URS

DOCKET
07-AFC-8
DATE DEC 14 2007
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December 14, 2007

Mr. B.B. Blevins
Executive Director
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Carrizo Energy Solar Farm (07-AFC-8)
Supplemental Information in Response to CEC Data Adequacy Requests
URS Project No. 22239472.014000

Dear Mr. Blevins:

On behalf of Ausra CA II, LLC (dba Carrizo Energy, LLC), URS Corporation Americas (URS) hereby submits this Supplemental Information in Response to CEC Data Adequacy Requests.

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit this Supplemental Information on behalf of Carrizo Energy, LLC.

Sincerely,

Angela Leiba
Project Manager

URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

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SUPPLEMENTAL INFORMATION

In Response To CEC Data Adequacy Requests

APPLICATION FOR CERTIFICATION (07-AFC-8)

Carrizo Energy Solar Farm
Carrizo Energy, LLC

Submitted to:
California Energy Commission

Submitted by:
Carrizo Energy, LLC

With Support from:

URS

1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

December 2007

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 1: Please include the qualifications for the biologists conducting the field studies and seasonal surveys.

Response: Provided as attachments to this sheet are the qualifications/resumes for the biologists who conducted the field studies and seasonal surveys.

URS

Eric A. Bailey

Project Biologist

Overview

Mr. Bailey has over seventeen years of experience as an environmental biologist. His responsibilities include focused surveys for California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, arroyo southwestern toad, and desert tortoise; vegetation mapping; and technical report preparation in conformance with CEQA, NEPA, and ESA.

Areas of Expertise

Biological Assessment
Construction Monitoring
Endangered Species Surveys

Education

BA/1984/ Biological Sciences/ California State University
California Teaching Credential/1986 /Life Science/California State University

Publications

Dispersal Capability of the California Gnatcatcher: A Landscape Analysis of Distribution Data. Western Birds 29:351-360, 1998. (P. Mock, coauthor).

California Gnatcatcher Territorial Behavior. Western Birds 29:242-257, 1998. (M. Grishaver, K. Preston, P. Mock, and D. King, coauthors).

Project Specific Experience

Biological Assessment

Escondido Parks Master Plan, City of Escondido, Escondido, California. Conducted field surveys for sensitive biological resources in proposed park sites and conservation areas.

Upham San Marcos Project, Chester R. Upham, San Marcos, California. Participated in biological resources survey of 35-acre site. Collected vernal pool soil samples for a fairy shrimp re-hydration study. Contributed to biological technical report.

Biological Resource Inventory, City of Poway, California. Conducted focused surveys for California gnatcatcher throughout the city and sphere of influence. Mapped habitats and sensitive resources.

Eagle Crest Avian Mitigation Monitoring and Cowbird Removal, The Koll Company. Participated in avifaunal monitoring of Cloverdale Creek and removal of cowbirds.

South Santa Fe Avenue Widening and Realignment, San Diego County Department of Public Works, San Diego, California. Conducted field surveys to determine the presence or absence of least Bell's vireo in the project area. Recorded faunal species list and provided photographic documentation of habitat quality.

Rancho Del Rey, City of Chula Vista, California. Participated in a vernal pool study that included floral inventory and soil sample collection for a fairy shrimp re-hydration study.

Miramar Road Vernal Pool Salvage, Bob Baker Enterprises, San Diego, California. Collected seed, mulch, and topsoil from vernal pools to be lost to development. Material collected used for habitat restoration and distributed to San Diego State University Biology Department, U.S. Fish and Wildlife Service, and Santa Ana Botanic Garden.

First San Diego River Improvement Plan, City of San Diego, California. Managed field task to collect data on a 20-acre revegetation site. Data used to determine whether the project met required standards for success.

***Brodiaea filifolia* Mitigation Monitoring Program, The Baldwin Company.** Managed a field effort to collect data on individual plant survivorship under a variety of test conditions

Lawrence Canyon, Coast Federal Bank. Conducted focused surveys for California gnatcatcher and mapped vegetation communities. Prepared a letter report quantifying the gnatcatcher population on site and detailing probable use areas.

Construction Monitoring

California Gnatcatcher Nest Monitoring for Dana Point Headlands Development. Monitored nests to prevent construction related impacts and brown-headed cowbird parasitism.

Open Space Management for San Elijo Hills Development. Monitored public use of natural open space conservation area. Recommended strategies for maintaining habitat quality. Conducted yearly census of California gnatcatcher population on-site. Produced year-end report of conditions on site, management actions taken, and recommendations for future management actions.

Biological Construction Monitoring for VertRep Facility, U.S. Navy/Stronghold Electric. Project biologist monitoring construction of a helicopter landing facility. Vernal pools, coastal sage scrub, and California gnatcatchers were the resources protected.

Biological Construction Monitoring of San Elijo Hills, San Elijo Hills, LCC. Implemented monitoring of wetlands permit conditions.

California Gnatcatcher Study, Skyline Wesleyan Lutheran Church. Collected field data to assess construction noise impacts on the species over three years. Mist netted and color banded gnatcatchers within the study area. Delineated territories on site and recorded breeding behavior, nesting success, and dispersal of young. Prepared a letter report detailing the breeding home range of each pair onsite prior to construction.

Kramer-Victor Powerline, Southern California Edison. Conducted surveys for desert tortoise, Mojave ground squirrel, and rare plants along the Kramer-Victor power corridor. Additionally, monitored construction crews to prevent take of desert tortoise.

Endangered/Sensitive Species Surveys

Emergency Storage Project, San Diego County Water Authority, San Diego, California. Conducted focused surveys for California gnatcatcher and arroyo southwestern toad. Survey area included vicinity of Lake Hodges and San Vicente Reservoir. Prepared portions of the Environmental Impact Report for the project.

Constraints Study for the Motoyama Property, Kurano and Associates. Researched sensitive species known in the project area and conducted a constraints level survey. Produced a report detailing biological resources detected and potentially occurring on site.

Effects of Aircraft Noise on Least Bell's Vireo at Marine Corps Air Station Camp Pendleton, U.S. Department of the Navy, San Diego, California. Recorded behavioral data of least Bell's vireo biweekly over five months. Behavioral data was compared to onsite noise data to test for possible effects on the species by aircraft noise.

Rancho San Diego California Gnatcatcher Study, Home Capital Corporation. Collected behavioral field data on California gnatcatchers throughout the breeding and non-breeding seasons. Assisted in mist netting and color banding of approximately 114 individuals. Analyzed territory size data for a gnatcatcher population of approximately 25 pairs.

Miramar Landfill General Development Plan, City of San Diego, California. Conducted focused surveys for California gnatcatcher, San Diego fairy shrimp, San Diego mesa mint, San Diego button celery, and willowy monardella. Contributed to the biological technical report and environmental impact statement for the proposed facilities.

South County Landfills, City and County of San Diego, California. Conducted comprehensive field surveys for sensitive species and focused surveys for California gnatcatcher and arroyo southwestern toad in six proposed landfill sites. Prepared constraints level report for each site.

California State University, San Marcos, Loop of the Oceanside to Escondido Commuter Rail Project, Myra L. Frank and Associates. Conducted sensitive species surveys and habitat delineation for the proposed commuter rail. Prepared a biological technical report for the site.

University Commons Residential Development Project, City of San Marcos, California. Conducted focused surveys for California gnatcatcher. Prepared a biological technical report for the EIR process.

Daley Rock Quarry, Daley Corporation and County of San Diego, California. Conducted sensitive-species surveys for the project. Evaluated proposed noise impacts to least Bell's vireo. Prepared a biological technical report.

Homeporting Avifaunal Surveys, U.S. Navy, Southwest Division. Participated in weekly surveys of waterbirds in north-central San Diego Bay. Quality checked database on Microsoft Excel spreadsheet.

North County Landfills, County of San Diego, California. Conducted comprehensive field surveys for sensitive species on two proposed landfill sites. Performed focused surveys for California gnatcatcher, arroyo southwestern toad, southwestern pond turtle, and least Bell's vireo. Delineated boundaries of three least Bell's vireo territories.

Marine Corps Base Camp Pendleton Firing Range Project P633, U.S. Navy, Southwest Division. Conducted focused surveys for arroyo southwestern toad. Recorded a population of 12 vocalizing males near the site.

Town Center North Commercial Development, Collins Development Company. Conducted focused surveys for least Bell's vireo. Delineated three pairs on site.

Pala Road Bridge Widening, County of Riverside, California. Conducted focused surveys for least Bell's vireo and southwestern willow flycatcher.

Miramar Landfill Pipeline Project, Santa Fe Pacific, San Diego, California. Conducted focused surveys for least Bell's vireo.

Marine Corps Air Station El Toro, U.S. Navy, Southwest Division. Conducted focused surveys for arroyo southwestern toad.

Rancho San Diego California Gnatcatcher Population Census, Rancho San Diego Partners. Organized field effort to census gnatcatcher population within an approximate area of 2,000 acres. Produced a report that analyzed population fluctuations over seven years.

Smith Encinitas California Gnatcatcher Surveys, Dorothea Smith. Conducted gnatcatcher surveys on 5-acre site and produced a letter report.

Meadowlark Estates California Gnatcatcher Survey, Consultants Collaborative. Conducted gnatcatcher surveys on approximately 180-acre site and produced a letter report.

Fanita Ranch, City of Santee, California. Conducted focused surveys for California gnatcatcher and cactus wren.

URS

Alyssa J. Boinay

Staff Biologist

Overview

Ms. Boinay is a field biologist with over two years of experience monitoring California Threatened and Endangered species and restoring native habitat. Alyssa's survey work has covered areas of the central coast and northern high desert region of California, focusing on California red-legged frogs and arroyo toads in the Los Padres National Forest, and the Northern spotted owl in the Klamath National Forest. More recently, her conservation efforts have included ecological restoration, concentrating on the re-vegetation of disturbed habitat with genetically local, native plant species. Alyssa has propagated site specific grassland, chaparral, riparian and coastal dune species for ecological restoration. She has aided in the design and installation of several small-scale restoration sites.

Areas of Expertise

Monitoring Threatened and Endangered Amphibians of California
Wildlife Surveys
Habitat Restoration GPS and GIS mapping

Years of Experience

With URS: < 1 Year
With Other Firms: 2 Year

Education

BA/Earth and Environmental Science/2004/Wesleyan University, CT

Project Specific Experience

Wildlife Experience

- Los Padres National Forest - Conducted aquatic surveys to assess the breeding success of California red-legged frogs (*Rana aurora draytonii)* and arroyo toads (*Bufo californicus*). Survey work included CRLF egg-mass and ArTo egg-string surveys, taking morphometric measurements of all individuals, and habitat suitability of stream reaches.
- Klamath National Forest - Conducted transect surveys for Northern goshawk (*Accipiter gentilis*), Burrowing owls (*Athene cunicularia*). Performed nest searches for State Threatened Swainson's hawks (*Buteo swainsoni*), banded fledglings and trapped adults. Surveyed historical territories of the Federally Threatened Northern spotted owl (*Strix occidentalis caurina)* and used standard mouse bating techniques to assess breeding status.

Sensitive Species Experience

Blunt-nosed leopard lizard (*Gambelia sila*)

- California Valley, CA – Surveyed for Blunt-nosed leopard lizards using the CA Department of Fish and Game Protocol.

Desert Tortoise (*Gopherus agassizii*)

- Attended the Desert Tortoise Council's *Introduction to surveying, monitoring and handling techniques workshop*.

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

Over 20 positive contact hours

- Los Padres National Forest - Surveyed for California red-legged frog egg masses, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin

GPS waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

Arroyo Toad (*Bufo californicus*)
Over 30 positive contact hours

- Los Padres National Forest - Surveyed for Arroyo toad egg strings, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin GPS waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

Northern Goshawk (*Accipiter gentilis*)
5 positive contact hours

- Klamath National Forest - Performed transect surveys while playing recorded vocalizations to solicit a response from Northern goshawks. Performed nest searches.

Swainson's Hawk (*Buteo swainsonii*)
20 positive contact hours

- Macdoel, CA – Performed nest searches to locate Swainson's hawk fledglings and pairs. Banded individuals and recorded band numbers of previously banded individuals.

Habitat Restoration Experience

- Assisted in the restoration of tidal wetlands at the Santa Barbara Airport by collecting local, California native plant seed and propagating native plants for re-vegetation.
- Assisted in restoration of disturbed coastal dunes by collecting genetically local, native plant seed.
- Assisted in the bluff's restoration at Nicholas Canyon State Park, Malibu by in-planting 2,000 native plants.
- Assisted in restoration of the Santa Barbara County landfill by installing irrigation systems, planning and planting 1,000 California native plants.
- Removed invasive weeds, including tamarisk, yellow/purple star-thistle and pampas grass from the Los Padres National Forest.

Vegetation Survey Experience

- San Bernardino NF, CA- Conducted vegetation surveys to map the presence/absence of the invasive weed: arrundo along river channels.

- Los Padres NF, Santa Barbara District, CA- Conducted vegetation surveys to map the presence/absence of yellow star thistle.
- Los Padres NF, Santa Barbara District, CA-Conducted rare plant presence/absence surveys for the Santa Ynez false-lupine (*Thermopsis macrophylla* var. *angina*), Late-flowered mariposa lily (*Calochortus weedii var. vestus*) and the Refugio Manzanita (*Arctostaphylos refugioensis).*

Contact Information

URS Corporation
2625 S. Miller St., Suite 104
Santa Maria, CA 93455
Tel-Santa Maria: 805.361-1114
Cell: 617.913-3136
Alyssa_Boinay@URSCorp.com

Lori Bono

Biologist

AREAS OF EXPERTISE

- Small Mammal Trapping and Identification
- Bat Call Analysis

EDUCATION

- Bachelors of Science, California State University, Fresno, 2004
- Associate of Science, College of the Sequoias, 2000

PROFESSIONAL ORGANIZATIONS

- The Wildlife Society
- The Nature Conservancy
- World Wildlife Fund
- Sierra Club, Kern-Kaweah Chapter

AWARDS / RECOGNITION

- President's List, California State University, Fresno, 2007
- Faculty Sponsored Student Research Grant, $1,250 of the year, 2006
- Travel Grant, $1600 of the year, 2006
- Faculty Sponsored Student Research Grant, $940 of the year, 2005

CONTINUING EDUCATION

- Biology, California State University, Fresno, Master's Degree, 2007

Summary Paragraph – Lori Bono has been responsible for conducting wildlife surveys and assessments to determine the presence of Threatened and Endangered (T&E) species, special status species and their habitat. She has also participated in controlled burns, and botanical surveys. Lori is currently finishing her master's degree at California State University, Fresno and currently holds a bachelor's degree in biology with a minor in agricultural business from California State University, Fresno. She brings to us five years of experience in the field. Prior to joining us she served as a Field Biologist for the Ecology and Parasitology Laboratories at California State University, Fresno in Fresno, California and has volunteered with the Endangered Species Recovery Program and the Sequoia Riverlands Trust, James K. Herbert Prairie Wetland Preserve in Tulare, California.

PROFESSIONAL EMPLOYMENT

2007 – Present Quad Knopf
Biologist/Assistant Planner
2005 – 2007 California State University, Fresno,
Graduate Student Researcher
2005 – 2007 California State University, Fresno,
Teaching Associate
2004 – 2005 California State University, Fresno,
Research Assistant-Project Director

PROJECT EXPERIENCE

Yokohl Valley Ranch Project — Tulare County, California

Biologist. Scheduled and coordinated field research efforts among crew leaders and project staff. Performed Spring floristic surveys for special status plant species, vernal pool mapping, Swainson's hawk surveys, bat surveys and bat call analysis (via Sonobat), dry season fairy shrimp sampling, small mammal trapping and identification, valley elderberry longhorn beetle surveys, California tiger salamander spotlighting, and stream electro-shocking to determine presence/absence of native California lamprey and California roach.

Reedley Waste Water Treatment Plant-Fresno County, California

Biologist. Performed preconstruction surveys for nesting raptors and surveyed project and surrounding areas for valley elderberry longhorn beetles (*Desmocerus californicus dimorphus*). Responsible for construction crew supervision

and training, worker education and construction monitoring.

Dunmore Communities- Kings County, California

Biologist. Conducted preconstruction surveys for blunt-nosed leopard lizards, San Joaquin kit foxs and burrowing owls.

Sugar Plum Homes — Kings County, California

Biologist. Performed protocol level surveys for the San Joaquin kit fox. Included nightly monitoring of spotlighting routes and track stations.

NSF-EID Grant: Identifying the Flow and Control of Pathogens from the Land to the Sea: Tracking Toxoplasma from Cats to Sea Otters — California State University, Fresno, CA. *Graduate Student Researcher—Parasitology Laboratory.* Field assistant in entomological research of Toxoplasma gondii. Responsible for the collection of ectoparasites and blood samples, via retro-orbital bleeds, from rodent populations in Morro Bay, California.

Soil Moisture, Gap Analysis Experiment — California State University, Fresno, CA. *Graduate Research Assistant-Ecology Laboratory.* Assist in the installation and location of Gap plots and transects in the Sequoia National Forest. Responsible for collecting soil moisture measurements, taking hemispherical photos, and maintaining accurate data records. Involved extensive off-trail hiking carrying heavy loads.

Seed Rain Experiment at California State University Fresno — California State University, Fresno, CA. *Research Assistant Project Director-Ecology Laboratory.* Head assistant running experiment monitoring seed rain in the Sierra National Forest at the Teakettle Research Station. Involved organizing a team of researchers, locating plots with compass and topographic maps, emptying seed traps, counting, identifying and recording seed species, and analyzing seed data. Required intense off-trail hiking and maintenance and repair of seed traps.

Sequoia Riverlands Trust — James K. Herbert Prairie Wetland Preserve in Tulare, California. On May 5th, 2004 volunteered for a bird point survey, under the supervision of Bobby Kamansky, in which I walked transects and recorded point counts, which reflected frequency and species of birds observed. On August 3rd and 4th, 2004 volunteered for a prescribed burn, under the supervision of Bobby Kamansky, in which flares were used to ignite 83 acres of preserved habitat in an effort to assist native grass restoration.

Alexander Doyle Brown

Wildlife Biologist

4908 Penelope Pl, 661-619-4688
Bakersfield, CA 93304 *alex.brown_1@yahoo.com*

Educational Background

High School diploma: June 1998. Stockdale High School, 1800 Buena Vista Blvd. Bakersfield, CA 93312.

Bachelor of Science degree, Biology: June 2003. California State University, Bakersfield, 9001 Stockdale Hwy. 93311.

Work Experience

6/06- Present: Associate Environmental Scientist for Quad Knopf, Inc. Duties include small mammal trapping for monitoring and presence/absence surveys, Pre-activity surveys for various oil related and construction activities, report writing, biological monitoring, and data entry. Current Supervisor Glen Mears 661-616-2600

5/01- 6/06: Wildlife Biologist for Endangered Species Recovery Program (ESRP). Duties consisted primarily of trapping, radio collaring, and monitoring of San Joaquin kit fox through telemetry and track stations. Additional duties included, but were not limited to, small mammal trapping for sensitive species of rodents and shrews, surveying for and capturing blunt-nosed leopard lizards, skunk trapping and radio collaring, various surveys for sensitive plant and animal species. Volunteer from end of employment through present for various research projects. Dr Brian Cypher- ESRP 661-835-7810.

8/02- 6/06: Wildlife Biologist contracted through Center for Natural Lands Management. Duties included assisting Preserve manager with habitat restoration, study grid maintenance, small mammal trapping, vegetation surveys, and pit fall trapping. Volunteer from end of employment through present for various research projects. Greg Warrick 661-387-9453

5/01- 8/05 (summers): Biological Assistant for research project observing the effects of cattle grazing upon endangered species in Lokern, CA. Duties included lizard transect surveys, live trap census for sensitive rodent species, as well as invertebrate monitoring through the use of pit falls. Dr. David Germano, 661-654-2471.

4/02- 10/03: Survey Crew Leader for Blunt-nosed leopard lizard surveys along Hwy 65. Duties also included small mammal live trap surveys and San Joaquin kit fox spotlighting. Contracted for Caltrans through Dr David Germano, 661-654-2471.

12/01- 5/02: Contract work through Analysts International for Chevron-Texaco. Duties consisted of establishment of computer training labs, institution and maintenance of numerous office computers, and some desktop support. Michael Burt 661-978-4382

1/02- 3/02: Student assistant for the Facility for Animal Care and Treatment (FACT). Duties were comprised handling and rehabilitation of injured wildlife, cage cleaning and maintenance, public education, supervision of volunteers and students, and facility maintenance. Marlene Benton 661-654-3167

6/01- 7/01: Assistant Coach for Eagle's Wings track and fitness camp. Worked closely with young athletes (ages 5-17) to instruct them in track and fitness fundamentals. Dave Lonsinger, Stockdale High School 661-664-2800

Alexander Doyle Brown
2007

5/00- 5/01: Student assistant for California Department of Water Resources. Conducted environmental surveys for sensitive wildlife species as well as data entry and permit applications. Margie Graham, Environmental Specialist III, California Department of Water Resources: 916-653-0844; *margieg@water.ca.gov*

1/00- 6/01: Student assistant. Identified fish species from fossil remains. Duties also included various work with vertebrate zoology. Dr Kenneth Gobalet, CSUB 661-654-3038

9/99- 12/01: Volunteer for FACT. Duties were comprised of injured wildlife rehabilitation, cage cleaning and maintenance, public education, supervised volunteers, and facility maintenance. Marlene Benton 661-654-3167

6/98- 8/98: Assistant Coach for Eagle's Wings track and fitness camp. Worked closely with young athletes (ages 5-17) to instruct them in track and fitness fundamentals. Dave Lonsinger, Stockdale High School 661-664-2800

6/92- 2/00: Grounds keeper and field inventory. Duties included maintaining a working inventory of hay and straw for a hay brokerage as well as landscape establishment and maintenance, office maintenance, and some delivery of products. Truman Brown 661-834-1755

Skills & Experience

- Knowledge of telemetry equipment and experience with carnivore tracking
- Experience performing necropsies upon animals of varying conditions
- Proficient writing skills with familiarity with PC and Mac systems
- Able to work in group or solitary situations
- Dependable, hard working, and able to work in diverse conditions
- Experience in plant identification
- Extensive experience with animal identification from bone, scats, and tracks
- Experience PIT tagging and trapping of small mammals and lizards
- Acquainted with GPS/ GIS
- Experience surveying for and handling San Joaquin kit fox
- Experience surveying for and handling Blunt-nosed leopard lizards (Level II Researcher- if not higher)
- Additional thorough experience surveying for and handling various Raptors, Western pond turtles, Heteromyid sp., San Joaquin antelope squirrel, other rodent species, and sensitive plant species.

References

Brian Cypher, Wildlife Ecologist, Endangered Species Recovery Program: 661-835-7810; *bcypher@esrp.org*

Margie Graham, Environmental Specialist III, California Department of Water Resources: 916-653-0844; *margieg@water.ca.gov*

Bill Vanherweg, Wildlife Biologist, Private Consultant: 805-839-0375; *bvan@sbcglobal.net*

Christine Van Horn Job, Wildlife Biologist, Endangered Species Recovery Program: 661-549-5395; *cvanjob@aol.com*

Additional references available upon request

URS

Corey D. Chan

Environmental Scientist

Overview

Mr. Chan's education and experience have provided him with a diverse background in environmental science. He has extensive field experience on marine, freshwater, and terrestrial projects, including monitoring, restoration, and data collection and management.

Years of Experience

With URS: <1 Year
With Other Firms: 4 Years

Education

MS/Environmental Science and Management/2005/University of California, Santa Barbara

BS/General Biology/2000/ University of California, San Diego

Project Specific Experience

Current Employment

Casitas Resource Management Plan (CEQA/NEPA), Ventura, CA., 2007. Preparation and analysis of existing conditions and impacts/mitigation for geology, hazardous materials, and visitor access and circulation sections.

Desert Tortoise Survey, Barstow, CA., 2007. Surveyed for Desert Tortoise for placement of panels and transmission lines for solar project.

Blunt-nosed Leopard Lizard Survey, Carrizo Plains, CA., 2007. Performed protocol survey to assess habitat quality for Blunt-Nosed Leopard Lizard.

Restoration Monitoring/Seed Collection, Santa Barbara, CA., 2007. Collection of native plant seeds and restoration monitoring of seeded and planted wetland, upland, and riparian habitats at the Santa Barbara Airport and Ellwood Grasslands.

Ecorisk Assessment, Santa Barbara, CA., 2007. Collected and prepared tissue samples for ecorisk assessment for a remediation project.

Tidewater Goby and Fish Relocation, Santa Barbara, CA., 2007. Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks, Santa Barbara.

Soil Stockpile Removal, Santa Maria, CA., 2007. Construction monitoring and waste manifest documentation for contaminated soil removal.

Site Assessment, Santa Barbara, CA., 2007. Soil, water, and gas sampling; mapping; data presentation and consolidation; and analyses for Site Investigation and Remedial Action Plan Reports.

Project Administration, Santa Maria, CA., 2007. Preparation of health and safety plan and coordination with subcontractors for remediation work on ConocoPhillips sump site.

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Previous Employment

WELDesign, Santa Barbara, CA., Environmental Restoration and Landscaping, December 2005-August 2006. Planted native plants, installed irrigation, and monitored at residential and restoration sites. Worked using sustainable, environmentally-friendly practices and methods.

Ecotrust, Portland, OR., Field Staff Coordinator, June 2005-November 2005. Interviewed commercial fishermen along California's Central Coast as part of marine reserve socioeconomic mapping project. Coordinated with field staff and fishing community contacts.

United States Forest Service, Santa Barbara, CA., Aquatic Biologist, June 2004-September 2004. Sampled stream sites for aquatic macroinvertebrates and habitat characteristics throughout the Los Padres National Forest. Compiled and analyzed collected data for use in forest management.

Department of Fish and Game, San Diego, CA., Scientific Aide, January 2001-September 2003. Assisted with drafting a management plan for market squid and white seabass fisheries. Observed and assessed bycatch in commercial spot prawn fishery. Completed market sampling of economically important fish species.

Scripps Institution of Oceanography, UCSD, La Jolla, CA., Biological Intern and Laboratory/Research Assistant. July 1999-September 2003. Completed SCUBA dive surveys of the Point Loma kelp forest ecosystem. Tracked shortfin mako sharks using acoustic telemetry. Collected and transported live mako sharks and Pacific bonitos for respirometry experiments. Performed spectrophotometric analyses and blood sampling. Quantified El Niño effects on the fecundity and growth of a kelp isopod.

Chambers Group Inc., Irvine, CA. Field Biologist. January 2002-February 2002. Ensured compliance of Marine Mammal Protection Act during oil exploration of Los Angeles harbor. Sampled stormwater for chemical analysis.

Professional Societies/Affiliates

- Goleta Stream Team, Santa Barbara Channelkeeper
- Santa Barbara County Certified Green Gardener

Specialized Training

- 2007/40-hr Haz Mat General Site Worker
- 2007/Loss Prevention System Health and Safety Training
- 2007/Smith Driver's Training
- 2007/Waste Manifest Training

Publications

Movement patterns, depth preferences, and stomach temperatures of free-swimming juvenile mako sharks, *Isurus oxyrinchus*, in the Southern California Bight. Marine Biology, 145: 191-199. Accepted March 2, 2004 C.A. Sepulveda, S. Kohin, C. Chan, R. Vetter, J.B. Graham.

Contact Information

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Kimberly Duncan

Senior Associate Environmental Scientist

AREAS OF EXPERTISE

- Threatened and Endangered Species
- Habitat Management
- Compliance Monitoring
- Compliance Reporting
- CEQA/NEPA Compliance

EDUCATION

- B.S. Biology, California State University, Bakersfield

REGISTRATIONS / CERTIFICATIONS

- Kern River Research Center's Southwestern Willow Flycatcher Workshop - May 1999
- Swainson's Hawk Workshop - May 2000
- Desert Tortoise Council, Tenth Annual Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop - November 2001
- Wetland Training Institute Certificate of Basic Wetland Delineation - March 2001
- The Wildlife Society, San Joaquin Valley Chapter, Giant Kangaroo Rat Trapping Workshop – September 2006
- The Wildlife Society, San Joaquin Valley Chapter, Blunt-Nosed Leopard Lizard Workshop – May 2007; participated as field crew leader
- Scientific Collecting Permit Permanent ID # SC-009210

PROFESSIONAL ORGANIZATIONS

- Western Section of the Wildlife Society
- San Joaquin Valley Chapter of the Wildlife Society
- Sacramento-Shasta Chapter of the Wildlife Society
- Kern County Chapter of the California Native Plant Society

Ms. Duncan maintains a working knowledge of the biological requirements of rare and endangered species indigenous to central and northern California. She is familiar with the survey methodologies for determination of the presence of endangered species. She participated in various projects conducted by Occidental of Elk Hills, Inc. and Elk Hills Power LLC in Kern County, California. Work efforts have included, floristic surveys conducted for federally listed threatened and endangered species by walking straight-line transects, collecting data and filing reports for further assessment by California Department of Fish and Game, United States Fish and Wildlife Service, and the California Energy Commission. In addition, she conducted pre-activity surveys for sensitive, threatened and endangered species for the construction of the Occidental Elk Hills power plant, and for AERA Energy, and participated in vegetation sampling on Cole's Levee Ecological Preserve (CLEP).

In addition, she has led local schools and organizations on numerous educational and field tours on CLEP. Tours include identification of animal and plant species, life histories on wildlife, early history of settlers in the San Joaquin Valley, and ecological and environmental habitat impacts.

PROJECT EXPERIENCE

Master Services Agreement, Occidental of Elk Hills — Kern County, CA. *On-call Biological Consultant.* Assists with the monitoring and compliance with state and federal Endangered Species Acts on Elk Hills. Performs threatened and endangered species surveys prior to oil exploration, well development, repairs and abandonment work.

Biological Surveys for Elk Hills Power Plant — Kern County, CA. *Biologist.* Conducted San Joaquin kit fox, blunt-nosed leopard lizard, burrowing owl and San Joaquin antelope squirrel surveys for the power plant facility, associated pipelines and transmission towers in Kern County. Provided monitoring of project implementation as well as threatened and endangered species training to project employees.

Master Services Agreement, AERA Energy — Kern County, CA. *On-call Biological Consultant***.** Assists with the monitoring and compliance with state and federal Endangered Species Acts on Coles Levee Ecosystem Preserve. Performs threatened and endangered species surveys prior to oil exploration, well development, repairs and abandonment work.

Airport, Mays, Balboa and Taft Commingling Projects — Taft, CA. *Biologist.* This project involved conducting pre-activity surveys to identify listed plant and animal species and their habitats in accordance with BLM guidelines prior to project initiation.

Occidental Hedges Exploratory Oil/Gas Project — Kern County, CA. *Biologist.* This project involves the preparation of an environmental document and associated technical studies for an oil exploratory project located south of the Highway 33 and California Aqueduct intersection in Kern County, CA. Ms. Duncan's project responsibilities include conducting reconnaissance level biological surveys, completing protocol level surveys for the presence of blunt-nosed leopard lizards, and providing assistance with the preparation of an MND, and EA, and technical studies.

Occidental Diatomite/Upturn Exploratory Oil Projects — Kern County, CA. *Biologist.* This project involved the preparation of an environmental document and associated technical studies for an oil exploratory project located in southern Kern county. Ms. Duncan's responsibilities included conducting protocol level surveys for the presence of blunt-nosed leopard lizards and San Joaquin kit fox prior to project initiation.

Expansion T6-LH-A Oil/Gas Project — Kern County, CA. *Biologist.* This project currently involves preparation of a NEPA environmental document and associated technical studies in cooperation with the BLM for an oil/gas outreach project located near Lost Hills in Kern County. Ms. Duncan's project responsibilities include surveys for threatened and endangered species prior to construction activities, monitoring of project implementation as well as threatened and endangered species training to project employees.

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

NATHAN HALE

Staff Ecologist

EDUCATION

- M.S. (Candidate), Environmental Studies, San Jose State University, San Jose, CA. Present
- B.A. Environmental Studies, with Highest Honors, University of California Santa Cruz, CA. 2005.

AREAS OF EXPERTISE

Natural history of avian species, restoration ecology, invasive plant species management, environmental interpretation, community-based conservation

PROFESSIONAL EXPERIENCE

- Live Oak Associates, Inc., San Jose, CA. Staff Ecologist/Field Assistant. 2006-Present.
- Red Panda Project, Santa Clara County, CA. Communications Intern. Present.
- Santa Clara Valley Audubon Society, Cupertino, CA. Conservation Intern. 2004-2006.
- Earthwatch International, Costa Rica, Field Assistant, Tropical Montane Forest Restoration, 2005.
- Santa Clara Valley Audubon Society, Cupertino, CA. Associate Editor, Creekside News 2004.
- University of California Santa Cruz, Research Assistant, Invasive Plant Species 2004.
- University of California Santa Cruz, Research Assistant, Fish Bycatch Policy 2004.

PROFESSIONAL TRAINING

- Natural History of California Field Study, University of California, Santa Cruz, 2004.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- Society for Conservation Biology
- National Audubon Society
- Orion Society

QUALIFICATIONS

Nathan Hale has experience and knowledge in the areas of natural history, general ecology and environmental writing. He has applied this knowledge in research projects including a tropical montane forest restoration project in southern Costa Rica, several vegetation research and management projects on Santa Cruz Island, CA, and the creation of conservation and natural history publications for several non-profit conservation organizations. He has also conducted burrowing owl, loggerhead shrike, California horned lark, and general raptor surveys as well as blunt-nosed leopard lizard surveys, wetland delineations, and vegetation sampling for Live Oak Associates, Inc. Furthermore, Nathan has a working knowledge of CEQA and NEPA documentation. He is currently working toward a graduate degree focused on the study area of restoration ecology.

URS

Gregory Hoisington, M.S.

Ecologist

Overview

Mr. Hoisington's professional experience includes interdisciplinary projects in biological resource assessment and identification, environmental document preparation, environmental planning, compliance, permitting, and construction monitoring. Greg has led natural resource field surveys for fauna and flora species, wetlands and waters determinations, and for sensitive plant and wildlife species. Mr. Hoisington's experience includes preparation of biological and environmental documents for compliance with NEPA, CEQA, CEC, Endangered Species Acts, and other relevant legislation. Greg has also prepared permit applications and participated in informal and formal consultation with regulating agencies including CDFG, USFWS, NMFS, ACOE, and California Coastal Commission.

Areas of Expertise

Biological resource assessment and identification; Environmental Documentation; Planning, Compliance, and Permitting

Years of Experience

With URS: 1.5 Years

With Other Firms: 2 Years

Education

MS, Biology, 2004, California State University, Long Beach.

BS, Ecology and Environmental Biology, 2001, California State University Long Beach.

Project-Specific Experience

Anaheim Power Plant AFC, Orange County, CA.
Performed vegetation community mapping, habitat suitability analysis for rare plant and wildlife species, and initial Waters of the State, U.S., and wetlands delineations for an Application for Certification of a proposed power plant site and associated water, electrical, and natural gas line linears.

Solar Power Plant AFC, San Luis Obispo County, CA. Field Biologist on a survey team for an Application for Certification of an 180 MW solar/thermal generating facility located San Luis Obispo County. Performed rare plant surveys, vegetation community mapping, and initial kit fox and blunt nose leopard lizard habitat suitability assessments.

Solar Power Plant AFC and EIS, Imperial County, CA. Field Biologist for a 7000 acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

Solar Power Plant AFC and EIS, San Bernardino County, CA. Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

Southern California Edison, Palmdale, CA.
Performed vegetation community mapping along a 43 mile transmission line proposed for upgrades. Compiled data and vegetation maps for submission to the California Public Utility Commission.

TransCanada and Imperial Irrigation District, Southern CA
Performed field surveys for listed flora and fauna species and

Wetlands/Waters of the U.S. along an 80-mile and separate 45-mile proposed liquefied natural gas pipeline. Authored the Biology and Hydrology sections for the Federal Energy Regulatory Commission filing, responded to data requests/comments, and resubmitted the sections for certification.

Florida Power and Light, Blythe, CA
Led field surveys to document CDFG jurisdictional streambeds along a 67-mile project alignment. Conducted field biological surveys to determine species composition and diversity of desert wash woodland and creosote bush scrub annuals, perennials, shrubs, and trees. Compiled and analyzed data to create resource databases (botanical, vertebrate and wetland databases) and produced graphical representations of biological data in tables and graphs. Assisted with preparation of technical impact evaluations, Biological Assessment, CDFG Streambed Alteration Permit, California Energy Commission Data Requests, and Mitigation and Monitoring plans. Performed field evaluation and permitting of U.S. waters determinations based on CDFG code 1600, and Section 404 of the Clean Water Act.

LA Dept. of Public Works, Marina del Rey, CA.
Performed an eelgrass, *Caulerpa* spp., and sensitive marine biological resource survey for a proposed Marina del Rey tide gate improvement project. The survey consisted of benthic mapping and surveying along 2-meter snorkel transects within an approximate 50,000 sq. ft. project area. Authored a letter report of the findings for the LADPW.

Chevron San Ardo Crude Pipeline, Coalinga, CA.
Performed biological monitoring for the California tiger salamander, California red- legged frog, and San Joaquin kitfox during geotechnical drilling investigations along a proposed 57-mile heated crude pipeline.

City of Santa Monica, Santa Monica, CA.
Performed vegetation community mapping and tree inventory along a 1.6-mile portion of Palisades Bluff proposed for slope stabilization. Data were collected for inclusion in a California Coastal Development Permit application. Drafted a report of findings and assisted with data inclusion within the CCD permit.

Federal Emergency Management Agency (FEMA), Sonoma, Sacramento, and Napa Counties, CA
Performed site assessments for Federally-listed flora and fauna species on four river projects. Site assessments consisted of habitat suitability and presence/absence surveys for Federally-Listed species including central California steelhead ESU, CA red-legged frog, CA Freshwater shrimp, bald eagle, and northern spotted owl. Species effects determinations were made for each site and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with National Marine Fisheries Service and/or U.S. Fish and Wildlife Service were made. Authored Biological Assessments for two

projects for submittal in Section 7 ESA consultation.

CalTrans, San Luis Obispo and Riverside Counties, CA
Performed site biological assessments for common and special status plant and wildlife species for independent transportation improvement projects for US 101/McCoy Lane Interchange improvement, Redlands Boulevard improvement, Gilman Springs Road improvement, Palomar Road widening, and I215/Newport Road Interchange improvement projects. Authored all environment documents (NES-MIs) and prepared responses to comments.

Seales Mineral Project, Tronas, CA
Performed site reconnaissance and biological permit compliance analysis for a borax and sodium sulfate mining operation that impacts on avian species protected by state and federal ESAs, MBTA, and CDFG Code Sections 3500 and 3800 *et seq*. Presented data and fatal flaws analysis to perspective buyers of the mining operation.

Chevron Guadalupe Restoration Project, Guadalupe, CA
Assisted with California Red-legged Frog eyeshine surveys within an estuarine habitat along the Santa Maria River and performed construction monitoring for areas containing listed plants.

Federal Emergency Management Agency (FEMA), Marin County, CA. Performed site assessments for Federally-listed Threatened or Endangered Flora and Fauna Species on 12 marine and freshwater projects within Marin County, CA. Site assessments consisted of suitability of habitat and presence/absence surveys for Federally-Listed species including central California steelhead ESU and Coho Salmon, CA red-legged frog, CA freshwater shrimp, clapper rail, and Baker's larkspur. Species effects determinations were made for each site and recommendations for inclusion in a Programmatic Biological Assessment or individual Section 7 Endangered Species Act consultation with National Marine Fisheries Service and/or U.S. Fish and Wildlife Service were made. Authored Biological Assessments for six projects requiring Section 7 ESA consultation.

Santa Barbara Airport, Santa Barbara, CA
Assisted in a fish identification and relocation project to relocate estuarine fishes from two intertidal wetland sites planned for runway construction disturbance to an undisturbed, adjacent wetland location. Assisted with the relocated fishes included the tidewater goby.

County of Santa Barbara
Assisted in the design, construction, and implementation of a central California steelhead ESU fish passage through an existing, impassible bridge barrier. Utilized natural rock formations and also engineered rock and pool formations to facilitate fish passage up an approximately 15 foot vertical gradient.

CalTrans, Paso Robles, CA
Performed biological survey activities to identify sensitive wildlife and plant species on land proposed for two separate transportation overpass improvement projects (US 101/SR 46 W and US 101/SR 46 E) located in Paso Robles, California. Identified required biological surveys, performed biological surveys for sensitive wildlife and botanical species, identified relevant environmental studies required for NEPA/CEQA compliance, authored relevant environmental documentation (NES-MI), and responded to comments.

Mission College, Sylmar, CA
Authored the Biology section of an EIR prepared for an expansion of the Los Angeles Mission College. Performed biological resource assessments for general and sensitive floral and fauna within the project area and performed Waters of the U.S. jurisdictional determinations. Responded to Client and public comments.

CalTrans, Santa Ana, CA
Implemented biological construction monitoring plans for the SR 22 Improvement Project. Inspected work sites for compliance with all relevant permit and construction monitoring requirements for flora, fauna and Waters of the U.S and state.

Union Pacific Railroad, Mesquite, NV
Completed ACOE Waters of the U.S. delineations along a proposed 32-mile railroad line extending northwest from Mesquite, NV and at a proposed coal-powered electrical generating station. Gathered GPS locations of all tributaries to Waters of the U.S. as well as length and width measurements in order to calculate disturbance acreages.

Pacific Gas and Electric, North Baja Natural Gas Pipeline, Southern California and Western Arizona
Led field monitoring of experimental vegetative seeding plots and bi-annual botanical surveys for revegetation along an 87 mile pipeline corridor pursuant to the CDFG Streambed Alteration Permit, USFWS BO, and the FERC and California State Lands Commission (CSLC)-approved FEIS requirements. Compiled and analyzed all data and authored bi-annual botanical reports.

Florida Power and Light, Lancaster, CA
Developed and implemented field methods for a special status plant survey along a 60-mile transmission line slated for an upgrade. Coordinated field efforts, led field surveys, and coordinated with regulators including CDFG and USFWS regarding field surveys.

PPM Energy, Palm Springs, CA
Developed and implemented field methods for protocol desert tortoise surveys and special status plant and animal surveys. Coordinated field efforts and performed sensitive species surveys on approximately 6 acres slated for wind development. Coordinated with agencies including CDFG

and USFWS.

U.S. Air Force, Edwards Air Force Base, Lancaster, CA
Prepared and implemented a field research plan to address predation of the desert tortoise by the common raven. Performed population density estimates of ravens, movement patterns, and nest searches for tortoise remains.

South Coast Water District (SCWD), Laguna, CA
Managed and prepared three draft CEQA initial studies for the installation of a new water line, the replacement of an existing water line, and for the maintenance of two sanitary sewer lines in Laguna Beach, California. Duties included project management, client relations, identification of required biological and cultural surveys, planning biological sampling events, identifying required environmental permits, and identifying relevant technical environmental studies required for CEQA compliance. Developed general species lists, developed and implemented special status plant surveys for rare species. Coordinated contractors performing cultural and special status bird surveys.

Arctic Slope Regional Corporation (ASRC Lynx, Inc), Alaska
Performed marine mammal monitoring surveys for shipping operations associated with oil exploration activities along the north slope of Alaska in the Arctic Ocean. Documented all observed mammals in accordance with the conditions stipulated by the NOAA Incidental Harassment Authority Permit under the Marine Mammal Protection Act.

Calpine Energy, Riverside, CA
Prepared a biological resources mitigation implementation and monitoring plan (BRMIMP) as well as a worker environmental awareness plan (WEAP). Assisted with biological resource monitoring for construction activities associated with an Electric Generating Facility installation. Performed construction monitoring for sensitive biological resources.

PPM Energy, Inc., Jucumba, San Diego County, CA
Performed site feasibility surveys and flora/fauna sampling activities to identify common and sensitive wildlife and plant species on BLM-administered land proposed for a wind-energy development project. Identified required biological surveys, planned biological sampling events, identified requisite permitting sequence and scheduling, identified potential stakeholders, and identified relevant environmental studies required for NEPA/CEQA compliance. Developed avian field sampling protocols including point count observation areas and coverage, and completed avian data collection at all project observation locations every two weeks for one year.

Hunter's Point Naval Station, San Francisco, CA
Performed burrowing owl protocol surveys and vegetation composition mapping on 176 acres within the Hunter's Point Navy Base. Performed passive Burrowing Owl relocation methodology in order to relocate the

sensitive species from within the project construction area. Performed vegetation identification for dominant species suspected of radioactive isotopic uptake in order to clear the vegetation for remediation activities.

Cal Trans, Hesperia CA
Led a site evaluation and natural resources field survey of an approximately 20 acre undeveloped open space parcel in the city of Hesperia, San Bernardino County, California for a I-15 and Ranchero Road Interchange Preliminary Environmental Analyses. Determined potential environmental development regulatory and compliance issues of this study site relative to biology and jurisdictional waters of the United States. Identified vegetation coverage, wildlife present, and potential waters of the United States. Compiled and mapped GPS data of vegetation coverage and water features. Authored the biology section of the Preliminary Environmental Assessment.

