessed the suitability of the site as habitat for this protected species. In general, Dudek’s initial work on the project identified potential biological issues before the client submits any applications to proceed on the project to the County of San Diego.

**Solar Power at Santee Lakes Recreational Preserve, Padre Dam Municipal Water District, San Diego County, California.** Served as lead project biologist. The Padre Dam Municipal Water District (District) used an innovative approach to incorporate solar paneling into their Santee Lakes Recreational Preserve park. The District proposed to construct recreation vehicle (RV) ports over three RV parking areas to support solar paneling.

A feasibility study was conducted that indicated that solar panels would be cost effective through a “Power Purchase Agreement” and would benefit the District, park users, and the surrounding community by providing clean energy to the power grid. Dudek prepared an IS that determined that a negative declaration would be the appropriate environmental document for this project. A key factor of the project was that it would provide the District with renewable, clean energy into the power grid, which would help reduce the District’s overall carbon emissions at the preserve. A key issue analyzed and determined to be less than significant was the visual character and light and glare for the neighboring residences from the structures and solar paneling.

## Municipal

**As-Needed Biological and Cultural Resources Surveys and Monitoring, Department of Parks and Recreation, County of San Diego, California.** Served as project manager, providing as-needed consulting services for biological and cultural resources. Services included conducting Phase I cultural resources surveys; baseline biological surveys; habitat, wildlife corridor, and sensitive plant and animal species monitoring; and habitat restoration. Prepared technical reports, developed vegetation management plans, and developed public access plans providing analysis and recommendations for potential multiple-use trails and staging areas. Responsible for oversight, wildlife survey design, and staffing for the following projects:

- Baseline Biodiversity and Cultural Survey for the Pascoe, Helix-Lambron, and Cielo Azul Parcel Additions to the Del Dios Highlands Preserve. This project included preparation of a vegetation management plan for the approximately 313-acre area in Escondido, California.

- Baseline Biodiversity and Cultural Survey for the Escondido Creek Preserve. This project included preparation of a vegetation management plan for the approximately 346-acre site in the Elfin Forest.
- Baseline Biodiversity and Cultural Survey for the San Luis Rey River Park. This project included preparation of a trails assessment and vegetation management plan for the approximately 460-acre site in the northern San Diego County area.
- Tijuana River Valley Regional Park Habitat Restoration Project. This 33-acre site is located in southern San Diego County.
- Lusardi Creek Perennial Invasive Vegetation Control and Coastal Sage Scrub Seed Imprinting Project. This project included preconstruction surveys for nesting birds. This approximately 2-acre site is located in the San Dieguito River Valley.
- Santa Ysabel West Perennial Invasive Vegetation Control Project. This approximately 0.26-acre area is a mitigation site in eastern San Diego County.
- Baseline Biodiversity and Cultural Survey for the Sycamore South and Hagey Portions of the Sycamore Canyon and Goodan Ranch Preserves. This project included preparation of a vegetation management plan for the entire preserve (2,300 acres) and an access plan. The survey site encompasses approximately 263 acres in the Santee/Poway area. This work is still in progress.
- Baseline Biodiversity and Cultural Survey for the Stoneridge Preserve. This project included preparation of a vegetation management plan and was conducted over an approximately 244-acre area in the South San Diego County area. This work is still in progress.
- Baseline Biodiversity and Cultural Survey for the Potrero/Mason Properties. This project included preparation of a vegetation management plan and access plan. The survey was conducted over an approximately 505-acre area in the Barratt Junction area. This work is still in progress.

## Resource Management

**LaBorde Canyon Off-Highway Vehicle Park Study, Riverside County, California.** Served as the project manager and lead biologist for the 2,600-acre study. Was responsible for scheduling ten biologists and one subconsultant to conduct habitat mapping, sensitive plant surveys, Stephens' kangaroo rat (*Dipodomys stephensi*) and San Bernardino kangaroo rat (*Dipodomys merriami parvus*) habitat assessments and trapping, installation and implementation of 20 reptile trap arrays, raptor nest surveys, and general wildlife surveys.