City of Los Angeles Department of Public Works
Assisted with creation of design criteria and objectives for a construction plan for a storm water treatment wetland. Design criteria and objectives were derived from established standards in the SWRCB Proposition 13 Non point Source Pollution Grant Program and Regional Water Quality Control Board's (RWQCB) Watershed Management requirements. Implemented native botanical restoration plans following construction.

Sempra Energy Resources, Southern California
Assisted with the creation of a habitat restoration plan for restoration of native desert habitat in the vicinity of the recently constructed La Rosita Transmission lines. The plan included control of invasive tamarisk species along the right-of-way for both the Intergen and the Sempra transmission lines.

Casden Properties, Santa Clarita, CA
Performed a site evaluation and natural resources field survey of an approximately 90 acre undeveloped open space parcel in the city of Santa Clarita, Los Angeles County. Natural resource surveys included plants, wildlife, and communities. The assessment was intended to determine potential environmental development regulatory and compliance issues of this study site. Assisted in the preparation of a Final Report of Environmental Resources and Compliance issues.

Awards

Graduation with Honors (graduate)
Graduation with Honors (undergraduate)
USC Sea-Grant 2002-2003 Graduate Research Fellowship ($12,000)
USC Sea-Grant 2003-2004 Graduate Research Fellowship ($12,000)
CSULB Richard B. Loomis Graduate Research Award ($250)
Aquarium of the Pacific Research Grant ($800)

Specialized Training

Flat Tailed Horned Lizard Monitor Training – Administered by Bureau of Land Management, El Centro, CA. April 30, 2007

Caulerpa taxifolia Identification Training – Administered by NMFS, Long Beach, CA. March 8, 2007

Project Management Training (PM100) March 2006 Tetra Tech EC, Inc.

Project Management Training (PM200) April 2006 Tetra Tech EC, Inc.

CEQA 16-Hour Training Workshop – Successful CEQA Compliance, UCLA Extension Course

40-Hour HAZWOPER, December 2004

8-Hour HAZWOPER Refresher Jan 2006

38-Hour Army Corp of Engineers Wetland Delineation and Management Training Program, Richard Chinn Environmental Training

Nuclear Health Physics Radiation Protection Training Program, 1990 Institute for Resource Management (IRM)

NAUI Advanced Scuba Diver and California State University, Long Beach AAUS Scientific Research Diver

Publications

Hoisington, G. and C. Lowe. 2005. Distribution, abundance, and population structure of the round stingray, *Urolophus halleri,* near a thermal discharge at Seal Beach, CA. Marine Environmental Research.

Lowe, C., G. Moss, **G. Hoisington**, J. Vaudo, D. Cartamil, M. Marcotte, Y. Papastamatiou. 2007. Caudal spine shedding periodicity and site fidelity of round stingrays, *Urobatis halleri* (Cooper), at Seal Beach, California: implications for stingray-related injury management. Bulletin of the Southern California Academy of Sciences.

Contact Information:

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greg_hoisington@urscorp.com

RICK A. HOPKINS, PH.D.
Principal
Senior Conservation Biologist/Ecologist

EDUCATION

- Ph.D. Wildlands Resource Science, University of California, Berkeley, CA. 1990.
- Dissertation Title: Ecology of the cougar in the Diablo Range.
- M.A. Biology, San Jose State University, San Jose, CA. 1981.
- B.A. Wildlife Zoology, San Jose State University, San Jose, CA. 1976.

AREA OF EXPERTISE

Population ecology, mammalogy, predator ecology, survey techniques, wildlife/habitat relationships, conservation biology, threatened and endangered species, and environmental regulations (CEQA, NEPA, FESA, CESA)

PROFESSIONAL EXPERIENCE

- Live Oak Associates, Inc., (formerly Hartesveldt Ecological) Oakhurst, CA. Co-Owner, Vice-President, Senior Wildlife Biologist. 1999 to Present
- Consulting Biologist 1990 to present
- San Jose State University, San Jose, CA. Spring Lecturer. 1991
- University of California at Berkeley, Berkeley, CA. Research Assistant. 1984 to 1989
- San Jose State University, San Jose, CA. Lecturer. 1983 to 1985
- University of California at Berkeley, Berkeley, CA. Teaching Assistant. 1982 to 1983
- San Jose State University, San Jose, CA. Graduate/Teaching Assistant, Biology. 1977 to 1981

PROFESSIONAL TRAINING

Habitat Evaluation Procedure (HEP). U.S. Fish and Wildlife Service. 6/92

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

Wildlife Society, American Society of Mammalogists, Society for Conservation Biology, Ecological Society of America

QUALIFICATIONS

Dr. Hopkins is a national recognized wildlife ecologist whose training and research has focused on population ecology and movements of wildlife, particularly mammalian carnivores and threatened and endangered (T&E) wildlife species. His areas of expertise include the following:

- **Special status Species Surveys.** Dr. Hopkins has designed and managed a considerable number of surveys for special status species and/or their habitats during the last 15 years. While Dr. Hopkins is a broadly trained ecologist with experience with several wildlife species, he has dedicated the last 25 years to the study of mammalian carnivores. During the last 15 years he has focused a great deal of attention in studying the distribution of the San Joaquin kit fox within its range. He has continued to search for ways to establish survey techniques that will provide statistical rigor to the methods employed to ascertain the presence or absence of wildlife species on sites, particularly in marginal habitats. He has also assisted his clients with mitigation that reduced impacts to such species, including (but not limited too) listed crustaceans (e.g., vernal pool fairy shrimp), Bay checkerspot butterfly, Mission blue butterfly, San Bruno elfin, Callippe butterfly, Valley elderberry longhorn beetle, California tiger salamander, California red-legged frog, western pond turtle, blunt-nosed leopard lizard, Alameda whipsnake, western burrowing owl, Swainson's hawk, golden eagle, bald eagle, Buena Vista Lake shrew, giant kangaroo rat, salt

marsh harvest mouse, San Joaquin kit fox. He has also contributed to the development of the California Wildlife Habitat Relationships Program and is trained in Habitat Evaluation Procedures.

- **Endangered Species Consultations.** Dr. Hopkins has prepared supporting material for both section 7(a) and 10(a) consultations with the U.S. Fish and Wildlife Service. As Principal, he has supervised the collection of data on listed species within project areas, analysis of project impacts, the development of mitigation measures, and has been the primary contact with the resource agencies during the process. Dr. Hopkins has prepared a number of Habitat Conservation Plans for a variety of projects.
- **Preparation of CEQA/NEPA Documents.** Dr. Hopkins has supervised interdisciplinary teams of biologists characterizing the biological setting of project sites and planning areas, determining project impacts, and developing conceptual mitigation plans consistent with the requirements of CEQA and NEPA for over 600 projects during the last 15 years.

PUBLICATIONS

Grigione, M.M., P. Beier, R.A. Hopkins, D. Neal, W.D. Padley, C.M. Schonewald and M. L. Johnson. 2002. Ecological and allometric determinants of home-range size for mountain lions (Puma concolor). Animal Conservation 5:317-324.

Hopkins, R. A., M. J. Kutilek, and G. L. Shreve. 1986. The density and home range characteristics of mountain lions in the Diablo Range of California. Pages 223-235 In S. D. Miller and D. Everett eds, Proc. International Cat symposium, Kingsville, Texas, October 1982.

Hopkins, R.A. 1984. Current techniques used in the research of pumas. Pages 216-229 in J. Roberson and F. Lindzey, eds. Second Mountain Lion Workshop. Utah Div. Wildl. Res., Utah.

Hopkins, R.A. 1990. Ecology of the Puma in the Diablo Range. Ph.D. Dissertation University of California at Berkeley, California.

Kutilek, M.J., R.A. Hopkins, E.W. Clinite, and T. E. Smith. 1983. Monitoring population trends of large carnivores using track transects. Pages 104-106 in J. F. Bell, and T. Atterbury, eds. Proc. Internat. Conf. Renewable Resource Inventories for Monitoring Changes and Trends. School of Forestry, Oregon State University, Corvallis, Oregon.

PROFESSIONAL PRESENTATIONS

1979. Annual Meeting of American Society of Mammalogist. Current Techniques in the Capturing of Mountain Lions. Corvalis, Oregon.

1981. Annual Meeting of the Western Section of the Wildlife Society. Home Range Characteristics of the Mountain Lion in the Diablo Range. San Luis Obispo, California.

1983. International Cat Symposium. The Density and Home Range Characteristics of Mountain Lions in the Diablo Range of California, Kingsville, Texas.

1984. Second Mountain Lion Workshop. Progress Report on the Home Range Characteristics of Cougars in the Diablo Range, Zion National Park, Utah.

1989. Third Mountain Lion Workshop. Duke, R. D., R. C. Klinger, R. A. Hopkins, and M. J. Kutilek, Yuma Puma: Population Status Update. Arizona.

1989. Third Mountain Lion Workshop. Hopkins, R.A. The comparison of home range estimators in the analysis of puma movements.

1992. Annual Meeting of the Western Section of the Wildlife Society. Duke, R.D., R.A. Hopkins, H.T. Harvey, and H.S. Shellhammer. The Distribution and Abundance of Salt Marsh Harvest Mice in 3 South Bay Marshes Influenced by Effluent Discharge. San Diego, California.

1997. 5th Mountain Lion Workshop. California Statewide Estimates And Trend Analysis: Lessons From The Diablo Range. San Diego, California.

1997. Annual Meeting of the American Society of Mammologist. Townsend, S.E., R. A. Hopkins, and R.R. Duke. Distribution of the San Joaquin Kit fox in the North part of its Range. Stillwater, Oklahoma.

2000. An Invited Ecological Co-chair for the Central Coast Ecoregion of California for the Missing Linkages Conference: Restoring Connectivity to the California Landscape. The mission of the conference was "to bring together land managers and planners, conservationists, and top scientists from each ecoregion in the state to identity the location of, and threats to the most important movement corridors for California's wildlife."

2000. California Wilderness Conference. Invited Panel Participant for the Wilderness Management Section. Other panel members included Dr. Peter Moyle, Dr. David Chipping, Dr. Robert Stack.

2002. Carnivore Conference. November 2002. Mystery, Myth and Legend, Challenges for the Management of Cougars. Monterey, California.

2003. 7th Mt. Lion Workshop. May 2003. Mystery, Myth and Legend: The Politics of Cougar Management in the New Millennium. Rick Hopkins. Jackson, Wyoming.

2003. 7th Mt. Lion Workshop. May 2003. Management of cougars (*Puma concolor*) in the western United States. Deanna Dawn, Michael Kutilek, Rick Hopkins, Sulehka Anand, and Steve Torres.

2004. Science and the Endangered Species. June 2004. CLE Endangered Species Conference, Santa Barbara, California. An invited panel member.

TESTIMONY AT STATE WILDLIFE COMMISSION MEETINGS OR STATE LEGISLATIVE HEARINGS.

Dr. Hopkins has provided both written and oral testimony at state wildlife commission hearings and at Legislative Hearings in several western states. These include California, Oregon, Washington, Colorado, Wyoming and South Dakota. The purpose of these testimonies was to provide decision makers the best available scientific information regarding the biology and ecology of the cougar and to evaluate the ramifications of or effectiveness of proposed actions.

BOARD MEMBER OF NON-PROFIT ORGANIZATION

- Cougar Fund, Jackson, Wyoming. An organization dedicated to the preservation of the cougar in its present and historic range. Other board members include Jane Goodall, Marc Beckoff, Tom Mangelsen (Co-founder), Cara Blessley (Co-founder), Howard Buffett, Corinne E. Rutledge, Webb Blessley.

SCIENTIFIC ADVISORY BOARDS

- Department of Biological Sciences, San Jose State University.
- Predator Defense; an Oregon organization dedicated to the use of sound science in the management of mammalian predators.
- Sinapu; a Colorado organization focused on the conservation and restoration of carnivores in the Southern Rockies.

Bob L. Jones

Wildlife Biologist

AREAS OF EXPERTISE

- Biological Resource Assessments
- Vertebrate Ecology
- Wildlife Surveys
- Special Status Species Assessments
- Resource Monitoring
- CEQA / NEPA Documentation

EDUCATION

- MS, Zoology, Oklahoma State University, Stillwater, OK 1996
- BS, Technology, University of Houston, Houston, TX 1985

PROFESSIONAL ORGANIZATIONS

- American Ornithologists' Union
- The Wildlife Society
- American Society of Mammalogists
- Society for the Study of Amphibians and Reptiles

PUBLICATIONS

Jones, B., S.F. Fox, D.M. Leslie, D.M. Engle, and R.L. Lochmiller. 2000. *Herpetological responses to brush management with herbicide and fire.* Journal of Range Management 53:154-158.

CONTINUING EDUCATION

- Blunt-nosed leopard lizard Identification Workshop (The Wildlife Society, San Joaquin Valley Chapter). Cal State Bakersfield, CA May 2007

Mr. Jones is responsible for providing biological resource assessments, special status species assessments, protocol level wildlife surveys, environmental impact analysis, and CEQA and NEPA document preparation. He has conducted biological fieldwork throughout California and Nevada for both private firms and government agencies for over five years. Mr. Jones has extensive experience working with wildlife species. While working as a biologist for the U. S. Forest Service, he performed nocturnal and nesting status surveys on the California Spotted Owl (*Strix occidentalis occidentalis*) in the Plumas National Forest. As a research assistant at Oklahoma State University, he conducted demographic surveys (mark/recapture) on reptiles, amphibians, and small mammals. His research work for his Master's thesis involved an ecological study of how native populations of reptiles and amphibians responded to manipulated habitats.

PROJECT EXPERIENCE

Yokohl Ranch Project — Tulare County, CA. *Wildlife Biologist.* The Yokohl Valley project involves a proposed long-term development of approximately 36,000 acres. As part of the Yokohl Ranch project team, Mr. Jones performed a wide variety of reconnaissance level and protocol level surveys of the project site. Surveys performed included botanical surveys, Swainson's hawk and other raptor surveys, small mammal trapping, acoustical bat surveys, amphibian and reptile surveys, and baseline fisheries surveys. Other duties included the writing of technical reports.

Yosemite Ranch Estates EIR — Merced County, CA. *Wildlife Biologist.* This project involved performing a field survey of a proposed 67 acre development and writing the Biological Resources section of the EIR.

Willow Creek Specific Plan EIR — Merced County, CA. *Wildlife Biologist.* This project involved performing a field survey of a proposed 660 acre development and writing the Biological Resources section of the EIR.

Lower Northwest Interceptor Program (SRCSD) — Sacramento & Yolo Counties, CA. *Biological Monitor and Wildlife Biologist.* The Lower Northwest Interceptor project is a 19 mile sewer pipeline owned by the Sacramento Regional County Sanitation District. Provided giant garter snake (GGS) surveys and biological resource monitoring. Monitoring activities included observing construction operations near sensitive areas (wetlands, elderberry shrubs, and GGS habitat) and daily monitoring of active raptor nests, migratory bird nests, and wildlife corridors. Other duties included keeping

daily logs of all observations and attending progress and environmental team meetings.

Bradshaw Interceptor Section 6A/6B (SRCSD) — Sacramento County, CA. *Biological Monitor.* The Bradshaw Interceptor 6A/6B project included two sections of a larger interceptor scheme located in central Sacramento County. The project is owned and operated by the Sacramento Regional County Sanitation District. Responsibilities comprised monitoring construction operations near sensitive areas (seasonal wetlands, vernal pools, perennial streams, elderberry shrubs, and GGS habitat). Other duties included keeping daily logs of all observations and occasional consultations with restoration biologists.

Three Rivers Levee Improvement Project — Yuba County, CA. *Wildlife Biologist / Biological Monitor.* This project involved performing pre-construction surveys for giant garter snake (*Thamnophis gigas*) and giving Environmental Awareness Training to contractors prior to ground disturbing operations.

Panattoni Development Company — Sacramento County, CA. *Wildlife Biologist.* Provided on-site burrowing owl monitoring and Environmental Awareness Training to work crews during the initial phase of construction. Wrote a report of observed activities for California Department of Fish and Game.

Sacramento SPCA — Sacramento County, CA. *Wildlife Biologist.* Performed a biological assessment and several surveys, including a western spadefoot toad (*Spea hammondii*) survey for a proposed addition to the SPCA facility. The project site contained a vernal pool, which required extensive consultation with the U. S. Fish and Wildlife Service.

CalTrans I-5 / Templin Highway Project — Los Angeles County, CA. *Wildlife Biologist.* Performed nesting bird surveys prior to site preparation activities as part of a Streambed Alteration Agreement with the California Department of Fish and Game. While the survey was aimed at finding any migratory nesting bird, special attention was given to special status species such as Least Bell's vireo (*Vireo bellii pusillus*), Coastal California gnatcatcher (*Polioptila californica*), and Southwestern willow flycatcher (*Empidonax traillii extimus*).

City of Rio Vista — Solano County, CA. *Wildlife Biologist.* This project involved providing peer review and oversight of biological monitoring crews monitoring seismic gas exploration activities in and around Rio Vista for the City of Rio Vista. Responsibilities included reviewing environmental documents and ensuring that biological monitoring crews were in compliance with appropriate environmental documents. The project also included consulting with the State Lands

Commission and CALFED representatives. A report of our oversight was submitted to the City.

Bickford Ranch — Placer County, CA. *Biologist.* Performed a survey for elderberry shrubs on the entire 1,900 acre proposed development. Elderberry shrub locations were fixed using GPS equipment and a map of all shrubs was produced. Wrote the Elderberry Mitigation Plan.

Squaw Valley USA— Placer County, CA. *Biologist.* This project involved assisting in Wetland Delineation fieldwork and producing a highly detailed vegetation map (mapped to the association level) for a proposed improvement to an existing access road.

JAMES JONES, JR.
Project Manager,
Senior Biologist/Botanist

EDUCATION

- Graduate Studies. Botanical and Ecological Sciences-Fresno State University, Fresno, CA.
- B.A. Environmental Biology, Fresno State University, Fresno, CA. 1991
- A.A. Business Administration, Porterville Community College, Porterville, CA. 1988

AREA OF EXPERTISE

Plant identification, preliminary wetlands determinations, revegetation plans for upland and riparian ecosystems, threatened and endangered species identification and surveys, environmental permit regulations (CEQA, NEPA, CESA, Fish and Game Code)

PROFESSIONAL EXPERIENCE

- Live Oak Associates, Inc., present.
- Senior Botanist/Consulting Biologist, Quad Knopf, Inc., 1996 to 2007.
- Botanist, U.S. Forest Service - Sierra National Forest, 1994
- Botanist, U.S. Forest Service - Pacific Southwest Research Division, 1995
- Scientific Aid, California Department of Fish and Game – Allensworth Ecological Reserve 1993
- Botanist, U.S. Forest Service-Sequoia National Forest, Greenhorn Ranger District, 1992

PROFESSIONAL TRAINING

- Swainson's Hawk Technical Advisory Committee Workshop & Training, 2002
- Wetland Delineations, Wetland Training Institute, 2001
- ArcView GIS - Bakersfield Training and Workshop, 1996

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

Botanical Society of America, California Native Plant Society

QUALIFICATIONS

Mr. Jones has over 15 years of experience conducting botanical and wildlife surveys for impact assessments and evaluations. He has designed, managed, and implemented numerous such surveys and prepared Environmental Assessments in accordance with the U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, and California Department of Fish and Game established protocols. In addition, Mr. Jones possesses a strong background and knowledge of the terrestrial ecology of vertebrates occurring throughout California. He has consulted on numerous projects and provided a diverse array of biological services to a variety of public and private entities including local agencies, large developers, planning firms, attorneys, cities, counties, and water districts. Mr. Jones has extensive experience working with clients in the oil and gas industry in central and southern California. His areas of expertise include the following:

- **Special-status Species Surveys.** Mr. Jones has designed, implemented, and reported on numerous surveys for endangered, threatened, and other sensitive plant and animal species in California and Nevada. He possesses an extensive knowledge of listed species occurring in Kern and Tulare counties, including the blunt-nosed leopard lizard, San Joaquin kit fox, Tipton kangaroo rat, giant kangaroo rat, valley elderberry longhorn beetle, Swainson's hawk, San Joaquin antelope squirrel, San Joaquin woolly-threads, Kern mallow, Bakersfield cactus, California jewelflower, San Joaquin adobe sunburst, striped adobe lily, and many more.
- **Revegetation and Mitigation Monitoring Plans**. Mr. Jones has prepared numerous revegetation plans and mitigation monitoring plans for a diverse array of public and private entities; assisting these entities to fulfill their requirements under Sections 401 and 404 of the Clean Water Act and

Section 1600 et seq. of the California Fish and Game Code. He has also conducted the field surveys and monitoring activities required under these permits/agreements for many projects and he has routinely prepared the annual reports for submission to the permitting agencies.

- **Delineation of Jurisdictional Waters.** Mr. Jones has completed specialized training in U.S. Army Corps of Engineers wetland delineation methodologies and during the past ten years he has completed or assisted in the preparation of numerous detailed preliminary wetlands determinations for a variety of both public and private projects. He has served as a consulting botanist specializing in the identification of wetland indicator plant species on numerous project sites throughout many habitats in California.
- **Preparation of CEQA/NEPA Documents.** Mr. Jones has prepared the biological resources portions of numerous EIR's, initial studies, and NEPA documents requiring reconnaissance-level and protocol-level special- status species surveys, wetland delineations, habitat mapping, and impact assessment. As a project manager for many of these projects, he has supervised interdisciplinary teams of biologists characterizing the biological setting of project sites and planning areas, determining project impacts, and developing conceptual mitigation plans consistent with the requirements of CEQA and NEPA.

Areas of Expertise	Terrestrial and Global Change Biology/Ecology Botanical Taxonomy Experimental Design and Management
Total Years of Experience URS Other Firms	8 1 7
Education	MS/2005/Ecology/San Diego State University BS/1997/Geology/Botany/California State Polytechnic University Wetland Delineation Training/2006/Wetland Training Institute Inc. Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop/2006/Desert Tortoise Council Fairy Shrimp of California Identification Course/2007/Mary Schug Belk CalTrans Stormwater Monitoring Program Training/2007/URS Corporation
Registration/Certification	N/A
Overview	Glen Kinoshita is a biologist and botanist for URS. He has a strong interest in the flora and fauna of southern California, participating in ecosystem research in southern California chaparral through San Diego State University and native plant surveys through the California Native Plant Society. He also has a strong background in terrestrial ecological research in the southern California and arctic Alaskan geographical regions focusing on the effects of global climate change. He has also participated in atmospheric research projects in Antarctica and paleobotanical research in late Miocene flora in the Los Angeles and San Bernardino counties of southern California. Mr. Kinoshita has since furthered his professional experiences to include rare and endangered invertebrate, bird, and reptile surveys, sub-meter global positioning systems and habitat restoration.
Project Experience	Botanical and Ecological Projects **SR-73 Pilot Program** Performed vegetation monitoring for highway stormwater bioretention basin and water sampling equipment installation and maintenance at sites along SR-73 in Orange County, CA. *(2007-present)* **Marine Corps Base Camp Pendleton** Performed rare plant and vegetation surveys at sites near San Diego County, CA. *(2007-present)* **Chino Valley Independent Fire District** Performed rare plant and vegetation mapping at FEMA sites in Chino Hills, CA. *(2007-present)* **Quorum Property Consultants** Performed rare plant and animal survey in Rancho Mirage, CA. *(2007-present)* **AUSRA** Performed blunt nosed leopard lizard surveys at site near Paso Robles, CA. *(2007-present)* **Stirling Energy Systems**

Performed rare plant and desert tortoise, and flat tailed horned lizard surveys at sites near Barstow, CA and El Centro, CA. *(2007-present)*

Marine Corps Air Station Miramar
Performed vegetation and rare plant surveys and assisted in native plant restoration at site near San Diego, CA. *(2007-present)*

Gregory Canyon
Performed surveys for arroyo toad and assisting in implementation of native habitat restoration near Pala, CA. *(2006-present)*

San Elijo Hills
Performed vegetation surveys and habitat restoration monitoring near San Marcos, CA. (2006-present)

SANDAG 805
Performed rare plant and bird surveys along 805 freeway in San Diego, CA *(2006-present)*

Otay Land Company
Performed rare plant and vegetation survey at location at San Diego, CA. *(2006-present)*

Kearney Mesa Parcel
Performed rare plant, vegetation, and fairy shrimp surveys at site in San Diego, CA. *(2006-present)*

Point View Properties.
Performed rare plant survey in a continuation of an existing monitoring program at Rancho Palos Verdes, CA. *(2006-present)*

Dana Point Headlands
Performed rare plant surveys, habitat and restoration monitoring, and construction monitoring at site in Dana Point, CA. *(2006-present)*

Wind Implementation Monitoring Program
Surveyed vegetation within wind energy program area at Palm Springs, CA. *(2006-2007)*

Lakeside Land Company
Performed vegetation surveys, habitat and restoration monitoring related to San Diego River floodway restoration project. *(2006-present)*

Nobel Drive Preserve
Performed rare plant and fairy shrimp survey in vernal pool location and performed wetland delineations in potential areas in San Diego, CA. *(2006-present)*

Caspers Regional Park
Performed rare plant and vegetation survey at FEMA construction project in Orange County, CA. *(2006-present)*

Nursery Products
Performed survey of rare plants at location near Barstow, CA *(2006-2007)*

Patterns and Controls of Temporal Variation in CO_2 Sequestration and Loss from Arctic Ecosystems
Measured ecophysiological effects of simulated climate change on arctic tundra ecosystem near Barrow, AK. *(1999-2001)*

Atmospheric and Geophysical Projects

Atmospheric Research Observatory
Served as station science technician at South Pole, Antarctica for the National Oceanic and Atmospheric Administration. *(2003-2005)*

Educational Projects

Partnerships Involving the Scientific Community in Elementary Schools.
Participated in science outreach programs to introduce new curricula in K-6 classrooms in San Diego County. *(2000-2003)*

Undergraduate Mentoring in Environmental Biology. Mentored undergraduate environmental sciences students in ecological projects in Barrow, Alaska and San Diego, California. *(2001-2003)*

Teachers Experiencing the Arctic and Antarctic. Mentored a high school environmental science teacher on ecological projects in Barrow, Alaska. (2001-2003)

Paleontological Projects

San Bernardino County Museum.
Sorted and catalogued paleobotanical specimens from excavations in Los Angeles, San Bernardino, and Riverside counties in southern California, determined geological and stratigraphic interpretations from museum collections. *(1996-1997)*

Field Science Experience

Experimental design, point, plot, and transect vegetation surveys, ecosystem photosynthesis measurements, plant taxonomy, morphology, physiology, ecosystem micrometeorological measurements, vegetation mapping, GIS application with ArcView software and submeter GPS field usage with Trimble equipment. Biostatistical software experience with Systat and SAS packages.

Other Equipment and Scientific Research Experience

Gas chromatography, Infrared gas analyzers, Campbell Scientific and other data acquisition systems, meteorological data acquisition systems, various small-scale hardware, electrical, and electronic diagnosis and repair, handling of compressed gases, helium research balloon launching, scientific sample shipping and inventory, electronic database maintenance, snow and atmospheric air sampling,

logistical experience with US National Science Foundation support organizations.

Professional Associations

Ecological Society of America
California Native Plant Society
American Association for the Advancement of Science

Publications/Presentations/ Papers Presented

Kinoshita, GY, WC Oechel, G Vourlitis, SJ Hastings, RC Zulueta. 2006. The Effects of Elevated Soil Temperature and Water Table Manipulation on Arctic Tundra Carbon Flux. In manuscript.

Kinoshita, GY. 2002. PISCES: Partnerships Involving the Scientific Community in Elementary Schools. NSF GK-12, Washington DC.

Kinoshita, GY. 2002. Affect of Three Seasons of Elevated Soil Temperature and Water Table Manipulation on the Coastal Arctic Tundra Ecosystem near Barrow, Alaska. NSF-LAII, Seattle, Washington.

Kinoshita, GY. 2002. Results of Three Growing Seasons of Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. poster at NSF-LAII, Salt Lake City, Utah.

Kinoshita, GY. 2002. Current Ecosystem Research in Arctic Alaska. NSF-TEA, New Hampshire.

Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. NSF-LAII, Victoria, British Columbia, Canada.

Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. Ecological Society of America, Snowbird, Utah.

Kinoshita, GY. 2002. Preliminary Results of an *in situ* Manipulation of Water Table and Elevated Soil Temperatures on the Arctic Coastal Tundra Ecosystem CO_2 Fluxes at Barrow, Alaska. NSF-LAII, Seattle, Washington.

Kinoshita, GY. 2002. An Experiment to Determine the Effects of *in situ* Manipulation of Soil Moisture and Temperature on Net Ecosystem CO_2 Flux at Barrow, Alaska. Arctic Research Consortium of the United States, San Francisco, California.

Professional History

URS Corporation, Biologist, San Diego, California, 2006-present.
National Oceanic and Atmospheric Administration, Physicist, Boulder, Colorado, 2003-2005.
San Diego State University, Field Science Technician, San Diego, California, 1998-2003.

WARING LAURENDINE
Project Manager
Senior Environmental Biologist

EDUCATION

- Teaching Credential, Fresno State University, Fresno, CA
- Graduate Studies. Marine Ichthyology- Moss Landing Marine Laboratories, Moss Landing, CA.
- B.A. Environmental Biology, Fresno State University, Fresno, CA. 1984

AREA OF EXPERTISE

Wetlands, wildlife, threatened and endangered species, environmental permit regulations (CEQA, NEPA, CESA Clean Water Act, Fish and Game Code)

PROFESSIONAL EXPERIENCE

- Live Oak Associates, Inc., present.
- Biology Department Manager/Consulting Biologist Quad Knopf, Inc. 1992 to 2007.
- Seasonal Aid, California Department of Fish and Game - Mussel Watch Program
- Biologist Jones and Stokes Associates 1986 and 1987
- Biologist Woodward-Clyde Consultants 1985

PROFESSIONAL TRAINING

- Arid West Supplement, Wetland Training Institute 2007
- Wetland Delineations, Wetland Training Institute 1995
- Habitat Conservation Planning Workshop, Wildlife Society 1995
- California Fairy Shrimp Identification- Denton Belk 1995, Mary Belk 2006

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

Wildlife Society, American Fisheries Society

QUALIFICATIONS

Mr. Laurendine is recognized as a successful regulatory compliance consultant with many projects being successfully permitted. He has provided consulting services to a variety of clients including local agencies, large developers, planning firms, attorneys, city and counties, water districts, as well as large oil and gas companies. His areas of expertise include the following:

- **Delineation of Jurisdictional Waters.** Mr. Laurendine has completed specialized training in wetland delineation methodologies and during the past fifteen years he has completed numerous detailed wetland delineations. He has conducted studies in areas with tidal influence to high montane meadows.
- **Wetland Permit Assistance.** Mr. Laurendine has prepared support documentation for many clients requiring formal consultation under Section 2081 of the California Fish and Game Code and Section 7 consultation with the United Fish and Wildlife Service and the National Marine Fisheries Service. Permit packages for clients needing permits from U.S. Army Corps of Engineers, Coastal Commission, California Regional Water Quality Control Board, California Department of Fish and Game, Office of Historic Preservation, National Marine Fisheries Service and the Department of Water Resources have been routinely obtained. Provided legal advice and mediated between CDFG and clients to resolve their waterway infractions that could have lead to court.
- **Special status Species Surveys.** Mr. Laurendine has conducted numerous surveys for threatened or endangered animals, and/or their habitats, and assisted his clients with mitigation that reduced impacts to such species. In addition, he has prepared supporting material for both section 7(a) and 10(a) consultations with the U.S. Fish and Wildlife Service. Mr. Laurendine has assisted in the preparation the Management Plan for the Elk Hills Conservation Area and served as the senior

environmental biologist responsible for monitoring threatened and endangered species within the Elk Hills Oil Field and Occidental of Elk Hills Conservation Area. In addition, Mr. Laurendine prepared the Biological Opinion for the Section 7 consultation for Plains All American Pipeline Company Operation and Maintenance Program. Their facilities extended from Kern County to the Colorado River. On a similar note, Mr. Laurendine prepared the Biological Opinion for the Southern California Gas Company's Northern Service Territory (Kern, Tulare, Kings, and Fresno counties). Species included: San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, San Joaquin woolly threads, Hoover's wooly-star, Kern mallow, Bakersfield cactus, and many more.

- **Preparation of CEQA/NEPA Documents.** Mr. Laurendine has prepared portions of numerous EIR's, initial studies, and NEPA documents requiring reconnaissance level wetland delineations, special- status species surveys, habitat mapping, etc. As a project manager for many of these projects, he has supervised interdisciplinary teams of biologists characterizing the biological setting of project sites and planning areas, determining project impacts, and developing conceptual mitigation plans consistent with the requirements of CEQA and NEPA.

PUBLICATIONS

Chesemore, D. L., W. M. Rhodehamel, and W. E. Laurendine. 1984. Small Hydroelectric Survey Results, Oakhurst and Bass Lake Areas, California, 27 February - 5 March 1984. Final Report Submitted to Oak Ridge National Laboratory, Oak Ridge, Tennessee. 15pp.

Stephenson, M., D. Smith, G. Ichikawa, J. Geotzl, W. Laurendine, and M. Martin. 1987. State Mussel Watch Program Preliminary Data Report 1986-1987. Prepared for the State Water Resources Control Board. California Department of Fish and Game, Environmental Services Division. 35pp. plus appendix.

Areas of Expertise	California's Amphibians, Reptiles, Birds and Mammals Special Status Species Surveys, Habitat Assessment, Research and Monitoring Wetland Delineation Vegetation Mapping and Botanical Surveys Habitat Restoration Non-native Species Eradication Permitting and Environmental Analysis Differential Global Positioning System
Years of Experience URS Other Firms	9 7 2
Education	BS/1997/Ecology, Behavior, and Evolution/University of California, San Diego
Supplemental Education/Training	Blunt-nosed Leopard Lizard Identification, Wildlife Society Workshop (2007) Bat Ecology and Identification, Wildlife Society Workshop (2004) California Tiger Salamander Training by Dave Cook, Sonoma County Population (2003) SW Willow Flycatcher Training By Mary J. Whitfield, Kern River Preserve, CA (2002) Wetland Delineation Training, Wetland Training Institute (2001) Desert Tortoise Training Workshop, by HDR (2001) Fairy Shrimp Identification by Denton Belk (2000) Bird Banding Class Series by Barbara Carlson, University of California (1998) Little Brown Birds of San Diego by Phil Unitt, SD Natural History Museum (1999)
Certification/USFWS Recovery Permits	U.S. Fish and Wildlife Service Recovery/Permit No. TE-063608-4 Quino Checkerspot Butterfly (Presence/Absence Surveys) Vernal Pool Branchiopods (Presence/Absence Surveys) California Gnatcatcher (Presence/Absence Surveys) Southwestern Willow Flycatcher (Presence/Absence Surveys)
Overview	Mr. Lohstroh is a USFWS-permitted wildlife biologist with expertise in California ecology, especially in San Diego County. With a background in endangered species research, he has participated in several research projects in southern California, including the Long Term Ecological Monitoring Project on Marine Corps Air Station Miramar, the Bird Atlas Project with the San Diego Natural History Museum, and the Desert Tortoise Reproductive Study conducted by the Biological Research Division of the U.S. Geological Survey. Mr. Lohstroh has over 9 years experience conducting avian surveys in San Diego County, and has participated in and managed many aspects of focused wildlife surveys, habitat surveys, and restoration projects, including five-year habitat restoration monitoring, and achievement of restoration goals using an adaptive management approach. With a focus on birds, reptiles, amphibians, butterflies and vernal pool branchiopods, Mr. Lohstroh has ample wide-ranging experiences that have expanded into habitat restoration, botanical surveys, environmental permitting and analysis, sub-meter global positioning system surveying, and project management.
Relevant Experience	**Quino Checkerspot Butterfly** Presence/absence surveys conducted Spring of 2003-2007 at San Diego, East Otay Mesa, Chula Vista, and the Pala region in San Diego County, and at Aguanga Valley and Alberhill in Riverside County, CA. Quino detected in 2003, 2004 and 2005. **Vernal Pool Branchiopods**

Fairy Shrimp Surveys I-805 Managed Lanes Project. Conducted two consecutive years of vernal pool surveys along the I-805 alignment from the I-5 merge to the International Border. Conducted both dry and wet season sampling. ***(2006-2007)***

Fairy Shrimp Surveys Caltrans State Route 11. Identified federally listed Riverside fairy shrimp (*Streptocephalus woottoni*) during presence/absence surveys of approximately 50 vernal pools.

Fairy Shrimp Surveys, Marine Corps Base Camp Pendleton, California. Identified federally listed Riverside fairy shrimp (*Streptocephalus woottoni*), and San Diego fairy shrimp (*Branchinecta sandiegonensis*) during presence/absence surveys of approximately 50 vernal pools ***(Nov-Jan 2005)***

Fairy Shrimp Surveys, Kinder Morgan, Central Valley, California. Assisted a permitted biologist with surveys for fairy shrimps along a proposed gas pipeline corridor. Dip-netted over 200 pools. Fairy shrimp observed included the U.S. Fish and Wildlife Survey-listed endangered vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), as well as midvalley fairy shrimp (*B. mesovallensis*), California fairy shrimp (*Linderiella occidentalis*) and versatile fairy shrimp (*B. lindahli*).

Fairy Shrimp Surveys, Otay Land Company, Proctor Valley, California. Assisted a permitted biologist with conducting surveys for fairy shrimps. The federally endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) was observed during these surveys.

Arroyo Toad

Over 250 hours of arroyo toad surveys (presence/absence surveys, habitat assessment and monitoring) conducted in various San Diego County locations since 1998, including the San Pasqual Valley, Sloan Canyon, and along the San Luis Rey River (downstream of Pauma Valley). Obtained USFWS approval for handling arroyo toads at San Mateo Creek in 2004-2005. Conducted 50 hours of upland arroyo toad surveys to gather data on arroyo toad non-breeding activity. ***(1998-present)***

Desert Tortoise

State Route 58 Bypass Freeway Project, Caltrans, Mojave, California. Supervised and orchestrated preconstruction surveys and construction monitoring as a project biologist for a major road construction project through desert tortoise habitat. ***(2000-2004)***

Desert Tortoise Reproductive Study, Mojave National Preserve (Joshua Tree National Park, CA) and Mesa Power Station (Palm Springs, California). Provided technical support, including recovering desert tortoises with radio telemetry, transmitter attachment/logistics, x-radiography procedures, conducting field surveys of tortoises, vegetation sampling, and data entry. ***(1998)***

Venomous Reptiles

Two years of experience handling, relocating, caring for, and exhibiting three rattlesnake species native to coastal San Diego County.

Southwestern Willow Flycatcher
Presence/absence surveys conducted near Beaumont and Murrieta in Riverside County, and at the Sweetwater and Otay Rivers in San Diego County ***(2006-2007).***

Assisted William E. Haas monitoring a unique population of southwestern willow flycatchers (WIFL) nesting in coast live oak woodland along the Upper San Luis Rey River, San Diego County, CA. Up to 14 WIFL territories monitored ***(2000-2003).***

Least Bell's Vireo
Over 9 years of experience conducting presence/absence and monitoring surveys for least Bell's vireos in Los Angeles County, Riverside County, and throughout San Diego County, CA. Documented territories at large populations along the San Luis Rey River (2004), San Diego River (2005), Otay River (2005-2007), and Los Peñasquitos Creek (2006).

Coastal California Gnatcatcher
Conducted presence/absence surveys throughout San Diego County, monitored several nesting pairs of California gnatcatchers during construction activities in coastal sage scrub habitat in San Diego and Orange Counties, CA. Specific locations where surveys were conducted include:

Del Mar (2006)
Otay Mesa (2004, 2006, 2007)
Dana Point, CA (2003)
Highway 73, Orange County, CA (2003)
City of San Diego, CA. (2001, 2006, 2007)
Poway, CA (2001).
Escondido, CA. (1999)
Point Loma, CA. (1999)
Santee, CA. (1999)
Hacienda Heights, Los Angeles County, CA. (1999)
(See also Construction Monitoring)

Burrowing Owl
Caltrans State Route 7, Calexico, California. Constructed artificial burrows and passively relocated over 50 pairs of burrowing owls for a road project in the Imperial Valley. Monitored nesting pairs and burrow occupation with a fiber-optic scope.

Light-Footed Clapper Rail
Sweetwater River, Bonita, California. Assisted with presence/absence surveys in freshwater marsh habitat along the Sweetwater River. Conducted territory photo-documentation. ***(1999)***

Mammals
Marine Corps Air Station Miramar, San Diego, California. Over 230 hours of mammal-trapping experience obtained while participating in a long-term, ecological monitoring project. Well accustomed to procedures associated with proper handling and identification of small mammals captured with both Sherman

and Stoddard traps and skill at identifying mammal tracks.
Well versed in the use of **ANABAT** bat-detection equipment ***(1998-2000)***.

Wildlife Corridor Study, Chino Hills, California. Field team leader for a large-scale wildlife corridor assessment in the hills of Orange County. Checked and maintained 90 passive tracking stations and completed 6-mile transects locating and identifying tracks and scat of large mammal species, including mountain lion (*Felis concolor*), bobcat (*Felis rufus*), coyote (*Canis latrans*), and southern mule deer (*Odocoileus hemionus fulignata*). Managed database and directed GIS logistics**.**

Wildlife Corridor Study, Del Mar, California. Conducted a wildlife corridor assessment in for a horse stable present within a suspected wildlife linkage corridor. Installed and maintained 30 gypsum powder passive tracking stations and 5 infrared sensor cameras. Identified tracks and scat of large mammal species, including, bobcat (*Felis rufus*), coyote (*Canis latrans*), and southern mule deer (*Odocoileus hemionus fulignata*). ***(2006)***

Other Wildlife Experience

Pitfall Trapping

MCAS Miramar Long Term Ecological Monitoring Project, San Diego, CA. Participated in a pitfall trapping program (4,500 pitfall trap days) capturing mammals, reptiles, and amphibians for five-year ecological monitoring study. Maintained and analyzed species data using Microsoft Access, and Excel. ***(1998-2000)***

Non-Native Species Eradication

San Mateo Creek and Lagoon, San Onofre, California. Coordinated and executed an exotic predator control program at San Mateo Creek in San Diego County. Removed exotic species including bullfrogs, crayfish, and mosquito fish using gigs and seines to benefit native rare tidewater gobies and arroyo toads. Managed database and composed summary report. Conducted diurnal and nocturnal eradication with the aid of seine nets, dip nets, and frog gigs. Obtained approval from USFWS to conduct these activities in arroyo toad habitat. Collaborated with ichthyologist Camm Swift during entire program. ***(2005)***

Sweetwater River, Spring Valley, California. Assisted introduced species (bullfrogs and non-native fish) control efforts. Methods used in the river and ponds included seine net, dip net, and hand capture.

Marine Corps Air Station Miramar, San Diego, California. Introduced species (bullfrogs and non-native fish) control conducted as part of a base-wide herpetological sampling study. Methods used in the ponds included seine net, dip net, and hand capture.

San Diego County, California. Constructed and tended brown-headed cowbird traps throughout San Diego County. Cared for trapped bait cowbirds and released native non-target species.

Habitat Assessments

San Diego County, California. Conducted preliminary evaluations of 718 storm

drain sites for the County of San Diego Department of Public Works. Habitat evaluations considered use by arroyo toad, willow flycatcher, least Bell's vireo, and California gnatcatcher. Photographs were taken when required and storm drain site descriptions and characteristics formatted and organized into a large, Microsoft Excel database.

Riverside and Imperial Counties, California. Habitat assessment for sensitive lizard/bird species along Union Pacific Railroad lines**.**

Botanical /Restoration Experience

Assisted on several rare plants surveys mapping populations of many rare species including *Calochortus dunnii, Salvia munzii, Muilla clevelandii, Ambrosia pumila, Dudleya variegata, Deinandra conjugens* and *Tetracoccus dioicus.*

Implemented all facets of a revegetation plan, including application of native seed and two years of habitat restoration monitoring at a site disturbed by geotechnical investigations.

Global Positioning System Survey Experience

Gregory Canyon Landfill. Surveyed boring locations for a geotechnical investigation using a Trimble Geo XT (sub-meter). Planned route to minimize impacts to special status species including arroyo toad. ***(2007)***

Dana Point Headlands Preserve Trail. Collected rare plant (cliff spurge) location data using a Trimble Geo XT (sub-meter) in order to avoid impacts resulting from the alignment of an interpretive trial within the headlands preserve. ***(2007)***

Soledad Canyon Geotechnical Investigation. Collected area polygons using a Sokkia sub-meter GPS receiver to calculate impact areas at the conclusion of a Geotechnical Investigation. ***(2004)***

Port of San Diego, California, Storm Drain Global Positioning System Survey. Collected global positioning system data of storm drain systems within parks owned by the Port of San Diego. Instructed others in the use of the sub-meter Trimble XR Pro global positioning system and managed data, including post-processing. ***(2001)***

Environmental Permitting and Regulations

I-805 Managed Lanes Project. Task leader managing listed species surveys, including least Bell's vireo, southwestern willow flycatcher, California gnatcatcher, vernal pool brachiopods, and Quino checkerspot butterfly. Also participated as a task leader for the wetland delineation along a 15 mile stretch of freeway. ***(2006-2007)***

Biological Assessment for Prescribed Burn Program, Federal Emergency Management Agency, San Bernardino, California. Conducted sensitive-species surveys and habitat assessments and assessed impacts for a prescribed burn program in the Front Range of the San Bernardino Mountains**.**

Evaluation of Pipeline Crossings of Wetlands, Gas Research Institute,

Michigan. Assessed local effects to habitat and wildlife from pipeline rights-of-way through wetlands. Recommended best management practices as part of an adaptive management approach to minimizing impacts and facilitating reclamation.

Pacific Gas and Electric Generating Company, Otay Mesa Power Generating Plant, San Diego, California. Conducted vertebrate surveys for a biological resource assessment and assisted in preparing the biology section of the Application for Certification (environmental impact report equivalent document). Orchestrated preparation of the biology report for the County of San Diego, biological assessment for the U.S. Fish and Wildlife Service, and biological resources mitigation and implementation plan for the California Department of Fish and Game and U.S. Fish and Wildlife Service; maintained GIS map updates for all these documents.

Sloan Canyon Sand Company Project. Provided assistance in management of Endangered Species Act compliance and developing a plan to mine while conserving the endangered arroyo toad population. Participated in construction monitoring and nighttime toad surveys.

San Diego River Improvement Project, Lakeside Land Development Company, San Diego, California. Provided assistance in management of Section 404 permitting and Endangered Species Act Compliance for a major floodplain-restoration project on the San Diego River.

Construction Monitoring

San Diego River Improvement Project, Lakeside Land Development Company, San Diego, California. Conducted regular biological monitoring visits of project site to ensure compliance with Section 404 permitting and Endangered Species Act.

State Route 58 Bypass Freeway Project, Caltrans, Mojave, California. Supervised and orchestrated preconstruction surveys and construction monitoring as a project biologist for a major road construction project through desert tortoise habitat. Conducted regular biological monitoring visits of project site.

Range 314, Camp Pendleton, California. Monitored construction to ensure avoidance of endangered arroyo toad and other sensitive species during a communications-line installation project adjacent to San Mateo Creek. Duties included photo-documentation and educating construction crew about identifying protected species and how to reduce impacts to species' habitat.

San Luis Rey River, Pala, California. Monitored construction daily to ensure avoidance of endangered arroyo toad and other sensitive species during sand mining sampling near the San Luis Rey River. Duties included photo-documentation and educating crews about protected species and how to reduce impacts to species' habitat.

Marina del Rey, California. Nighttime monitoring of roosting endangered California brown pelicans *(Pelecanus occidentalis)* during harbor dredging operations.

San Elijo Lagoon, Cardiff, California. Daily biological monitor during pipeline installation for the San Elijo Joint Powers Authority Water Reclamation Project. Duties included monitoring construction limits, water quality, and California gnatcatcher activity in the work area. Also completed daily reports with a shorebird and upland bird list and took construction photographs.

Sloan Canyon, Dehesa, California. Construction monitor to ensure avoidance of endangered arroyo toad and other sensitive species during sand mining sampling adjacent to the Sweetwater River. Duties included photo-documentation and educating the construction crew about identifying protected species and how to reduce species impacts.

Professional Societies

Member, Ecological Society of America
Member, San Diego Natural History Museum, Plant Atlas Project Volunteer

Security Clearance

Non-Live Fire Range Safety Officer, Marine Corps Base Camp Pendleton

URS

Julie Love

Biologist

Areas of Expertise

- Restoration Planning, Implementation, and Monitoring (Coastal sage scrub, Riparian, Wetland, Grassland, Bioswales)
- Vegetation Surveys and Mapping
- Stream Monitoring (Algae and Water Quality)
- Wildlife Surveys
- Fish Relocation

Years of Experience

With URS: 1.5 Year
With Other Firms: 4 Years

Education

Master of Environmental Science and Management/2003/University of California, Santa Barbara

Bachelor of Science/Marine Biology/2000/University of California, Los Angeles

Overview

Ms. Love's combined work experience and education provide a wide range of ecological training. She has over five years of experience working in the fields of habitat restoration, botany, stream and algae monitoring, marine biology, terrestrial wildlife, maintenance/construction, and ecosystem inventory, assessment, and monitoring. Ms. Love's position at URS involves vegetation surveys and mapping, habitat assessment, habitat restoration and monitoring, stream and algae monitoring, wildlife surveys, fish relocation, and database management.

URS Specific Experience

Habitat Restoration

Restoration Coordination, Santa Barbara Airport, CA. Assisted in planning and implementing restoration for 65 acres of wetland, coastal sage scrub, and riparian habitats. Organized and implemented monitoring program consisting of point-intercept transect and quadrat data collection and maintenance monitoring. Managed and analyzed resulting data. Authored annual reports detailing restoration success. Organized native seed collection.

Restoration Monitoring, Lake Casitas, CA. Monitored restoration success of a 6 acre site that included native grassland, wetland, and riparian habitats. Authored monthly and annual reports detailing restoration success and maintenance activities.

Restoration Planning, Ellwood, CA. Assisted in planning and implementing restoration for 2 acres of grassland and vernal pool habitat. Organized and implemented monitoring program consisting of point-intercept transect data collection and maintenance monitoring. Managed and analyzed resulting data. Organized native seed collection.

Vegetation Surveys and Mapping

Vegetation Mapping, City of Santa Barbara, CA. Mapped vegetation types using the Holland Classification System throughout various parts of the City. Dominant vegetation types included oak woodland, riparian, and ruderal.

Vegetation Mapping, Lake Casitas, CA. Mapped vegetation types using the Holland Classification System throughout various parts of the lake and surrounding areas. Dominant vegetation types included freshwater marsh, oak and walnut woodland, grassland, and ruderal.

Biological Resource Study, City of Santa Barbara, CA. Mapped vegetation types using the Holland Classification System along a portion of Loma Alta Drive. Documented existing plant species and monitored for rare plant species. Developed mitigation measures for construction activities.

Rare Plant Survey, Yucaipa, CA. Performed rare plant survey in a riparian habitat and associated flood plain. Photographed and documented existing vegetation.

Wildlife Surveys

Tidewater Goby and Fish Relocation, Santa Barbara Airport, CA. 125 hours. Captured and relocated tidewater gobies and other fish species from Tecolotito and Carneros Creeks. Performed initial presence/absence protocol surveys for tidewater goby in all locations prior to relocation. Performed presence/absence protocol surveys for tidewater goby in all locations after relocation. Managed data collection and compilation. Coordinated preparation and post-project clean up of field gear.

Tidewater Goby and Fish Relocation, City of Santa Barbara, CA. 85 hours. Captured and relocated tidewater gobies and other fish species from Laguna Channel, Santa Barbara. Coordinated preparation and post-project clean up of field gear. Monitored construction activities to prevent impacts to tidewater goby.

Desert Tortoise Survey, Mojave Desert, CA. 40 hours. Performed survey to assess habitat quality for desert tortoise. Mapped, photographed, and cataloged habitat suitability and vegetation types.

Blunt-Nosed Leopard Lizard Survey, California Valley, CA. 24 hours. Performed protocol survey to assess habitat quality for Blunt-Nosed Leopard Lizard.

California Red-legged Frog Habitat Survey, Santa Barbara, CA. 8 hours. Performed survey to assess habitat quality for California red-legged frog in Winchester Canyon. Mapped, photographed, and cataloged habitat suitability and vegetation types.

Stream Surveys

Algae Inventory Survey, Ventura River, CA. Performed monthly algae surveys, collected water samples. Authored annual report detailing water quality conditions, algae and vegetation cover.

Stormwater Sampling, Santa Barbara Airport, CA. Organized stormwater and base flow sampling efforts for two creeks. Authored annual reports detailing water quality conditions.

Project Specific Experience

Reserve Steward and Restoration Coordinator for Coal Oil Point Reserve, U.C. Santa Barbara. Planned, implemented and monitored restoration efforts at a 160-acre reserve. Oversaw the native plant nursery - propagation and care of plants, collecting seeds and cuttings. Coordinated monthly community restoration workdays - planned restoration activities, taught volunteers restoration techniques, fostered ecosystem and environmental education, implemented set up and clean

up. Supervised interns on a weekly basis – coordinated schedules, trained them in restoration techniques, taught them native and non-native plant names. Operated and maintained machinery and tools - tree chipper, water tank, weed whacker, chainsaw, band saw, circular saw, hand saw, jigsaw, tool grinder. Maintained and fixed infrastructure, including fences, buildings, and water lines. Certified in pesticide application for the U.C. System. Assisted the Snowy Plover Docent Program as a chick monitor and docent on Sand's Beach, and as a supervisor for the abandoned egg nursery. Assisted with fish seining, classified and counted samples.

Restoration Project Assistant for Land Trust for Santa Barbara County, Arroyo Hondo Preserve, Gaviota Coast, CA. Planned, implemented and monitored restoration efforts at a 780-acre reserve. Coordinated and assisted monthly community restoration workdays - planned restoration activities, taught volunteers restoration techniques, implemented set up and clean up, fostered ecosystem and environmental education. Supervised interns on a weekly basis - trained them in restoration techniques, taught them native and non-native plant names, implemented set up and clean up. Maintained machinery and tools.

Project Manager for Santa Barbara Audubon Society's Goleta Slough Habitat Enhancement Project, Goleta, CA. Planned, implemented and monitored restoration efforts. Locations included Atascadero Creek, Tecolotito Creek, Goleta Slough, and private property throughout Goleta. Coordinated restoration workdays for volunteers and interns. Supervised activities such as non-native plant removal, native plant installation, and an extensive Pampas Grass removal project.

Restoration Project Assistant for the Gas Company, Goleta Slough, Goleta, CA. Assisted in planning, implementing, and maintaining restoration efforts at a restoration site along Tecolotito Creek. Main responsibilities included planning native plant layout, installing native plants and seeds, and maintaining the site by watering and removing non-native species. Coordinated and supervised restoration workdays for volunteers and interns.

Student Researcher at the California Environmental Protection Agency, Sacramento, CA. Established an Ecological Risk Assessment protocol for chemical, physical, and biological stressors on the fall-run chinook salmon in Secret Ravine. Constructed a conceptual model illustrating the sources, stressors and resulting ecological actions associated with the system. Acted as salmonid biology advisor to group members. Developed and implemented protocol for grain size distribution analysis of redds in Secret Ravine. Implemented water quality monitoring. Assembled and organized existing data relative to the project and created a database.

Field Researcher for the Marine Biology Department, U.C. Los Angeles. Conducted research at several locations, including Santa Cruz Island, the Hawaii Institute of Marine Biology, and the U.C. Davis Marine

Institute at Bodega Bay. Conducted avian, pinniped and cetacean counts. Performed bioassays, benthic surveys, and limiting nutrient experiments on algae. Observed shoreline crab effects on snail population dynamics in relation to the intertidal environment. Constructed and executed an individual experiment on the correlation between invasive algal growth and water circulation in Kaneohe Bay, Hawaii.

Field Researcher for the Marine Botany Lab, U.C. Santa Barbara. Conducted research in several locations, including Port Hueneme, More Mesa Beach, and Santa Barbara. Assisted with macro-invertebrate benthic surveys, classified and counted samples. Assisted with fish seining, classified and counted samples. Induced and collected reproductive specimens from purple urchins to be used in water toxicity tests. Assisted in monitoring surf grass populations by collecting data. Assisted in monitoring intertidal larvae settlement surveys by collecting data and settlement plates.

Professional Societies

- Santa Barbara Audubon Society, Conservation Chair 2004-2007
- California Native Grass Association, Member 2007

Specialized Training

- Noxious Weed Seminar, Agricultural Commissioner's Office, June 2005
- Using Native Grasses and Graminoids in Restoration and Revegetation, California Native Grasslands Association Workshop, May 2007
- American Red Cross First Aid and CPR
- Pesticide application certification for the U.C. System, July 2004
- NAUI Scuba Certified and Research Diver Certified, June 1999

Contact Information

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Fax: 805.964.0259
Julie_Love@urscorp.com

Areas of Expertise

Listed Species Surveys, Monitoring, Habitat Assessment and Research
Knowledge of native fauna and flora of southern California
Technical Report Writing
Wetland Delineation of rivers and tributaries in the arid southwest
Vegetation Mapping and Botanical Surveys
NEPA/CEQA Permitting and Environmental Analysis
FEMA/NISTAC Hazard Mitigation Program NEPA Analysis
Risk Assessment and Hazard Mitigation Planning
Task Management

Total Years of Experience

9.5

URS

7

Other Firms

2

Education

BA/1999/Biology/University of San Diego

Supplemental Training

Flat-tailed horned lizard Identification Training by BLM (2007)
Blunt-nosed leopard lizard Identification Training by The Wildlife Society (2007)
California Fairy Shrimp Identification Class by Mary Belk (2006)
Federal Wetland/Waters Regulatory Policy Training by Wetland Training Institute (2006)
SW Willow Flycatcher Training By Mary J. Whitfield, Kern River Preserve, CA (2002)
Desert Tortoise Survey and Handling Workshop by HDR (2001)
Wetland Delineation Training by Richard Chan (2001)

Registration/Certification

U.S. Fish and Wildlife Service Recovery/Permit No. TE-135968-0
California Gnatcatcher (Presence/Absence Surveys)

Overview

Ms. Theresa Miller is a Wildlife Biologist with more than 7 years of experience and expertise in California sensitive species, especially in San Diego County. She conducts biological surveys with a focus on birds, reptiles, and amphibians, and develops technical reports and planning documents. Specializing in environmental projects, she has written many biological resources evaluations for NEPA/CEQA and been involved in many major environmental impact reports (EIRs), environmental assessments (EAs), environmental impact statements (EISs), biological assessments (BAs), biological technical reports, and hazard mitigation plans. Her project experience has involved task management, GIS/GPS analyses, GIS modeling, database development, and risk assessments for hazard mitigation planning for numerous public and private agencies.

Project Experience

BIOLOGY/ ENVIRONMENTAL PLANNING PROJECTS

Solar Power Plant AFC and EIS, San Bernardino County, CA. Biologist/team leader on survey team in support of an Application for Certification for an 800MW thermal generating facility located within San Bernardino County. The project will cover 15,000 acres and will include over 36,000 solar dishes. Desert tortoise, Mohave ground squirrel, vegetation mapping, and rare plant surveys were conducted over majority of project area.

Colorado River Aqueduct Operations and Management Habitat Conservation Plan, MWD of Southern California 2004-2006. - GIS Specialist, field coordinator and field biologist on team performing 2 seasons of desert tortoise and rare plant surveys along the length of the Colorado River Aqueduct from western Riverside County, California to Parker, Arizona. Created GIS field maps and species locations maps for use in determining conservation areas for the

HCP within MWD ownership. Field coordinator for 12 biologists and subcontractors from several offices during second year of surveys which focused on rare plant surveys for 41 sites. Observed tortoise and identified tortoise burrows and sign. Compiled and analyzed several years of data collection including 2 years of survey data, and prepared HCP document and appendices.

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. 2006. Biology Task Manager for the proposed development of a 160-acre biosolids/green waste composting facility in San Bernardino County. Coordinated and lead field team for USFWS protocol desert tortoise surveys and rare plant surveys, and prepared biotechnical report as well as biology section of EIR.

Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006. –Field team leader for a wildlife corridor assessment of an 8-acre horse farm/training property located within an existing MSCP wildlife corridor linkage in Del Mar, California. Checked and maintained 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks in August and September 2006 to identify tracks and scat of large mammal species, including mountain lion (*Felis concolor*), bobcat (*Felis rufus*), coyote (*Canis latrans*), and southern mule deer (*Odocoileus hemionus fulignata*). Managed database and directed GIS logistics. Prepared report and GIS mapping of results. Conducted California gnatcatcher protocol surveys and identified territories throughout study area.

SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. 2005-ongoing. Ms. Miller conducted wildlife and sensitive species surveys (including least Bell's vireo, California gnatcatcher) and wetland delineations along a 1000-foot buffer of the alignment for expansion of I-805 from the Mexican Border to the 805/I-5 merge. Co-coordinated team effort for sensitive species surveys and wetland delineations, and prepared wetland delineation report and mapping of delineated jurisdictional waters. (***approx $4M***)

Metropolitan Water District, Upper Feeder-Santa Ana River Embankment Protection. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted least Bell's vireo surveys along the Santa Ana River in Riverside County to determine impacts from project implementation as part of FEMA HMGP mitigation/restoration project.

Whitewater Mutual Water Company, Irrigation Water Intake / Storage Structure Repair. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted arroyo southwestern toad and southwestern willow flycatcher surveys to determine biological impacts of restoring the irrigation water intake and water storage facilities to pre-disaster condition. Part of FEMA HMGP program.

Meadow Valley Generating Plant EIS, Southern Nevada. 2003. Field biologist conducting desert tortoise and rare plant surveys for a 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Identified tortoise burrows and sign.

Solar Power Plant AFC, San Luis Obispo County, CA. Lead biologist/task anager for biological surveys in support of Application for Certification for an 180MW thermal generating facility located within San Luis Obispo County. Surveys for several listed species, rare plant surveys and vegetation mapping of the site.

Solar Power Plant AFC and EIS, Imperial County, CA. Biologist/team leader for biological surveys in support of an Application for Certification for an 800MW thermal generating facility located within Imperial County. The project will cover 7,000 acres and will include 12,000 – 36,000 solar dishes. Project included flat-tailed horned lizard focused surveys, vegetation mapping, and rare plant surveys.

Larkspur Power Facility AFC Amendment, San Diego County, CA. Biologist for the Post Certification Amendment for Diamond Generating Corporation (a subsidiary of Mitsubishi) to the California Energy Commission to modify the Existing Larkspur Energy Facility in Otay Mesa, City of San Diego, to add a third 45MW LM6000. The normal power plant rating will be 135MW. Prepared biological technical report, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements.

State Route 56/Interstate 5 Interconnections, City of San Diego, California. 2005-ongoing. Conducted least Bell's vireo surveys and vegetation mapping of study site for the "connectors" project for Interstate 5 and State Route 56. Prepared biotechnical report. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project. ***(Ongoing) (approx $300k)***

Dana Point Headlands, California Gnatcatcher Monitoring. Assisted in the monitoring of gnatcatcher nest sites throughout territory located within and adjacent the project site.

Viejas Band of Kumeyaay Indians, Debris Removal from Pond at Mar-Tar-Awa Campground. **2006**. Biology task leader to assist FEMA with CEQA/NEPA compliance. Evaluated biological impacts of removal of silt, sediment, and debris from the pond to restore pond to its pre-disaster size, shape, and depth. Determined need for USFWS Section 7 consultation because the project was a post-disaster hazard mitigation project funded through the FEMA Public Assistance program.

County of San Diego, Central Avenue Flood Control Improvement Project, National City, CA. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted biological evaluation to determine biological impacts and need for Section 7 Consultation with USFWS for FEMA HMGP- related project to upgrade the drainage facilities in Central Avenue and to alleviate flooding up to and including a 100-year runoff event.

Big Tujunga Dam Seismic Retrofit Biological Assessment, Big Tujunga, CA. 2006 - Biologist assisting FEMA and Los Angeles County Department of Public Works in the CEQA/NEPA compliance for the proposed seismic retrofit of Big

Tujunga Dam, near Sunland, Los Angeles County. Prepared Biological Assessment as part of the CEQA/NEPA and Section 7 documents. Worked closely with USFWS to achieve completion an approved BA. Key issues included construction and dam operational impacts to Santa Ana Sucker and Arroyo Toad Designated Critical Habitat.

SR-52 Widening Project. San Diego, CA. 2006. - Conducted least Bell's vireo surveys along SR-52 right-of-way and identified several territories. Also observed several California gnatcatcher territories. Prepared biological technical report on sensitive species.

Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. 2006. Conducted sensitive species surveys (including least Bell's vireo and southwestern willow flycatcher) of project area for the installation of a new substation, re-conductoring of several transmission lines and new installation of several transmission lines in Riverside County (including the cities of Beaumont, Banning, and Calimesa).

Mira Sorrento Place Road Extension, City of San Diego, California.2005. Conducted biological construction monitoring of during implementation of road extension.

Range Management Plan Amendment/EIS, McGregor Range, Socorro, New Mexico. 2005. Technical writer responsible for alternatives and environmental consequences analyses for special status species, vegetation, wildlife, and livestock grazing sections for an EIS for the McGregor Range Management Plan Amendment. The RMPA/EIS determined impacts based on a forecast of 15 years of range management and improvements.

EIS and Biological Assessment, Resource Management Plan Revision and EIS, Socorro, New Mexico. 2006. Technical writer responsible for impacts analyses on special status species, vegetation, wildlife and livestock grazing sections for an EIS and BA for the Socorro BLM Field Office Resource Management Plan Revision.

Canyon Crest, City of Brea, California. 2002. - Field Coordinator for field surveys with a particular emphasis on identification of the local movement patterns of large mammals (*i.e*., coyote, mule deer, gray fox, bobcat, and mountain lion). Field activities included construction and maintenance of tracking stations and identification of mammal scat, tracks, and game trails. Prepared wildlife corridor assessment.

San Mateo Creek and Lagoon, San Onofre, CA. 2005. - Biologist on team to perform an exotic predator control program at San Mateo Creek in San Diego County. Removed exotic species including bullfrogs, crayfish, and mosquito fish using gigs and seines to benefit native rare tidewater gobies and arroyo toads. Conducted diurnal and nocturnal eradication with the aid of seine nets, dip nets, and frog gigs.

Avian Surveys, Cal Energy Power Plant, California Energy Commission, California, Salton Sea, CA. 2004. - Field coordinator and team leader for

shorebird flyover and wildlife diversity/abundance surveys at the Salton Sea, for expansion of a Geothermal Power Plant. This included several seasons of data collection and analysis. Over 90 species of birds were identified during the surveys.

FEMA/CDF and FEMA/City of San Bernardino Prescribed Burn Program - Prepared Programmatic Biological Assessments for proposed prescribed burns in San Bernardino County. Updated GIS mapping for project.

CSS Monitoring Program, City of San Diego, CA - Coordinated team effort and performed protocol sensitive species surveys for the coastal California gnatcatcher MSCP Reserve Habitat Monitoring project. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

San Elijo Hills Development Project, San Diego, CA. 2001 - Assisted in protocol California gnatcatcher surveys. Construction monitoring during brushing of property.

Questhaven Road Realignment, San Diego, CA. 2001. - Performed wetland delineation and protocol California gnatcatcher surveys.

Melrose Drive Extension Project, San Diego, CA. 2000. - Assisted in protocol California gnatcatcher surveys, prepared Biological Resources Technical Report and regional vegetation map.

Otay Land Co. Proctor Valley Project, San Diego, CA - Performed sensitive species, vegetation and Waters of the U.S. surveys for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

McClellan Palomar Airport Noise Compatibility Study, County of San Diego, CA. 2005. - GIS Specialist responsible for creating existing, 5-year, and 10-year projected GIS land use databases. The databases were then used to help evaluate noise conditions and help in GIS/noise modeling efforts. Over 400 GIS man-hours were used to create, update, and generate these all-encompassing databases and complete analysis for preparation of the supporting Part 150 FAA document. The final product was also converted to Global Environment Management System format for use at the airport facility. GIS models, exhibits, and materials were focal points for community planning meetings/forums.

Otay/Kuchamaa GIS Database Development, Biological Monitoring Plan, and Cultural Resource Study, Bureau of Land Management, California. 2003. - GIS Specialist responsible for creating a geospatial, FGDC-standard GIS database. GIS data from over 30 private and public agencies were integrated. Over 130 data layers were compiled, reviewed, corrected, and integrated to form one consolidated, easy-to-use database for planners, biologists, archaeologists, and other specialists within the Bureau of Land Management (BLM). A complete data dictionary, including complete FGDC standard metadata, was completed for the project. Also managed installation and training for all staff at three BLM offices.

Following completion of the database, a biological monitoring plan and cultural resource document were prepared. This project won the Association of Environmental Professionals' 2002 "Outstanding Environmental Solution" award.

Western Riverside HCP, Castle and Cook. 2002. - Provided review of document, data, and the GIS modeling process used in the preparation of the Western Riverside MSHCP. Also provided GIS analysis, vegetation mapping and graphics for comparison with previous vegetation and corridor linkage information.

Coastal Rail Trail, City of San Diego, CA. 2002. - GIS Specialist/Planner in support of development of the second-half of the Coastal Rail Trail. The project is tasked with completing a bicycle/pedestrian multi-use trail from Del Mar south to the Santa Fe Depot. The project was later condensed, due to funding limitations to segments from Carmel Valley Road near Del Mar south to Gillman Drive. SANDAG, Caltrans, FHWA, City of San Diego, San Diego Bicycle Coalition, San Diego Mountain Bikers Association, Friends of Rose Park, Audubon Society, Native Plant Society, the University Community Planning Group, and the Council District Office were all key players involved with the project. An environmental assessment and 30% engineering were the products of Phase I of the project. Phase II will consist of Final engineering and Design, slated for 2006, once funding becomes available.

Soil Erosion Surveys, GIS/GPS Database Collection and Plan Development, Naval Air Station, Miramar, San Diego, CA. 2004. - GIS Specialist in support of creating a complete geospatial GIS database of soil/erosion/restoration areas for the undeveloped portions of NAS Miramar. After being devastated by the 2003 San Diego Wildfires, the Base was concerned with erosion, runoff and potential for restoration for the lands burned. The project included surveying 14,000ac. of soil, using hand-held PDAs equipped with maps and soil information for field crews. Teams used GPS/GIS technologies to record and map data collected. A complete Work Plan and Final Report were generated as part of this project.

GIS Database Development and Support, San Diego Unified School District, California. 2004. - Provided GIS support in creating a complete geospatial GIS database for ongoing analysis and Phase I environmental site assessments for 30 proposed school sites. Over 30 environmental and manmade constraint layers were incorporated. A complete historical survey of potential hazardous sites was also researched and mapped into the GIS. Over 120 exhibits were generated for ongoing environmental, Phase I, and public-outreach efforts.

County Trails Assessment, County of San Diego, CA. 2003. - Provided GIS and technical writing support for the San Diego Trails Assessment assisting the County of San Diego (County) with preparation of a long-range strategy for non-motorized recreational trails. The effort included completion of a comprehensive trails system assessment. The County's existing, planned, and proposed trails were documented, along with types of trails (hiking, equestrian, and biking), user groups, and frequency of use. An evaluation was conducted to determine future trail demand, public attitudes and level of support, types of trails required, and design criteria. An opportunities and constraints analysis was conducted documenting existing physical and environmental constraints, including land uses, recreation, Multiple Species Conservation Program (MSCP) lands, sensitive

ecosystems, and public lands. The environmental approach describing required National Environmental Policy Act and California Environmental Quality Act documentation was also included. Alternative trail systems were evaluated with regard to environmental, public demand, and financial conditions. All conditions were mapped with GIS.

Cal Energy Power Plant, California Energy Commission, California. 2003. - Served as GIS Specialist for preparation of an application for certification (AFC) for submittal to the California Energy Commission (CEC) for construction and operation of the Salton Sea Unit 6 (SSU6) geothermal plant power-generation facility in Imperial County, California. The SSU6 is a proposed, nominally rated, 175-megawatt (MW) merchant power plant. Ancillary facilities and three transmission line alternatives were analyzed. Over 120 GIS exhibits analyzing over a dozen technical disciplines were also created.

OTHER GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

Meadow Valley Generating Project EIS, **Southern Nevada** - GIS Specialist for 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Generated GIS exhibits of impacts analysis.

GIS Specialist, CSS Monitoring Program, City of San Diego, CA - Provided GIS analysis, vegetation mapping and sensitive species location digitizing for the California gnatcatcher MSCP Reserve Habitat Monitoring project. Developed vegetation and sensitive species location graphics for each of nine study areas located throughout San Diego County. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

GIS Specialist, Otay Land Co. Proctor Valley Project, San Diego, CA - Provided GIS analysis and vegetation/Waters of the U.S. digitizing for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

FLOOD MODELING PROJECTS

Federal Emergency Management Agency Post-Fire Floodplain Mapping, San Diego, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California - GIS Specialist supporting floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

Floodplain Management Study and Plan, Viejas Indian Reservation, California - GIS Specialist responsible for floodplain modeling, mapping, and drainage system assessment. The contract also required stormwater management

support, reporting, and data presentation. Floodplain modeling included historical flood information, complete topographic survey, and computer simulations/models of studied flood classes, calibrating and verifying the hydrological model to historic floods, and establishing a design flood behavior. HEC-GEORAS hydraulic models were generated through GIS.

Technical Assistance Assessment of Disaster Related Infrastructure – Santa Clara & San Ildefonso Pueblos, FEMA - Performed GIS hydrologic modeling for Santa Clara and San Ildefonso Pueblos, located in Northern New Mexico, after the Cerro Grande Fire of 2000. ACOE's HEC-GeoHMS was integrated with ArcView GIS to delineate watersheds based on GPS point-locations. Stream networks were also determined using this program with 3-D Analyst. Utilized Spatial Analysis to determine percent slope and future potential for fire in areas that were burned. Digitized streams into project area determined from aerial surveys. Provided several graphics for each task.

Chollas Creek Wetlands Management Plan, San Diego County, California - GIS Specialist responsible for obtaining GIS data overlays, including data mapped for the MSCP study purpose and updated information. Worked with biologists to create a GIS database that included creek conditions, existing wetlands and sensitive biological resources, parcels and ownership, and planned development projects. With a HEC2 model created for this project and through intensive GIS modeling, sites along the creek needing wetlands management were identified. Also participated in development of presentation material for three community meetings using GIS/HEC-RAS three-dimensional models and information.

ROADWAY PROJECTS

State Route 56/Interstate 5 Interconnections, City of San Diego, California - Staff Biologist/Planner responsible for technical reports in environmental and preliminary engineering tasks relating to the "connectors" project for Interstate 5 and State Route 56. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project. These two key connectors are needed to handle increased travel demand and increased development in the vicinity. The project is highly publicized due to the fact that the proposed southbound Interstate 5 to eastbound State Route 56 connector would be a four-story "flyover" ramp adjacent to an environmentally sensitive lagoon and several residential communities.

Interim Improvements for the Interstate 5-State Route 56 Interconnections, City of San Diego, California - Staff Biologist/Planner and GIS Specialist for initial environmental clearance and preliminary engineering for the Interim Improvements relating to the interconnection project for Interstate 5 and State Route 56. Interim Improvements included road widening, restriping, retaining wall, additional drainage/bioswale installation, and replantings. This project was key to interim traffic congestion problems arising from the opening of State Route 56.

Sorrento Valley Road EIR, City of San Diego, California - GIS Task Manager for the equal evaluation of three distinct alternatives for a 3-mile segment of

Sorrento Valley Road which is closed and in disrepair since 1994, while a new pump station and a major Caltrans intersection at I-5 was constructed. The project borders the Los Peñasquitos Lagoon, which is managed by State Parks and under the joint coastal jurisdiction of the City of San Diego and the State Coastal Commission. All CEQA issues were evaluated ad mapped in GIS with special emphasis on traffic and noise impacts as well as biological permitting and mitigation.

Mira Sorrento Place Road Extension, City of San Diego, California - Staff Biologist for the civil design and environmental compliance studies associated with this road extension. Principal issues for evaluation included soils and slope stability, surface water hydrology, construction impacts, and cultural resources. Also helped prepare land use analysis technical report.

EMERGENCY RESPONSE/EMERGENCY PLANNING PROJECTS

Federated States of Micronesia (FSM) Multi-State Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Government of FSM/National Emergency Management Office (NEMO). 2005. - GIS Specialist/Planner for the multi-state FSM Hazard Mitigation Plan. As a recognized jurisdiction that is eligible under compact with the U.S. for FEMA funding, the FSM government hired URS to help prepare the Plan. The FSM is made up of four states, Pohnpei, Kosrae, Chuuk, and Yap covering over 1,000,000 miles of ocean including over 605 islands. Assisted with extensive public outreach efforts held throughout the islands during the project. Prepared Hazard Mitigation Plan including public meeting materials and preparation, working group participation and data collection, agency and interested-party site visits and interviews and more. Prepared hazard maps using GIS and data collected from FSM and websites. The Plan included a complete risk assessment, vulnerability analysis, and separate mitigation strategies for each State.

Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Office of Emergency Services (OES), County of San Diego, CA. 2004. - GIS Specialist and Planner for San Diego County's Multi-Jurisdictional Multi-Hazard Mitigation Plan. Plan preparation, GIS analysis and HAZUS-99/HAZUS-MH modeling, public outreach efforts, and individual jurisdiction support. The Plan (including a separate *"For Official Use Only"* attachment for manmade hazards) was over 750 pages, included production of over 100 maps for 18 jurisdictions and the County, and covered 4,264 square miles. Risk assessment, vulnerability analysis, and mitigation strategies were generated for each jurisdiction. Participated in and prepared maps and materials for all working group meetings, encompassing public officials/staff, fire/police/emergency personnel, public/private organizations and citizens; over two dozen individual jurisdictional meetings, and all public meetings held over the two-year project life. Prepared hazard maps and performed loss estimation analysis for Risk Assessment. *This project won the Association of Environmental Professionals' 2004 "Outstanding Environmental Document" award.*

Viejas Band Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), State of California. 2005. - GIS Specialist and Planner in charge of planning and GIS-related efforts for developing the Viejas Band Multi-Hazard Mitigation Plan. Performed GIS analysis and HAZUS-99/HAZUS-MH

modeling, participated in and prepared maps and materials for all working group meetings. The Plan included a complete risk assessment, vulnerability analysis, and mitigation strategy.

Twenty-seven (27) Single Jurisdiction Hazard Mitigation Plans, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), Individual Jurisdictions within County of Maricopa, AZ. 2004. - Provided peer review for the twenty-seven (27) separate single-jurisdictional DMA 2000 plans for the cities within Maricopa County, Arizona. GIS review included analysis of GIS HAZUS 99/HAZUS-MH modeling results. Reviewed compilation of results for risk analysis/loss estimation portions of document.

Concow Maidu of Mooretown Rancheria Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California. 2005. - Provided peer review and assistance in development of the Hazard Mitigation Plan. GIS support included GIS HAZUS 99/HAZUS-MH modeling and risk assessment. Peer reviewed compilation of all results for risk assessment and mitigation portions of document preparation.

Statewide Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of Arizona. 2004. - Provided peer review for the State-wide Plan. GIS Peer review included GIS HAZUS 99/HAZUS-MH modeling results. Peer reviewed compilation of all results for risk analysis/loss estimation portions of document preparation.

Ventura County Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California - Provided GIS support for the county-wide Plan. GIS support included hydrologic and GIS HAZUS 99/HAZUS-MH modeling.

Urban Area Security Initiative, City of San Diego/Federal Emergency Management Agency (FEMA). 2005. - Provided GIS support in the analysis and compilation of a wide-variety of complex, highly confidential source data for the completion of the Urban Area Security Initiative (UASI). This project included analysis of potential hazardous materials release/weapons of mass destruction analysis, including morbidity, mortality, and damage assessments.

California Firestorm 2003 Modeling/Mapping, Federal Emergency Management Agency (FEMA)/California Office of Emergency Services (OES), Los Angeles, San Bernardino, Ventura, Riverside, San Diego Counties; California - GIS Specialist in support of floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

Technical Assistance Assessment of Disaster Related Infrastructure – Santa Clara & San Ildefonso Pueblos, FEMA. 2002. - Performed GIS hydrologic modeling for Santa Clara and San Ildefonso Pueblos, located in Northern New

Mexico, after the Cerro Grande Fire of 2000. ACOE's HEC-GeoHMS was integrated with ArcView GIS to delineate watersheds based on GPS point-locations. Stream networks were also determined using this program with 3-D Analyst. Utilized Spatial Analysis to determine percent slope and future potential for fire in areas that were burned. Digitized streams into project area determined from aerial surveys. Provided several graphics for each task.

Professional Associations

Association of Environmental Professionals, Member, (2000–Present)
Women's Environmental Council, Member, (2002 Present)
Wildlife Society Member, (2001 – Present)
California Geographic Information Association, Member, (2001-Present)
ESRI Regional Arc User Group, (2001-Present)
Desert Tortoise Council Member, (2002-Present)

Areas of Expertise	Wildlife Biology Biological Impact Assessment ESA/Wetlands Permitting Habitat Conservation Planning Wildlife Corridor Assessment Habitat Restoration Planning and Monitoring
Years of Experience URS Other Firms	28 9 19
Education	PhD/1990/Biology/University of California, Los Angeles CPh/1983/Biology/University of California, Los Angeles BS/1979/Wildlife Biology/University of California, Davis
Registration/Certification	Certified Senior Ecologist/Ecological Society of America Certified Wildlife Biologist/The Wildlife Society Training in ACOE Wetland Delineation Methods & Regulatory Policy OSHA Hazardous Waste Operations and Emergency Response Training/Section 1910.120 Training in Use of ArcView and Auto Cad R14 Software
Overview	Dr. Mock has over 28 years of professional experience as a wildlife biologist and environmental consultant. He has served as principal investigator for studies of endangered wildlife, directing and participating in field investigations, data analysis, and preparation and review of technical reports and mitigation plans. Dr. Mock has extensive national and international experience in the assessment of impacts on biological resources, especially in relation to wetland ecosystems, coastal sage scrub, and endangered species. Dr. Mock has produced environmental impact assessments of various development projects throughout western US and the Pacific Rim in conformance with NEPA, CWA, and ESA. His specific area of expertise is in the ecology, management, and monitoring of vertebrate populations. He has conducted investigations of several sensitive bird species, including California least tern, brown pelican, least Bell's vireo, California gnatcatcher, coastal cactus wren, and bald eagle. He is experienced in landscape scale habitat evaluation modeling, preserve design, wildlife corridor assessment, and population viability analysis. He is certified as a senior ecologist by the Ecological Society of America and a wildlife biologist by The Wildlife Society. Dr. Mock participates in all aspects of project management, including client liaison, budgeting, field investigations and research, supervision of field biologists, regulatory permitting assistance, agency liaison, report preparation and review, public presentations, and expert testimony. Dr. Mock has also served as a Lecturer at the University of San Diego and University of California, San Diego, where he has taught courses on biological assessment, principles of ecology, and wildlife management.

Project Experience

ECOLOGICAL RESEARCH

Ecological Studies of California Gnatcatcher (*Polioptila californica*), Home Capital Corporation, Weingarten, Siegel, Fletcher Group, Inc., and Skyline Wesleyan Presbyterian Church. Served as project manager/principal investigator for a comprehensive ecological study of over 40 pairs of California gnatcatchers in the Rancho San Diego area in order to document home range size, habitat preferences, dispersal behavior, breeding/population biology, and effects of development.

Foraging Ecology of California Least Tern (*Sterna antillarum browni*), Mission Bay, Department of Parks and Recreation, City of San Diego. Served as project manager/principal investigator, responsible for documentation of least tern foraging habitats within Mission Bay Park.

Habitat Characterization of Ephemeral Watercourses Receiving Treated Wastewater Effluents in the Arid Western U.S., Wastewater Management Department, Pima County, Arizona/EPA. Served as project coordinator for the research team assigned to gather data at two southern California sites and acted as the lead wildlife biologist for the overall program.

Behavioral Study of the Effects of Military Helicopter Activity on Breeding Least Bell's Vireo, U.S. Navy. Served as the principal investigator for an intensive behavioral study of least Bell's vireo breeding adjacent to Camp Pendleton Marine Corps Air Station. This empirical study verified a theoretical model of noise impacts to breeding vireos.

Study of the Effects Associated with Modification of Sand Grain-size on Shorebird Foraging Behavior, Department of Parks and Recreation, City of San Diego. Project manager/principal investigator for an impact assessment of proposed modification of sand grain-size as an erosion-control measure in Mission Bay Park. Study involved documentation of changes in shorebird foraging behavior associated with erosion-control methods.

San Diego Bay Waterbird Survey, U.S. Navy. Project Director of a three-year study of waterbird use of north and central San Diego Bay. Involved weekly boat surveys of waterbirds and other sensitive species. This study allowed for a detailed analysis of spatial and temporal variation of waterbird abundance and habitat use within San Diego Bay.

Behavioral Study of the Effects of Military, Fixed-wing Aircraft Activity on Idaho Bighorn Sheep, U.S. Air Force. Dr. Mock participated in the experimental design and statistical analysis of this intensive behavioral study of bighorn sheep in the Owahee Range of western Idaho.

Wildlife Corridor Study of the 23,000-Acre Otay Ranch, San Diego County, City of Chula Vista. Project director responsible for documentation of wildlife corridors on Otay Ranch and the Miramar-Peñasquitos area of San Diego, made recommendations for the retention and protection of regionally significant corridors within and throughout the ranch.

Wildlife Corridor Assessment for Canyon Crest Development Project, Brea California. City of Brea. Senior biologist for a detailed, wildlife corridor assessment for the project vicinity around a proposed residential development project in the City of Brea, California. Landscape-scale wildlife movement routes between open space areas associated with Carbon Canyon Road were identified

and redundant routes through the project site were conserved as part of the project design.

Raptor Ecology and Management Study on Otay Ranch, City of Chula Vista. Project director responsible for documenting nesting, roosting, and foraging areas of sensitive bird-of-prey species using radio telemetry methods. Species studied included golden eagle, northern harrier, black-shouldered kite, Cooper's hawk, and burrowing owl.

Analysis of Brown Pelican Migration Patterns from Band Recovery Data, Los Angeles County Natural History Museum. Principal investigator. Dr. Mock also assisted Dr. R.W. Schreiber in his field studies of the reproductive ecology of pelicaniform birds on Johnston Atoll, Central Pacific Ocean.

Study of Growth Energetics and Food Intake of Nestling Thick-billed Murre (*Uria lomvia*) Pribilof Islands, Bering Sea, Alaska, Department of Ecology and Evolutionary Biology, University of California, Irvine. Principal investigator for a study that included use of isotopically labeled water and body composition analysis. Dr. Mock was a member of a large research team led by Dr. G.L. Hunt, which studied the effects of colony size on the reproductive ecology and energetics of colonial seabirds.

Comprehensive Studies of the Reproductive Energetics and Ecology of the Western Bluebird (*Sialia mexicana*), Department of Biology and Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles. As a doctoral candidate, Dr. Mock's studies included comparative growth energetics of nestling western bluebird and ash-throated flycatcher (*Myarchus cinerascens*), use of the doubly-labeled water method, time-activity budget analysis, nestling growth analysis, laboratory measurement of animal metabolism, body composition analysis, bird banding methods, and statistical analysis.

Development of an *in vivo* Method to Estimate Lipid Reserves of Vertebrates, Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles. As a research associate in Dr. Ken Nagy's Lab, Dr. Mock participated in validation studies of the cyclopropane methods to estimate lipid reserves of vertebrates.

San Diego County Breeding and Wintering Bird Atlas Project, San Diego Natural History Museum. A principal participant in the design and implementation of 6-year atlas project. Providing GIS mapping support and assistance in data analysis.

REGIONAL NATURAL RESOURCE PLANNING

Multiple Species Conservation Program, City of San Diego Clean Water Program. Principal wildlife biologist directing the gap analysis, preserve design, wildlife corridor analysis, and resource assessment to delineate a network of potential preserve areas for a 900-square mile area in southwestern San Diego County. The objective of this three-year program is to develop a plan for the conservation and management of self-sustaining, viable populations of federally listed species and key candidate species and their habitats. Included in this program is the development of population viability analyses for California gnatcatcher and coastal cactus wren, a comprehensive GIS-based habitat evaluation model to aid in the relative valuation of habitat areas and identification preserve planning areas, and a long-term monitoring plan of conserved habitats

and selected target species. This project received numerous citations and awards for excellence in resource planning.

Carlsbad Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Carlsbad. A principal participant in the evaluation of habitat and target species evaluations for proposed city-wide preserve system.

San Marcos Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of San Marcos. Providing technical assistance to City staff regarding habitat and target species evaluations for proposed city-wide preserve system; Technical review of subarea plan document.

Rancho Palos Verdes Natural Communities Conservation Program Subarea Habitat Conservation Plan and EIR, City of Rancho Palos Verdes. Project Manager and Technical Lead for program assisting the City of Rancho Palos Verdes in the first phase of a NCCP subarea plan for coastal sage scrub habitats. Phase I involves the following tasks: (1) assemble and review existing information on biological resources, land uses, and land-use constraints, (2) perform reconnaissance and focused biological surveys, (3) refine current vegetation mapping and assess the restoration/enhancement potential of disturbed habitats and non-native vegetation, (4) develop three preliminary preserve design alternatives being evaluated in Phase II of the program, and (5) interact with resource agencies, landowners, and local working group of interested parties to incorporate their concerns into the preserve design process. Phase II involved the preparation of the HCP document for public review and Phase III involved the preparation of the EIR and Implementing Agreement documents. Key sensitive species evaluated in the plan include Palos Verdes Blue and El Segundo Blue butterflies, California gnatcatcher, coastal cactus wren, and bright green dudleya.

Desert Lands Habitat Conservation Plan, Metropolitan Water District. Project Manager for HCP and CEQA/NEPA process to address potential incidental take associated with the operation and maintenance of the Colorado River Aqueduct. Program included sample plot assessments across 97,000 acres of MWD owned lands.