**San Luis Rey Bike Path, City of Oceanside, San Diego County, California.** Served as project manager and primary wildlife biologist. This project was located at the western end of the San Luis Rey River, near Interstate 5. Conducted vegetation mapping and focused surveys for California gnatcatcher and a variety of sensitive plant species. Processed environmental studies in support of the City of Oceanside's Mitigated Negative Declaration and wrote the habitat restoration plans for the project.

**Annual Gnatcatcher Surveys, Trump National Golf Club, City of Rancho Palos Verdes, California.** Conducted gnatcatcher surveys over approximately 100 acres of restored coastal sage scrub and coastal bluff scrub habitat within and surrounding the golf course on the Palos Verdes Peninsula. The goal of the surveys was to determine the breeding status of paired birds, territory number, size and location, breeding success, and cowbird predation in accordance with the Ocean Trails Habitat Conservation Plan. Prepared annual monitoring reports that summarized population dynamics and identified threats to gnatcatchers.

**Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Riverside County Transportation and Land Management Agency, Riverside County, California.** Served as one of the primary biologists for the Western Riverside MSHCP. Responsible for writing species accounts and coverage assessments for all of the covered reptiles, amphibians, insects, and crustaceans within the planning area. Also responsible for analyzing various wildlife crossing and corridor issues and determining potential methods for safely conveying wildlife across planned roadways. This involved extensive review of current state-of-the-art wildlife underpasses and overpasses within California, nationally, and globally. This also included visiting various sites, such as the Interstate 80 underpasses east of Sacramento. Also participated in implementation of the MSHCP, reviewing proposed projects for consistency with the MSHCP.

**West Coyote Hills Field Closure and Development Project, Chevron USA Production Company and Chevron Pacific Coast Homes, City of Fullerton, Orange County, California.** Assisted Chevron in obtaining a federal Section 4(d) permit to allow closure of the approximately 600-acre oil field. This field was home to over 46 pairs of California gnatcatchers. Managed environmental compliance regarding endangered species issues and included regular coordination with the USFWS, CDFG, U.S. Army Corps of Engineers, and California Division of Oil and Gas. Served as long-term 4(d) compliance monitor and coordinator for the field closure. Managed and conducted construction worker training seminars, and provided other training materials to educate workers regarding biological resources. Obtained regulatory agency approval of several project changes, including extension of work seasons and impact variances. Prepared and managed implementation of habitat restoration activities benefiting the California gnatcatcher. Prepared, and regularly coordinated with the regulatory agencies regarding, a federal Section 7 Biological Assessment to be included within the USFWS Biological Opinion regarding development of approximately half of the site. Acceptance of this assessment was reliant upon defensible analysis that through project modifications, project configuration, habitat restoration, and long-term management regimes, no net loss of California gnatcatchers would occur.

**Stephens' Kangaroo Rat Habitat and Fire Management Plan, Riverside County Habitat Conservation Agency, Riverside County, California.** Project manager responsible for preparing a Stephens' kangaroo rat Habitat and Fire Management Plan for the Riverside County Habitat Conservation Agency reserves in Lake Mathews and Steele Peak. Conducted interviews of habitat managers, species experts, and wildlife agency personnel. Coordinated expected fire behavior modeling for the reserve in order to develop a fire protection strategy and brush management plan. Established a suite of monitoring protocols and measures to track population levels and contributed habitat statistics to use for future management decisions. Conducted live-trapping in eleven 90-meter by 90-meter grids that included 49 traps per grid. Established a series of stratified grids across the reserve and field-verified the sites. Tested surrogate burrow count methodologies and sampled vegetation using a modified relevé method.

**Baseline Biological Surveys of the Otay Ranch Preserve – Salt Creek and San Ysidro Mountain Parcels, County of San Diego, California.** Serving as project manager, staffed the project and attended preserve owner/manager meetings as needed. Provided direction on wildlife survey design and directed staff with regard to survey locations and various wildlife studies, including butterfly surveys, avian point-count stations, herp arrays, game camera locations, and small-mammal trapping, within an approximately 1,350-acre area located in Chula Vista, California.

**Environmental Surveys of Simon and Mount Gower Preserves, County of San Diego, California.** Served as senior wildlife biologist. Provided direction on wildlife survey design and directed staff with regard to survey locations and various wildlife studies, including avian point-count stations, herp arrays, game camera locations, and small mammal trapping, within the 617-acre Simon Preserve and the 1,522-acre Mount Gower Preserve located in Ramona, California.