North County Multiple Habitat Conservation Program, San Diego Association of Governments. Principal member of a team of biologists formulating a regional preserve design for a 1,000-square-mile area in northwestern San Diego County. This program is similar to the City of San Diego's MSCP program (see above).

Key Deer Habitat Conservation Plan (HCP), Florida Department of Transportation and Monroe County. A principal participant in habitat and target species assessments and the development of a conservation plan for Big Pine Key and No Name Key encompassing over 5,000 acres of potential Key Deer habitat.

Adaptive Management Research Program for Sweetwater Reservoir Least Bell's Vireo Population, Sweetwater Authority. Dr. Mock provided technical assistance in the development of testable hypotheses, including statistical power analyses for the habitat and population monitoring of the large least Bell's vireo population associated with the reservoir.

Chevron Lokern HCP EIR, Chevron Oil Corporation. Senior biologist overseeing EIR assessment of proposed HCP for over 14,400 acres of sensitive habitats and 31 sensitive species within Kern County.

Santa Monica Mountains National Recreation Area General Development Plan EIS, National Parks Service. Senior biologist overseeing biological assessment of the master plan for the 150,000-acre NRA in coastal Los Angeles County.

California Gnatcatcher Sweetwater River HCP, Home Capital Corporation/San Diego Association of Governments. Project manager and principal author of the first HCP developed for the California gnatcatcher. This HCP presented a program designed to ensure the continued existence of the California gnatcatcher in the Rancho San Diego/Sweetwater River Drainage and proposed to merge the management of the upland habitats with the riparian habitat proposed for management of the least Bell's vireo. This document presented information on the status and biology of the gnatcatcher, including a population viability analysis of the Sweetwater River gnatcatcher subpopulation as an isolate. The plan set guidelines for the conservation and management of coastal sage scrub designated as Conserved Habitat. Management actions were identified in a structured program within the Sweetwater River Drainage through preservation and active management of sage scrub habitat, specifically applied land use controls, and local private and public agreements.

City-wide Biological Resource Assessment and Environmental Planning for the City of Poway, San Diego County, Department of Planning, City of Poway. Task manager for a city-wide California gnatcatcher survey encompassing over 8,000 acres of suitable habitat and development of habitat assessment for coastal sage scrub habitats. Suitable California gnatcatcher habitat within Poway and its Sphere of Influence was identified and recommendations for habitat acquisition priorities and management of biological open space to sustain viable California gnatcatcher populations were made. This project won an Orchid award in the Orchids and Onions Community Awareness Program.

Otay Mountain/Kuchamaa Cooperative Planning Area Biological Monitoring Plan, GIS Database Development, and Cultural Resources Study, BLM. URS prepared a complete GIS Database, Biological Monitoring Plan, and Cultural Resources Study for the Otay/Kuchamaa Cooperative Planning Area managed by the Bureau of Land Management in San Diego County, Ca. The objective of this task order was the development of the baseline database – developed as GIS data layers – needed to conduct the planning process and EIS analysis, including development of a reasonable range of land management alternatives. The focus of the baseline conditions was related directly to the biological and cultural resources for the management area. This project received a Merit Award from the San Diego AEP.

Oceanside Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Oceanside. A principal participant in habitat and target species assessments and the evaluation of a regional California gnatcatcher movement corridor between San Marcos and Camp Pendleton through Carlsbad and Oceanside.

Point Loma Habitat Management Plan, U.S. Navy. Participated in the development of a habitat evaluation model to aid in the relative valuation of habitat areas and assignment of conservation and habitat management priorities within the study area.

Escondido Master Plan of Parks, Trails, and Open Space/EIR, Department of Planning, City of Escondido. Task manager for identification of regionally

significant wildlife corridors throughout the City of Escondido. Regional and site-specific analyses of Escondido's biological resources were made as part of the city's commitment to expand park and recreation facilities, establish long-term open space, and identify mitigation priorities. The regional analysis identified a primary wildlife corridor system to be retained within the city, and concentrations of high quality biological resources recommended for protection through open space easements or for use as mitigation.

Wetlands Management Plan for the Island of Saipan, Coastal Resource Management Office, Commonwealth Government of the Northern Mariana Islands. Project manager/zoologist for a comprehensive wetlands management plan for the island of Saipan. Study involved habitat evaluation and assessment. Recommendations for habitat acquisition priorities and management were made for the conservation of significant wetland resources on Saipan.

The Oasis Project, U.S. Air Force, Air Combat Command. Senior wildlife biologist involved in landscape level evaluation of biodiversity on two Air Force training ranges (in Idaho and North Carolina) compared to adjacent areas where land use patterns differ from the training ranges.

DeLuz Habitat Mitigation Bank, The Eadington Companies. Biological consultant assisting the formation and wildlife agency approval of a 141-acre San Diego County mitigation bank dominated by riparian and oak woodlands.

BIOLOGICAL ASSESSMENT/MITIGATION

Department of Defense

Biological Assessment/EIS of BRAC Actions at MCAS Camp Pendleton, U.S. Navy. Principal Investigator for an intensive behavioral ecology study of potential effects of helicopter overflight activity on the vocalization behavior of the endangered least Bell's vireo. This study also included a statistical analysis of vireo breeding success in relation to CNEL noise contours for the MCAS. Senior Biologist overseeing preparation of NEPA/EIS documents that focused on indirect effects to least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

Biological Assessment/EIS of BRAC Actions at NAS Miramar, U.S. Navy. Senior Biologist overseeing biological assessment of realigning NAS Miramar as MCAS Miramar. NEPA/EIS documents that focused on potential adverse effect to vernal pool habitat and associated sensitive species, wetlands, California gnatcatcher, and regional wildlife corridors.

Programmatic EIS for Testing and Operations at Pt. Mugu Air Warfare Center, U.S. Navy. Senior Biologist overseeing biological assessment of testing and operation programs. Emphasis was on associated biological effects on sensitive waterbirds and marine mammals within the 36,000 square mile Sea Test Range in the Southern California bight.

Biological Assessment/EA of Helicopter Outlying Landing Field, MCB Camp Pendleton, U.S. Navy. Senior Biologist overseeing preparation of NEPA/ESA documents for proposed HOLF facility. Biological issues included potential impacts to vernal pool habitat and associated sensitive species, Stephen's kangaroo rat, arroyo southwestern toad, and indirect effects to California gnatcatcher and least Bells' vireo.

Construction Biological Monitoring Program for VertRep Project, Camp

Pendleton, Stronghold Electric/U.S. Navy. Project manager for implementation of construction monitoring and environmental awareness program for contractor staff for a construction of a helicopter landing facility at a coastal bluff site. Sensitive resources protected included vernal pools, coastal sage scrub, and California gnatcatcher.

Homeporting Project EIS, San Diego Bay, U.S. Navy. Senior Biologist assessing impacts on wildlife associated with dredging and site improvements for the homeporting of two aircraft carriers in San Diego Bay.

San Nicolas Island Barge Landing EA, U.S. Navy. Principal biologist for the biological assessment of existing barge landing activities and evaluation of alternative landing sites on the island. EA focused on potential impacts to marine mammals, snowy plover, seabird colonies and sensitive plants.

Preconstruction Survey for Micronesian Megapode at the Saipan Radar Installation, Commonwealth of the Northern Marian Islands, U.S. Air Force. Principal investigator that conducted focused surveys for the sensitive Micronesian megapode and recommended mitigation to minimize impacts to this species.

Transportation Projects

Mammoth Lakes Airport Expansion EIS, FAA. Senior biologists overseeing the biological assessment of new commercial service at regional airport. Issues included indirect impacts to breeding grounds of sage grouse.

Teledyne Ryan Facility Demolition EIR, San Diego International Airport. Senior biologists overseeing the biological assessment of building demolition adjacent to an active least tern breeding colony.

Interstate 805 Widening Project, SANDAG. Task Manager overseeing assessment vegetation mapping and T&E species surveys for 25-mile freeway widening project. Species included least Bell's vireo and California gnatcatcher.

Carmel Valley Road Improvement Project EIR, City of San Diego.

Construction Monitoring and Burrowing Owl Removal Program for SR 7, El Centro, Caltrans.

Exotic Predator Removal Program, San Mateo Creek and Lagoon, Caltrans.

Natural Environment Study (NES) of SR 11, East Otay Mesa Border Crossing, Caltrans.

Endangered Species Surveys for Interstate 5 Widening Project, Caltrans.

I-5/SR-56 Interchange Improvement Project EIR/EIS, Caltrans and City of San Diego.

Biological Surveys for SR 52 Widening Project, Caltrans.

Construction Monitoring for SR 73 Water Quality Facilities Upgrade Project, Caltrans.

Biological Assessment, Cajon Pass Triple Track Project, BNSF Railroad

Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad.

Wetland Mitigation Planning and Permitting Assistance for Light Rail Transit (LRT) Projects in San Diego County, Metropolitan and North County

Transit Development Boards. Project manager responsible for impact assessment, mitigation planning, and permitting assistance for several proposed commuter rail projects whose alignments must cross wetland habitat.

North County Light Rail Transit Project EIR, North County Transit Development Board. Principal wildlife biologist assessing potential biological impacts associated with a light rail transit line between Oceanside and Escondido.

Biological Assessments of Four Road Widening Projects, County of San Diego. Senior biologist overseeing the biological assessment of four road-widening projects in southeastern San Diego County. Sensitive species included least Bell's vireo and California gnatcatcher.

Biological Assessments of Proposed Widening and Extension of San Elijo Road, Twin Oaks Valley Road, Rancho Santa Fe Road, and Melrose Drive, City of San Marcos. Senior biologist and author of biological assessments for four critical regional road projects in San Marcos. Key biological issues included California gnatcatcher and regional wildlife corridors.

Biological Assessment and EIR for Scripps-Poway Parkway, City of Poway. Senior biologist for this major roadway project through the undeveloped portion of south Poway that provides a regional linkage between SR 167 and I-15. Major issues included California gnatcatcher, wildlife corridors, and potential conflicts with the City's habitat conservation plan.

Sorrento Valley Road Improvement Project EIR, City of San Diego. Senior biologist providing biological assessment for road project directly adjacent to Los Peñasquitos Lagoon. Sensitive resources included saltmarsh and riparian wetlands, clapper rail, Belding's Savannah sparrow, and California gnatcatcher and two regional wildlife corridors.

Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad. Project manager for implementation of biological monitoring program for track removal between Holtville and El Centro, Imperial County, California.

Las Pilitas Bridge Replacement Project, County of San Luis Obispo. Senior biologist providing technical review of Natural Environment Study documents.

Rigel Street Bridge Replacement Project, City of San Diego. Provided biological assessment and assistance in processing streambed alteration agreement.

Atchinson Avenue Bridge Replacement Project, City of Roseville. Senior biologist overseeing the preparation of Natural Environment Study document and wetlands delineation for wetlands permitting process. Sensitive species include Coho salmon, steelhead, and valley oak

Ford Avenue Bridge Replacement Project, Alameda Corridor Project Team. Provided wetlands permitting assistance.

Infrastructure Facility Projects

Big Tujunga Dam Seismic Rehabilitation and Spillway Modification Project. Senior Biologist assisting FEMA and Los Angeles County Department of Public Works in the CEQA/NEPA compliance for the proposed seismic retrofit of Big Tujunga Dam, near Sunland, Los Angeles County. URS is conducting biological surveys of the project area and is preparing CEQA/NEPA and Section 7 documents. Key issues include construction and dam operational impacts to Santa

Ana Sucker and Arroyo Toad Designated Critical Habitat.

CHEVRONTEXACO de MEXICO Onshore LNG Receiving Terminal, Baja California. Senior biologist overseeing biological assessment of an offshore LNG terminal located near the Coronado Islands, Baja California, Mexico. Key issues included assessment of potential impacts to seabirds.

Starwood Midway Peaker Power Plant AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in Kern County.

Panoche Peaker Power Plant AFC. Senior biologist assisting in biological assessment and ESA permitting of power plant project in Kern County.

Ausra Solar Energy Project AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in San Luis Obispo County. Project involved intensive surveys for blunt-nosed leapord lizard on a 1000-acre project area.

SES Solar One Energy Project AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in San Bernardino County. Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 16,000-acre project site and 100-mile transmission line.

SES Solar Two Energy Project AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in Imperial County. Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 8,000-acre project site and 10-mile transmission line.

CalEnergy Salton Sea Unit 6 Geothermal Power Plant Application for Certification. Project manager overseeing AFC document preparation. The California Energy Commission processed the licensing for construction and operation of the Salton Sea Unit 6 Geothermal Power Project, a proposed 185 net megawatt power plant in Imperial County, near the southern extent of the Salton Sea. Geothermal projects from the Salton Sea Known Geothermal Resource Area rarely come to the commission for action as most of these are much smaller, ranging from 10 to 45 megawatts, not requiring Energy Commission licensing. The Salton Sea Unit 6 project was unique based upon the size of the proposed plant, the location of the project near environmentally sensitive habitat, and the Sonny Bono Salton Sea National Wildlife Refuge. In addition, Imperial County has unique socioeconomic and geographic conditions. These factors provide the complex context within which this project was evaluated. Most CEC technical staff were not initially familiar with the area, or the unique aspects of a geothermal power facility deriving steam flashed directly from produced hot brine. The AFC document prepared by URS for the project provided an excellent platform for the CEC analysis, clearly presenting the necessary technical information. The complex information was presented in a format and context that highlighted the unique aspects of geothermal power production, and the environmental and socioeconomic conditions of the project area and this region. The AFC accurately described the environmental, engineering, and technical components of the project, and clearly addressed the potential impacts, mitigation strategies, and the technical issues across the spectrum of disciplines. Notably, the CEC deemed the AFC "data adequate" within nine months of initial project application.

Miramar General Development Plan EIR/EIS, City of San Diego Waste Management Department. Participant in the evaluation of plan proposing a variety of landfill-associated facilities. Sensitive species, habitat, and wildlife

corridors were issues of concern.

Biological Assessment of Proposed International Airport at Maj Po Mash, Shenzhen, China, City of Shenzhen. Principal investigator that evaluated potential impacts to biological resources at wetlands and bay adjacent to a proposed airport site.

Emergency Water Storage Project, San Diego County Water Authority. Principal author of Biological Assessment that included detailed estimation and justification of incidental take and habitat values of endangered species and their habitats expected to be impacted by the proposed reservoir project. Assessment was used in ACOE 404 permitting and ESA Section 7 consultation with the wildlife agencies. This project received an AEP planning award.

Evaluation of Biological and Water Quality Monitoring Program of the Shanghai River, China, Shanghai Sewerage Authority. Principal investigator responsible for assessment and recommendations for biological and water quality monitoring program for the Shanghai Sewerage System.

Alvarado Water Filtration Plant Project, City of San Diego. Senior biologist overseeing construction monitoring impacts to coastal sage scrub and California gnatcatchers. The gnatcatcher population within the project vicinity was monitored for 3 breeding seasons during project environmental review and implementation.

Chandler Landfill Water Recharge Basin Demonstration Project, Rolling Hills, CA, Water Replenishment District of Southern California. Senior biologist overseeing wetlands delineation and permitting assistance.

Gilroy Landslide Remediation Evaluation, Santa Clara Valley Water District. Senior biologist overseeing biological assessment and permitting for remediation of a landslide threatening a major water aqueduct. Sensitive species include red-legged frog, California tiger salamander, San Joaquin kit fox, and valley oak.

SMUSD Administration Office Complex, San Marcos Unified School District. Senior biologist overseeing biological assessment of vernal pool site proposed for a school district office complex.

Mountain Pass Mine Expansion Project, Molycorp, Inc. Senior biologist overseeing biological assessment and wetland delineation for the 30-year expansion plan for an existing rare earth element mine in San Bernardino County. Sensitive species included desert tortoise and three rare deserts plant species.

Residential Development Projects

EIR/Mitigation Monitoring Program for San Elijo Ranch Development, City of San Marcos. EIR biologist and project manager for development and implementation of a mitigation monitoring program for the approved 2,100-acre San Elijo Ranch development. Tasks included evaluating potential impacts to sensitive plant and animal species and negotiating mitigation measures deemed acceptable to all concerned parties. Sensitive plant and animal surveys were conducted and format mitigation plans were prepared. Habitat restoration plans and 404/1603 permit applications for impacts to wetlands, coastal sage scrub, and native grassland were prepared.

Biological Assessment and Mitigation Planning, Calavera Heights Development, Carlsbad, Lyon Communities. Project manager overseeing assessment of biological impacts and development and implementation of mitigation monitoring program. Also provided permitting assistance and resource agency liaison services.

Otay Ranch Programmatic EIR, City of Chula Vista/County of San Diego. Participated in biological assessment of proposed development and preserve design of 23,000-acre Otay Ranch in southern San Diego County. Major issues included potential impacts to wildlife corridors and a multitude of sensitive wildlife species and their habitats.

On-call Consulting Services for Otay Land Company, Otay Land Co., LLC. Senior biologist overseeing on-call consulting services contract for 4,800-acre ownership within Otay Ranch planning area.

University Commons EIR and Mitigation Plan, City of San Marcos. Biological assessment of a residential/commercial development and preparation and implementation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

Salt Creek Ranch EIR, City of Chula Vista. Principal wildlife biologist assessing residential/commercial development and preparation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

Fanita Ranch EIR, City of Santee. Participated in the biological assessment of a 5,600-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

Development Constraints Assessment for Tom Dyke Ranch, Saint Vincent De Paul Society. Project manager overseeing detailed development constraints assessment for a proposed children's camp and conference center facility.

San Marcos Highlands Biological Assessment, City of San Marcos. Project manager overseeing assessment of biological impacts for a proposed residential development on a 250-acre site.

Hampton Heights Project EIR, County of San Bernardino. Provided assessment of biological impacts for a proposed residential and golf course development on a 470-acre site near Redlands, California.

Willows Development Project, Temecula, Willows Investment Group. Senior biologist for wetlands delineation and permitting program for a 32-acre residential development.

Vista Palisades Estates Project, Capital Pacific Homes. Senior biologist for assessment of biological impacts for a proposed residential development on a 390-acre site near Vista, California.

Benicia Specific Plan EIR, City of Benicia. Principal wildlife biologist assessing a residential/commercial development within a 2,500-acre specific plan area. Impacts to sensitive habitats, species, and wildlife corridors were the primary issues of concern.

East Otay Mesa Biological Assessment, County of San Diego. Participated in the biological assessment of a 5,300-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

Santa Fe Valley/4S Ranch Biological Assessment, County of San Diego. Participated in the biological assessment of two specific plans areas encompassing about 6,000 acres. Developed a habitat evaluation model to aid in the relative valuation of habitat areas.

Coastal Development, Recreation Projects

ESPN X-Games, Mission Bay San Diego, ESPN. Biological consultant providing technical support of California Coastal Commission permitting process. Provided biological assessment and proposed mitigation program for potential impacts to California least tern breeding colony.

Mission Bay Park Shoreline Stabilization and Restoration Project and Natural Resource Management Plan EIR, City of San Diego. Principal wildlife biologist in the biological evaluation of methods proposed for shoreline stabilization/restoration and the proposed long-term maintenance/enhancement plan for natural resources. Primary issues of concern included impacts to wetlands, least tern foraging habitat, and shorebird foraging habitat.

The Headlands, Dana Point, Headlands Reserve, LLC. Assisting with the processing of the development plan and California Coastal Commission coastal permit process for this 121-acre coastal property that supports California gnatcatcher, Pacific pocket mouse and several rare plants.

Convair Lagoon Remediation Project EIR, San Diego Port Authority. Principal biologist assessing impacts of hazardous waste remediation project on waterbird species using the lagoon.

National City Marine Terminal Wharf Expansion Project EIR, San Diego Port Authority. Principal biologist assessing impacts of wharf expansion project on mariner resources, including waterbird species.

Biological Resource Inventory and Environmental Assessment of Proposed Marina at Ballona Lagoon, Marina del Rey, California, Silver Strand Marina Association. Principal investigator for a comprehensive assessment of potential impacts to biological resources from a proposed marina at a 13-acre lagoon. Studies included documentation of California least tern and shorebird use of the lagoon.

Biological Assessment of the Ormond Beach Area Concept Plan, City of Oxnard. Principal investigator for an evaluation of proposed resource management and development plan for coastal dune and wetland habitats of Ormond Beach.

Biological Assessment of Elsinore Lake Management Plan, Lake Elsinore, California, Elsinore Water Authority. Project biologist that evaluated impacts to biological resources of Elsinore Lake from a proposed water-level control facility.

Poway Amphitheater EIR, City of Poway. Principal biologist assessing impacts of proposed amphitheater. Impacts to sensitive plants, California gnatcatcher and a regional wildlife corridor were key issues addressed in the EIR.

Other Relevant Experience

California Department of Fish and Game Biologist. Prepared bird and mammal sections of the Department's biannual report to the State Legislature on the status of California's endangered wildlife; Conducted surveys for wintering bald eagles and riparian birds.

Teaching

Principles of Ecology for Natural Resource Management, University of California, San Diego. Dr. Mock taught a course for three years on ecology that

emphasizes the application of ecological knowledge toward solving problems in conservation biology and regional land use planning.

Wildlife Management, University of California, San Diego. Dr. Mock taught a course for three years on wildlife ecology/management that emphasizes techniques for conservation of wildlife population and their habitats.

Biological Assessment, University of San Diego. Dr. Mock taught a course on Biological Assessment that emphasized the requirements of CEQA, NEPA and ESA. Project case histories were used to provide students with real world examples of the types of environmental issues, which typically need to be addressed in a biological assessment.

Masters Thesis Committee Member, Geography Department, San Diego State University. Dr. Mock served as an adjunct member of a thesis committee of a biogeography graduate student, who evaluated the umbrella species concept as it applied to the conservation of the California gnatcatcher. Dr. Mock advised the student on habitat reserve design and population viability analysis.

Teaching Fellow, Biology Department, University of California, Los Angeles. Dr. Mock taught laboratory sessions for various biology courses while a graduate student. Courses included ornithology, comparative physiology, cell physiology, animal behavior, and introductory biology.

Technical Reviewer

Conservation Biology, The Auk, Ecology, Condor, Ecological Monographs, Western Birds, *Ornis Scandinavica*,

- Proceedings of Symposium on Wildlife Habitat Restoration and Management
- Proceedings of a Symposium on Wildlife Habitat Restoration
- Proceedings of the Wildland Interface II Symposium
- Reviewer of Partners-in-Flight conservation plan for Southern California shrubland habitats
- Natural Communities Conservation Planning (NCCP) Core Group Reviewer of the Research Agenda
- Reviewer for selected sections and species accounts of *San Diego Bird Atlas*
- Reviewer of draft CDFG report on Bird Species of Special Concern

Professional Societies

Ecological Society of America
The Wildlife Society
Pacific Seabird Group, Southern California Representative
Society for Conservation Biology
Sigma Xi, The Research Society
American Ornithologist Union
Associate of Field Ornithologists
Cooper Ornithological Society
Wilson Ornithological Society
The Waterbird Group
California Native Plant Society

Publications

At the Crossroads 1980: A report on California's endangered and rare fish and wildlife. California Department of Fish and Game report to the California Legislature. 1982. Dr. Mock contributed sections pertaining to endangered birds and mammals.

Christmas bird counts as indices of population status of brown pelicans and three gull species in Florida. American Birds 41: 1334-1339, 1987. R.W. Schreiber co-author.

Eastern brown pelicans: what does sixty years of banding tell us? Journal of Field Ornithology 59: 171-182, 1988. R.W. Schreiber co-author.

Energetics of growth and maturation in sympatric passerines that fledge at different ages. The Auk 108: 34-41, 1991. M. Khubesrian and D.M. Larcheveque co-authors.

Daily allocation of time and energy by adult western bluebirds feeding nestlings. Condor 93: 598-611, 1991.

Energetic constraints to the distribution and abundance of the California gnatcatcher. Western Birds 29:413-420.

California gnatcatcher territorial behavior. Western Birds 29:242-257. K. Preston, M. Grishaver, E. Bailey, and D. King co-authors.

California gnatcatcher vocalization behavior. Western Birds 29:258-268. K. Preston and M. Grishaver co-authors.

Dispersal capabilities of the coastal California gnatcatcher: a landscape analysis of distribution data. Western Birds 29:351-360. E. Bailey co-author.

Is the California gnatcatcher a good umbrella species for habitat reserve design? Western Birds 29:453-467. S. Fleury and J. O'Leary co-authors.

Breeding behavior of the California gnatcatcher in the vicinity of Rancho San Diego, California. Western Birds 299-322. M. Grishaver and K. Preston, co-authors.

California Gnatcatcher – Dr. Mock contributed the species account in Partners-in-Flight conservation plan for Southern California shrubland habitats.

California Gnatcatcher – Dr. Mock contributed the species account in the *San Diego Bird Atlas*, authored by Phil Unitt in 2004.

Belen Perez

Biologist

AREAS OF EXPERTISE

- Conservation and Protection Laws (NEPA, CEQA, FESA, CESA)
- Familiar with survey protocols and methods
- Biological methods used for the inventory and monitoring of wildlife

EDUCATION

- Bachelors of Science, Biology with concentration in Environmental Studies, California State University, Bakersfield, 2005
- Biology, San Diego State University
- General Education courses, Bakersfield College.
- California Department of Fish and Game Level II Blunt-Nosed Leopard lizard Researcher.

REGISTRATIONS / CERTIFICATIONS

- Department of Fish and Game, Scientific Collecting Permit, #SC-0U9209

CONTINUING EDUCATION

- PASSPORT Training, Shafter, CA, December 2006

Ms. Perez' professional experience has involved a variety of surveying. Experience includes: surveying for Blunt-nosed leopard lizard, San Joaquin Antelope Squirrel, different species of kangaroo rats and a variety of birds. She is familiar with methods used for inventory and monitoring of wildlife. Also familiar with federal and state conservation and protection laws of wildlife.

PROFESSIONAL EMPLOYMENT

2006 – Present	Quad Knopf, Biologist
2006 – 2006	California Department of Fish and Game, Seasonal Scientific Aid
2006 – 2006	Kern National Wildlife Refuge, Volunteer Biologist
2003 – 2003	Kenneth S. Norris Rancho Marino Reserve, Cambria, California Volunteer Field Assistant
2002 – 2004	California State University, Bakersfield, Student Assistant

PROJECT EXPERIENCE

Quad Knopf, Inc. – Bakersfield, California. *Wildlife Biologist*. Duties here include performing protocol level surveys for a variety of species including the blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope squirrel and other special-status species. Also have done reconnaissance level surveys to determine potential habitat.

Occidental of Elk Hills, Inc. – Tupman, California. *Wildlife Biologist*. Duties include the pre-activity surveys for proposed new well pad locations, protocol level surveys for blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope squirrel and other special-status species. Monitor for pipeline projects and oil spill cleanups on critical habitat.

Yokohl Ranch- Exeter, Califorina – *Biologist.* Assisted with the spring botanical surveys for special-status native plants, and Sycamore Alluvial Woodland. Also assisted with surveys for vernal pools, fairy shrimp, elderberry shrubs, and fish. Conducted small mammal trapping and spotlighting.

California Department of Fish and Game, Hunter check station— Delano, California. *Seasonal Scientific Aid.* This project involved the identification of waterfowl that were taken by hunters and the sell of necessary permits.

Migratory Bird Survey — Kern National Wildlife Refuge, California. *Volunteer Wildlife Biologist.* Duties involved wildlife surveys for a variety of raptors and waterfowl that were migrating onto the refuge. Responsibilities included surveying different sections of the refuge and identifying birds.

Monterey Pine Forest Monitoring — Cambria, California. *Volunteer Field Assistant.* This project involved monitoring of the Monterey Pine for signs of "pine pitch canker" (*Fusarium subglytinaus* f.sp. *pini*). Responsibilities included walking four belt transects in different habitats within the forest, measure all trees within a 10-meter belt, census all large trees, tag and map trees. State any sign of disease or mortality.

Blunt-Nosed Leopard Lizard Survey, Cattle Grazing Study — Lokern, California. *Field Assistant.* This project involved the walking of plots with grids to survey for lizard population. Also found the location of lizards with radio-telemetry and recorded location with a Global Positioning System (GPS). Trained new assistants and kept work schedule.

Cattle Grazing Study — Lokern, California. *Field Assistant.* This project involved the setting of live traps for the San Joaquin Antelope Squirrel and different kangaroo rats. Responsibilities included baiting of live traps, daily data recording and the identification of recaptured animals. Surveyed pit fall traps for other vertebrates and invertebrates. Also conducted vegetation sampling on the plots.

CalTrans State Route 65 — Bakersfield, California. *Field Assistant.* This project involved spotlighting for the San Joaquin Kit Fox. Responsibilities included spotlighting and locating dens and other signs of fox activity.

Carnivore interaction at artificial feeding sites — California State University Bakersfield, California. *Student Assistant.* This project involved observational studies among San Joaquin Kit Fox and interactions with other carnivores at supplemental feeding sites.

Matthew S. Perry

Associate Environmental Scientist

AREAS OF EXPERTISE

- Threatened and Endangered Species
- Habitat Management
- Compliance Monitoring
- Compliance Reporting
- Biological methods used for the inventory and monitoring of wildlife

EDUCATION

- B.S., Biology with concentration in Ecology, California State University, Bakersfield, 2006.
- A.A., General Education with concentration in Biology, Taft College, 2003.

PROFESSIONAL ORGANIZATIONS

- The Nature Conservancy- Member
- World Wildlife Fund- Member

CONTINUING EDUCATION

- PASSPORT Training, Shafter, CA, June 2007.

As a Field Biologist for Quad Knopf, Inc., Mr. Perry is responsible for biological field surveys, data collection, and species identification with emphasis on rare and endangered species, survey methodology, legal regulations regarding wildlife species; to support written documentation (e.g. environmental studies, biological assessments, environmental impact reports, threatened and endangered species habitat impact analysis, etc.) pursuant to CEQA and both the state and federal endangered species act. Mr. Perry has practical experience in accepted field methodologies for threatened and endangered plant and animal species including the San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gamelia sila*) as well as several other sensitive plant and animal species. He has been conducting biological field surveys, data collection, plant and animal species identification with an emphasis on rare and endangered species, survey methodology, legal regulation pursuant to CEQA and both the state and federal endangered species acts. His experience with threatened and endangered species ranges throughout Kern County, California.

PROFESSIONAL EMPLOYMENT

2007 – Present	Quad Knopf, Inc., Biologist
2006 – 2007	Bakersfield City School Dist., Sub. Science Teacher.
2005 – 2006	CSU, Bakersfield, Student Assistant

PROJECT EXPERIENCE

Occidental of Elk Hills, Inc. Elk Hills, California**.** Mr. Perry participated in various projects conducted by Occidental of Elk Hills, Inc. (OEHI). Work efforts have included, monitoring the wildlife populations of Tipton kangaroo rats, giant kangaroo rats, San Joaquin kit fox, San Joaquin antelope squirrels and blunt-nosed leopard lizards. Conducting compliance monitoring and reporting, and spotlighting.

Aera Energy, Biological Surveys/Monitoring, Lost Hills, California. Mr. Perry assisted in providing biological preactivity surveys for threatened and endangered species prior to oil exploration, and well development, and biological monitoring services during well development.

Yokohl Ranch Project, Yokohl Valley, California. Mr. Perry has identified and mapped using GPS the location of Elderberry shrubs, preformed fisheries surveys using the electro shocking method for the presence of the California Roach (*Hesperoleucus symmetricus*), and the Kern brook lamprey (*Lampetra hubbsi*) , and analyzed bat calls (using Sonobat software) of various species all was done in Yokohl Valley for the Yokohl Ranch project.

California State University, Bakersfield. While attending classes at California State University, Bakersfield, Mr. Perry conducted floristic surveys and collections in various regional areas of Kern County, California with an emphasis on the Kern River Canyon. Other studies included researching the allelopathic effects of *Eucalyptus camaldulensis* on monocot and dicot plants. Mr. Perry also volunteered time at the Facility for Animal Care and Treatment (F.A.C.T) caring for and assisting in the rehabilitation of various species of birds of prey. Mr. Perry also had a job working at the Student Help Desk where he assisted faculty and students researching and locating journal publications. Offered guidance to students when applicable and conducted extensive student relations by engaging in student's questions and concerns.

Area of Expertise

Wildlife Biology, Biological Monitoring, Biological Resource Assessment, Desert Tortoise Surveys, Burrowing Owl Surveys, and Flora and Fauna Identification

Years of Experience URS

2.0

Education

B.S./ 2006/ Marine Biology/ California State University, Long Beach
B.S./ 2006/ Zoology/ California State University, Long Beach
Minor/ 2006/ Chemistry/ California State University, Long Beach

Overview

Mr. Pugh has had years of experience working both in the field and in the laboratory. His professional accomplishments include work in the biological assessment and identification of flora and fauna, vegetation mapping, biological monitoring, and a working knowledge of the preparation of biological documents in compliance with CEQA, California Coastal Act, California Department of Fish and Game Code, ACOE and other relevant legislation.

Certifications, Classes, Seminars, Workshops, and Special Training

- California Anostraca and Notostraca (Fairy Shrimp) Identification Class. January 30 – February 1, 2007. Certified February 9th, 2007 by USFWS.
- Desert Tortoise Council: Surveying, Monitoring, and Handling Techniques Workshop. November 4 & 5, 2006.
- Introduction to Birding Workshop: Instructor, Sylvia Gallagher (Audubon Society). September 2006 – December 2006.
- *Caulerpa taxifolia* Identification Certification under the Caulerpa Control Protocol. Certified February 12th, 2007 by U.S. Department of Commerce, National Marine Fisheries Service.

URS Project Experience

- **Staff Biologist, Beverly Boulevard Bridge Reconstruction Project Biological Monitoring, Los Angeles County, CA.** During the two-year reconstruction process of Beverly Boulevard Bridge, duties included monitoring of construction activities to ensure compliance with a California Department of Fish and Game Code 1602 Streambed Alteration Agreement, monitoring of nesting swallows relative to construction activities, removing all swallow nests prior to nest completion, conducting general surveys for bats within the old bridge structure, and consultation with the superintendent regarding pending construction activities. February 2006 - Present
- **Staff Biologist, First Industrial Realty: Multiple Site (15) Habitat Assessments, Burrowing Owl Surveys, and MSHCP Compliance/ Consistency Document Preparation, Riverside County, CA.** Conducted preliminary habitat assessments which included vegetation community mapping, inventory of existing biological resources, and assessment of the potential for sensitive resources and jurisdictional aquatic resources to occur. Subsequent burrowing owl focused surveys were required for most of these sites per the Western Riverside County MSHCP. MSHCP consistency documents were also prepared. August 2007 – Present.
- **Staff Biologist, AUSRA Blunt-nosed Leopard Lizard Presence/Absence Surveys, San Luis Obispo County, CA.** Field biologist for conducting focused surveys for blunt-nosed leopard lizard over roughly two (2) square miles of fallow agricultural land in the Chorizo Plains.
- **Staff Biologist, Solar I Desert Tortoise Presence/Absence Surveys, San**

Bernardino County, CA. Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations. Spring and Summer 2007.

- **Staff Biologist, Solar II Flat-Tailed Horned Focused Surveys, Imperial County, CA.** Field Biologist for a 7000 acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations. Spring and Summer 2007.
- **Staff Biologist, Mission College California Gnatcatcher (CAGN) Focused Surveys, Los Angeles County, California.** Assisted permitted biologist Rick Bailey (permit TE-101151-0) with USFWS protocol surveys for CAGN. Duties included assistance with incidental bird, reptile, mammal, and amphibian identification, as well as assistance with detecting CAGN within a 1.8-acre patch of coastal sage scrub. February 2007 – March 2007.
- **Staff Biologist, Potential Vernal Pool Assessments for Various Road Widening Projects, Riverside County, California.** Performed site assessments in which pools of standing water were evaluated as to whether or not they could support vernal pool species (i.e., fairy shrimp). Surveys were conducted at three different locations during and immediately after a recent rain storm. February 2007.
- **Staff Biologist, Santa Ana River Mitigation Bank Restoration & Remediation Action Plan, Orange County, California.** Assisted in the production of the Remediation and Restoration Plan for the Santa Ana River Mitigation Bank. Duties included site visits and assessments, consultation with our Botanist and Project Manager for remediation plans, and document production. February 2007.
- **Staff Biologist, Clinton Keith Road Widening BTR, Riverside County, California.** Performed a biological assessment of the entire road widening project footprint and prepared a biological technical report (BTR) and evaluation of potential impacts to sensitive wildlife resources. December 2006.
- **Staff Biologist, South Merced Specific Plan BTR and EIR, Merced County, California.** Assisted in the production of both the BTR and Biological Resources Section of the EIR for the South Merced Specific Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, presentation of mitigation and avoidance measures for sensitive resources with a moderate to high potential to occur within the study area, and coordination with our GIS department to produce figures depicting project baseline conditions. December 2006.
- **Staff Biologist, San Bernardino County General Plan, San Bernardino County, California.** Assisted in the production of both the Biological Resources Section of the San Bernardino General Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, coordination with our GIS department to produce figures depicting County baseline conditions, and preparation of a specific and detailed report on existing wildlife corridors and potential impacts to those essential linkages. November 2006 – December 2006.
- **Staff Biologist, LBVI and CAGN Monitoring, Prima Deshecha Landfill, Sukut Construction, Orange County, California.** Monitoring of wildlife during construction within Zone 1 Phase C2 of the Prima Deshecha Landfill.

Species of concern included Least Bell's Vireo (*Vireo bellii pusillus*) and California Gnatcatcher (*Polioptila californica californica*). Duties also included monitoring of construction activities to insure their compliance with CDFG regulations. July 2006 – October 2006.

- **Staff Biologist, Dana Point Headlands Biological Monitoring, Orange County, California**. Monitoring of flora and fauna at Dana Point Headlands during construction. Duties included monitoring of construction activities to insure their compliance with CDFG regulations. This included instructing and educating workers on how to avoid native vegetation (coastal sage scrub) and sensitive wildlife species (coastal California gnatcatcher). September 2006 – October 2006.
- **Staff Biologist, Chevron Mahala Oil Field Abandonment Project, San Bernardino County, California.** Conducted pre- and post-construction surveys for an oil well abandonment project in Chino Hills, California. An assessment of biological baseline conditions and potential impacts to existing sensitive biological resources was made before consultation with the client on how to avoid sensitive biological and jurisdictional resources within the project footprint. August 2006 – November 2006.
- **Staff Biologist, BNSF Railway Construction, San Bernardino County, California.** Assisted in the Biological Assessment (BA) through literature searches and detailed species accounts. July 2006 –September 2007.
- **Staff Biologist, San Joaquin Veterans Cemetery Rodent Control**. Performed numerous in depth literature searches (i.e. scientific studies, published reports, EIR, EA, BA) for acceptable rodent control for the San Joaquin kit fox. A report was written which included possible alternatives to pesticides as well as risk assessments, biological effects, and residual uptake for varying pesticides. February 2006.

WESTLEY M. RHODEHAMEL, M.A.
Regional Director
Senior Wildlife Biologist

EDUCATION

- Master of Arts – Biology, California State University, Fresno 1998
- Bachelor of Arts - Biology, Zoology Option California State University, Fresno 1986

AREA OF EXPERTISE

Wildlife biology, survey techniques, wildlife/habitat relationships, and conservation biology, threatened and endangered species, and environmental regulations (CEQA, NEPA, FESA, CESA)

PROFESSIONAL EMPLOYMENT

- Live Oak Associates, Bakersfield Office, CA., Wildlife Biologist 2007.
- Quad Consultants/Quad Knopf Consultants, CA., Vice President/Southern Regional Manager/Wildlife Biologist 1990 to 2007.
- Siemer & Associates, Inc. CA., Biologist 1989 – 1990.
- Instructor of Biology, Fresno Community College, CA 1988 - 1989
- Research Director under a grant from the California Department of Recreation, 1986 - 1989
- Seasonal Aid, California Department of Fish and Game 1986 - 1987
- Biologist Jones and Stokes Associates 1986 and 1987
- Biologist Research Limited 1985 and 1986
- Biologist Woodward-Clyde Consultants 1985

PROFESSIONAL TRAINING

- Chief Survey Technique for Mojave Ground Squirrel
- Habitat Conservation Planning Workshop (Instructor) The Wildlife Society 1995.
- Presented training on Survey Techniques for Blunt Nosed Leopard Lizards (Instructor) The San Joaquin Valley Chapter of the Wildlife Society 2003 and 2007.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- Western Section of the Wildlife Society
- San Joaquin Valley Chapter of the Wildlife Society (Past President)
- Public Member At Large Metropolitan Bakersfield HCP Trust Group (3 consecutive terms)

QUALIFICATIONS

Mr. Rhodehamel is responsible for project management and coordination, including project supervision, impact analysis, research and mitigation design, and technical report preparation for a variety of local and regional projects. He has served as principal investigator on projects under the auspices of the NEPA, CEQA, FESA, and CEAS. In addition, Mr. Rhodehamel has extensive experienced in the preparation of California Endangered Species Memorandum of Understanding and Management Authorizations under Section 2081 and preparation of documentation for formal Section 7, 10(a), consultation. A selection of these projects is provided below:

- Mr. Rhodehamel was the principal biologist for the development of the ARCO Western Energy HCP that resulted in the establishment of the Coles Levee Ecosystem Preserve. Since the ecosystem was established he as served as the biologist responsible for the monitoring and management of endangered species on the preserve and tracking sales of conservation credits with in the preserves conservation bank.

- Mr. Rhodehamel assisted in the preparation the Management Plan for the Elk Hills Conservation Area and served as the principal biologist responsible for monitoring threatened and endangered species within the Elk Hills Oil Field and Occidental of Elk Hills Conservation Area.
- He assists in the Management of the Kern Water Bank Conservation Area, and supports the Kern Water Bank Staff with their compliance with the conditions of the Kern Water Bank Habitat Conservation Plan.
- Prepared the Biological Opinion for the Section 7 consultations for Plains All American Pipeline Company Operation and Maintenance Programs in the San Joaquin Valley.
- Mr. Rhodehamel served as principal biologist and coordinated the development of the Biological Opinion and Mitigation Monitoring Plan for the construction of the Elk Hills Power Plant, Kern County California.
- Mr. Rhodehamel is Principal Biologist responsible for the development of Semitropic Water Storage Districts Biological Opinion (currently under review by USFWS) and the development of a 3,200 acre Conservation Area as part of a the Districts Advanced Stored Water Recovery system
- Mr. Rhodehamel was the Principal Biologist of a 6 year study of the wintering ecology of bald eagles at Millerton Lake State Recreation Area. The study focused on the habitat requirement of wintering bald eagles including food habit, roost characteristics, and human interactions.

SELECTED REPORTS & PUBLICATIONS

Chesemore, D. L., W. M. Rhodehamel, and W. E. Laurendine. 1984. Small hydroelectric survey results, Oakhurst and Bass Lake Areas, California, 27 February - 5 March 1984. Final report submitted to Oak Ridge National Laboratory, Oak Ridge Tennessee. 15pp.

Chesemore, D. L., J. M. Payton, and W. M. Rhodehamel. 1987. Review of past ecological research on the Alkali Sink Ecological Reserve, Fresno County, California. 1: Soils and Vegetation. Department of Biology, California State University, Fresno, March 1987. 28pp.

Chesemore, D. L., J. M. Payton and W. M. Rhodehamel. 1987. Review of past ecological research on the Alkali Sink Ecological Reserve, Fresno County, California. 2: Vertebrates. Department of Biology, California State University, Fresno, March 1987. 50pp.

Chesemore D. L. and W. M. Rhodehamel. 1992. Ecology of a vanishing subspecies: The Fresno Kangaroo rat (*Dipodomys nitratoides exilis*). 17pp. In Williams, D.F., S Bryne, and T.A. Rado, eds. Endangered and sensitive species of the San Joaquin Valley, California: their biology, management and conservation. The California Energy Commission, Sacramento, 388pp.

Germano, D. J., and W. M. Rhodehamel. 1995. Characteristics of kangaroo rat burrows in fallow fields of the southern San Joaquin Valley. Transactions of the Western Section of The Wildlife Society. 31:40-44.

Rhodehamel W. M., A. E. Staebler, and D. L. Chesemore. 1987. A selected partial bibliography on the literature of the bald eagle (*Haliaeetus leucocephalus*). Submitted in partial completion of research grant Bald Eagle II, California Department of Parks and Recreation, Millerton Lake State Recreation Area, June 1987. 107pp.

Rhodehamel W. M., D. L. Chesemore and H. L. Latimer. 1992. Habitat selection and effects of boating activities on wintering bald eagles, Millerton Lake State Recreation Area, California. In Williams, D.F., S Bryne, and T.A. Rado, eds. Endangered and sensitive species of the San Joaquin Valley, California: their biology, management and conservation. The California Energy Commission, Sacramento. 388pp.

Rhodehamel W. M. 1991. A management-oriented study of habitat selection and effects of boating activities on wintering Bald Eagles, Millerton Lake State Recreational Area, California. M.A. Thesis. California State University, Fresno. 69pp.

Rhodehamel W. M., W. Dixon and J. Ashley. 2005 Elk Hills Conservation Area Annual Monitoring Summary Presented at the semi-annual San Joaquin Natural Communities Conference, California State University, Bakersfield.

URS

Laura Rizzo

Environmental Scientist

Overview

Ms. Rizzo graduated cum laude from Purchase College, State University of New York with a B.A. in Environmental Science and a Minor in Visual Arts. She completed an undergraduate thesis on a native lily of New York, listed as a threatened species, *Chamelirium lutuem*, and it's responses of to canopy removal. Ms. Rizzo has experience with biological monitoring, water quality testing, Geographic Information Systems and natural history education. Her position at URS involves vegetation surveys and mapping, wildlife surveys and database management.

Areas of Expertise

General Wildlife Surveys
Database Management
Avian surveys
Vegetation Surveys
GPS and GIS mapping
CEQA Planning/Permitting

Years of Experience

With URS: <1 Year
With Other Firms: <1 Year

Education

BA/Environmental Science/2005/Purchase College SUNY

URS Experience

Staff Biologist for Wetland Delineation, Newhall Ranch, CA. Performed protocol USACE Wetland Delineation survey to assess habitat and delineate jurisdictional wetlands. Tasks included completing datasheet forms, reviewing graphics and writing report sections.

Staff Scientist for Moreland Drainage Ditch Channel Maintenance, Ventura, CA. Collected data through research and fieldwork to be used in acquiring permits. Permits included CDFG Section 1600, Corps of Engineers Section 404 and RWQCB Section 401.

Field Biologist for Santa Barbara Airport Air Strike Surveys, Santa Barbara, CA. Performed weekly and biweekly surveys to assess bird usage of tidal and non-tidal basins in correlation with flight patterns over the airfield.

Field Biologist for Blunt-nosed Leopard Lizard Survey, Carrizo Plains, CA. Performed protocol survey to assess habitat quality for the Federally and State Endangered Blunt-Nosed Leopard Lizard.

Field Biologist for Santa Barbara Airport Breeding Bird Surveys, Santa Barbara, CA. Searched for nests and evidence of breeding birds in grassland and coastal sage scrub habitat prior to construction and vegetation clearing. Staked required 300 foot buffer zones around each active nest.

Field Biologist for Solar One Project, Mojave Desert, CA. Surveyed for the Federally and State Threatened desert tortoise within the 6,900-acre study area. Followed the US Fish and Wildlife tortoise survey protocol, primarily working in pairs or groups of three documenting sightings or any evidence of their presence.

Database Assistant for the Ventura County Watershed Protection District, Ventura, CA. Organized data and constructed a catalog of facilities, including best management practice codes, physical features (including photos and maps) and possible sensitive species for each

maintained facility. Catalog of facilities will be used by maintenance crew as a reference manual for all facilities that require any type of annual maintenance and debris removal.

Field Assistant for Santa Barbara Airport Restoration Project, Santa Barbara, CA. Recorded vegetation on transects as part of an ongoing monitoring project of seven restored areas within the airport, including various ecosystems. Documented restoration progress and assisted in pre-construction bird nest monitoring and annual report writing.

Relevant Experience

Biological Monitor for Garcia and Associates; Lompoc, CA. Monitored the threatened Gaviota tar plant during water pipeline installation. Recorded daily events and reported any disturbances to supervisors.

Water Quality Intern for Teatown Lake Nature Preserve, Ossining, New York. Ran water assessment testing for Chemical, Physical and Biological analysis**.** Taught day programs at the nature center (i.e. Maple Sugaring and Egg to Chick) and outreach programs**.** Planned annual student water quality conference for local schools within the watershed. Created informative posters and T-shirts for upcoming events. Researched and successfully found eco-friendly and local businesses to sponsor events.

Teacher's Assistant for Water Quality Science Class; Mahopac High School, Mahopac, New York. Assisted in planning of a local wetland restoration project, including landscape design, data collection, running biological assessments using Leaf Packs and general student education. Helped implement Trout in the Classroom (TIC) Program and followed through to completion where trout were released. Organized outreach program with schools within the watershed.

Advertising Intern for E/The Environmental Magazine; Norwalk, Connecticut . Completed online research for various eco-friendly products and services. Prepared media kits, contacted clients and customers and updated web site.

Professional Societies/Affiliates

- AEP (Association of Environmental Professionals)
- NYSDEC: Project Learning Tree, Project WILD, Project Aquatic WILD, Project WET

Awards

May 2005: Graduated Cum Laude from SUNY Purchase College, NY
June 2000 Regents Diploma and National Honor Society
New Rochelle High School -New Rochelle, NY

Languages
Italian - Fluent
Spanish - Conversational

Specialized Training
American Red Cross CPR/AED (January 19, 2007)
American Red Cross First Aid (June 5, 2007)
1 year GIS Education: SUNY Purchase College, NY
2000-2005/Course work in Environmental Science, Ecology, Geology, Biology, and Mathematics

Chronology
2007 to present: URS Corporation
2005: Garcia and Associates

Contact Information
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Laura_rizzo@urscorp.com

[Santa Barbara, CA/4-07/Rev.#1]

Areas of Expertise	Biological Resources Identification of Southern California habitats, flora, and fauna Habitat mapping Protocol surveys for arroyo toad, least Bell's vireo, and burrowing owl
Total Years of Experience URS Other Firms	7 1 6
Education	BS/2003/Biology/San Diego State University
Continuing Education	2006/California Notostracan and Anostracan Identification Course and Exam 2006/Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop 2007/Flat-tailed Horned Lizard Survey Techniques Workshop 2007/Blunt-nosed Leopard Lizard Survey Techniques Workshop
Overview	Cheryl Rustin has over seven years of relevant experience in the field of environmental consulting. She has extensive field experience in habitat mapping, general and focused wildlife and plant surveying, biological technical report production, and mitigation monitoring plan creation and implementation. Cheryl is currently a staff biologist in the San Diego office.
Project Experience	**Ausra Project, Paso Robles, California** Conducted a site assessment for San Joaquin kit fox, burrowing owl, and assisted with protocol surveys for the blunt-nosed leopard lizard. ***(2007)*** **Solar II Project, El Centro, California** Coordinated survey teams and participated in general vegetation mapping, rare plant surveys, and wetland delineation for an approximately 8,000 acre site in the Imperial Valley. Conducted a site assessment and focused protocol surveys for flat-tailed horned lizard and burrowing owl. ***(2007)*** **Solar I Project and Transmission Line** Conducted protocol level surveys for the desert tortoise. ***(2007)*** **Bethel Power Plant Project** Conducted habitat assessments for burrowing owls. ***(2007)*** **Dana Point Headlands Project** Assisted with protocol California gnatcatcher surveys under the supervision of a permitted biologist. ***(2007)*** **Niland Power Plant Project** Conducted site assessment for burrowing owls. Participated in the scoping and collapsing of burrows. Composed script for construction team training video. ***(2007)*** **Caltrans I-805 Expansion Project, San Diego, CA** Assisted with focused species surveys including least Bell's vireo, southwestern willow flycatcher, and coastal California gnatcatcher. Compiled field notes and prepared data tables and text for use in the Natural Environment Study. ***(2006-2007)***

FEMA Projects: Victorville, Monrovia, Newport Beach California
Conducted environmental assessments of repair projects requesting funding through the FEMA program. ***(2006)***

Kinder Morgan CALNEV Project, Colton, CA to Las Vegas, NV
Assisted with the preparation of a Feasibility Study for several proposed routes in California, Arizona, and Nevada. ***(2006)***

Clean Harbors Landfill Expansion, Westmorland, CA
Conducted habitat assessments for flat-tailed horned lizard and western burrowing owl and prepared associated report for client. ***(2006)***

Travel Plaza, Otay Mesa, CA
Conducted protocol level surveys for the burrowing owl. ***(2006)***

Champagne Lakes, Valley Center, CA
Performed protocol level surveys for the arroyo toad. ***(2006)***

Montecito Ranch, Ramona, CA
Performed extensive general and focused plant and wildlife surveys and habitat mapping. Assisted with wetland delineation and vernal pool identification. ***(2000-2006)***

Maderas Golf Course, Poway, CA
Hydrology study performed to determine the effect of water drawdown from the golf course on adjacent Sycamore and Thompson Creeks. Vegetation transects conducted biannually and revegetation of *Ericameria palmeri* implemented and monitored. ***(2001-2006)***

Sycamore Springs, Oceanside, CA
Implemented and monitored wetland buffer revegetation including the collection and analysis of vegetation transects for annual reports. ***(2002-2005)***

Rancho San Diego Towne Center, San Diego, CA
Mitigation revegetation project in eastern San Diego in which annual vegetation transect data was collected, analyzed, and implemented into reports. In addition, regular monitoring visits were conducted and problems reported to the client and landscape maintenance crew. ***(2000-2005)***

Passerelle, Pala, CA
Performed extensive general and focused plant and wildlife surveys and habitat mapping. Focused surveys performed included least Bell's vireo and arroyo toad. ***(2003-2005)***

MTDB, Mission Valley, San Diego, CA
Mitigation revegetation project along the San Diego River in which annual vegetation transect data was collected, analyzed, and implemented into reports. In addition, regular monitoring visits were conducted and problems reported to the client landscape maintenance crew. ***(2000-2004)***

Star Ranch, Jamul, CA
Performed extensive general plant and wildlife surveys and habitat mapping. ***(2004)***

Pappas, Pala, CA
Performed protocol level surveys for the least Bell's vireo and arroyo toad. ***(2004)***

Barrett Junction, CA
Performed protocol level surveys for the least Bell's vireo and arroyo toad. ***(2004)***

Professional Associations

Golden Key International Honour Society
Horned Lizard Conservation Society
Anza Borrego Desert Foundation
Desert Tortoise Council

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

MarieClaire Ryan

Education

09/2003-Present: Cal State University Bakersfield—Currently seeking degree in Mathematics, and Teaching Credential.

08/1999-06/2003: Centennial High School, Bakersfield, CA—Diploma.

Work Experience

06/2007-Present: Live Oak & Associates, Inc.—Biological Technician; Responsibilities include surveys for various threatened and endangered species consisting of spotlighting for San Joaquin kit fox, small mammal trapping for sensitive rodent species, blunt-nosed leopard lizard transect surveys, and reconnaissance surveys. Wes Rhodehamel (Supervisor) 661-912-2001.

05/2005-08/2005: Blunt-nosed Leopard Lizard Surveys & Small Mammal Trapping; Student assistant for research project observing the effects of cattle grazing upon endangered species in Lokern, CA. Duties included lizard transect surveys, live trap census for sensitive rodent species, as well as invertebrate monitoring through the use of pit falls. Dr. David Germano, 661-654-2471.

Volunteer Experience

05/2005-Present: Occasional volunteer assistance given to Endangered Species Recovery Program on various projects including: Blunt-nosed Leopard lizard surveys and monitoring, canid scat analysis, kit fox spotlighting, various data collection, and necropsy of specimens. Brian Cypher, 661-835-7810.

01/2000-12/2002: Puppy-Sitter for Guide Dogs for the Blind; Duties consisted of training and care of novice Guide Dogs.

Miscellaneous Skills

- Level II Surveyor for Blunt-nosed leopard lizards (*Gambelia sila*) and other lizards.
- Identification of San Joaquin kit fox (*Vulpes macrotis mutica*) sign including scats, dens, and tracks and experience spotlighting for this species.
- Experience performing surveys for San Joaquin antelope squirrel (*Ammospermophilus nelsonii*), Burrowing owl (*Athene cunicularia*), small mammal trapping, and some plant species.

Stephanie M. Seay
11127 Cebada Lane • Atascadero, CA 93422 *(805) 462-9246*

EDUCATION

Bachelor of Science Degree: March 1995
Major: Ecology & Systematic Biology
California Polytechnic State University; San Luis Obispo, CA
Concentration: Fisheries and Wildlife Biology

ADDITIONAL TRAINING

- 8 Hour Hazwoper Refresher, URS Corporation, 2007
- CEQA Seminar, Association of Environmental Professionals, 2007
- Beginning Word Processing, Cuesta Community College-North County Campus, Fall 2003
- Acoustic identification of bats using Sonobat, in hand identification and mistnetting, San Francisco State University, Sierra Nevada Field Campus, 2003
- Advanced Supervisor Training, California Oiled Wildlife Care Network, California Department of Fish & Game, Office of Oil Spill Prevention and Response, 2001
- Clinical Pathology: Laboratory Procedures and Diagnostics, International Wildlife Rehabilitation Council, 2001
- Basic Wildlife Rehabilitation 1AB, International Wildlife Rehabilitation Council, 1996
- Supervisor Training, California Oiled Wildlife Care Network, California Department of Fish & Game, Office of Oil Spill Prevention and Response, 1995

PROFESSIONAL EXPERIENCE

URS Corporation (employee) 6/06 to present
Subcontractor to Jordan Environmental Services/Unocal Corp. 9/00 to 6/06
Wildlife Monitor
Perform wildlife surveys and monitoring for the Guadalupe Restoration Project located within the Guadalupe-Nipomo Dunes complex. Field experience includes wildlife clearance surveys, construction monitoring, wildlife habitat restoration monitoring, photo documentation, and sensitive species surveys. Sensitive species experience includes California red-legged frog (*Rana draytonii*), western spadefoot (*Spea hammondii*), two-striped garter snake (*Thamnophis hammondii*), silvery legless lizard (*Anniella pulchra pulchra*), and the Southwestern pond turtle (*Clemmys marmorata pallida*). Wildlife surveying experience includes small mammal trapping, track stations, burrow surveys, point count surveys for birds, wildlife habitat assessment, wildlife sign surveys (i.e. scat, pellets, feathers, tracks, etc.), eyeshine surveys, egg mass surveys, and pit-tagging frogs. Responsible for conducting quarterly surveys for raptor use of the electrical distribution system and for the write-up of the quarterly raptor monitoring report to the U.S. Fish and Wildlife Service. Assist in the maintenance of wildlife monitoring databases, contribute to quarterly restoration monitoring reports, and assist with various biological reports addressing regulatory agency permit requirements. Escort personnel into sensitive habitat, which requires knowledge of sensitive vegetative species. Assisted with La Graciosa thistle planting, a sensitive species, at wetland sites. Assisted with vegetative and wildlife studies to determine the influence of steam and its ability to assist in the break down of hydrocarbons. Assisted with vegetation transects which are used in monitoring the presence of non-native plant species and in the development of success criteria for coastal dune scrub restoration sites.

Althouse and Meade, Inc. Biological and Environmental Services 7/01 to 11/02
Environmental Technician II
Performed wildlife surveys and monitoring for various development projects. Field experience included reconnaissance surveys for biological resources, sampling for insects, and botanical surveys. Wildlife survey experience includes acoustic identification of bats to determine presence and/or absence. Project experience included monitoring construction activities for a 750-acre equestrian estate/residential development.

International Wildlife Rehabilitation Council 3/98 to 2/02
Instructor
Responsible for instructing approximately 40 students per class on the basic skills for rehabilitation of wildlife. The course is approved for continuing education of wildlife rehabilitators by the California Department of Fish & Game and consists of two eight-hour class days. It consists of a lab section on various rehabilitation techniques including weighing, tube feeding, injections, stabilizing fractures, wound management and basic examination skills. The lecture includes such topics as restraint of wild animals, stress, basic shock cycle and treatment, fluid therapy, zoonosis and emaciation.

Sierra Delta Corporation 6/99 to 7/01
Environmental Consultant
Performed Biological Assessments for California red-legged frog (*Rana draytonii*) and San Joaquin kit fox (*Vulpes macrotis mutica*). Responsible for all aspects of Preliminary and Phase 1 Environmental Site Assessments for commercial, agricultural, and industrial properties. Conducted soil sampling of agricultural fields for chemical toxicity levels.

Kern County Superintendent of Schools 9/97 to 6/99
Naturalist
Responsible for conducting outdoor environmental educational walks for elementary school students. Ecosystems covered included: open ocean, sandy beach, evergreen forest, riparian, and the Morro Bay Estuary. Assisted the Head Teacher and other Naturalists in leading and directing students in following the instructional program of K.E.E.P. (Kern Environmental Education Program) Cambria

VOLUNTEER EXPERIENCE

Pacific Wildlife Care (California), Wildlife Rehabilitator
Dept. of Fish & Game, Oil Spill Prevention and Response, Wildlife Rehabilitator and Emergency Response Volunteer
U.S. Geological Survey, assisted biologist with California red-legged frog eyeshine surveys, 1999

PERMITS

Scientific Collecting Permit, Department of Fish and Game, expires July, 2007

Authorized under a Biological Opinion to capture and relocate California red-legged frogs at the site during construction activities in order to protect them from potential harm.

Chariss Tweedy

Wildlife Biologist/Certified Arborist

AREAS OF EXPERTISE

- Habitat Evaluation
- CEQA/NEPA Compliance
- Tree Surveys/Arborist Reports

EDUCATION

- B.A. Environmental Studies and Planning, (Emphasis in Conservation & Restoration), Sonoma State University, 1999

REGISTRATIONS / CERTIFICATIONS

- International Society of Arboriculture Certified Arborist #WE-7684A, 2006

PROFESSIONAL ORGANIZATIONS

- Society for Ecological Restoration
- International Society of Arboriculture
- California Native Plant Society
- Society for Conservation Biology

CONTINUING EDUCATION

- CNPS & DFG Vegetation and Habitat Rapid Assessment Method Workshop, 2006
- Spawning Habitat Restoration, UC Davis Extension, 2005
- Blunt-Nosed Leopard Lizard Identification Workshop, San Joaquin Valley Chapter of the Wildlife Society, 2007

Ms. Tweedy has experience conducting site assessments and analyzing habitat value for potential presence of special status wildlife and plant species. She has written several technical biological sections for initial studies, environmental impact reports, and constraints analyses, and assisted in surveys for special status species such as giant garter snake, western pond turtle, Swainson's hawk and other nesting raptors, valley elderberry longhorn beetle, and fairy shrimp. Additionally, as a Certified Arborist, Ms. Tweedy has performed multiple tree surveys and written arborist reports for a variety of clients.

PROFESSIONAL EMPLOYMENT

2007 – Present	Wildlife Biologist/Certified Arborist, Quad Knopf
2004 – 2007	Wildlife Biologist/Certified Arborist, Jones & Stokes

PROJECT EXPERIENCE

Lower Northwest Interceptor Program—Sacramento Regional County Sanitation District, Sacramento and Yolo Counties, California. *Lead Biologist.* Provided construction oversight services related to biological resources for a 19-mile wastewater pipeline that included nine different projects. Services included coordinating with construction managers, contractors, and biological monitors to ensure compliance with federal, state, and local environmental regulations. Coordinated and performed presence surveys for giant garter snake, western pond turtle, nesting raptors, and valley elderberry longhorn beetle. Observed and documented three adult valley elderberry longhorn beetles on one shrub within the project area in May 2006. Assisted in final reporting to permitting agencies.

Bradshaw Interceptor Project—Sacramento Regional County Sanitation District, Sacramento County, California. *Lead Biologist.* Performed construction monitoring of biological resources within the Bradshaw Interceptor 6A & 6B temporary construction easement. Duties performed and information collected served to maintain compliance with federal, state, and local environmental regulations. Performed presence surveys for giant garter snake, western pond turtle, and nesting raptors.

Content Analysis Services for Roadless Area Conservation Rule—U.S. Department of Agriculture Forest Service (USDA Forest Service), Salt Lake City, Utah. *Biologist.* Assisted with the coding and analysis of public comment

letters for the largest content analysis project ever conducted by the USDA Forest Service. This landmark project consisted of analyzing and sorting over 1.6 million public letters received in response to proposed changes to a federal policy.

Circuit Rider Productions, Inc—Windsor, California. *Restoration Technician.* Implemented a wide range of ecological restoration projects, often resulting from residential construction mitigation. Ecological restoration included riparian, oak woodland, and endangered species mitigation. Implemented flood control measures such as re-creating a riparian habitat from a dredged streambed to compensate for the additional runoff created by a large residential development. Performed streambed modification using native plants in order to slow stream flow, create habitat, and increase ground water infiltration. Project monitoring and maintenance of completed restoration projects to determine mortality rates of biological mitigation measures and potentially increase future success rates.

North Coast Native Plant Nursery—Petaluma, California. *Nursery Technician.* Identified, collected, and propagated California native flora to be used for environmental restoration projects in and around the San Francisco Bay Area. Forms of propagation included seed, cuttings, and transplanting. Performed native plant seed collection, harvesting, and preparation for propagation. Identified common nursery pests and diseases and implemented environmentally safe eradication and prevention measures. Learned to recognize preferred methods of propagation of varying species of natives.

Quad Knopf

CURTIS UPTAIN
Senior Associate Wildlife Biologist

Mr. Uptain specializes in conducting biological resource inventories and studies in the southwestern United States. He has over 20 years experience working with federally- and state-listed endangered species and over 5 years of experience with restoration of arid lands. Mr. Uptain has been involved in a wide variety of projects that include housing developments, pipeline and transmission line corridors, cogeneration plants, solar and geothermal installations, mining and waste treatment facilities, and restoration and management of retired farmlands. Mr. Uptain has been responsible for documenting the results of research and surveys in numerous technical reports such as Environmental Assessments (EA's), Environmental Impact Reports (EIR's), Environmental Impact Statements (EIS's), Biological Opinions, Mitigation and Monitoring Plans, Habitat Management Plans, and Habitat Conservation Plans (HCP's).

Education
California State University, Fresno
B.A. in Biological Sciences - 1978
M.A. in Zoology - 1983

Certifications/Registrations
Certified Associate Wildlife Biologist by The Wildlife Society, 1983
Certified in Habitat Evaluation Procedures by the USFWS, 1986
Certified instructor – Human Impact Evaluation Procedures for the Mojave Ground Squirrel by the California Department of Fish and Game, 1992
NEPA certification, UC Davis, 1998
CEQA certification, UC Davis, 1999
Certified in fairy shrimp identification by the USFWS, 2001

Areas of Expertise
Endangered Species Surveys and Research
Environmental / Biological Documentation
State and Federal ESA Consultations
Restoration of Arid Lands

Professional Employment

2005 – Present	Senior Associate Wildlife Biologist, Quad Knopf
1997 – 2005	Assistant Director and Project Coordinator, California State University Stanislaus, Endangered Species Recovery Program
1983 – 1997	Sole proprietor and Lead Biologist, Consultants in Wildlife and Environmental Services Agency

Endangered Species Research Projects

Endangered Species Recovery Program. Mr Uptain assisted in conducting a long-term demographic study of blunt-nosed leopard lizards at Pixley National Wildlife Refuge and on the Elkhorn Plains, CA.

Endangered Species Recovery Program. Mr Uptain assisted in conducting a long-term demographic study of giant kangaroo rats on the Elkhorn Plains, CA.

Endangered Species Recovery Program. Mr. Uptain assisted in conducting a long-term demographic study of Tipton kangaroo rats at Pixley National Wildlife Refuge, CA.

Endangered Species Recovery Program. Mr. Uptain coordinated trapping studies to determine the distribution and abundance of Tipton kangaroo rats on Kern National Wildlife Refuge, Kern County, CA.

Endangered Species Recovery Program. Mr. Uptain conducted a 6-year population monitoring study of the Doyen's dune weevil at the only known locality for this species and searched for additional populations. Kings County, CA.

United States Fish and Wildlife Service. Mr. Uptain conducted research and studies to determine the absolute and relative density of the blunt-nosed leopard lizard on six sites at the Pixley National Wildlife Refuge located in Tulare County, CA.

California Department of Fish and Game. Mr. Uptain researched and documented the distribution and relative abundance of the Stephens' kangaroo rat throughout its range.

Wetlands Projects

United States Bureau of Reclamation and The Foothill Conservancy Vernal Pool Surveys, Mr. Uptain was Project Coordinator for Vernal Pool Surveys on the 2,730 acre Blasingame Property, south of Friant in Fresno County, California. The surveys consisted of locating , mapping, and characterizing vernal pools, sampling pools for the presence of vernal pool branchiopods, California tiger salamanders, and spadefoot toads. Fresno County, CA.

United States Bureau of Reclamation Vernal Pool Surveys - Mr. Uptain was the Project Coordinator for the vernal pool surveys of the Friant Kern Canal. Surveys consisted of locating and mapping vernal pools and sampling pools for the presence of vernal pool branchiopods, California tiger salamanders, spadefoot toads, and other sensitive species located within the Canal right-of-way. Fresno, Madera, and Tulare counties, CA.

United States Bureau of Reclamation Annual Census'- Mr. Uptain was Project Coordinator for 5 years of annual census' of California red-legged frogs and monitoring of construction activities at San Justo Reservoir near Hollister, San Benito County, CA.

Endangered Species Recovery Program and the Smithsonian Instiution. Mr. Uptain coordinated trapping studies throughout the southern San Joaquin Valley to collect tissue samples of the endangered Buena Vista Lake shrew for a genetics analysis of the species.

Endangered Species Recovery Program and Ducks Unlimited. Mr. Uptain coordinated a trapping survey for Buena Vista Lake shrews at Goose Lake to determine impacts associated with wetlands enhancement on the site. Kern and Tulare counties, CA.

Restoration and Habitat Management Projects

Endangered Species Recovery Program, Land Retirement Demonstration Project. Mr. Uptain coordinated a five-year research project on wildlife use of retired and restored farmlands and the development of restoration technologies. Wildlife was monitored on 20, 10 acre plots that were subjected to various restoration prescriptions. Wildlife monitoring included invertebrates (annual pitfall and sweep surveys), amphibians and reptiles (transect surveys, pitfall trapping, coverboard surveys), birds (quarterly point counts and transect surveys), and small mammals (quarterly trapping). He also conducted quarterly night spotlighting and track station surveys and annual raptor census'. Selenium in plants and wildlife (invertebrates, small mammals) were monitored over the five-year period. Mr. Uptain also was responsible for coordinating the installation and management of a 4-acre native plant nursery which was used to amplify local stock of native plant seed, conduct research on native plant propagation and harvest techniques. He installed and managed the operation of a 1600 sq. ft. facility that was devoted to seed cleaning, processing, and storage. He coordinated data entry, statistical analysis, preparation of annual reports and a final five-year report for multiple research studies that were conducted to develop restoration techniques that could be applied to large scale restoration projects and presented findings at numerous professional conferences. Fresno and Tulare counties, CA.

California State Farmer's Fair Riverside County. Mr. Uptain assisted in a habitat restoration study for the Stephens' kangaroo rat on mitigation land for the Farmer's Fair in Riverside County, CA.

Endangered Species Recovery Program and the Department of the Navy. Mr. Uptain assisted with a habitat management (effects of fire and grazing) and demographic study for Tipton kangaroo rats at Lemoore Naval Air Station, Tulare County, CA. He prepared the final report for the study and made recommendations for appropriate land management.

California Department of Fish and Game, Region 4. Mr. Uptain coordinated field work and reviewed and edited text for Habitat Management Plans for the Buttonwillow Ecological Reserve

(Kern County), Big Table Mountain Ecological Reserve (Fresno County), and Hog Wallow Ecological Reserve (Tulare County).

California Department of Fish and Game, Region 4. Mr. Uptain coordinated, reviewed, and edited Land Acquisition Evaluations for three sites (Buena Vista Lake, Bena Landfill, and Comanche Point) and a Conceptual Area Plan for one site (?).

Habitat Conservation Planning Projects

Tulare County Habitat Conservation Plan. Mr. Uptain assembled information on sensitive species distribution and densities, developed a field survey protocol, and reviewed the conservation strategy for sensitive small- to medium-sized mammals.

California Department of Corrections North Kern Prison Site. Mr. Uptain was responsible for performing the initial surveys for sensitive biological resources on the North Kern Prison site at Delano, Kern County. Mr. Uptain was involved in developing/implementing the habitat conservation plan, a Tipton kangaroo rat relocation program, and a habitat restoration plan. He completed a five-year monitoring effort to determine the effects of habitat manipulations on Tipton kangaroo rat, blunt-nosed leopard lizard, and San Joaquin kit fox populations. Tulare County, CA.

San Joaquin Division of the California Aqueduct, Habitat Conservation Plan. Mr. Uptain compiled and analyzed field data collected by California Department of Water Resources and California Department of Fish and Game biologists and presented this data in the Habitat Conservation Plan for the San Joaquin Division of the California Aqueduct.

Fresno County, Pleasant Valley Habitat Conservation Plan. Mr.Uptain assisted with the preparation of the Pleasant Valley Habit Conservation Plan by organizing and conducting field investigations for sensitive species, analyzing field data, and preparing the biological portions.

Kern County Blackwells Corner Habitat Conservation Plan. Sensitive species surveys and a draft report was prepared by Mr. Uptain for a Habitat Conservation Plan for the water filtration system near Blackwells Corner, Kern County, CA.

Cogeneration, Hydroelectric, and Electrical Transmission Line Projects

La Paloma Generating Plant- As lead Biologist, Mr. Uptain conducted initial and focused surveys for sensitive plant and wildlife species for the La Paloma Cogeneration Plant and associated transmission lines and pipelines. He prepared the biological assessment and assisted with preparation of the environmental impact statement (EIS), application for certification to the California Energy Commission, California Department of Fish and Game 2081 Agreement, and the biological resources mitigation and implementation of the monitoring plan. He was the

coordinating biologist for the construction monitoring and employee training programs. Kern County, CA.

US Generating Company's Fellows Cogeneration. Mr.Uptain conducted field surveys, prepared progress reports, assisted in preparing an application for certification to the California Energy Commission. Mr. Uptain also supervised construction monitoring for the US Generating Company's Fellows Cogeneration which included a 17 acre power generation site, approximately 80 miles of transmission line, and associated water and natural gas pipelines in Kern County, CA.

South Belridge Cogeneration Project Application for Certification. Mr. Uptain performed habitat evaluations and density estimations of the San Joaquin antelope ground squirrel, and the Tipton kangaroo rat. He also performed relative density estimations and the distribution/abundance of the San Joaquin kit fox and their prey base, and the blunt-nosed leopard lizard that was needed for the application for certification for the California Energy Commission in Kern County, CA.

Haas-Kings Hydroelectric Project. Mr. Uptain assisted in a wintering deer survey and a recreation traffic survey for the Haas-Kings Hydroelectric Project in Fresno County, CA.

SCE Devers - Paloverde Transmission Line II. Mr. Uptain recovered sensitive biological species for mitigation and described the distribution of sensitive flora and fauna along the SCE Devers – Paloverde Transmission Line II in Riverside County, CA.

LADWP Sylmar Transmission Line. Mr. Uptain described the distribution of sensitive flora and fauna along the LADWP Sylmar Transmission Line in Kern, Inyo, and Mono counties, CA.

LADWP IPP 500 Kv Transmission Line. Mr. Uptain recovered sensitive biological species and monitored construction activities for mitigation of the LADWP IPP 500 Kv Transmission Line in Utah, Nevada and California.

SCE Victorville-Kramer Junction Transmission Line. Mr. Uptain determined the presence and abundance of the Mohave ground squirrels along the SCE Victorville-Kramer Junction transmission line in San Bernadino County, CA.

SCE Valley Substation-Serrano Transmission Line. Mr. Uptain determined the distribution of Stephens' kangaroo rat along the SCE Valley Substation-Serrano Transmission Line in Riverside County, CA.

LADWP McCollough-Victorville/Adelanto Transmission Line. Mr. Uptain performed habitat surveys and determined the distribution of sensitive flora and fauna along the LADWP McCollough-Victorville/Adelanto Transmission Line located in Riverside County, CA and Clark County, Nv.

Kings River Conservation District's Hydroelectric Development/Construction Projects. Collected baseline population data on fish in Dinky Creek and in Kings River, and monitored stream turbidity on Kings River below Pine Flat Dam in relation to hydroelectric development/construction projects in Fresno County, CA.

Gas, Oil, and Water Delivery System Projects

Mobil Oil Company, Kern and Monterey County, CA. Mr. Uptain was responsible for conducting field surveys that included a 30 mile long pipeline, 4 miles of oil delivery pipeline at their San Ardo facility in Monterey County, and preparing appropriate reports for project permitting through CDFG and USFWS. Mr. Uptain also performed construction monitoring/employee training for approximately 80 miles of oil pipeline in Kern County.

Unocal Platform Irene Project, Environmental Quality Assurance Program. Mr. Uptain performed biological monitoring for implementation of the Environmental Quality Assurance Program for the Unocal Platform Irene Project in Santa Barbara County, CA.

Mojave Pipeline, Tulare County, CA. Mr. Uptain performed verification trapping for Tipton kangaroo rats along the Mojave Pipeline northern expansion route in Tulare County, CA.

Mojave Pipeline Surveys for the Biological Opinion and Environmental Impact Report(EIR). Mr. Uptain was project manager for biological surveys for threatened and endangered species on approximately 400 miles of the Mojave Pipeline that were needed for the biological opinion report and the environmental impact report (EIR). Threatened and endangered species that were surveyed included the Mohave ground squirrel, desert tortoise, blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope ground squirrel, giant kangaroo rat, Tehachapi slender salamander, and the Tipton kangaroo rat. Mr. Uptain then assisted with preparation of the project's reports and he prepared the RFP for protection of biological resources during construction.

Mobil Oil Company, Kern County, CA. Mr. Uptain performed surveys for sensitive species, and conducted construction monitoring for a proposed 17 mile long pipeline for Mobil Oil Company in Kern County, CA.

Elk Hills Naval Petroleum Preserve #2. Mr. Uptain conducted field surveys to determine the impact of various levels of oil and gas development on the blunt-nosed leopard lizard and the San Joaquin kit fox at Elk Hills Naval Petroleum Preserve #2 located in Kern County, CA.

California Aqueduct, Fresno, Kings and Kern Counties. Mr. Uptain performed surveys for sensitive species along the San Joaquin Field Division of the California Aqueduct to determine impacts from canal dredging operations and assisted with the preparation of the biological assessment.

Solar and Geothermal Projects

LUZ Solar Energy Facility, Kern County, CA. Mr. Uptain performed CHIEF surveys for Mohave ground squirrel habitat for the LUZ solar energy facility in Kern County, CA.

Harper Lake Solar Cogeneration Facility's Application for Certification. Mr. Uptain performed habitat evaluations and density estimates for the desert tortoise and Mohave ground squirrel that were to be included in the application for certification to the California Energy Commission. Kern County, CA.

Kramer Junction Solar Cogeneration Facility's Application for Certification. Mr. Uptain performed habitat evaluations and density estimates of the desert tortoise that were to be included in the application for certification to the California Energy Commission. Kern County, CA.

Solar Energy Production Facility, San Diego County, CA. Mr. Uptain determined factors influencing the distribution and abundance of Stephens' kangaroo rat in Warner Springs Valley in relation to the development of a solar energy production facility in San Diego County, CA.

Beowawe Geothermal Area. Mr. Uptain assisted in a small mammal inventory of five habitat types in the Beowawe Geothermal Area in Lander and Eureka counties located in North Central NV.

Mining Projects

Shumake Mine Expansion Project, Kern County, CA. Mr. Uptain was responsible for performing the habitat evaluation and relative abundance study of Mohave ground squirrels for the Shumake Mine expansion project in Kern County, CA.

Queenstake Mine project, Inyo County, CA. Mr. Uptain was responsible for performing the habitat evaluations and relative abundance study of Mohave ground squirrels for the proposed Queenstake Mine project located in Inyo County, CA.

Sonora Mining Corporation's Jamestown Goldmine, Tuolumne County, CA. Mr. Uptain performed quarterly sampling over a 5 year period for an aquatic and riparian survey of Woods Creek in relation to the Sonora Mining Corporation's Jamestown Goldmine, Tuolumne County, CA.

Urban Development Projects

Riverside County Surveys. Mr. Uptain performed 10 surveys ranging in size from 1 to 7300 acres, some including live trapping, for Stephens' kangaroo rats in Riverside County for various development projects.

Off-Road Vehicle Park Project in Kern County, CA. Mr. Uptain determined the relative abundance of desert tortoise in relation to a proposed off-road vehicle park that will be located in Kern County, CA.

Kern County Planning Department Zone Changes. Mr. Uptain was responsible for describing sensitive flora and fauna at North Edwards and Inyokern locations in Kern County, CA for use in evaluating zoning changes.

1280 Acre Housing Development at Rosamond, Kern County, CA. Mr. Uptain performed a biological survey for sensitive plants and wildlife at Rosamond for a proposed 1280 acre housing development located in Kern County, CA.

Business Park Surveys. Mr. Uptain surveyed for the presence of San Joaquin kit fox at a proposed business park near Tracy, CA.

Spice Processing Plant Surveys. Mr. Uptain surveyed for the presence of threatened and endangered wildlife at a proposed spice processing plant in Tulare County, CA.

Other Projects

Endangered Species Recovery Program and State Parks and Recreation. Mr. Uptain coordinated surveys for a vegetation mapping effort, sensitive plant surveys, and herpetological surveys of the Millerton Lake State Recreation Area, Fresno County, CA.

Endangered Species Recovery Program. Mr. Uptain assisted with extensive small mammal trapping on the Madera Ranch to determine presence of Fresno kangaroo rats for a proposed water banking project, Madera County, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr Uptain coordinated field surveys, assisted with biological surveys, and prepared the final report for the Highway 165 Natural Environmental Study Report, Fresno and Mariposa counties, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr Uptain coordinated field surveys, assisted with biological surveys, and prepared the final report for the Highway 41 Natural Environmental Study Report, Fresno County, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr Uptain coordinated field surveys, assisted with surveys, and prepared reports for monitoring of

kit foxes and kit fox use of highway crossing structures along Highway 152, Merced County, CA.

Chemical Waste Management, Inc., Environmental Surveys. Mr. Uptain conducted various environmental surveys and conducted the mitigation procedures training for the Kettleman Hills Toxic Waste Facility. He also conducted a five-year monitoring study at their Bakersfield Facility.

Edwards Air Force Base Endangered Species Research. Mr. Uptain researched and studied the relative abundance of Mohave ground squirrels on Edwards Air Force Base in relation to impacts from a gravity wave detector.

Bakersfield Cellular Telephone Endangered Species Survey. Mr. Uptain performed a survey for the San Joaquin kit fox on cellular telephone tower sites located in Kern County, CA.

Harris Ranch Expansion Project Endangered Species Survey. Mr. Uptain conducted a San Joaquin kit fox survey and habitat assessment for the proposed Harris Ranch Expansion Project located in Fresno County, CA.

Propeace, Inc. Habitat Surveys. Mr. Uptain performed habitat surveys and assessed sensitive biological resources along I-15 and the IPP Transmission Line in relation to the Propeace Peace March.

Valley Nitrogen Producers, Inc. Biological Assessment. Mr. Uptain assessed the response of birds to an acoustical aversion system and bird mortality in a low pH evaporative waste pond located in Fresno County, CA.

J. Wayne Vogler

Ecologist

Overview

Mr. Vogler is an ecologist with extensive experience working with natural dune habitats along the Central California coast. Wayne's diverse experience ranges from site investigations of industrial sites to restoring native habitats at a large soil and groundwater remediation site. Wayne's project experience has included working with federal, state, and local agencies to find consensus among several parties, often with conflicting interests, toward the successful completion of the project. Wayne developed and instituted monitoring protocols, developed restoration plans, and monitored one of the largest hydrocarbon remediation projects along the U.S. Western Coast. Wayne has maintained compliance with Health and Safety training requirements, including some specialized training, since 1996; he is fully-versed and indoctrinated in the health and safety culture.

Areas of Expertise

Wetland Delineations
Coastal Dune Ecosystems
Flora/Fauna Surveys
Mapping Services
HAZWOPER Trained

Years of Experience

With URS: 1 Year
With Other Firms: 11 Years

Education

BS/Biological Sciences/1994/
University of California, Irvine

Registration/Certification

1997/U.S. Army Corp of Engineers Wetland Delineation Certification Program
1997/Lead Related Construction Supervisor (#S2112) and Project Monitor (#M2112), California Department of Health Services
1995/Asbestos Certified Site Surveillance Technician, #95-1831, California Department of Occupational Safety and Health

Project Specific Experience

Project Management

- Ecological Field Coordinator/Monitoring Task Leader for the Chevron Guadalupe Restoration Project – Develop, coordinate, and conduct biological monitoring and permit compliance of 2,800 acre remediation site. Participate and direct field crews in performance of botanical and wildlife monitoring efforts. Interact with construction personnel and coordinate efforts to avoid disturbance to sensitive species and habitats. Develop and provide senior review of ecological reporting documents. Initiate protocols to ensure compliance with 1,200+ permit conditions. Delineate federal and state jurisdictional wetlands. September 1997 to June 2006.
- Phase I ESAs, Asbestos and Lead Surveys – Managed and trained staff in site assessment and asbestos/lead investigations. Conducted 100+ site assessments in California, Colorado, Hawaii, Illinois, Indiana, Nevada, and New Mexico. Subject properties ranged from multi-acre vacant, natural lands to large industrial facilities to a pharmaceutical manufacturing plant.

Sensitive Species Survey Experience

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

- San Luis Obispo and Santa Barbara County – Conducted presence/absence surveys for California red-legged frogs and mapped habitats. 1999 through present.
- Chevron Guadalupe Restoration Project - Permitted to survey, capture, handle, and relocate California red-legged frogs. Includes pit-tagging and radio-tracking of individuals to monitor relocation efforts. Survey efforts for tadpoles, including dip-netting and use of minnow traps. 1999 through present.

Desert Tortoise (*Gopherus agassizii*)

- Mojave Desert – Completion of the Desert Tortoise Council Annual Surveying, Monitoring, and Handling Techniques Workshop. Training included survey techniques for individuals and their sign, assessment of habitat, handling techniques, and burrow construction. 2003.

Tidewater Goby (*Eucyclogobius newberryi*)

- Santa Barbara Airport, Los Carneros and Tecolotito Creek Realignments – Captured and relocated individuals from the former creek channels. Field work included seining creek channels, dip net capture, identification of listed and common species encountered, and transportation/release. 2006.

- City of Santa Barbara Laguna Channel Tide Gate Repair – Conduct survey for tidewater goby prior to work activities. Post-project sampling of new stream channel to determine tidewater goby re-colonization. Captured and relocated individuals prior to cofferdam placement and de-watering activities; monitored construction activities to avoid impacts to species. Field work included seining tidal lagoon channels, installation of blocking nets, capture and identification of listed and common species encountered, and transportation/release. 2006.

Wetland Delineations and Restorations

- Performed the initial survey and subsequent update surveys to identify and delineate wetlands according to federal definitions at the 2,800-acre Guadalupe Restoration Project. Employed both routine and comprehensive survey methods with findings reviewed by ACOE and NRCS. 1997 and 2004.

- A contributing author and editor to an encompassing wetland restoration and mitigation plan at the Guadalupe Restoration Project. Plan elements included the satisfaction of both federal and state resource agencies. Designed wetland habitat elements for the enhancement of both California red-legged frogs and La Graciosa thistle. Plan was approved by several federal and state resource agencies with accommodation by the U.S. Army Corp of Engineers describing the Plan as an example for future plans to ascribe toward. 2004 through 2006.

- Guadalupe-Nipomo Dunes – Conduct an identification survey of wetland habitats throughout the entire dunes complex. Developed identification and screening criteria, classification and descriptive identifiers, and survey methodology. Employed aerial photography interpretation for initial target identification. Mapped wetland habitats with sub-meter GPS unit for data to be incorporated into an existing GIS project. 2004 to present.

- Administrative Hearing with the Army Corp of Engineers for the Santa Maria Airport District. Presented to Hearing Officer in support of District's opinion that wetlands unfairly identified by ACOE personnel. Hearing resulted in no action taken by ACOE against District.

General Vegetation Surveys, Wildlife Surveys, and Habitat Assessment

- Conducted regimented surveys and mapping efforts for La Graciosa thistle (*Cirsium loncholepsis*), surf thistle (*Cirsium rhothopilum*), and beach spectacle-pod (*Dithyrea maritima*). Initial survey and mapping of presence. Annual censusing of populations. Monitoring of construction activities to ensure avoidance of disturbance to individuals and habitat. Summer 1998 to present.
- Presence survey. Population mapping, and habitat assessment for Gaviota tarplant (*Deinandra increscens* ssp. *villosa*) for a naturally vegetated 16-acres site at Vandenberg Air Force Base, California. June 2006.
- Habitat Inventory and Ecological Database (HIED) development for the 2,800-acre Guadalupe Restoration Project. Scope included the initial mapping of sensitive flora, sensitive fauna, weed infestation, habitat quality, and several other parameters. Data developed from aerial photograph interpretation, qualitative and quantitative surveys, and specific presence/absence surveys per species. Updated annually. 2002 to present.
- Pre-disturbance assessment and restoration monitoring surveys to determine habitat composition and quality. Developed protocols for photograph documentation efforts. Spring 1998 to present.
- Construction monitoring to ensure compliance with over 1,200 permit conditions. Work with contractors and construction personnel to minimize native habitat disturbance and avoid sensitive and listed flora and fauna. Spring 1998 to present.

Other Reports and Projects

- Worker identification guide to sensitive plants and animals in SLO County to Tosco pipeline workers. 1999.
- Collection of tadpoles and soil in support of an ecological risk analysis at a former gas plant along Santa Barbara coast.