### Transportation

**Stormwater Best Management Practice (BMP) Pilot Study and Statewide Wet Basin Projects, California Department of Transportation (Caltrans), Statewide, California.** Served as project manager for this BMP pilot study that began in 1999 to account for potential endangered species issues related to implementation of BMPs in San Diego and Los Angeles counties. Initially evaluated all proposed structures to determine which had the potential to become attractive nuisances to sensitive wildlife species. Potentially sensitive BMPs were then monitored over a 2-year period to determine their true impact on sensitive species. During this timeframe, Worked with Caltrans, project engineers, scientists, regulatory agencies, and local conservation groups to modify maintenance and facility management regimes to avoid impacts to a wide variety of sensitive species. As a result of this project, it was determined that one type of BMP was at greater risk of becoming an attractive nuisance to threatened and endangered species. At Caltrans' request, formulated a project strategy and initiated discussions with the regulatory agencies to determine a strategy to permit installation of the BMPs on a statewide level. It was determined that the best method would be to employ the Safe Harbors Act or possibly pursue a habitat conservation plan under Section 7 or 10 of the Endangered Species Act. Currently studying potential BMP sites throughout the entire state and is in contact with the pertinent regulatory agencies and field offices toward devising an effective permitting strategy.

**Oceanside to Escondido Rail Project, North County Transit District (NCTD), Cities of Oceanside, Vista, San Marcos, and Escondido and County of San Diego, California.** Served as the primary wildlife biologist for the project, conducting habitat assessments and focused surveys for California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and arroyo toad along the entire project alignment. Wrote the least Bell's vireo and brown-headed cowbird (*Molothrus ater*) management plans for the project. Additionally, implemented and managed the brown-headed cowbird trapping program.

**Mid-County Parkway, Riverside County Integrated Project, Riverside County, California.** Lead biologist responsible for managing and conducting focused sensitive plant, burrowing owl, least Bell's vireo, southwestern willow flycatcher, and fairy shrimp surveys within the Mid-County Parkway study area, which includes a number of alternatives and ranges from approximately 1.7 kilometer (1.1 mile) to 6.5 kilometers (4 miles) in width and is approximately 52 kilometers (32 miles) in length. In addition, was responsible for devising a cost-effective helicopter survey method for potential fairy-shrimp-occupied pools after rain events, reducing potential survey time from days to 3 hours. Was also responsible for siting and design of at least 15 major and minor wildlife undercrossings and 3 wildlife overcrossings to accommodate reserves in western Riverside County.

**Rancho Santa Fe Road Widening and Bridge Replacement Project, City of Carlsbad Public Works Department, San Diego County, California.** Served as a primary wildlife biologist for the project and conducted focused surveys for California gnatcatcher.

## Water/Wastewater

**As-Needed Contract, City of San Diego Engineering and Capital Projects Department and Water Utilities Department, San Diego County, California.** Completed environmental impact studies for several sewer and storm drain projects under the City of San Diego as-needed contract. Wrote several mitigation monitoring plans and processed documentation for CEQA compliance. Personally managed approximately 8 of the 80 projects.

**As-Needed Biological Services 2000–2005, San Diego Metropolitan Wastewater Department, City of San Diego, California.** Served as primary biologist. Responsibilities included conducting habitat assessments and focused surveys for arroyo toad, California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, fairy shrimp, and other species.

**San Diego Pipeline No. 6, Metropolitan Water District (MWD) of Southern California, Riverside and San Diego Counties, California.** The project consisted of a 30-mile-long, 9-foot-diameter water conveyance pipeline. Began work on this project as a project monitor, with responsibilities including conducting habitat assessments for at least 10 federally and state-listed plant and wildlife species, conducting biological studies, coordinating monitoring activities, and monitoring site investigations for the early project activities. Transitioned into project manager for the approximately \$1.5-million contract, and was responsible for providing environmental support services to the MWD necessary to support revised environmental documents for the pipeline. All tasks for this contract met aggressive scheduling requirements and were within budget.