Specialized Training

- Annually/8-Hour HAZWOPER Annual Refresher
- 2006/Loss Prevention System Training, a Behavior Based Safety Program
- 2006/Smith System Advanced Driving Traffic Safety
- 2003/PADI Certified Open Water Diver
- 2001/Stormwater Pollution Prevention on Construction Sites, California State Water Resources Control Board
- 1999/Certified Beer Master, Anheuser-Busch, Inc.
- 1996/40-Hour Hazardous Waste Workers' and 24-Hour First Responder Health and Safety Training

Chronology

- 06/06-present: URS Corporation, Santa Maria, CA

- 10/02-06/06: (sd)² ecology, Grover Beach, CA
- 06/95-09/02: LFR, Inc., Santa Maria, CA

Contact Information

URS Corporation
910 East Stowell Road, Suite 112
Santa Maria, CA 93154
Tel: 805.349.7000
Fax: 805. 739.1135
wayne_vogler@urscorp.com

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 2: Please contact San Luis Obispo County to determine whether they have listed any cultural resources pursuant to ordinance for the project area. Please identify any properties that are listed within 1-mile radius around the project site or 0.25 mile on each side of the linear facilities.

Please contact local historical or archaeological societies and museums to determine whether they have identified any cultural resources within 1-mile radius around the project site or 0.25 mile on each side of the linear facilities.

Response: According to San Luis Obispo County, no known cultural resources are located within a one-mile radius around the proposed Carrizo Energy Solar Farm (CESF). Provided as attachments to this sheet, are correspondence between Jeremy Hollins (URS Architectural Historian) and San Luis Obispo County staff (CUL-2 Attachment A).

According to the San Luis Obispo County Historical Society, no known cultural resources are located within a one-mile radius around the proposed CESF. Provided as attachments to this sheet, are correspondence between Jeremy Hollins (URS Architectural Historian) and Ronald E. Clarke, Society Manager (CUL-2 Attachment B).

CUL-2 ATTACHMENT A
URS CORRESPONDENCE WITH SAN LUIS OBISPO COUNTY

Initial e-mail from URS to SLO County

Jeremy Hollins/SanDiego/URSCorp
12/05/2007 04:07 PM

To ekavanaugh@co.slo.ca.us
cc
bcc Kristen E Walker/SanDiego/URSCorp
Subject Request of Information - CA Valley/Simmler

Hi Elizabeth,

Attached is a letter from URS Corporation requesting information from the County of San Luis Obispo regarding the presence of cultural resources within a one-mile radius around the **proposed Carrizo Energy Solar Farm (CESF)** and within a one-quarter mile from any proposed linear facilities associated with the CESF. Also attached is a map which depicts the location of the CESF and its appropriate buffer areas.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. **If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities .**

This information will be transmitted to the California Energy Commission (CEC) the week of December 3, and it would be tremendously helpful if you responded as soon as possible to this request. ***Please respond via fax to 619-293-7920 (Att'n: Jeremy Hollins) or email jeremy_hollins@urscorp.com***

Thanks in advance for your time and cooperation.

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

This e-mail and any attachments are confidential. If you receive this message in error or are not the intended recipient, you

Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf 01400-b-l.pdf

URS

Initial e-mail from URS to SLO County
Attachment 01400-b-l.pdf

December 5, 2007

Elizabeth Kavanaugh
Department of Planning and Building
County Government Center
San Luis Obispo, CA 93408

Subject: Proposed Carrizo Energy Solar Farm
San Luis Obispo County, California
URS Project No. 22239472.01400

Dear Ms. Kavanaugh:

In regards to the proposed Carrizo Energy Solar Farm (CESF), URS Corporation (URS) is performing historical research to determine the presence of cultural resources located within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. URS is contacting the County of San Luis Obispo and San Luis Obispo County Historical Society to identify any cultural resources listed pursuant to ordinance by the County, or recognized by any local historical or archaeological society or museum.

The proposed siting location is located five miles west of the Kern County line, just north of California State Route (SR) 58, within Section 28, Township 29 South, Range 18 East on the United States Geological Survey. The north half of Section 33, Township 29 South, Range 18 East will also be used as a construction laydown area. The Assessor Parcel Number (APN) for the project footprint is 072-091-001 and the APN for the laydown area is 072-091-010. A map depicting the project area is attached.

In addition, URS has conducted an archival records search at the Central Coastal Information Center of the California Historical Resources Information System at the University of California at Santa Barbara. This record search indicated no cultural resources within the project area, and two prehistoric isolates within a half-mile of the project area, both lithic fragments.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities**. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities.**

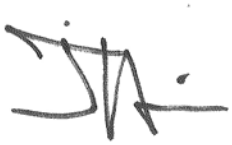
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

Please respond via fax to 619-293-7920 (Attention: Jeremy Hollins) or email jeremy_hollins@urscorp.com

Thank you in advance for your cooperation and time.

Sincerely,

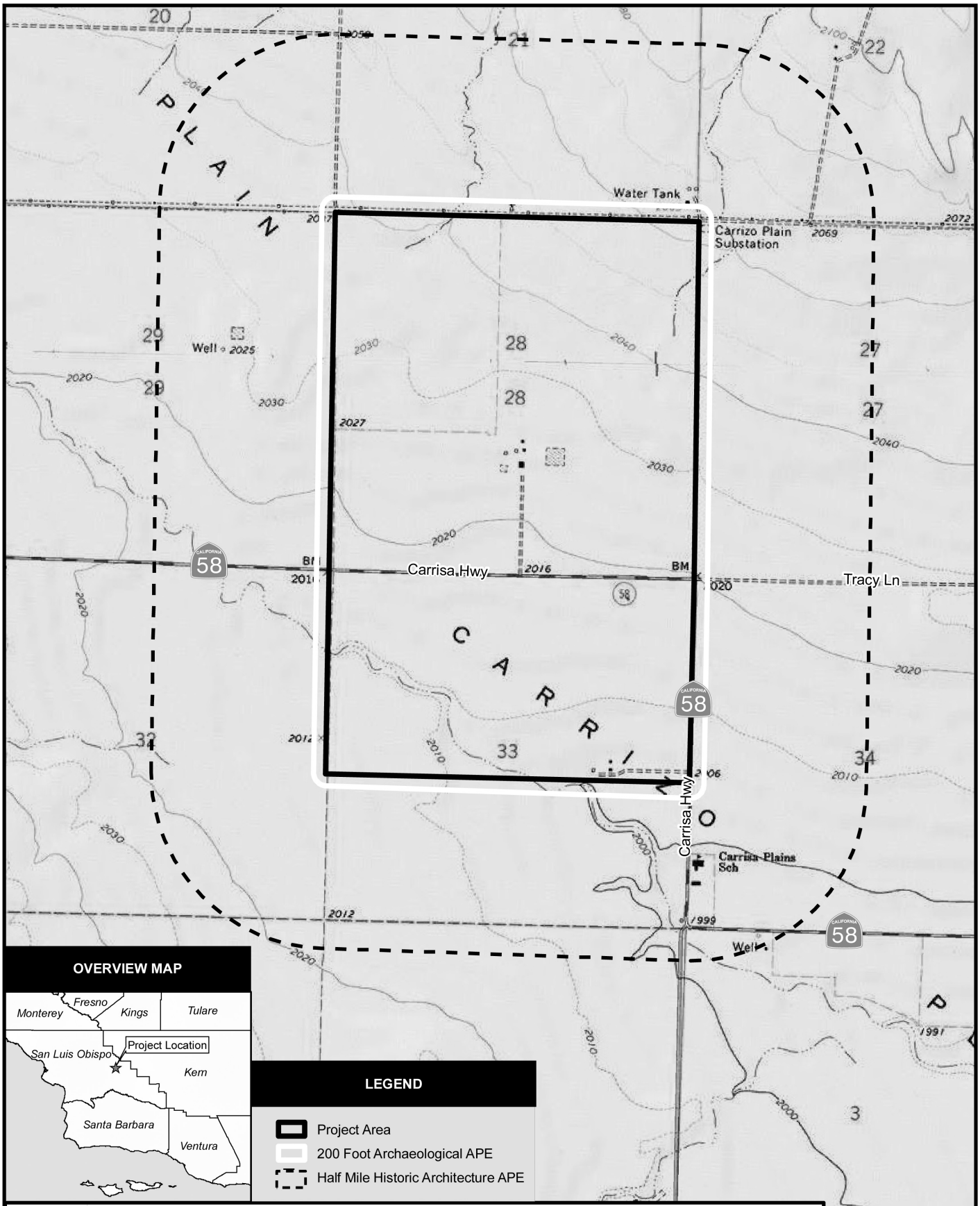
URS CORPORATION



Jeremy Hollins
Architectural Historical

JH:ml

Attachment: Project Map



SOURCES: TIGER (roads 2000);USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973, Simmler 1982, Las Yeguas Ranch 1973).

CULTURAL RESOURCES APE
CARRIZO ENERGY SOLAR FARM (CESF)

URS

1000 0 1000 2000 Feet
SCALE: 1" = 2,000' (1:24,000)

CREATED BY: JN	DATE: 12-12-07	FIG. NO: 1-3
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Second e-mail from URS to SLO County

Jeremy Hollins/SanDiego/URSCorp
12/05/2007 04:22 PM

To hphipps@co.slo.ca.us
cc
bcc Kristen E Walker/SanDiego/URSCorp
Subject Request of Information - CA Valley/Simmler

Hi Holly,

Attached is a letter from URS Corporation requesting information from the County of San Luis Obispo regarding the presence of cultural resources within a one-mile radius around the **proposed Carrizo Energy Solar Farm (CESF)** and within a one-quarter mile from any proposed linear facilities associated with the CESF. Also attached is a map which depicts the location of the CESF and its appropriate buffer areas.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities**. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities .**

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Thanks in advance for your time and cooperation.

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

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Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf 01400-c-l.pdf

Second e-mail from URS to SLO County
Attachment 01400-c-l.pdf

December 5, 2007

Holly Phipps
Department of Planning and Building
County Government Center
San Luis Obispo, CA 93408

Subject: Proposed Carrizo Energy Solar Farm
San Luis Obispo County, California
URS Project No. 22239472.01400

Dear Ms. Phipps:

In regards to the proposed Carrizo Energy Solar Farm (CESF), URS Corporation (URS) is performing historical research to determine the presence of cultural resources located within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. URS is contacting the County of San Luis Obispo and San Luis Obispo County Historical Society to identify any cultural resources listed pursuant to ordinance by the County, or recognized by any local historical or archaeological society or museum.

The proposed siting location is located five miles west of the Kern County line, just north of California State Route (SR) 58, within Section 28, Township 29 South, Range 18 East on the United States Geological Survey. The north half of Section 33, Township 29 South, Range 18 East will also be used as a construction laydown area. The Assessor Parcel Number (APN) for the project footprint is 072-091-001 and the APN for the laydown area is 072-091-010. A map depicting the project area is attached.

In addition, URS has conducted an archival records search at the Central Coastal Information Center of the California Historical Resources Information System at the University of California at Santa Barbara. This record search indicated no cultural resources within the project area, and two prehistoric isolates within a half-mile of the project area, both lithic fragments.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities**. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities.**

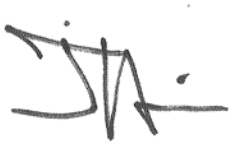
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

Please respond via fax to 619-293-7920 (Attention: Jeremy Hollins) or email jeremy_hollins@urscorp.com

Thank you in advance for your cooperation and time.

Sincerely,

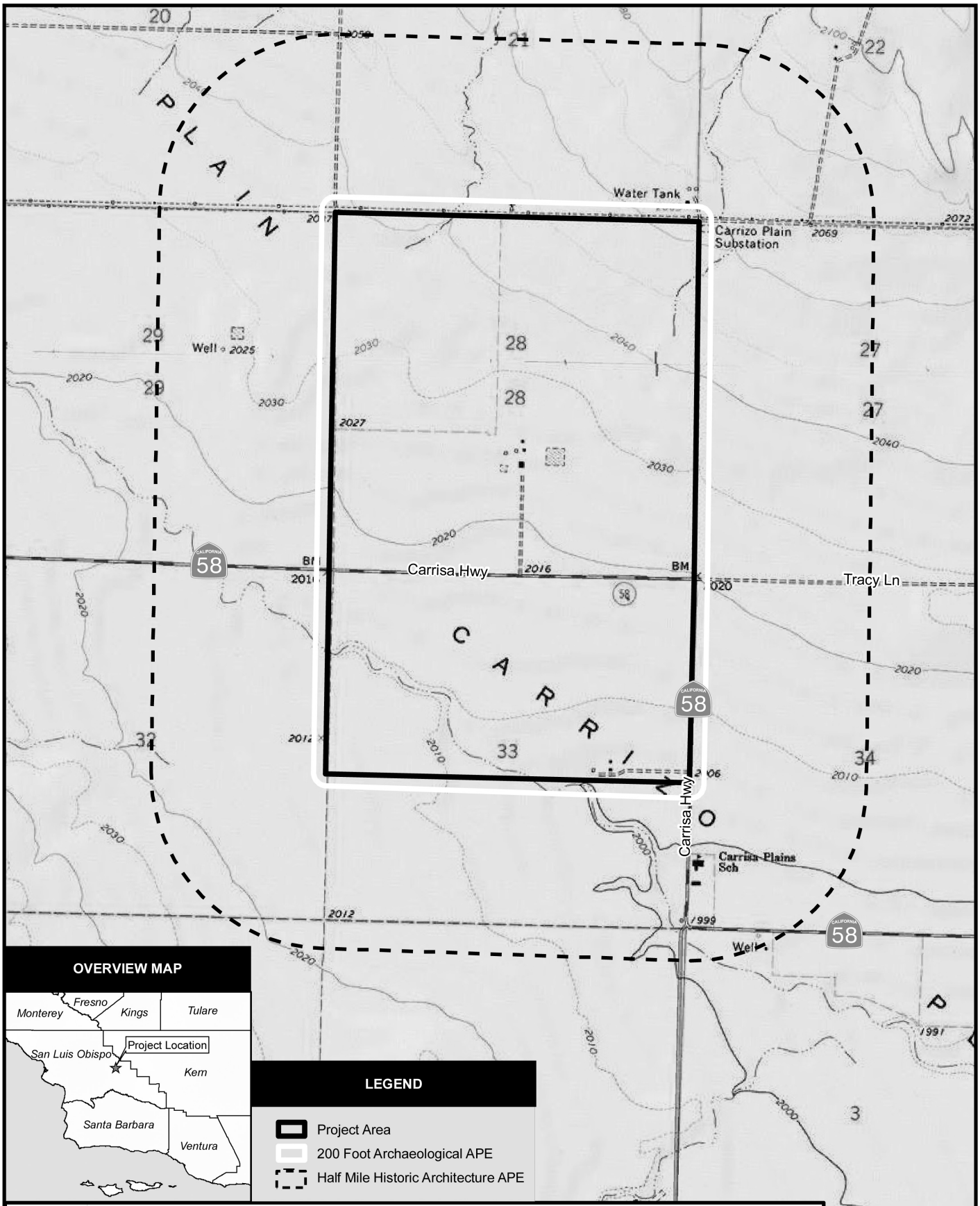
URS CORPORATION



Jeremy Hollins
Architectural Historical

JH:ml

Attachment: Project Map



SOURCES: TIGER (roads 2000);USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973, Simmler 1982, Las Yeguas Ranch 1973).

CULTURAL RESOURCES APE
CARRIZO ENERGY SOLAR FARM (CESF)

URS

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CREATED BY: JN	DATE: 12-12-07	FIG. NO: 1-3
PM: AL	PROJ. NO: 22239472	

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SLO County Response to URS

jdmckenzie@co.slo.ca.us
12/06/2007 09:52 AM

To Jeremy_Hollins@URSCorp.com
cc
bcc
Subject Re: Request of Information - CA Valley/Simmler

Mr. Hollins,

After review of our partial county records, we have no record of reports being completed or any cultural resource within one mile of the project. As I'm sure you know, for official record searches of prehistoric resources, UCSB maintains more complete records and should be consulted at:

Central Coast Archeological Info Ctr.
Dept. of Anthropology, UCSB
Santa Barbara, CA 93106-3210

(805) 893-2474 (805) 983-8707

Let me know if I can be of further assistance.

John McKenzie
Environmental Specialist
Environmental & Resource Management Division
Planning & Building Department
805/781-5452
FAX 805/788-2413

Jeremy_Hollins@URSCorp.com
12/06/2007 08:29 AM

To jdmckenzie@co.slo.ca.us
cc hphipps@co.slo.ca.us, joliveira@co.slo.ca.us
Subject Re: Request of Information - CA Valley/Simmler

Hi John

Thanks again for your attention and cooperation for this request. To the best of my knowledge and based on the project descriptions, there will not be any off-site linear facilities. Rather, the project would link up with the existing transmission lines. Please feel free to contact me with anything else and thanks.

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

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jdmckenzie@co.slo.ca.us
(Embedded image moved to file: pic23623.gif)
12/06/2007 06:45 AM

To
(Embedded image moved to file: pic24353.gif)
Jeremy_Hollins@URSCorp.com
(Embedded image moved to file: pic12036.gif)

cc
(Embedded image moved to file: pic31547.gif)
hphipps@co.slo.ca.us, joliveira@co.slo.ca.us
(Embedded image moved to file: pic21346.gif)

Subject
(Embedded image moved to file: pic00826.gif)
Re: Request of Information - CA Valley/Simmler

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Jeremy,

We are working on it and will have answers within a day or two. I am assuming since you are adjacent to existing transmission lines there are no off-site "linear facilities". If that is not the case, please provide additional mapping showing the location of these facilities.

John McKenzie
Environmental Specialist
Environmental & Resource Management Division
Planning & Building Department
805/781-5452
FAX 805/788-2413

Jeremy_Hollins@URSCorp.com
12/05/2007 04:40 PM

To: hphipps@co.slo.ca.us
cc: jdmckenzie@co.slo.ca.us, joliveira@co.slo.ca.us
Subject: Re: Request of Information - CA Valley/Simmler

Thank you so much for your help Holly. I really appreciate your effort.

Jeff and John, please feel free to contact me with any questions concerning this request for information.

Thanks again

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

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hphipps@
co.slo.c
a.us
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pic21323.gif)
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07 04:29
PM

To
(Embedded image moved to
file: pic06540.gif)
Jeremy_Hollins@URSCorp.com
(Embedded image moved to file:
pic07679.gif)

cc
(Embedded image moved to
file: pic23990.gif)
joliveira@co.slo.ca.us,
jdmckenzie@co.slo.ca.us
(Embedded image moved to file:
pic32588.gif)

Subject
(Embedded image moved to
file: pic24710.gif)
Re: Request of Information -
CA Valley/Simmler

(Embedded image moved to file:
pic29271.gif)
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pic17945.gif)

Hi Jeremy,

I just listened to your voice message and transferred your questions over to Jeff Oliveria. Jeff works in our Environmental Division and will be more suited to answer your question. Jeff is who I go to for all my cultural inquiries. Also another good contact is John McKenzie who also works in the Environmental Division also.

Jeff Oliveria - 781-4167
John McKenzie -781-5452

Holly Phipps
Planner - North County Geo Team
_____
Co of SLO Planning Department
976 Osos St, RM 300
San Luis Obispo, CA, 93408
805-781-1162
hphipps@co.slo.ca.us

Jeremy_Hollins@URSCorp.com
12/05/2007 04:22 PM

To hphipps@co.slo.ca.us
cc
Subject Request of Information - CA Valley/Simmler

Hi Holly,

Attached is a letter from URS Corporation requesting information from the County of San Luis Obispo regarding the presence of cultural resources within a one-mile radius around the proposed Carrizo Energy Solar Farm (CESF) and within a one-quarter mile from any proposed linear facilities associated with the CESF. Also attached is a map which depicts the location of the CESF and its appropriate buffer areas.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear

facilities.

This information will be transmitted to the California Energy Commission (CEC) the week of December 3, and it would be tremendously helpful if you responded as soon as possible to this request. Please respond via fax to 619-293-7920 (Att'n: Jeremy Hollins) or email jeremy_hollins@urscorp.com

Thanks in advance for your time and cooperation.

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

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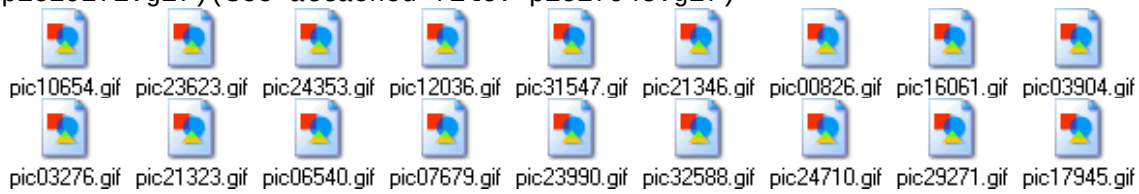
(See attached file: Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf)(See attached file: 01400-c-l.pdf)(See attached file: Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf)(See attached file: 01400-c-l.pdf)[attachment "Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf" deleted by Jeremy Hollins/SanDiego/URSCorp] [attachment "01400-c-l.pdf" deleted by Jeremy Hollins/SanDiego/URSCorp](See attached file: pic03276.gif)(See attached file: pic21323.gif)(See attached file: pic06540.gif)(See attached file: pic07679.gif)(See attached file: pic23990.gif)(See attached file: pic32588.gif)(See attached file: pic24710.gif)(See attached file: pic29271.gif)(See attached file: pic17945.gif)(See attached file: pic03276.gif)(See attached file: pic21323.gif)(See attached file: pic06540.gif)(See attached file: pic07679.gif)(See attached file: pic23990.gif)(See attached file: pic32588.gif)(See attached file: pic24710.gif)(See attached file: pic29271.gif)(See attached file: pic17945.gif)



CUL-2 ATTACHMENT B
URS CORRESPONDENCE WITH SAN LUIS OBISPO COUNTY HISTORICAL SOCIETY

E-mail from URS to SLO County Historical Society

Jeremy Hollins/SanDiego/URSCorp
12/05/2007 04:10 PM

To slochs@kcbx.net
cc
bcc Kristen E Walker/SanDiego/URSCorp
Subject Request of Information - CA Valley/Simmler

Hi Ron,

Attached is a letter from URS Corporation requesting information from the San Luis Obispo County Historical Society regarding the presence of cultural resources within a one-mile radius around the **proposed Carrizo Energy Solar Farm (CESF)** and within a one-quarter mile from any proposed linear facilities associated with the CESF. Also attached is a map which depicts the location of the CESF and its appropriate buffer areas.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. **If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities .**

This information will be transmitted to the California Energy Commission (CEC) the week of December 3, and it would be tremendously helpful if you responded as soon as possible to this request. ***Please respond via fax to 619-293-7920 (Att'n: Jeremy Hollins) or email jeremy_hollins@urscorp.com***

Thanks in advance for your time and cooperation.

Jeremy Hollins
Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
www.urscorp.com
Tel: 619-294-9400 x1068
Direct: 619-243-2868
Fax: 619-293-7920
jeremy_hollins@urscorp.com

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Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf 01400-a-l.pdf

E-mail from URS to SLO County Historical Society
Attachment 01000-a-l.pdf

December 5, 2007

San Luis Obispo County Historical Society
Attention: Director
PO Box 1391
San Luis Obispo, CA 93406-1391

Subject: Proposed Carrizo Energy Solar Farm
San Luis Obispo County, California
URS Project No. 22239472.01400

Dear Sir or Madam:

In regards to the proposed Carrizo Energy Solar Farm (CESF), URS Corporation (URS) is performing historical research to determine the presence of cultural resources located within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities. URS is contacting the County of San Luis Obispo and San Luis Obispo County Historical Society to identify any cultural resources listed pursuant to ordinance by the County, or recognized by any local historical or archaeological society or museum.

The proposed siting location is located five miles west of the Kern County line, just north of California State Route (SR) 58, within Section 28, Township 29 South, Range 18 East on the United States Geological Survey. The north half of Section 33, Township 29 South, Range 18 East will also be used as a construction laydown area. The Assessor Parcel Number (APN) for the project footprint is 072-091-001 and the APN for the laydown area is 072-091-010. A map depicting the project area is attached.

In addition, URS has conducted an archival records search at the Central Coastal Information Center of the California Historical Resources Information System at the University of California at Santa Barbara. This record search indicated no cultural resources within the project area, and two prehistoric isolates within a half-mile of the project area, both lithic fragments.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities**. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities.**

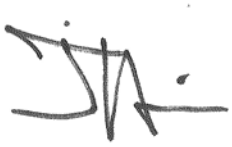
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

Please respond via fax to 619-293-7920 (Attention: Jeremy Hollins) or email jeremy_hollins@urscorp.com

Thank you in advance for your cooperation and time.

Sincerely,

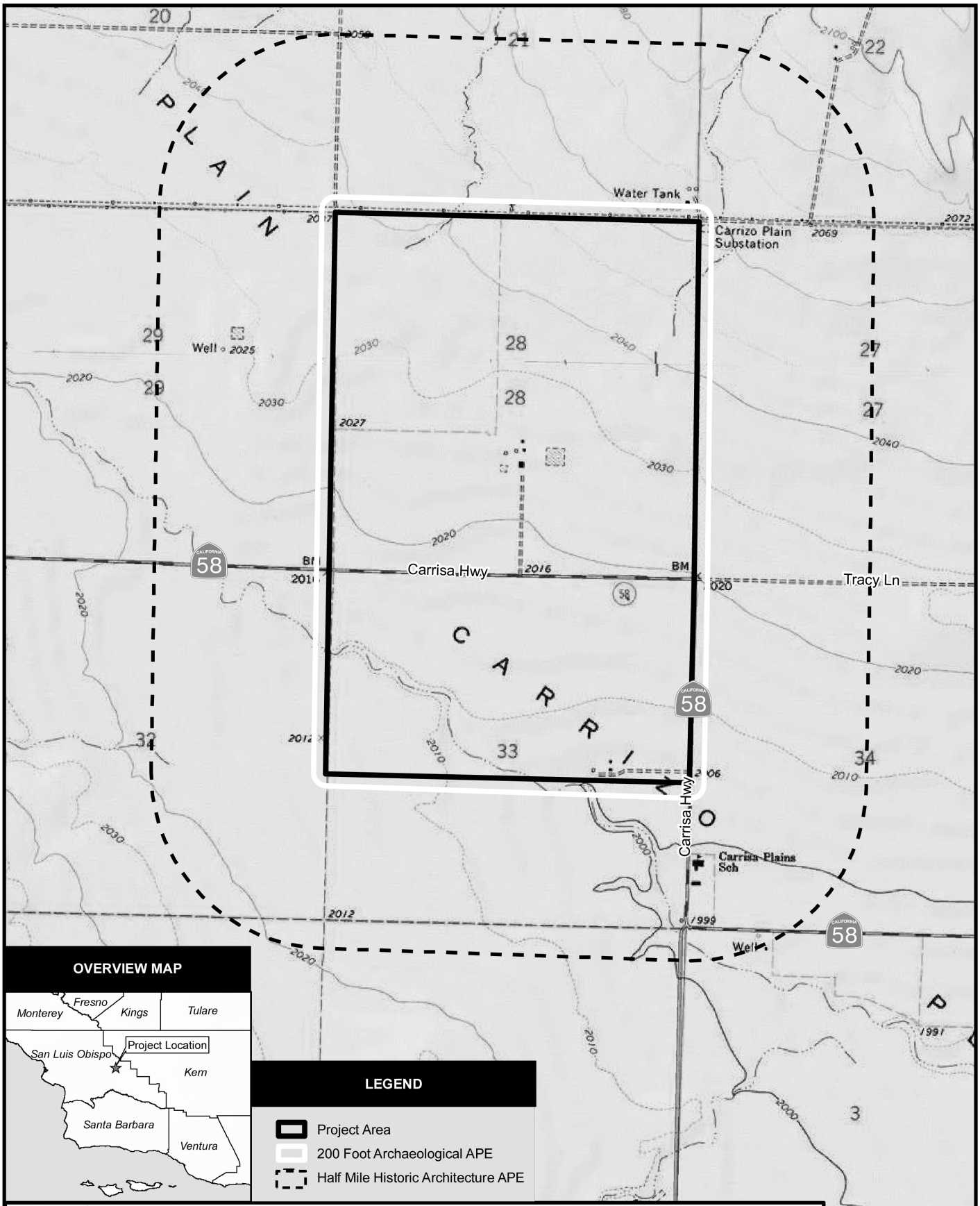
URS CORPORATION



Jeremy Hollins
Architectural Historical

JH:ml

Attachment: Project Map



SOURCES: TIGER (roads 2000);USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973, Simmler 1982, Las Yeguas Ranch 1973).

CULTURAL RESOURCES APE
CARRIZO ENERGY SOLAR FARM (CESF)

URS

1000 0 1000 2000 Feet
SCALE: 1" = 2,000' (1:24,000)

CREATED BY: JN	DATE: 12-12-07	FIG. NO: 1-3
PM: AL	PROJ. NO: 22239472	

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SLO County Historical Society Response to URS

"Ron Clarke" <slochs@kcbx.net>
12/06/2007 09:47 AM

To <Jeremy_Hollins@URSCorp.com>
cc
bcc
Subject RE: Request of Information - CA Valley/Simmler

Hi Jeremy:

We know of no significant cultural resources within a one-mile radius around the proposed Carrizo Energy Solar Farm. Likewise, we are not aware of any significant cultural resources within one-quarter mile of linear facilities in that area.

If you have any other questions on this matter, please feel free to contact me and I will be glad to help.

Sincerely,

Ronald E. Clarke, Society Manager
San Luis Obispo County Historical Society
696 Monterey Street
San Luis Obispo, CA 93401
805-543-0638
805-783-2919 (Fax)

-----Original Message-----
From: Jeremy_Hollins@URSCorp.com [mailto:Jeremy_Hollins@URSCorp.com]
Sent: Wednesday, December 05, 2007 4:11 PM
To: slochs@kcbx.net
Subject: Request of Information - CA Valley/Simmler

Hi Ron,

Attached is a letter from URS Corporation requesting information from the San Luis Obispo County Historical Society regarding the presence of cultural resources within a one-mile radius around the **proposed Carrizo Energy Solar Farm (CESF)** and within a one-quarter mile from any proposed linear facilities associated with the CESF. Also attached is a map which depicts the location of the CESF and its appropriate buffer areas.

Please identify the presence of cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities**. If there are no cultural resources, then please respond that there are no known cultural resources within a one-mile radius around the project site and within a one-quarter mile from any proposed linear facilities.**

This information will be transmitted to the California Energy Commission (CEC) the week of December 3, and it would be tremendously helpful if you responded as soon as possible to this request. ***Please respond via fax to 619-293-7920 (Att'n: Jeremy Hollins) or email jeremy_hollins@urscorp.com***

Thanks in advance for your time and cooperation.

Jeremy Hollins

Architectural Historian
URS Corporation
1615 Murray Canyon Road, Suite 1000
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Direct: 619-243-2868
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jeremy_hollins@urscorp.com

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(See attached file: Fig 1-3 Cultural Resources APE - Topo-11x17 color.pdf)(See attached file: 01400-a-l.pdf)

TECHNICAL AREA: LAND USE

Data Adequacy Request 3: Please discuss any recent or proposed zone changes and/or general plan amendments noticed by an elected or appointed board, commission, or similar entity at the state or local level (i.e., San Luis Obispo County) within one mile of the proposed site and within one-quarter mile of any project-related linear facilities.

Response: There are no recently proposed zone changes that affect the Carrizo Energy Solar Farm site; however, there is a Draft Amendment to the General Plan that, if adopted, would replace some existing sections of the General Plan. In the Draft Amendment to the Inland Framework for Planning, the potential benefits of solar energy conversion is extolled. According to a conversation with San Luis Obispo County Planner Susan Callado on November 28, 2007, none of the Draft Amendment sections change the general provisions for development of solar energy in the Project area.

TECHNICAL AREA: LAND USE

Data Adequacy Request 4: Please identify all discretionary reviews by public agencies initiated or completed within 18 months prior to filing the application for those changes or developments identified in subsection (g)(3)(A)(ii).

Response: According to a conversation with San Luis Obispo County Planner Susan Callado on November 28, 2007, there are no discretionary reviews by public agencies initiated or completed within the prior 18 months that would affect Project development.

TECHNICAL AREA: LAND USE

Data Adequacy Request 5: For staff to determine whether Assessor Parcel Number 072-091-001 (the parcel identified in the Application for Certification as the 640-acre parcel where the Carrizo Energy Solar Farm is proposed to be constructed) is a legal parcel as defined in the California Subdivision Map Act, please provide one of the following bulleted items:

- a Certificate of Compliance from San Luis Obispo County;
- a Final Parcel Map as recorded by the San Luis Obispo County;
- a Tentative Parcel Map with a recorded legal description from the San Luis Obispo County; or
- a current grant deed AND a grant deed that was recorded closest to but preceding the date of March 4, 1972.

Response: Per discussion and email correspondence (see Attachment Land-A) between URS (Seth Hopkins) and CEC (Eric Knight), it was determined that no documentation is needed for this data adequacy request for the Project. Because the Project site involves the use of a full 640-acre section (Section 28, Township 29, Range 18 East, Mount Diablo Base and Meridian) and not a portion of it, we conclude that the site is in conformance with the State Subdivision Map Act for purposes of demonstrating compliance with CEC informational requirements.

ATTACHMENT LAND-A

URS

Seth L Hopkins/SanDiego/URSCorp

----- Forwarded by Seth L Hopkins/SanDiego/URSCorp on 12/05/2007 05:23 PM -----

"Eric Knight"
<Eknight@energy.state.ca.us>
12/05/2007 05:01 PM

To <Seth_L_Hopkins@URSCorp.com>
cc "Amanda Stennick" <Astennic@energy.state.ca.us>
Subject Re: CESF AFC

Seth,

The option agreement and title report, nor any other documentation is needed for the data adequacy item for this project. Because the project site involves the use of a full 640-acre section (Section 28, Township 29, Range 18 East, Mount Diablo Base and Meridian) and not a portion of it, we conclude that the site is in conformance with the State Subdivision Map Act for purposes of demonstrating compliance with CEC informational requirements. You can reference this email and our discussion in your data adequacy supplemental filing.

I received your voice message regarding socioeconomics and have asked Joe Diamond to return your call.

If you have any other questions please give me a call.

Thank you,

Eric

Eric Knight, Supervisor
Community Resources Unit
California Energy Commission
Energy Facilities Siting Division
1516 Ninth Street, MS-40
Sacramento, CA 95814
tel: 916.653.1850

fax: 916.651.8868

>>> <Seth_L_Hopkins@URSCorp.com> 12/5/2007 11:28 AM >>>

Eric,

Here are the title report and option agreement for the properties. The County does not have a legal description or a Final Parcel Map for the APN 072-091-001. In order to get a Certificate of Compliance a current grant deed and a grant deed that was recorded closest to but preceding the date of March 4,1972 is required. Unfortunately we have not been able to locate a grant deed recorded prior to March, 1972.
I would like to submit this title report in lieu. Would you let me know if this would satisfy the requirement, or what additional information other than the four listed items could satisfy this request. Thank you for you time.

(See attached file: Preliminary_Report_-_Central_V[1].pdf)

(See attached file: Option Agreement Pages for Kristen.pdf)

Best Regards,

Seth L. Hopkins
Environmental Planner
URS Corporation
1615 Murray Canyon Road
Suite 1000
San Diego, CA 92108
www.urscorp.com
tel: 619.294.9400
dir: 619.243.2785
fax: 619.293.7920

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TECHNICAL AREA: LAND USE

Data Adequacy Request 6: The AFC identifies the bulleted items as being applicable to the project but does not discuss conformance. Please discuss how the project would conform with the following:

- Agricultural Policy 24 (Conversion of Agricultural Land) of the Agricultural and Open Space Element of the San Luis Obispo County General Plan;
- Section 22.32.060 (Standards for photovoltaic Generating Facilities) of the Land Use Ordinance Title 22 of the San Luis Obispo County Code; and
- The applicable standards of Chapter 19.20 of the Building and Construction Ordinance Title 19 of the San Luis Obispo County Code.

Response: **Agricultural Policy 24: Conversion of Agricultural Land:** Agricultural Policy 24 establishes criteria for the conversion of agricultural lands to alternate uses. The criteria state that urban boundaries should not expand: "until such time as land is needed to accommodate necessary uses or services that cannot otherwise be accommodated within the existing urban or village area." In general, large solar power facilities cannot be accommodated within the existing urban boundaries of small rural villages, and the large cities of San Luis Obispo County are not located in areas that experience ideal conditions for solar energy conversion. The siting process for the Carrizo Energy Solar Farm (CESF) has not found a feasible alternative location within the urban and village reserve lines that meets the functional requirements of the project. This meets the criteria for change of use designation from agricultural use, identified in AGP24, that states that a change of use is allowed if there is no feasible alternative location within the urban and village reserve lines.

The CESF is a development of countywide significance and annexation to a nearby city will not occur. Additionally, the land which is proposed to be converted is currently used as rangelands for grazing, the terrain type that is lowest in order of priority for protection from conversion, as stated in Agricultural Policy 24.

Development resulting from the expansion of dwellings and/or commercial uses beyond the urban boundary is prohibited by AGP24. The CESF is not an example of urban expansion; and will not occur adjacent to any urban area, or involve high density development. It is an industrial development. Some industrial uses are allowable on agricultural lands according to the General Plan.

Furthermore, the CESF will fulfill the following criteria of the County addressed in the General Plan: the public has a need for non-imported renewable energy; the surrounding lands will remain designated agriculture, and; the development of the CESF will not affect agricultural use of surrounding lands.

Section 22.32.060: This section of Title 22 sets Standards for Photovoltaic Generating Facilities. The CESF facility is not a photovoltaic facility. The CESF Project is considered a solar thermal facility. According to a conversation with

Eric Knight, CEC, it was presumed that the County would need to determine if this section applies to the CESF project. Per a conversation with John McKenzie, SLO County Planning and Building Department, on December 6, 2007, the intent of this section is to govern solar energy conversion facilities. The provisions of the ordinance would apply to the CESF project, and the Project is in conformance. The provisions of this ordinance are discussed below.

> "*A. Application Contents. In addition to the requirements of Section 22.32.020, an application for a photovoltaic generating facility shall describe:*
>
> > *1. Tracking system design, including a showing that no concentrated reflections will be directed at occupied structures, recreation areas or roads.*
> >
> > *2. How public access will be restricted or why public liability is not a concern at the particular facility.*
>
> *B. Undergrounding Required. Electrical distribution lines on the project site shall be undergrounded up to the low voltage side of the step-up transformer, to the point of on-site use, or to the utility interface point of an on-site substation*."

Per provision (A)(1), there are no foreseen significant impacts resulting from glare and a glare study will be prepared, please refer to response to Data Adequacy Request 27.

Per provision (A)(2), the facility will be fenced with a minimum 3 m (10-foot) chain link fence with three strands of barbwire on top and with privacy lattice around the perimeter. Entrance to the facility will be through one 7.3 m (24 feet) wide motorized gate equipped with a security monitoring system, including a camera and intercom system, remotely controlled from the control room.

Separate access will be provided to the switchyard and metering substation building. Access to individual buildings will be controlled with proximity badge readers.

Per provision (B), according to the County, undergrounding of transmission lines on site is not necessary. The following response from John McKenzie at the SLO County Planning and Building Department on December 6, 2007 refers to undergrounding of transmission lines for the CESF project.

"After review of the County's LUO Chapter on Electric Generating Plants, including the Photovoltaic Generating Facilities, it is the intent of this chapter for distribution lines to be placed underground where ever possible. However, staff also has concluded that this applies to offsite distribution lines, such as to substations or other major transmission lines/facilities. So, in this case, since there are no new off-site transmission/distribution lines as a part of this request (i.e., existing tie-in transmission lines are along edge of property), no undergrounding of lines would apply or be required."

Chapter 19.20.360: Chapter 19.20.360 adopts the Uniform Solar Energy Code as it relates to the physical design of the solar facility; not the land use type.

Therefore, per discussion with CEC technical staff Eric Knight on December 5, 2007, this Chapter of the Building and Construction Ordinance (Title 19 of the San Luis Obispo County Code) does not apply to the land use section of the Project AFC.

TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 7: Please provide a full-page color photographic reproduction depicting the visual appearance of the site prior to construction.

Response: Provided as attachments to this sheet, are the following full-page color figures:

- Figure 3.4-1 (A) – Existing Aerial View of Project Site Prior to Construction Carrizo Energy Solar Farm (CESF).
- Figure 3.4-1 (B) – Aerial Simulation Carrizo Energy Solar Farm (CESF).

EXISTING AERIAL VIEW OF PROJECT SITE
PRIOR TO CONSTRUCTION
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472	**3.4-1 (A)**

Path: G:\gis\projects\1577\22239320\mxd\simulations_existing_aerial.mxd, 12/04/07, jamie_nyholt

AERIAL SIMULATION
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472	**3.4-1 (B)**

Path: G:\gis\projects\1577\22239320\mxd\simulations_aerial.mxd, 12/04/07, jamie_nyholt

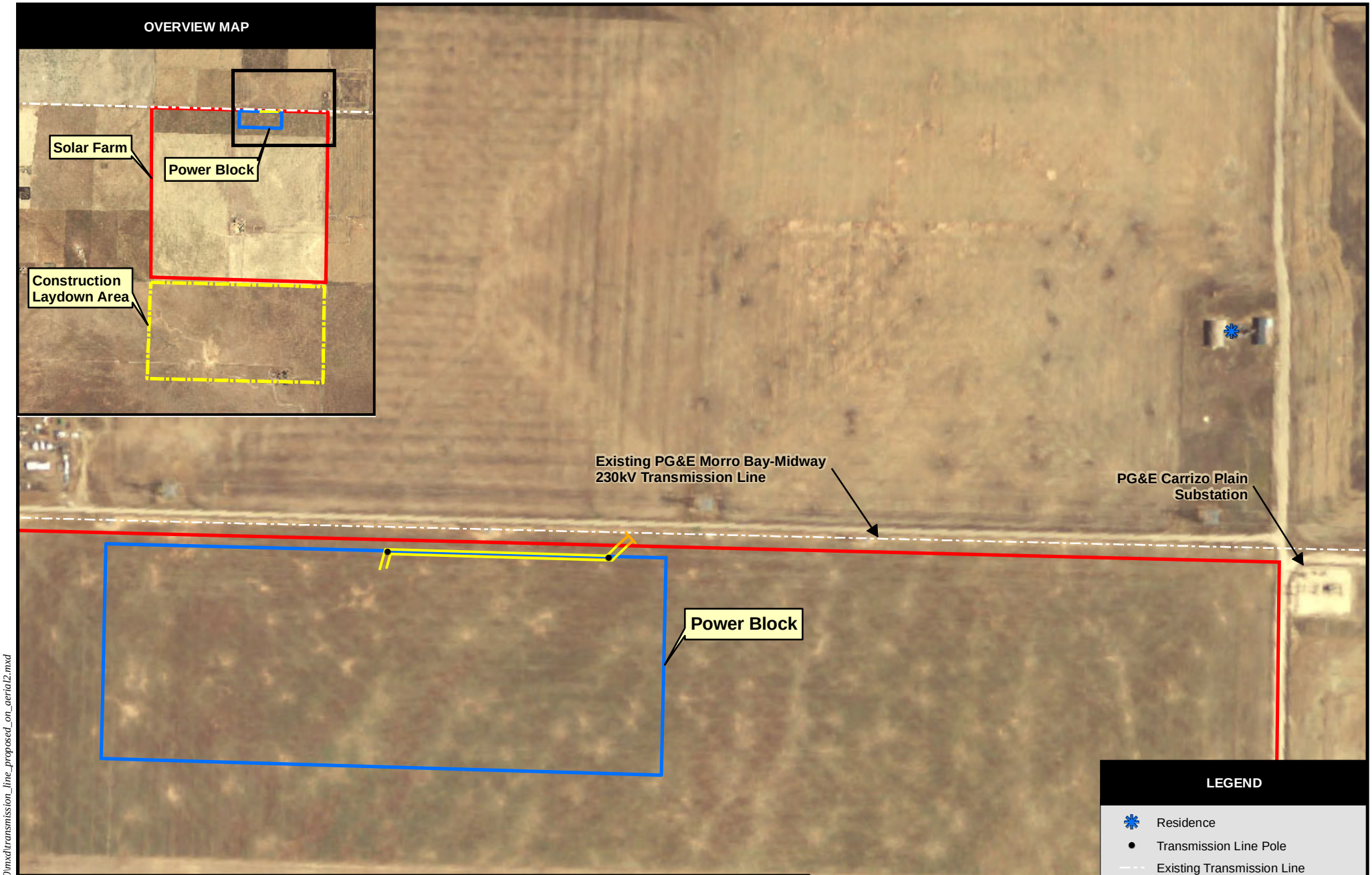
TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 8: Please provide a map of each proposed transmission line route, showing the settled areas, parks, recreational areas, scenic areas, and existing transmission lines within one mile of the proposed route(s). Please differentiate between the on-site and off-site portions and include the existing line to the Midway substation.

Response: As discussed in Section 3.0, Facility Description and Location, of the project document (07-AFC-08), the Carrizo Energy Solar Farm (CESF) transmission system will require construction of approximately 260 m (850 feet) of 230 kV transmission line. As depicted in Figure PO-8(A), Proposed Transmission Line Location On Existing Aerial View and Figure PO-8(B), Proposed Transmission Line Location On Simulated Aerial View (provided as attachments to this sheet), the proposed CESF overhead transmission line begins at the dead-end structure of the switchyard (within the power block) and continues east along the northern edge of Section 28 for approximately 213 m (700 feet), then north for 46 m (150 feet) to interconnect with the existing PG&E Morro Bay-Midway 230 kV transmission line located along the northern boundary of the Project site. The transmission line is within the Project site boundary except for a 27 m (90 feet) long segment that connects to the PG&E tower.

The proposed on-site transmission line is shown in yellow and the transmission line extension off-site is shown in Orange. Please also see Figure 3.4-4 Power Block General Arrangement provided in Section 3.0 of the project document (07-AFC-08). There are no parks, recreational areas, or designated scenic areas within one mile of the proposed transmission line route. In addition, the settled areas within one mile of the proposed route are not all able to be shown on Figures PO-8(A) and PO-8(B) due to the scale required to clearly display the difference between proposed on- and off-site transmission lines. Please refer to Figure 5.13-2 provided in Section 5.13, Visual Resources, of the project document (07-AFC-08) for settled areas within one mile of the project site/proposed transmission line route.

Per URS (Amy Gramlich) telephone correspondence with Mary Dyas on November 27, 2007, Figures PO-8(A) and PO-8(B) are not required to depict “the existing line to the Midway substation” as CESF does not propose transmission lines that extend to the Midway Substation. However, Figures PO-8(A) and PO-8(B) do show the segment of the existing PG&E Morrow Bay-Midway 230 kV transmission line located along the northern boundary of the site. For reference purposes, Figure PO-8(C) is provided as an attachment to depict the existing PG&E Morrow Bay-Midway line as it extends to the Midway Substation.



LEGEND

- Residence
- Transmission Line Pole
- Existing Transmission Line
- On-Site Transmission (760 feet)
- Off-Site Transmission Line (90 feet)
- Solar Farm
- Power Block
- Construction Laydown Area

SOURCES: USDA FSA Aerial Photography
Field Office: County image mosaic for
San Luis Obispo, CA (2005).

N

URS

150 0 150 300 Feet

SCALE: 1" = 150' (1:3,600)

PROPOSED TRANSMISSION LINE LOCATION ON EXISTING AERIAL VIEW CARRIZO ENERGY SOLAR FARM (CESF)

CREATED BY: JN	DATE: 12-05-07	FIG. NO:
PM: AL	PROJ. NO: 22239472	**PO-8 (A)**

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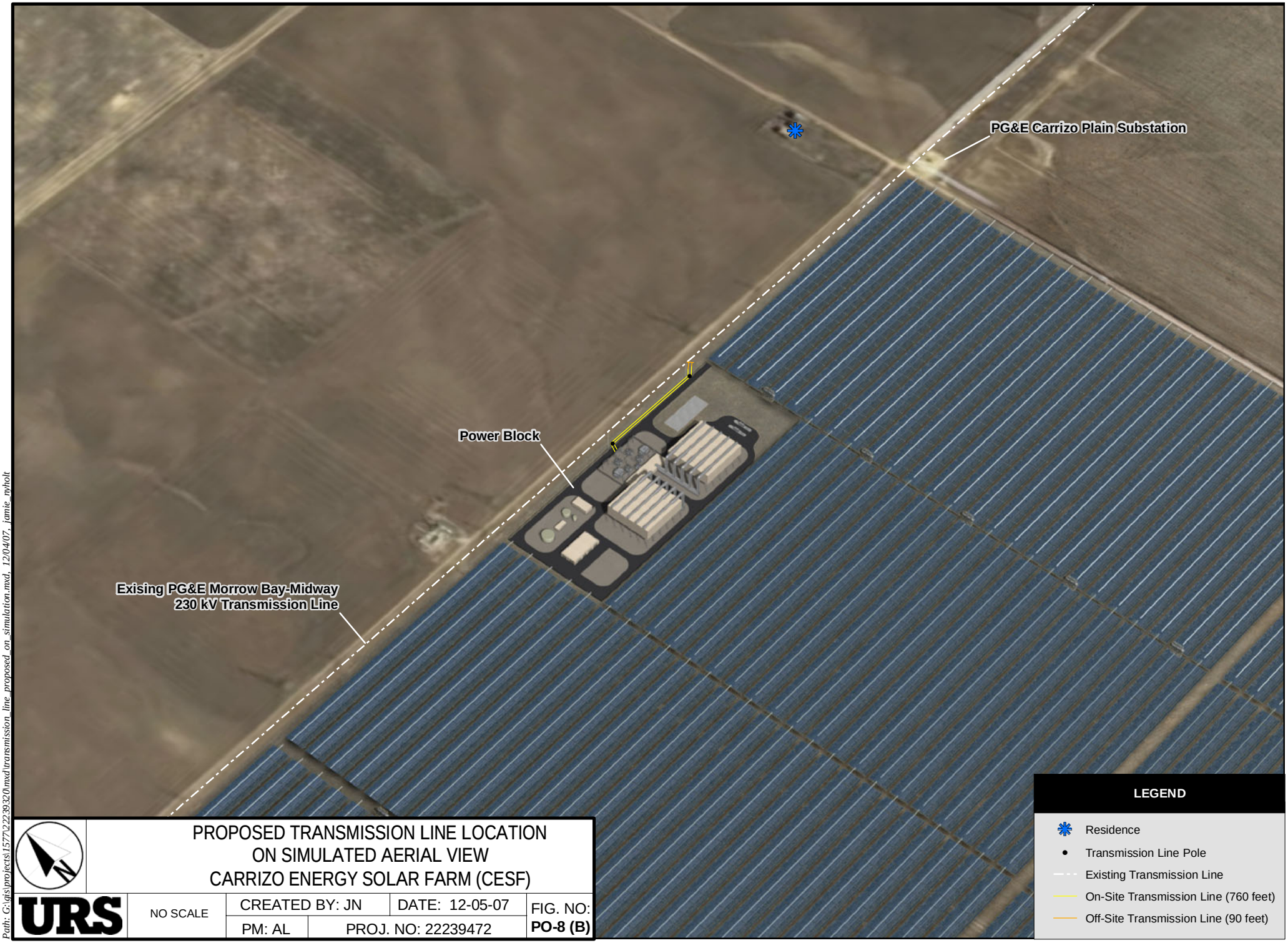

PROPOSED TRANSMISSION LINE LOCATION
ON SIMULATED AERIAL VIEW
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472	PO-8 (B)

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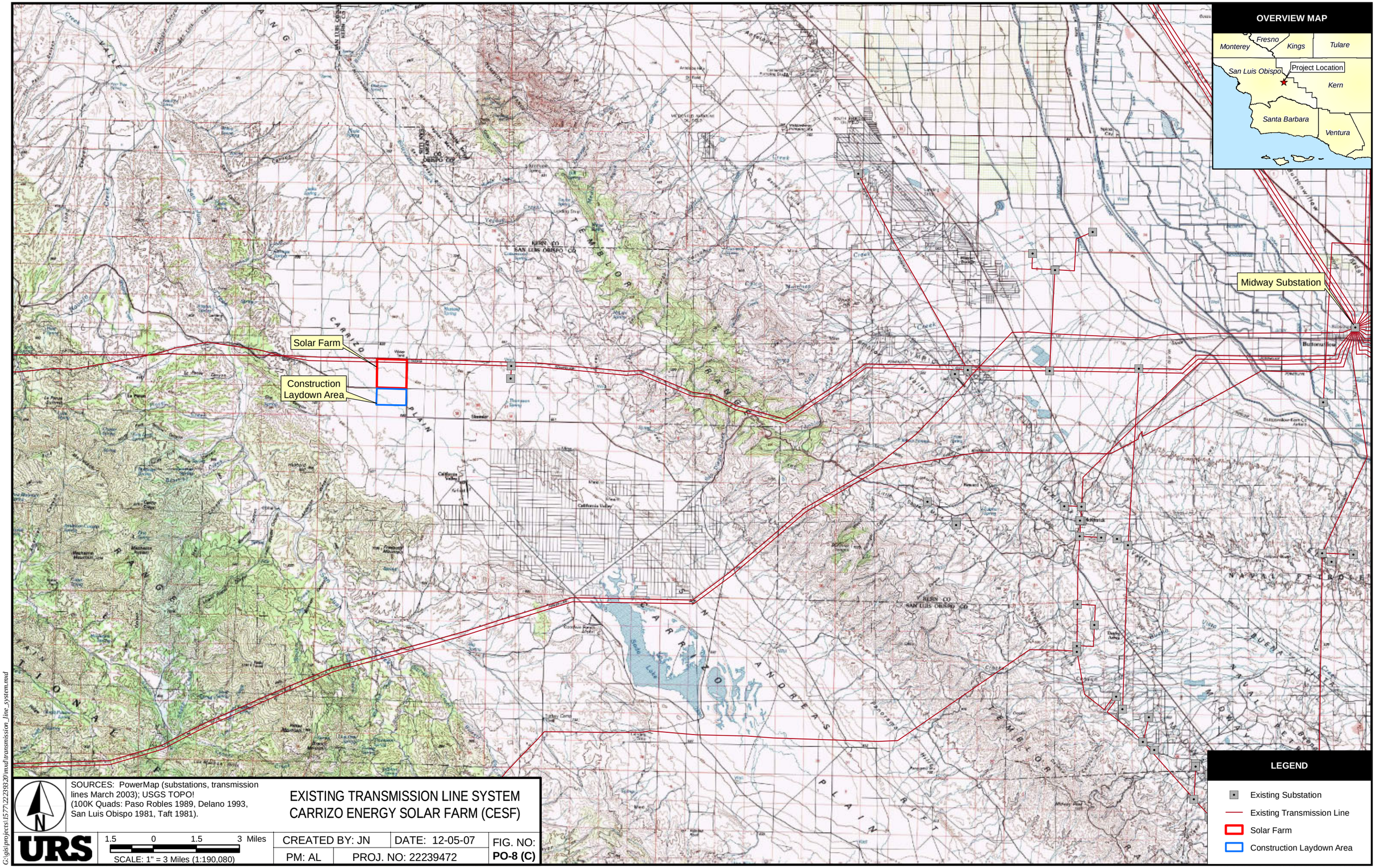


SOURCES: PowerMap (substations, transmission lines March 2003); USGS TOPO! (100K Quads: Paso Robles 1989, Delano 1993, San Luis Obispo 1981, Taft 1981).

EXISTING TRANSMISSION LINE SYSTEM
CARRIZO ENERGY SOLAR FARM (CESF)

URS

1.5 0 1.5 3 Miles
SCALE: 1" = 3 Miles (1:190,080)

CREATED BY: JN	DATE: 12-05-07	FIG. NO:
PM: AL	PROJ. NO: 22239472	PO-8 (C)

G:\gis\projects\577\22239320\mxd\transmission_line_system.mxd

TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 9: Please provide a full-page color photographic reproduction depicting a representative above ground section of the transmission line route prior to construction and a full-page color photographic simulation of that section of the transmission line route after construction. Please differentiate between the on-site and off-site portions and include the existing line to the Midway substation.

Response: Provided as attachments to this sheet, are the following full-page color figures:

- Figure 5.4-3(A) – Existing PG&E Morrow Bay-Midway 230 kV Transmission Lines Carrizo Energy Solar Farm (CESF).
- Figure 5.4-3(B) – Interconnection Simulation Carrizo Energy Solar Farm (CESF).

Please Note: Figure 5.4-3(B) was provided as an architectural rendering and was not developed from a photograph taken at the site. Therefore, Figure 5.4-3(A) is a photograph of the existing PG&E Morrow Bay-Midway 230 kV transmission lines, taken in an effort to show a related view of existing conditions (site prior to construction) at the site.

The photograph provided as Figure 5.4-3(A) was taken from the northeastern corner of the Project site looking directly west down the existing PG&E Morrow Bay-Midway transmission line corridor (therefore, the Project site is on the left side of the photograph). The simulated photograph provided as Figure 5.4-3(B) shows an aerial view of the proposed transmission line connection (as if taken from a helicopter) from the northeastern quadrant of the Project site facing northwest along the transmission line system.

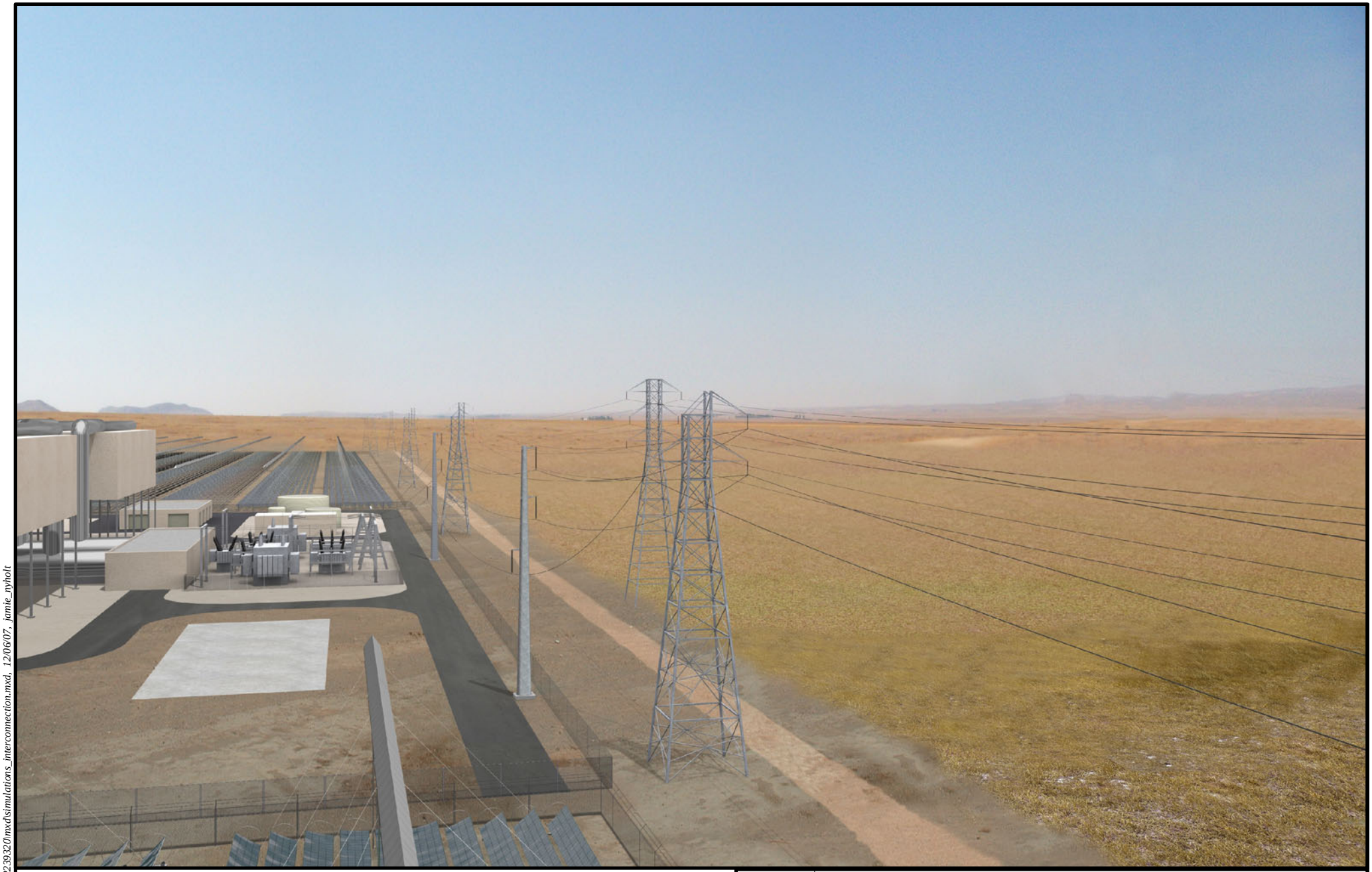
Figure 5.4-3, provided in Section 3.0, Facility Description and Location, of the project document (07-AFC-08), incorrectly depicted a paved road along the existing PG&E Morrow Bay-Midway transmission line corridor parallel to the CESF Project site. CESF does not propose paving the existing dirt road (see Figure 5.4-3 (A)). Therefore, the simulation has been revised to properly depict that the existing dirt road will remain unpaved.

As discussed in the response to Data Adequacy Request 8, per URS (Amy Gramlich) telephone correspondence with Mary Dyas on November 27, 2007, Figure 5.4-3(A) and Figure 5.4-3(B) are not required to depict “the existing line to the Midway substation” as CESF does not propose transmission lines that extend to the Midway Substation. Please refer to Figure PO-8(C), provided as an attachment to Data Adequacy Request 8 above, to view the existing PG&E Morrow Bay-Midway line as it extends to the Midway Substation.

EXISTING PG&E MORROW BAY-MIDWAY
230kV TRANSMISSION LINES
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472	**3.4-3 (A)**

Path: G:\gis\projects\1577\22239320\mxd\simulations_interconnection_existing.mxd, 12/04/07, jamie_nyholt



INTERCONNECTION SIMULATION
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-06-07	FIG. NO: **3.4-3 (B)**
		PM: AL	PROJ. NO: 22239472	

Path: G:\gis\projects\157\22239320\mxd\simulations_interconnection.mxd, 12/06/07, jamie_nyholt

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 10: Please provide fiscal resources, and a list of the applicable local agencies with taxing powers and their most recent and projected revenues.

Response: The local agency with taxing power includes San Luis Obispo County. San Luis Obispo County's estimated summary of expenditures is presented in Table 1. The County's Revenues are shown in Table 2. The County's revenues have shown steady growth in recent years, growing 14 percent since 2004. The major source of revenues for the County are intergovernmental revenues (about 42 percent) followed by taxes (about 32 percent). Property taxes alone account for approximately 21 percent of total revenues for the County.

Table 1
County Expenditures

	2006-2007	**2007-2008**
Fiscal & Administrative	$23,010,000	$24,670,000
Reserves and Contingencies	$36,816,000	$39,472,000
Finance	$32,214,000	$29,604,000
Land Based	$55,224,000	$64,142,000
Community Services	$13,806,000	$14,802,000
Health & Human Services	$151,866,000	$167,756,000
Public Protection	$105,846,000	$113,482,000
Capital Projects	$9,204,000	$9,868,000
Internal Support	$32,214,000	$29,604,000
Total General Fund	**$460,200,000**	**$493,400,000**

Table 2 **Summary of Estimated Revenue, Other Financing Sources and Transfers Fiscal Year ended 2006-2007**			
	Actual 2004-2005	**Actual 2005-2006**	**Estimated 2006-2007**
Current Secured Property Tax	$472,106,399	$78,967,704	$86,144,055
Current Unsecured Property Tax	$1,934,108	$2,048,190	$2,054,160
Supplemental Property Tax	$4,196,654	$7,690,809	$3,044,742
Other Tax	$32,235,840	$42,283,010	$43,371,814
Total Taxes	**$110,473,001**	**$130,989,713**	**$134,614,771**
Licenses/Permits, Fines/Penalties	$17,868,723	$15,308,072	$14,879,377
Revenues From Use of Money & Property	$3,632,915	$5,547,499	$2,478,450
Intergovernmental Revenues	$160,812,086	$178,681,763	$174,253,853
Charges for Service	$35,980,183	$35,964,325	$34,905,337
Other Revenue & Financing Sources	$39,168,479	$53,411,702	$57,493,354
Total	**$367,935,387**	**$419,903,074**	**$418,625,142**

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 11: Please provide an estimate of non-local workers who will relocate to the project area to work on the project during the operations phase.

Response: Carrizo Energy, LLC is currently in the process of defining local resources to support the Project. The Carrizo Energy Solar Farm will continue to work with local groups to identify opportunities for local employment. Based on the expected operational workforce ranging from 40 to 75 full-time employees, it is reasonable to assume that the local available workforce can provide the facility workforce without negatively impacting the local employment base. Between 12 and 23 of the 40 to 75 workers will already live in nearby areas. Of the remaining 17 to 63 workers, possibly 6 to 12 workers will relocate from other local areas of the County of San Luis to shorten their commute.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 12: Please provide an estimate of the potential population increase caused indirectly by the project.

Response: The Carrizo Energy Solar Farm (CESF) will not indirectly cause a population increase to the local area. All of the workers are expected to commute to the Project site from various areas of San Luis Obispo County and Bakersfield, and no workers are expected to relocate as a result of employment at the CESF.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 13: Please provide an estimate of applicable school impact fees.

Response: The Carrizo Energy Solar Farm (CESF) will be within the Atascadero Unified School District and will incur a school impact fee for commercial development. Upon issuance of a building permit, the school impact fee will be assessed based on the rate of $0.43/ft^2. The square footage of the development is estimated at 64,000 ft^2, which would result in a school impact fee of $27,520.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 14: Please provide separate estimates of the total operation payroll for permanent and short-term (contract) operation employees.

Response: In order to estimate a range of total payroll several potential scenarios have been evaluated. One scenario is that two lines of reflectors are cleaned every day, and that each line is cleaned approximately every 100 days. A line cleaning requires moderately skilled resources and supervision such that a 5 person crew can complete 1 line (4,000m) per day (so two lines cleaned daily would require two crews, totaling 10 persons (FTE)). Power block operators, and daily maintenance supervision and crews, are a minimum of 15 per shift, 2 shifts per day, which comes to a total of 30 persons (FTE). Therefore, the minimum total O&M team is 40 persons (FTE).

Alternatively, in a maximum employment scenario, the assumptions being that five lines are cleaned every day and that each line is cleaned approximately every 40 days: Five 5-man crews would be employed to clean 5 lines per day (25 FTE cleaners). In addition, management and operators could add 50 persons (FTE). In such a scenario, the total O&M team would number 75 persons (FTE).

Based on these assumptions, the number of permanent employees will range between 40 and 75 FTE employees, as follows:

- 10 to 25 Cleaners
- 20 to 30 Operators and Maintenance Technicians
- 10 to 15 Managers and Administrators
- 3 to 5 permanent contract personnel for administration building cleaning services.

The cleaners will likely earn between $30,000 and $40,000/yr, at an annual total of $350,000 to $875,000. These personnel will be tasked with cleaning reflectors on a regular, routine, and continuous basis.

Operations and Maintenance Technicians will earn between $50,000 and $90,000/yr, at an annual total of $1,500,000 to $2,250,000. These personnel will perform the operations and maintenance for the facility under the direction of management, including daily startups and shutdowns as well as all routine maintenance.

Managers and Administrators will earn between $40,000 and $120,000/yr, at an annual total of $900,000 to $1,350,000. These personnel are the Office Manager, Plant Engineer, Maintenance Manager, Instrument & Controls Manager, Plant Manager, Operations Manager, Accounting Manager, Operations Supervisor, Maintenance Supervisor, I&C Supervisor. These personnel are to be responsible for all operating and maintenance routines including planning, coordinating and executing all facility functions and activities. Furthermore these personnel are responsible for maintaining facility operations in accordance with all applicable laws, ordinances, conditions and regulations.

Annual turbine and generator inspections as well as overhauls, when required, will be performed by contract personnel with specialized skills and ability. The value of these contracts will range from $25,000 for inspections to $250,000 for overhauls.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 15: Please provide an estimate of the expenditures for locally purchased materials for the construction and operation phases of the project.

Response: Due to the remote location of the facility and the fact that few industrial supply businesses are part of the local area it is likely that the closest material suppliers will be in the Paso Robles, Atascadero, and San Luis Obispo area or Bakersfield area.

Purchases during construction are likely to include vehicle fuel and maintenance; industrial oils and lubricants; concrete; equipment rentals such as forklifts, cranes, etc.; lumber; sheetrock; cleaning supplies; waste disposal services; office supplies and other materials, with a potential cost in excess of $10,000,000.

Purchases during operation will likely include vehicle fuel and maintenance, industrial oils and lubricants, cleaning agents, paints, office supplies and equipment, water treatment services and chemicals, waste disposal services, telephone service, with a potential cost of $2,000,000 or more per year.

Other than industrial equipment and supplies there will be a need for various foods and beverages which could be acquired from Mckittrick, Santa Margarita, or Taft.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 16: Please provide an estimate of sales taxes generated during construction and separately during an operational year of the project.

Response: Due to the remote location of the facility and the fact that few industrial supply businesses are part of the local area it is likely that the closest material suppliers will be in the Paso Robles, Atascadero, and San Luis Obispo area or Bakersfield area.

Purchases during construction are likely to include vehicle fuel and maintenance, industrial oils and lubricants, concrete, equipment rentals such as forklifts, cranes, etc., lumber, sheetrock, cleaning supplies, waste disposal services, office supplies and other materials with a potential cost in excess of $10,000,000. At the current county sales tax rate of 7.75 percent, sales taxes on these purchases are expected to be approximately $775,000.

Purchases during operation will likely include vehicle fuel and maintenance, industrial oils and lubricants, cleaning agents, paints, office supplies and equipment, water treatment services and chemicals, waste disposal services, telephone service, with a potential cost of $2,000,000 or more per year. Sales taxes on these purchases are expected to be approximately $155,000.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 17: 1. Please indicate what year the economic estimates are for.

2. Please estimate the expected income and employment secondary impacts (indirect and induced) due to the construction, operation, and maintenance of the project.

3. Please show the employment and income multipliers, Type II or Type III, and identify the economic model used e.g., IMPLAN or other.

Response: 1. Please indicate what year the economic estimates are for.

Economic estimates provided are based on 2007 dollars.

2. Please estimate the expected income and employment secondary impacts (indirect and induced) due to the construction, operation, and maintenance of the project.

Construction and operation of the proposed Project would result in secondary (indirect and induced) income and employment effects in Kern and San Luis Obispo counties. *Indirect effects* describe impacts (e.g., change in employment) caused by the iteration of industries purchasing from industries resulting from direct final demand changes. *Induced effects* represent impacts (e.g., change in employment) on all industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes.

Indirect and induced income and spending effects would occur from the purchase of goods and services by firms involved with construction and operation. Indirect and induced employment effects would result from workers spending their income in their local area, and typically lag behind direct effects by 6 to 12 months.

<u>Construction</u>

The estimated total construction cost of the Carrizo Energy Solar Farm (CESF) is $500 million. Of this, the estimated value of materials and supplies purchased locally in Kern and San Luis Obispo counties is $10 million. The Project would require an average direct construction employment of 290, with an estimated total construction payroll of $170 million. IMPLAN Pro Sector 41 (Other New Construction) was used for this analysis, and economic estimates were based on 2007 dollars.

The estimated CESF indirect and induced labor income impacts are $902,298 and $13,652,759, respectively. Assuming the total annual value of local construction purchases to be $3.4 million[1], the project construction income

[1] $3.4 million is the approximate annual portion of the total local construction expenditures of supplies and materials ($10 million) over the total construction timeframe (35 months) that is assumed to remain in Kern and San Luis Obispo

multiplier is approximately 1.2 (i.e., [($58,285,714 + $902,298 + $13,652,759)/$58,285,714], and is based on a Social Accounting Matrix (SAM) Type model.

The Project's estimated indirect and induced construction employment impacts in Kern and San Luis Obispo counties are 19 and 385 jobs, respectively. These additional jobs result from the $3.4 million in annual local construction expenditures and approximately $58.3 million[2] in annual payroll. Based on an average direct construction employment of 290 workers, the employment multiplier associated with the construction of CESF is approximately 2.4 [(290 + 19 + 385)/290]. This project construction employment multiplier is based on a Type SAM model.

Operation

Indirect and induced impacts during Project operation and maintenance represent *permanent* increases in area jobs, income, and spending. The modeling input was based on estimated annual local O&M expenditures of $2 million, an average direct employment of 75 personnel with a combined payroll of $4.25 million, and short-term and contract work valued at an annual average of $137,500, with an estimated equivalent employment of 2 personnel. The short-term and contract work is expected to include occupations such as inspectors and equipment specialists with specific knowledge of the Project conditions.

The Project's resulting indirect and induced operation employment effects for permanent employees in Kern and San Luis Obispo counties would be 5 and 27 jobs, respectively. These additional jobs result from the $2 million in operations and maintenance and $4.25 million in payroll. Based on a direct operation employment of 75 permanent workers, the employment multiplier associated with the operation of CESF is approximately 1.4 [(75 + 5 + 27)/75]. Based on the estimated annual expenditures for short-term and contract work of $137,500, with the equivalent employment of 2 personnel, the Project's resulting indirect and induced employment effects for short-term and contract workers is 1.5 [(2 + 0 + 1)/2]. The Project's total indirect and induced employment effects for both permanent and contract workers would be 5 and 28, respectively. With the direct employment of 77 workers, the employment multiplier associated with operation of CESF is 1.4 [(77 + 5 + 28)/77]. This project operation employment multiplier is based on a Type SAM model.

Operation of CESF would result in estimated indirect and induced income impacts of $329,069 and $934,098, respectively from the permanent employees. The income multiplier associated with the operational phase of the project is approximately 1.3 [($4,250,000 + $329,069 + $934,098)/$4,250,000]. Short-term and contract employees would result in no indirect impacts and $27,451 of

counties. The annual portion of total expenditures = $10 million x (12 months/35 months) = $3,428,571. This value was rounded and presented in the text as $3.4 million; the actual value used in the modeling was $3,428,571.

[2] $58.3 million is the annual portion of the total local construction payroll ($170 million) over the total construction timeframe (35 months). The annual portion of total construction payroll = $170 million x (12 months/35 months) = $58,285,714. This value was rounded and presented in the text as $58.3 million; the actual value used in the modeling was $58,285,714.

induced income impacts. Based on an annual expenditure of $137,500 on contract workers, the associated impact multiplier is 1.2 [($137,500 + $0 + $27,451)/$137,500]. The Project's total indirect and induced employment effects for both permanent and contract workers would be $329,069 and $961,549, respectively. The associated income multiplier is 1.3 [$4,387,500 + $329,069 + $961,549)/$4,387,500]. This project operation income multiplier is based on a Type SAM model.

3. Please show the employment and income multipliers, Type II or Type III, and identify the economic model used e.g., IMPLAN or other.

The construction and operation multipliers for employment and income impacts derived from the economic modeling are presented in the table below. The employment and income multipliers for construction and operation of the proposed Project are based on a SAM type model. Indirect and induced impacts were estimated using IMPLAN Professional (version 2.0.1025) input/output modeling.

CESF Construction and Operation Multipliers for Employment and Income Impacts, 2007 Dollars

	Direct	Indirect	Induced	Multiplier
Construction				
Employment	290	29	385	2.4
Labor Income	$58,285,714	$902,298	$13,652,759	1.2
Operation[1]				
Employment	77	5	28	1.4
Labor Income	$4,387,500	$329,069	$961,549	1.3

[1] Total, including permanent and short-term/contract workers.

TECHNICAL AREA: SOIL RESOURCES

Data Adequacy Request 18: Please provide an estimate of soil loss by water erosion. Staff recommends using Revised Universal Soil Loss Equation (RUSLE2).

Response: Provided as an attachment to this sheet are the estimates of soil loss by water erosion.

Soil Erosion

Soil Loss (tons/Ac-yr)	Assumptions	
RUSLE (A) = R*K*LS*C*P		
Rainfall Runoff Erosivity Factor ®		100
Soil Erodibility Factor (K)	Moderate	0.20
Soil Types:	90%-Capay Clay (0-2%)	
	10%-Yeguas-Pinspring Complex (2-5%)	
L (Slope Length Factor)	Slope Steepness Factor (S)	0.27
Slope		1%
Cover-Management Factor ©	Fallow ground	1.0
Erosion Control Practice Factor (P)	Loose as disked ploy layer	1
Area (Ac)	Total site area (Ac)	640
Soil Loss (RUSLE)	Estimated Sediment Discharge (Tons/Ac-Yr)	5.40
Soil Loss (RUSLE)	Estimated Sediment Discharge (Tons/Yr)	3,456

Wind Erosion
E=f(I*K*C*L*V)
Annual Soil Loss (Tons/Ac) (E)
Soil Erodibility Index % > 0.84mm
Surface Roughness (K)
Average Wind Factor ©
Unsheltered Distance across field
Vegetated Cover (V)

TECHNICAL AREA: TRAFFIC AND TRANSPORTATION

Data Adequacy Request 19: Please provide roadway design capacities for State Route 58.

Response: Two-lane state highways such as SR-38 can carry up to a 1,900 passenger car capacity per hour per lane. Table 5.11-3 in the Project document (07-AFC-8) specifies the Caltrans Level of Service Criteria used in the analysis.

TECHNICAL AREA: TRAFFIC AND TRANSPORTATION

Data Adequacy Request 20: As to project-related hazardous materials, please provide a discussion of the estimated quantities, estimated number of trips, anticipated routes, means of transportation, and any transportation hazards associated with such transport.

Response: Normal operations and maintenance requires the use of industrial lubricants and chemicals typically found in light industrial facilities for lubricating, cooling, preserving and cleaning equipment. Those materials deemed hazardous will be subject to Department of Transportation (DOT) requirements for transport, including vessel and container identification as well as handling procedures during transport. Furthermore, Cal-OSHA, NFPA, and other agencies and jurisdictions strictly delineate labeling, storage, and handling requirements, once the materials are received on site.

Hazardous Waste associated with the lubricating, cooling, preserving and cleaning materials used on site will be stored in accordance with Cal-OSHA requirements and will be handled by certified hazardous waste haulers, disposers and recyclers.

The Carrizo Energy Solar Farm is accessed via State Route 58 (SR-58) in eastern San Luis Obispo County with no known alternative routes. All material will be transported to and from the site on SR-58, as there are no suitable alternatives. All vendors, suppliers and delivery agents will be instructed to use only designated highways and roadways for the transport of these materials. SR-58 connects to U.S. Route 101 in the west and Interstate 5 in the east.

During the construction period, it is anticipated that approximately three truck or tanker trips per day will be used to haul hazardous construction materials to and from the Project site. Recyclable materials such us used oils will be transported to Bakersfield while non recyclable materials will be disposed of in the Class I disposal facility in Kettleman City.

A summary of hazardous materials to be used and stored and hazardous materials generated during Project construction is provided in Table 1.

During project operations, it is anticipated that approximately one truck or tanker trip per day will be used to haul hazardous construction materials to and from the Project site. Recyclable materials such as used oils will be transported to Bakersfield while non-recyclable materials will be disposed of in the Class I disposal facility in Kettleman City.

A summary of hazardous materials to be used and hazardous waste generated during operation of the Project is provided in Table 2.

Table 1
Project Construction Hazardous Materials and Waste

Hazardous Material	Purpose	Storage Location	Maximum Quantity Stored	Estimated No. of Trips	Anticipated Routes	Means of Transportation	Associated Hazards
Diesel fuel	Refueling construction vehicles and equipment	Laydown area	1,000 gallons	As needed	SR-58, I-5, US-101	Tanker	Fire, Spill
Diesel fuel	Refueling Truck	Laydown area/mobile	1,320 gallons	As needed	SR-58, I-5, US-101	Tanker	Fire, Spill
Lubricating oil	Lubricating equipment parts	Contained in storage tanks on equipment skids	3,000 gallon	As needed	SR-58, I-5, US-101	Tanker	Fire, Spill
Gasoline	Refueling construction vehicles and equipment	Laydown area	1,000 gallons	As needed	SR-58, I-5, US-101	Tanker	Fire, Spill
Cleaning chemicals/ detergents	Periodic cleaning	Warehouse/ Shop area	132 gallons	As needed	SR-58, I-5, US-101	Truck	Spill
Hazardous Waste	**Origin Composition**	**Waste Mgmt. Method**	**Estimated Quantity**	**Estimated No. of trips**	**Anticipated Routes**	**Means of Transportation**	**Associated Hazards**
Construction waste – hazardous	Empty hazardous material containers	Return to vendor or dispose to hazardous waste disposal facility	1.3 cubic yards	1 per week	SR-58, I-5, US-101	Truck	Spill
Construction waste – hazardous	Solvents, used oils, paint, oily rags, or adhesives	Dispose to hazardous waste disposal facility or recycle	176 gallons	1 per week	SR-58, I-5, US-101	Truck	Fire, Spill
Spent batteries – hazardous, recyclable	Lead acid, alkaline type	Dispose to recycling facility	40 in 4 years	Intermittent	SR-58, I-5, US-101	Truck	Spill

Table 2
Project Operations Hazardous Materials and Waste

Hazardous Material	Use	Storage Location	Quantity Stored	Estimated No. of trips	Anticipated Routes	Means of Transportation	Associated Hazards
Diesel fuel	Firewater pump driver	Firewater skid	300 gallons (maintain full tank)	As needed	SR-58, I-5, US-101	Tanker	Fire, Spills
Diesel fuel	Refueling station service vehicles	Power block refueling station	1000 gallons (maintain full tank)	As needed	SR-58, I-5, US-101	Tanker	Fire, Spills
Gasoline	Refueling station service vehicles	Power block refueling station	1000 gallons (maintain full tank)	As needed	SR-58, I-5, US-101	Tanker	Fire, Spills
Cleaning chemicals/ detergents	Periodic cleaning	Warehouse/ Shop area	132 gallons	As needed	SR-58, I-5, US-101	Truck	Spills
CORTOL OS5300	Oxygen scavenger	Water treatment building	925 gallons (initial fill)	As needed	SR-58, I-5, US-101	Truck	Spills
Lubricating oil	Lubricating rotating equipments	Storage tanks on equipment	3,170 gallons (total)	As needed	SR-58, I-5, US-101	Truck	Fire, Spills
Laboratory reagents	Water analysis	Water treatment building	<1 gallon	As needed	SR-58, I-5, US-101	Truck	Spills
Mineral transformer insulating oil	Generator step-up (GSU) transformers	Contained within transformers and electrical switches	11,000 gallons each	As needed	SR-58, I-5, US-101	Truck, Tanker	Fire, Spills
Mineral transformer insulating oil	Standby transformer	Contained within transformers and electrical switches	4,000 gallons	As needed	SR-58, I-5, US-101	Truck, Tanker	Fire, Spills
Mineral transformer insulating oil	Auxiliary transformers	Contained within transformers and electrical switches	3,000 gallons each	As needed	SR-58, I-5, US-101	Truck, Tanker	Fire, Spills
Propylene glycol	Coolant antifreeze	Power block	55 gallons	As needed	SR-58, I-5, US-101	Truck	Spills

Table 2
Project Operations Hazardous Materials and Waste
(Continued)

Hazardous Material	Use	Storage Location	Quantity Stored	Estimated No. of trips	Anticipated Routes	Means of Transportation	Associated Hazards
Used hydraulic fluid, oils and grease, oily filters – hazardous, recyclable	STG and other users of hydraulic actuators and lubricants	Dispose to authorized waste recycle facility	5.3 gallons/day	Intermittent	SR-58, I-5, US-101	Truck	Spills
Spent batteries – hazardous, recyclable	Lead acid, alkaline type	Dispose to recycling facility	5/year, 400/year	Intermittent	SR-58, I-5, US-101	Truck	Spills
Oily absorbent – hazardous	STG and other users of hydraulic actuators and lubricants	Dispose to authorized waste disposal facility	55 gallons/ month	Intermittent	SR-58, I-5, US-101	Truck	Fire
Waste oil/sludge – hazardous, recyclable	Oil/water separator (OWS)	Dispose to authorized waste recycle facility	500 gallons	Intermittent	SR-58, I-5, US-101	Truck	Fire, Spills

TECHNICAL AREA: TRANSMISSION SYSTEM ENGINEERING

Data Adequacy Request 21:

1. Provide a complete electrical one-line diagram (or resubmit Figure 3.4-14) of Carrizo Energy Solar Farm (CESF) switchyard showing all the equipment required for the generator interconnection with the switchyard including any bus duct connectors or cables, 4.16 kV switchgear & breakers on the low side (13.8kV), generator step-up transformers, short overhead line or conductors with its configuration, buses, breakers and disconnect switches on the 230 kV side and their respective ratings.

2. Project interconnection point to the California ISO grid is not adequately described in the Facility Description section of the AFC. Please provide a detailed description, and an electrical one line diagram of the interconnection point to the power plant to the Morro Bay-Midway (PG&E) transmission line.

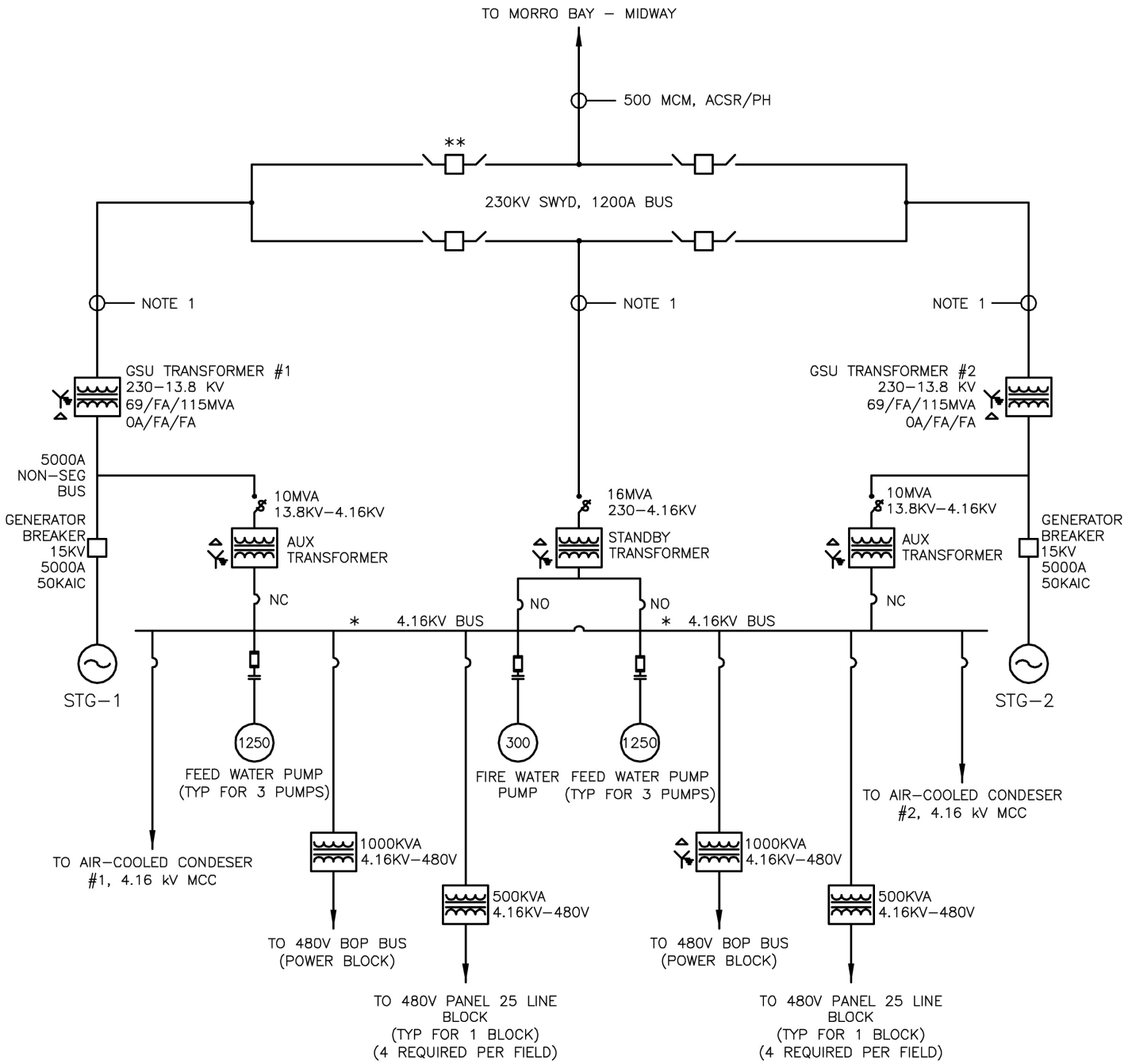
3. Provide conductor size, type and the 230 kV steel-pole configuration of the proposed 850 feet long 230 kV single-circuit which interconnects Morro Bay-Midway transmission line.

Response:

1. Figure 3.4-14 (see Figure TSE-21(A)) has been revised to include all the equipment required for the generator interconnection with the switchyard including any bus duct connectors or cables, 4.16 kV switchgear and breakers on the low side (13.8kV), generator step-up transformers, short overhead line with conductors and configuration, buses, breakers and disconnect switches on the 230 kV side and their respective ratings. Also, refer to Figure 3.4-16, Switchyard Plan, in the AFC, copy attached.

2. Please see Figure TSE-21(B), Single Line Diagram, Proposed 230 kV Interconnection, attached. As described in AFC Sections 1.2.3, Transmission Facilities, and 3.4.12.1 Design, Construction and Operation of Transmission Facilities, the CESF transmission system will require construction of approximately 850 feet of 230 kV transmission line. The overhead line begins at the dead-end structure in the switchyard and extends east along the northern edge of Section 28 for approximately 700 feet, then north for 150 feet to interconnect with the existing PG&E Morro Bay-Midway 230 kV transmission Line #1. Construction of the line will include a dead-end structure at the switchyard and two tubular steel poles with concrete foundation. A minimum ground clearance of 32 feet at the lowest point of the span will be maintained to exceed the minimum clearance required by GO-95. The final design value will be consistent with General Order 95 and the NESC. Any underground power and communication lines construction will meet GO-128.