**Tributary Areas 3 and 8 Environmental Monitoring, U.S. Marine Corps Base Camp Pendleton, San Diego County, California.** Served as project manager and primary biologist. Implemented categorical exclusion permit requirements supporting installation of an upgraded sewer system over a portion of the base. This required writing a monitoring and compliance plan; initiating habitat assessments over portions of the system which had the potential to affect least Bell's vireo, California gnatcatcher, and arroyo toad; and monitoring activities on a regular basis in accordance with the monitoring plan.

**Non-Potable Water Distribution System, Yucaipa Valley Water District, San Bernardino and Riverside Counties, California.** Served as lead biologist for wildlife studies within San Timoteo Canyon. Responsibilities included scheduling personnel and conducting focused surveys for arroyo toad, least Bell's vireo, and southwestern willow flycatcher. Overall, 39 person-days were required to complete these focused surveys along the approximately 7-mile alignment.

**As-Needed Contract, Eastern Municipal Water District, Riverside County, California.** Served as monitoring biologist and primary biologist. These projects required Stephens' kangaroo rat, Quino checkerspot, and California gnatcatcher surveys and monitoring. These projects were situated throughout western Riverside County.

**Multiple Projects, Riverside County Flood Control and Water Conservation District, Riverside County, California.** Served as project manager for multiple projects. The projects ranged from multiple-acre detention basins to long and linear conveyance projects. Responsible for conducting biological studies, reporting, mitigation and monitoring plan writing, and wetland permitting. Recently completed two projects that involved widening existing channels in the Salt Creek and Perris Valley areas: 4- and 2-mile-long study areas, respectively. These projects involved conducting biological studies (i.e., vegetation mapping, wetland delineations, and focused surveys for California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, arroyo toad, Quino checkerspot, and sensitive plants), relocating burrowing owls, reporting, and assisting with resource agency permitting as required. Many of the projects required coordination with resource agencies.

APPENDIX B  
*Habitat Suitability Model*



## Appendix B Habitat Suitability Model

Species Information					Habitat Suitability Model Inputs			Output
Scientific Name Common Name	Sensitivity Code & Status (Federal/State/C ounty/CRPR) <sup>1</sup>	Habitat Requirements/Life Form/Blooming Period/Elevational Range	Potential to Occur on Site	Factual Basis for Determination	Suitable Vegetation Communities On Site	Elevation Range (feet)	Soils/Other	Total Suitable Acreage On Site
<i>Astragalus crotalariae</i> Salton milkvetch	None/None/List D/4.3	Sonoran desert scrub(sandy or gravelly)/perennial herb/ January–April/-197–820 feet	High	Species known to occur within the vicinity of the project site (SDNHM 2012a). Project site is in the known elevational range of the species, and desert scrub is present on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	-197 - 820	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6
<i>Astragalus insularis</i> var. <i>harwoodii</i> Harwood's milkvetch	None/None/List B, MSCP/2.2	Desert dunes, Mojavean desert scrub; sandy or gravelly/annual herb/January–May/0– 2,329 feet	High	The project is within the known geographic range of this species; there is a known occurrence less than 2 miles from the project site (CDFG 2012a). Additionally, the project site is within the known elevational range of the species, and there is desert scrub present on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	0-2329	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	433
<i>Astragalus lentiginosus</i> var. <i>borreganus</i> Borrego milkvetch	None/None/List D/4.3	Desert dunes, Mojavean desert scrub, Sonoran desert scrub/sandy/annual herb/ February–May/98–1,050 feet	Moderate	Species known to occur within the vicinity of the project site (SDNHM 2012a). Project site is close to the known elevational range of the species, and desert scrub is present on site. Therefore, there is a moderate potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	98-1050	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6

## Appendix B (Continued)

Species Information					Habitat Suitability Model Inputs			Output
Scientific Name Common Name	Sensitivity Code & Status (Federal/State/C ounty/CRPR) <sup>1</sup>	Habitat Requirements/Life Form/Blooming Period/Elevational Range	Potential to Occur on Site	Factual Basis for Determination	Suitable Vegetation Communities On Site	Elevation Range (feet)	Soils/Other	Total Suitable Acreage On Site
<i>Astragalus sabulorum</i> gravel milk-vetch	None/None/None /2.2	Desert dunes, Mojavean desert scrub, Sonoran desert scrub/ usually sandy, sometimes gravelly; flats, washes, and roadsides/annual/perenni al herb/ February–June/ 197–3,051 feet	High	The project is within the known geographic range of this species; there is a known occurrence approximately 7 miles east of the project site (CDFG 2012a). Additionally, the project site is within the known elevational range of the species, and there is desert scrub on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	-197-3051	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6
<i>Chaenactis carphoclinia</i> var. <i>peirsonii</i> Peirson's pincushion flower	None/None/List A/1B.3	Sonoran desert scrub (sandy), desert slopes near Santa Rosa Mountains/annual herb/March–April/10– 1,640 feet	High	The project is within the known geographic range of this species; there is a known occurrence less than 2 miles from the project site (CDFG 2012a). Additionally, the project site is within the known elevational range of the species and there is desert scrub on site.	Sonoran creosote brush scrub  Sonoran wash scrub	10-1640	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6
<i>Cryptantha costata</i> ribbed cryptantha	None/None/List D/4.3	Desert dunes, Mojavean desert scrub, Sonoran desert scrub/sandy/annual herb/ February–May/-197– 1,640 feet	High	Species known to occur within the vicinity of the project site (SDNHM 2012a). Project site is within the known elevational range of the species, and desert scrub is present on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub	-197-1640	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	433

## Appendix B (Continued)

Species Information					Habitat Suitability Model Inputs			Output
Scientific Name Common Name	Sensitivity Code & Status (Federal/State/C ounty/CRPR) <sup>1</sup>	Habitat Requirements/Life Form/Blooming Period/Elevational Range	Potential to Occur on Site	Factual Basis for Determination	Suitable Vegetation Communities On Site	Elevation Range (feet)	Soils/Other	Total Suitable Acreage On Site
<i>Malperia tenuis</i> brown turbans	None/None/List B/2.3	Sonoran desert scrub; sandy, gravelly/annual herb/March–April/49– 1,099 feet	High	The project is within the known geographic range of this species; there is a known occurrence approximately 3 miles from the project site (CDFG 2012a). Additionally, the project site is within the known elevational range of the species, and there is desert scrub on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub	49-1099	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	433
<i>Pectocarya peninsularis</i> Baja California bur-comb	None/None/List D/None	Sonoran desert scrub/washes, roadsides, clearings/annual herb/0– 984 feet	Moderate	Species known to occur within the vicinity of the project site, less than 5 miles (SDNHM 2012a). Project site is in the known elevational range of the species and desert scrub is present on site. Therefore, there is a moderate potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	98-984	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6
<i>Pilostyles thurberi</i> Thurber's pilostyles	None/None/List D/4.3	Sonoran desert scrub/perennial herb parasitic/January/0–1,198 feet	High	Species known to occur within the vicinity of the project site (SDNHM 2012a). Project site is in the known elevational range of the species, and desert scrub is present on site. Therefore, there is a high potential for this species to occur on site.	Sonoran creosote brush scrub  Sonoran wash scrub	0-1198	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	439.6

## Appendix B (Continued)

Species Information					Habitat Suitability Model Inputs			Output
Scientific Name Common Name	Sensitivity Code & Status (Federal/State/C ounty/CRPR) <sup>1</sup>	Habitat Requirements/Life Form/Blooming Period/Elevational Range	Potential to Occur on Site	Factual Basis for Determination	Suitable Vegetation Communities On Site	Elevation Range (feet)	Soils/Other	Total Suitable Acreage On Site
<i>Xylorhiza orcuttii</i> Orcutt's woody aster	None/None/List A, MSCP/1B.2	Sonoran desert scrub/perennial herb/March-April/0-1,198 feet	High	The project is within the known geographic range of this species; there is a known occurrence less than 5 miles from the project site (CDFG 2012a). Additionally, the project site is within the known elevational range of the species and there is desert scrub on site. Therefore, there is a high potential for this species to occur on site.	Sonoran desert brush scrub	0-1198	Rositas fine sand, 0-2% slope  Rositas fine sand, hummocky, 5-9% slope	433