3. The proposed CESF transmission interconnect conductors would be 500 MCM ACSR conductors. Please see Figures TSE-21(C) and TSE-21(D), Typical 230 kV Single Circuit Single-Shaft, Tubular Pole for the proposed steel-pole configurations.



NOTES:

1. SEE FIG 3.4–16, SWITCHYARD PLAN

* 4.16KV, 3000A, 350MVA

** 230KV CIRCUIT BREAKER RATED AT 1200A, 50KA IC

PATCH SERVICES LLC
333 SUNSET AVENUE
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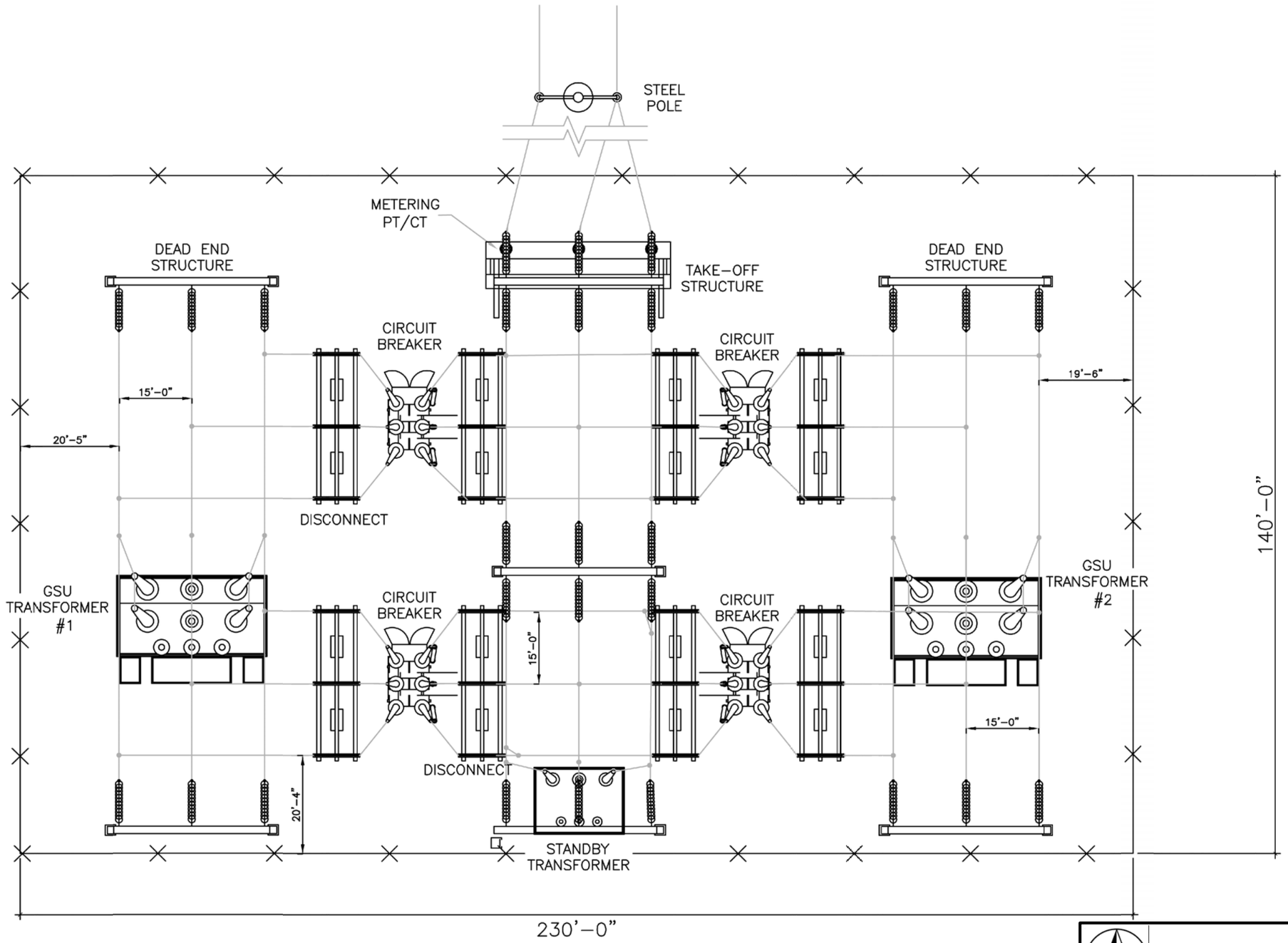
SCALE: NONE	DRAWING NO.	DATE:	REV
JOB NO: 1507	SK–5001	12/02/07	G

SINGLE LINE DIAGRAM
CARRIZO ENERGY SOLAR FARM (CESF)

URS

NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
	PM: AL	PROJ. NO: 22239472.00000	TSE-21(A)



THIS DRAWING WAS PREPARED BY PATCH SERVICES FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH PATCH SERVICES AND PATCH'S CLIENT IS GRANTED.

REV	DATE	DESCRIPTION	CHK'D BY	CHK'D BY	APP'D BY	PROJECT MGR.	APP'D BY
A		PRELIMINARY	CM	KFH	AK		

PATCH SERVICES

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RICHARDSON, TX 75081
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FAX: 972-231-4059

URS

SWITCHYARD PLAN
CARRIZO ENERGY SOLAR FARM (CESF)

CREATED BY: PATCH	DATE: 09-12-07	FIG. NO:
PM: AL	PROJ. NO: 22239472	3.4-16

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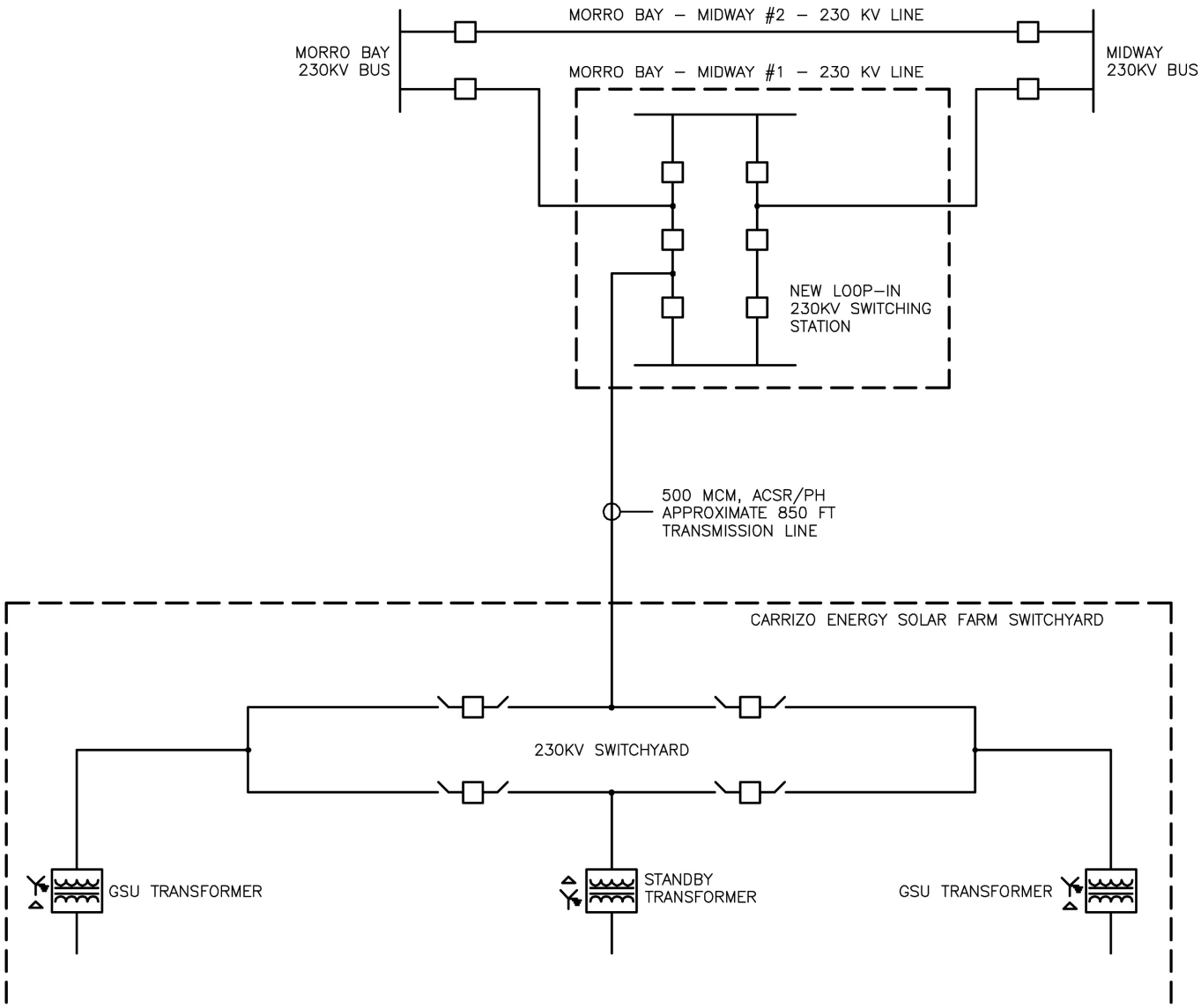
USER: CM Date:

ACAD FILE: D-1507-3000L_A



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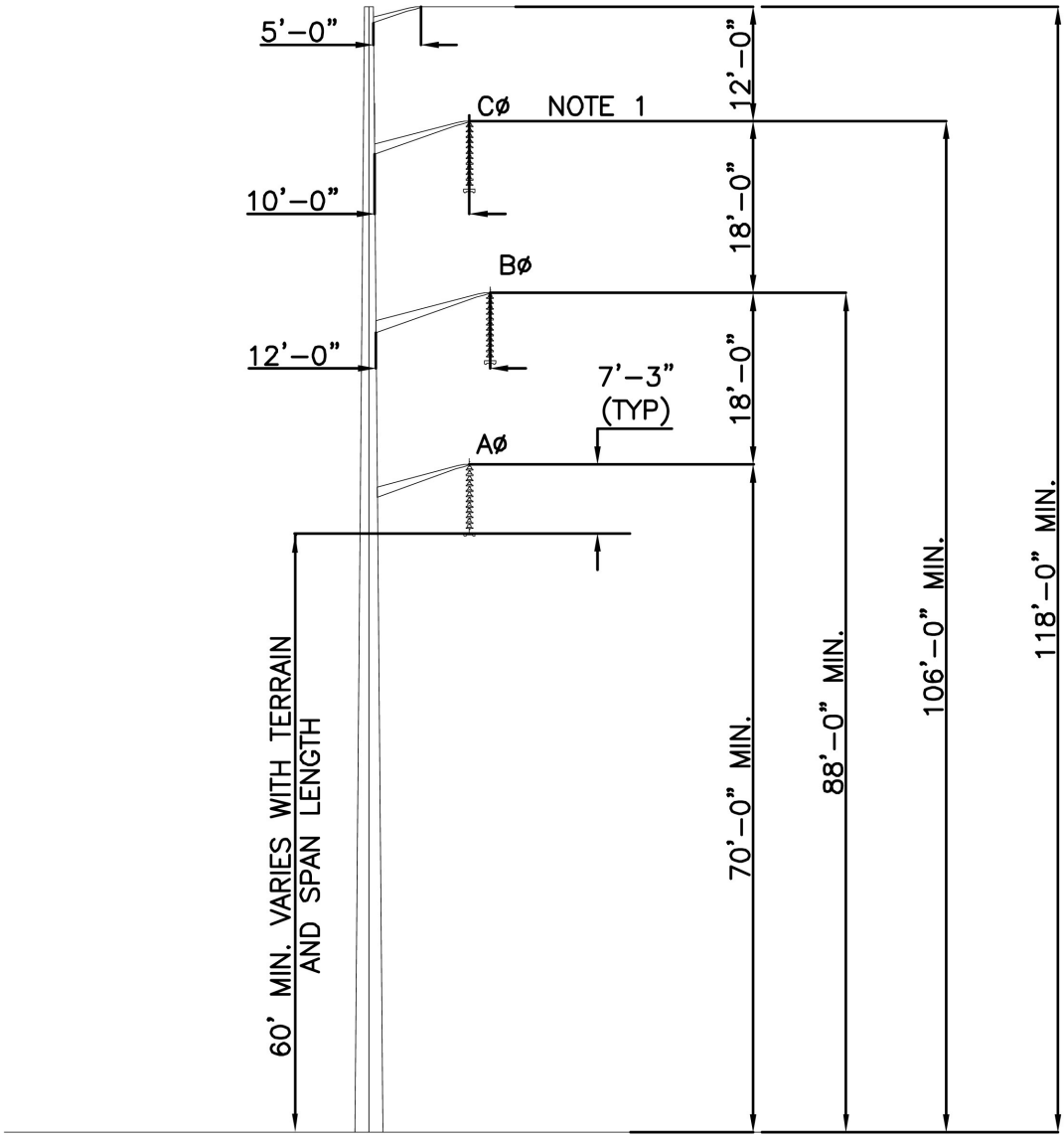
SCALE: NONE	DRAWING NO.	DATE:	REV
JOB NO: 1507	SK–5002	12/01/07	A

SINGLE LINE DIAGRAM
PROPOSED 230 KV INTERCONNECTION
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472.00000	TSE-21(B)



NOTES:

1. FINAL POLE DIMENSIONS WILL BE DETERMINED DURING DETAILED DESIGN.

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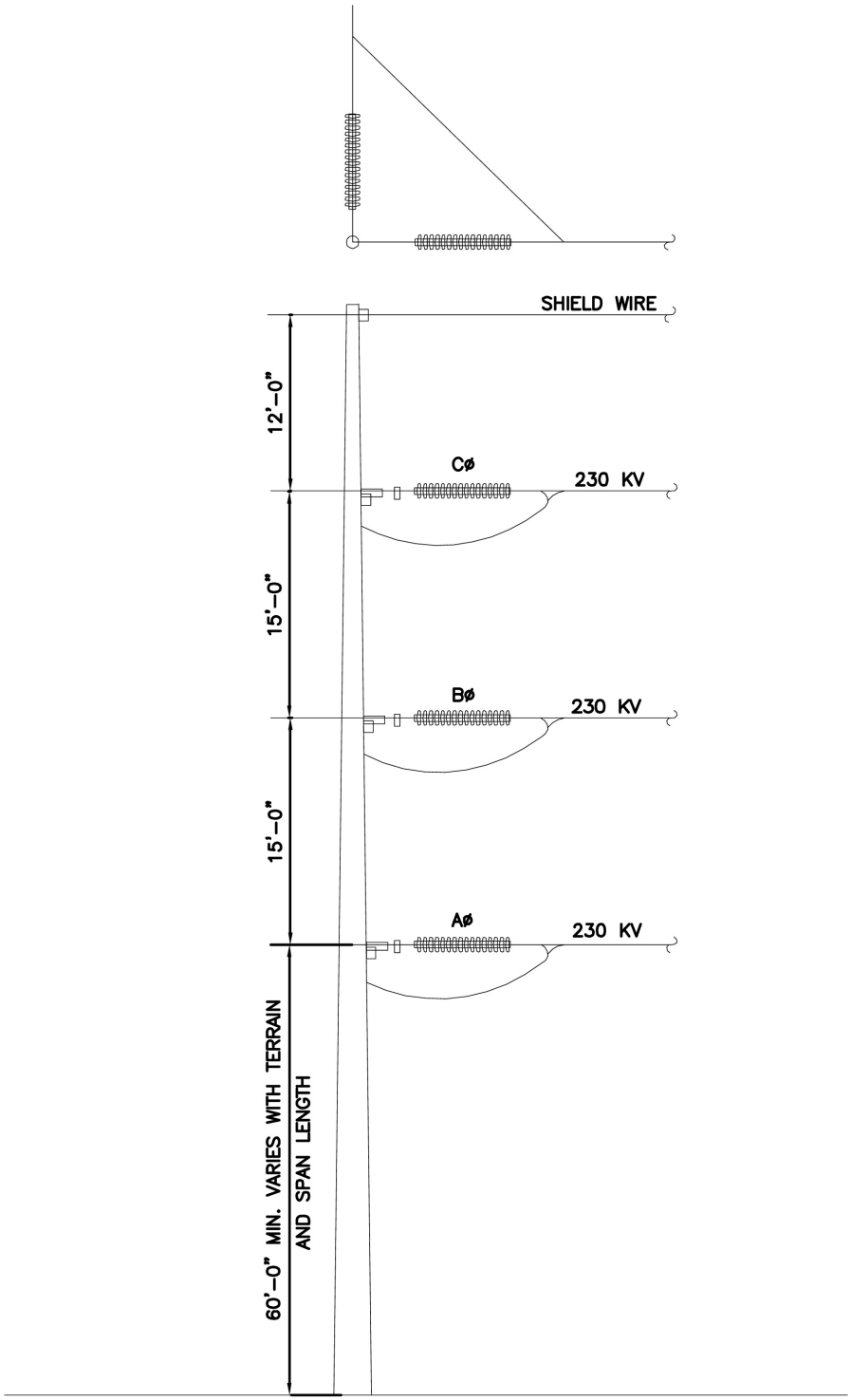
SCALE: NONE	DRAWING NO.	DATE:	REV
JOB NO: 1507	D–1507–5020	12/01/07	A

TYPICAL 230 KV SINGLE CIRCUIT SINGLE-SHAFT, TUBULAR STEEL POLE (FIGURE 1 OF 2)
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472.00000	TSE-21(C)



NOTES:

1. FINAL POLE DIMENSIONS WILL BE DETERMINED DURING DETAILED DESIGN.

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SCALE: NONE	DRAWING NO.	DATE:	REV
JOB NO: 1507	D-1507-5021	12/01/07	A

TYPICAL 230 KV SINGLE CIRCUIT SINGLE-SHAFT, TUBULAR STEEL POLE (FIGURE 2 OF 2)
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: JN	DATE: 12-05-07	FIG. NO:
		PM: AL	PROJ. NO: 22239472.00000	TSE-21(D)

TECHNICAL AREA: TRANSMISSION SYSTEM ENGINEERING

Data Adequacy Request 22: Provide a discussion of the CPUC G.O. 95 and G.O. 98, in relation to the proposed overhead (230 kV single phase circuit) and underground (switchyard interconnection) transmission facilities.

Response: As noted in Data Adequacy Request Response 21, above, minimum ground clearance of 32 feet at the lowest point of the span will be maintained to exceed the minimum clearance required by GO-95. The final design value will be consistent with General Order 95 and the NESC. Any underground power and communication lines construction will meet GO-128, Rules for Construction of Underground Electric Supply and Communication Systems.

TECHNICAL AREA: TRANSMISSION SYSTEM ENGINEERING

Data Adequacy Request 23: Indicate when a copy of the updated System Impact Study (SIS) will be provided to the California Energy Commission.

Response: The good faith estimate Carrizo Energy, LLC has received for the completion of the System Impact Study is March 20th, 2008. Barring any delays, the California Energy Commission will receive a copy of the results then.

TECHNICAL AREA: VISUAL RESOURCES

Data Adequacy Request 24: The AFC does not discuss the effectiveness of the proposed landscape screening to mitigate, to a less than proposed significant level, visual impacts to Key Observation Point 2. Please provide a discussion on this issue.

Response: Carrizo Energy, LLC held an Open House in the CESF Project area on November 13, 2007 to notify residents in the area of the proposed CESF Project and solicit public input. The idea of CESF Project off-site landscaping on adjacent resident properties was proposed to the residents and they seemed open to receiving more information regarding potential landscaping on their properties. The effectiveness of the proposed off-site landscaping depends on landowner agreement with the Applicant to allow for planting on their properties. Please also see response for Data Adequacy Request 26.

TECHNICAL AREA: VISUAL RESOURCES

Data Adequacy Request 25: The existing conditions photographs and simulations of the proposed project are not full page. In addition, the simulations are not presented at life-size scale when held at 10 inches from the eye. The presentation of images at a reduced scale understates the prominence of visible landscape features as well as potential visual impacts. For comparison purposes, please refer to the life-size scaled images provided in the San Gabriel Generating Station Application for Certification (also prepared by URS).

Please provide new Figures 5.13-12 through 5.13-21 that are full page and present the proposed project at life-size scale when held 10 inches from the eye.

Please include in the revised simulation(s) proposed landscaping (five years after installation) to mitigate potentially significant impacts (see Appendix B (g) (6) (H) below). Please provide the estimated time until landscaping maturity is reached.

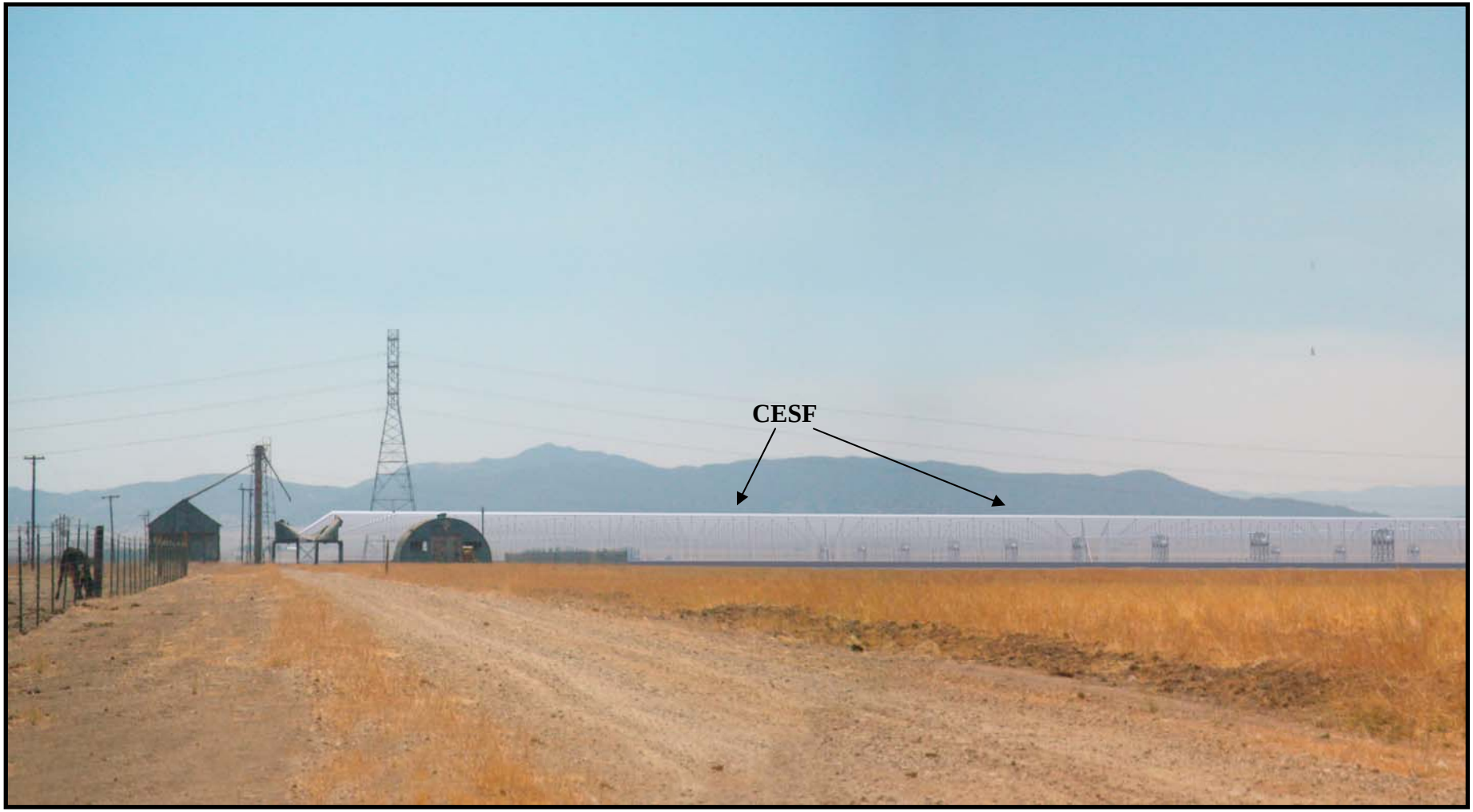
Response: Provided as attachments to this sheet, are full-page color Figures 5.13-12 through 5.13-21 in the requested format (similar to format provided in San Gabriel Generating Station Application for Certification). URS revisited the Carrizo Energy Solar Farm (CESF) Project site to verify that the existing and simulated figures are at the appropriate scale to "present the proposed project at life-size scale when held 10 inches from the eye."

Per URS (Amy Gramlich) telephone correspondence with CEC (Eric Knight) on November 27, 2007, the simulations (Figures 5.13-13, 5.13-15, 5.13-17, 5.13-19, and 5.13-21) are not required to depict proposed landscaping (five years after installation) as there is no landscaping proposed on the CESF site. However, URS understands that during the Data Request phase, the CEC will require the preparation of a line-of-sight diagram to adequately show the screening effectiveness of the proposed off-site landscaping.

KOP 1: Existing front yard view from the closest residence to the north, looking southwest toward CESF site (approximately 0.3-mile north of CESF). This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

EXISTING VIEW OF CESF FROM KOP #1
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-12
		PM:AL	PROJ. NO: 22239472	



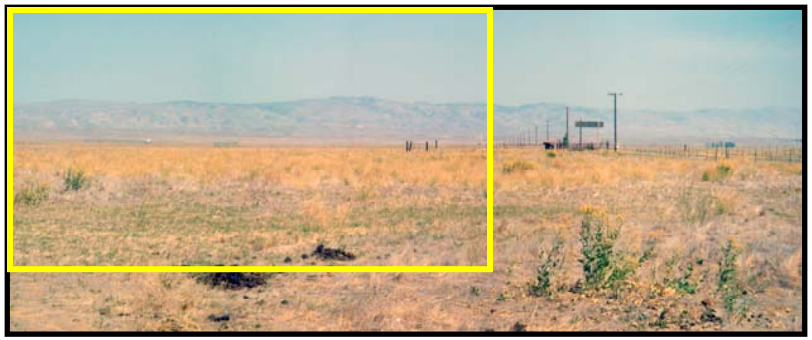
KOP 1: Simulated front yard view from the closest residence to the north, looking southwest toward CESF site (approximately 0.3-mile north of CESF). This photo location is meant to represent "worst-case" views from residential viewers to the north. north of CESF).

This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

SIMULATED VIEW OF CESF FROM KOP #1
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-13
		PM:AL	PROJ. NO: 22239472	

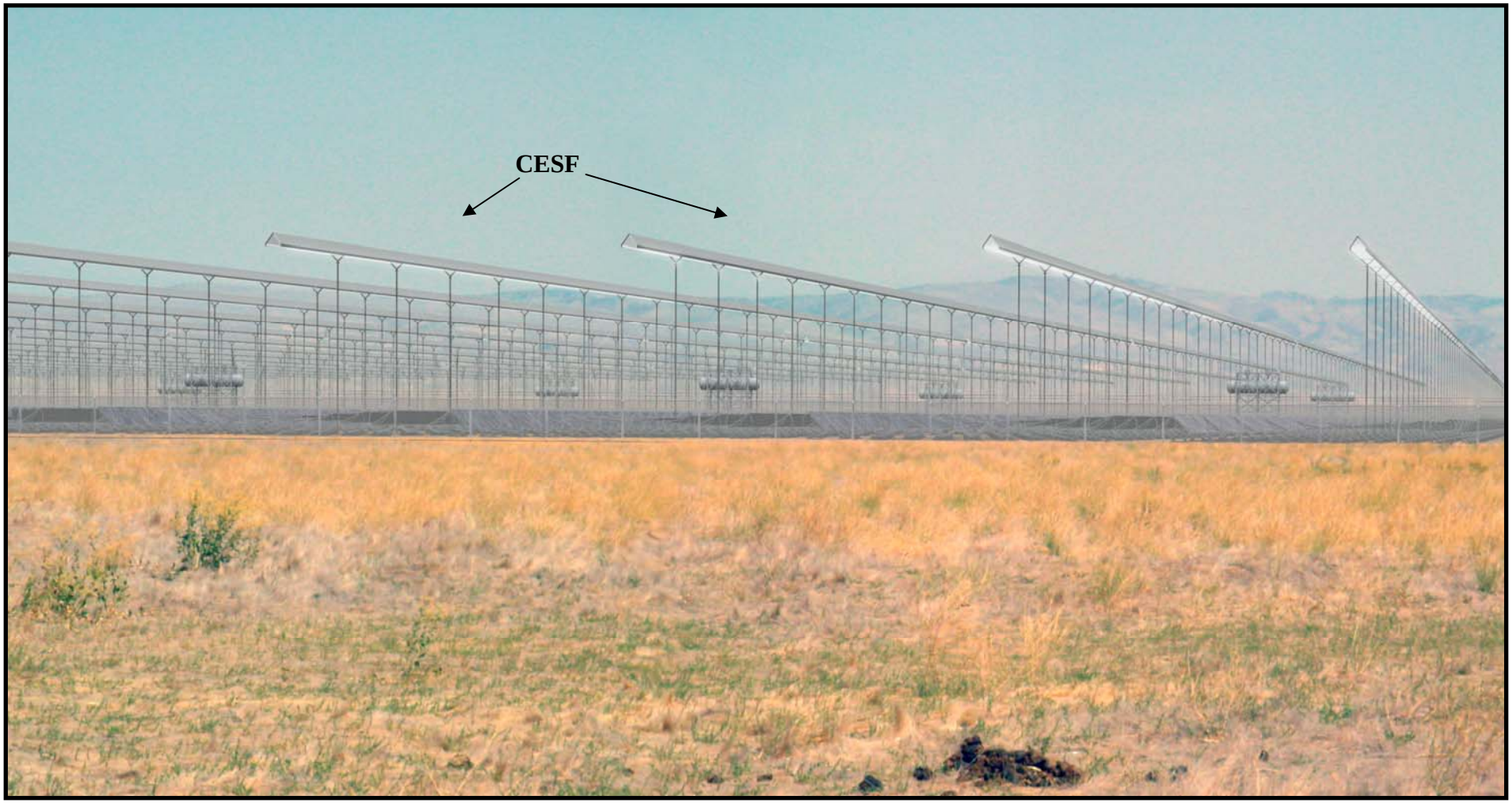
KOP 2: Existing front yard view from the closest residence to the west, looking northeast toward CESF site (approximately 0.2-mile west of CESF).



This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

EXISTING VIEW OF CESF FROM KOP #2
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-14
		PM:AL	PROJ. NO: 22239472	



KOP 2: Simulated front yard view from the closest residence to the west, looking northeast toward CESF site (approximately 0.2-mile west of CESF). This photo location is meant to represent "worst-case" views from residential viewers to the west.

This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

**Note:
1. Slight distortion caused by panoramic merging of photos.
2. Simulation was placed on existing site topography. Proposed grading plan for terracing of landscape was not available at time of simulation. preparation, and therefore, is not reflected.

SIMULATED VIEW OF CESF FROM KOP #2
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-15
		PM:AL	PROJ. NO: 22239472	

KOP 3 (West): Existing traveler view from intersection of SR-58 and Tracy Lane, looking northwest toward CESF site.

EXISTING VIEW OF CESF FROM KOP #3 (WEST)
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-16
		PM:AL	PROJ. NO: 22239472	

KOP 3 (West): Simulated traveler view from intersection of SR-58 and Tracy Lane, looking northwest toward CESF site. This photo location is meant to represent "worst-case" traveler views from SR-58.

SIMULATED VIEW OF CESF FROM KOP #3 (WEST)
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-17
		PM:AL	PROJ. NO: 22239472	

KOP 3 (North): Existing traveler view from intersection of SR-58 and Tracy Lane, looking north up Tracy Lane (CESF site is on the west).

EXISTING VIEW OF CESF FROM KOP #3 (NORTH)
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-18
		PM:AL	PROJ. NO: 22239472	

KOP 3 (North): Simulated traveler view from intersection of SR-58 and Tracy Lane, looking north up Tracy Lane (CESF site is on the west). This photo location is meant to represent "worst-case" traveler views from SR-58.

SIMULATED VIEW OF CESF FROM KOP #3 (NORTH)
CARRIZO ENERGY SOLAR FARM (CESF)

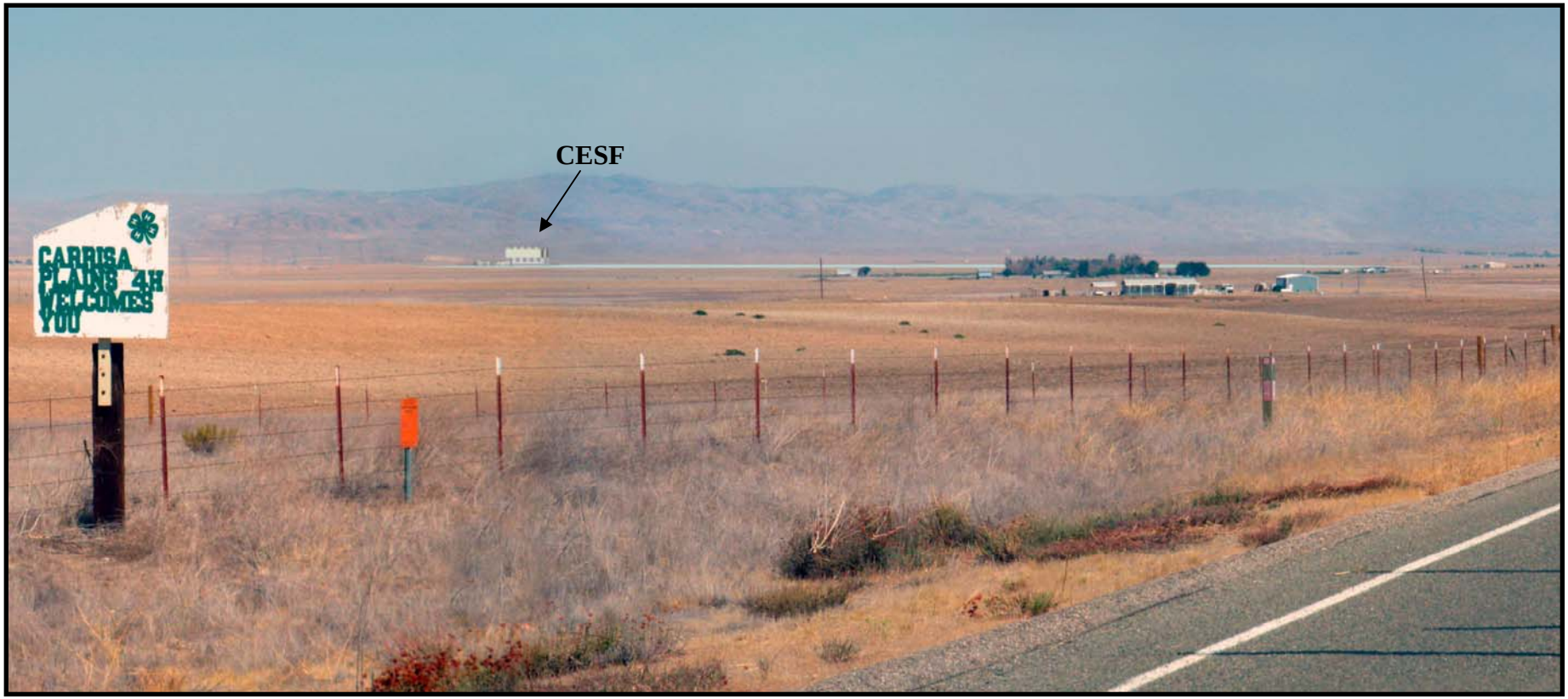
URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-19
		PM:AL	PROJ. NO: 22239472	

KOP 4: Existing view from the Hubbard Hill - Freeborn Mountain open space area looking northeast toward CESF site (approximately 3.5 miles southwest of CESF).

This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

EXISTING VIEW OF CESF FROM KOP # 4
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-20
		PM:AL	PROJ. NO: 22239472	



KOP 4: Simulated view from the Hubbard Hill - Freeborn Mountain open space area looking northeast toward CESF site (approximately 3.5 miles southwest of CESF). This photo location is meant to represent "worst-case" views (e.g. elevated, unscreened, closest proximity views) for potential recreational users within the Hubbard Hill-Freeborn Mountain area.*

*This photo location also represents traveler views along SR-58 from an elevated location.

This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

SIMULATED VIEW OF CESF FROM KOP #4
CARRIZO ENERGY SOLAR FARM (CESF)

URS	NO SCALE	CREATED BY: AG	DATE: 12-5-07	FIG. NO: 5.13-21
		PM:AL	PROJ. NO: 22239472	

TECHNICAL AREA: VISUAL RESOURCES

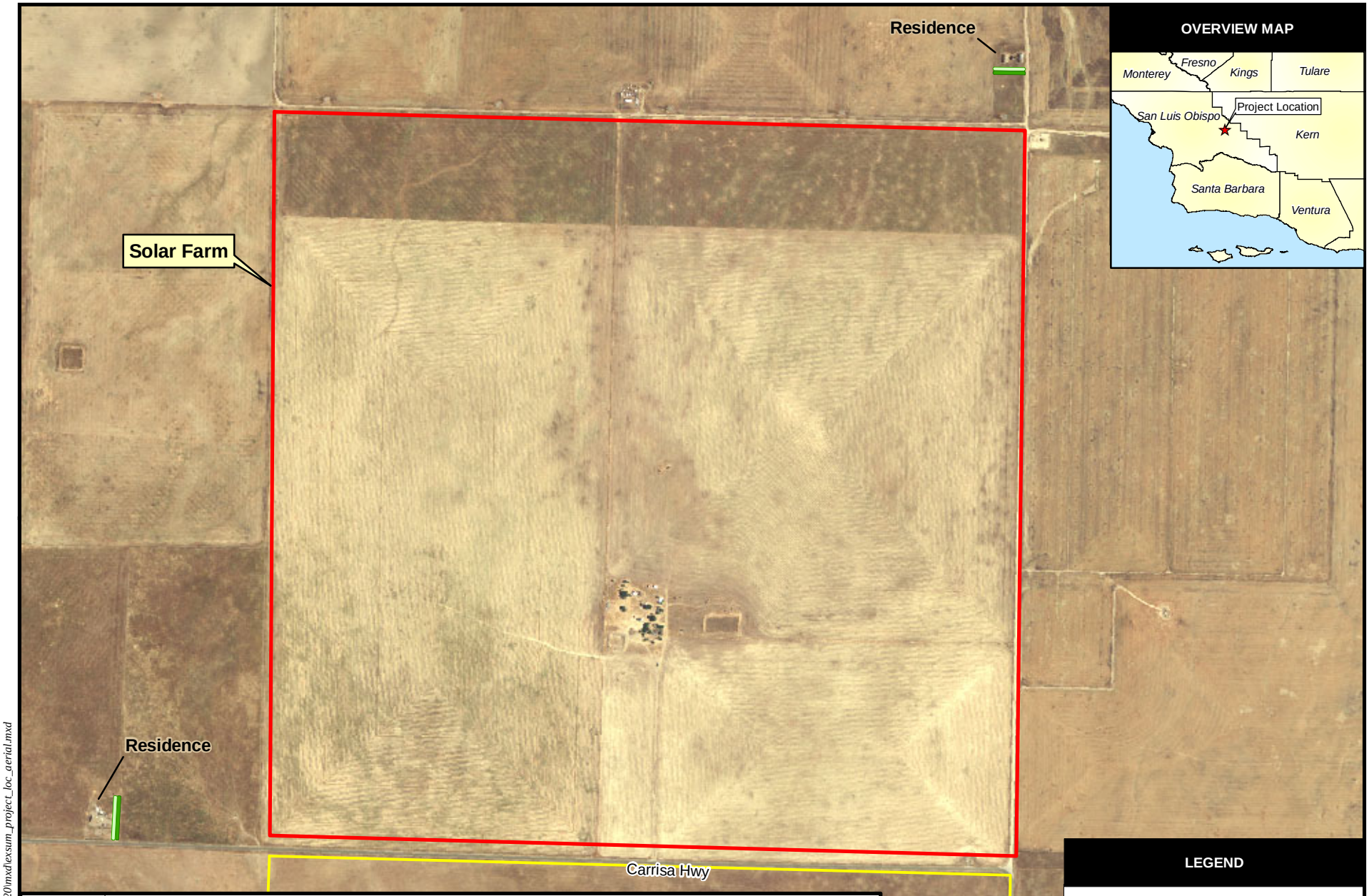
Data Adequacy Request 26: The AFC identifies potentially significant impacts to Key Observation Point 2 caused by project structures. Landscaping has been proposed to mitigate these impacts but no plan was included in the AFC. Please provide a conceptual landscaping plan at a 1:40 scale (or other legible scale pre-approved by staff).

Response: The Carrizo Energy Solar Farm (CESF) does not propose on-site landscaping. All landscaping proposed as part of CESF is off-site on adjacent residential properties to act as screening to effectively reduce potential visual impacts on surrounding sensitive residential viewers. A Conceptual Landscaping Plan was not included in the project document (07-AFC-08) because it is intended that the Applicant would need to prepare an agreement with individual landowners to allow for planting on their properties. However, a Suggested Conceptual Landscaping Plan (Figure VISRES-26) has been provided as an attachment to this sheet, to depict the Applicant's preliminary landscaping ideals based on initial discussions with the adjacent landowners. The Applicant will continue to coordinate with the adjacent landowners to develop the Conceptual Landscaping Plan to ensure that the Landscaping Plan that is prepared, and approved by the CEC, would remove any potential visual resource impact issues. As requested, a narrative describing the type/species, spacing, and growth rates of the off-site landscaping is provided below.

Two species of evergreen tree will be used. Evergreens provide two advantages: They will provide coverage all year round, and are also drought tolerant, enabling them to handle the arid climate of the Carrizo Plains. The CESF Project will be screened by a row of Leyland Cypresses (*cupressus leylandii*) spaced 8 feet apart, and a second row of California Junipers (*juniperus californica*), 8 feet behind the first row, which will be spaced 16 feet apart and staggered so as to be aligned with the gaps between the Cypresses. The row of Junipers will be on the resident's side, and the row of Cypresses will be on the project side. Both rows will be planted simultaneously within the adjacent residential properties.

The Leyland Cypress is known for its fast growth rate, and will reach around 15 feet within 5 years. The California Juniper was chosen because it is a native species to the Carrizo Plains area, and while it grows more slowly than the Leyland Cypress (it will be at approximately 6 feet in 5 years), it will eventually reach approximately 30-40 feet in height. This arrangement allows screening to develop fairly quickly due to the growth rate of the Cypresses, which will be supplemented over time by the native Junipers. The Cypresses are a naturally weaker species, a common trait associated with a quick growth rate, but at approximately 20 years of age when they begin to wane, the Junipers will quite sufficiently provide effective screening of the Project. The Junipers need no water at all once they are established, and as they are native to the area, they will enhance the surrounding landscape in an attractive and natural way.

As discussed in the response to Data Adequacy Request 25 above, URS understands that during the Data Request phase, the CEC will require the preparation of a line-of-sight diagram to adequately show the screening effectiveness of the proposed off-site landscaping.



SOURCES:
USDA FSA Aerial Photography
Field Office: County image mosaic for
San Luis Obispo, CA (2005).

SUGGESTED CONCEPTUAL LANDSCAPING PLAN
CARRIZO ENERGY SOLAR FARM (CESF)

URS

NOT TO SCALE

CREATED BY: JN	DATE: 12-06-07	FIG. NO:
PM: AL	PROJ. NO: 22239472	VISRES-26

LEGEND

- Solar Farm
- Construction Laydown Area

Suggested Landscaping

- California Juniper
- Leyland Cypress

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TECHNICAL AREA: VISUAL RESOURCES

Data Adequacy Request 27: The AFC indicates that residents, particularly those to the north, could experience brief, glare impacts each day as the mirrors are rotated out of the stow position. Given this potential, please explicitly discuss how the project would conform to San Luis Obispo County General Plan Energy Element Policy Guideline 39.3 and County Code-Title 22, Land Use Ordinance (22.32.060.A.1 and 22.10.060.C).

Given that a number of project structures, including the solar receivers (56-feet tall) would exceed the maximum allowable height (35 feet; 40 feet for solar collectors) in the Agricultural District, please explicitly discuss how the project would be brought into conformance with the San Luis Obispo Code, Title 22, Land Use Ordinance, 22.20.090.C.1 (8).

Response: No formal Glint/Glare Study has been prepared for the Carrizo Energy Solar Farm (CESF) Project. However, based on Applicant and Applicant Engineer comments, regardless of mirror orientation, less than significant glint/glare impacts are anticipated from construction/operation of CESF. Therefore, the project would conform to San Luis Obispo County General Plan Energy Element Policy Guideline 39.3 and County Code-Title 22, Land Use Ordinance (22.32.060.A.1 and 22.10.060.C).

Per URS (Amy Gramlich) telephone correspondence with CEC (Eric Knight) on November 27, 2007, URS understands that during the Data Request phase, the CEC will request the preparation of a formal Glint/Glare Study, to include an analysis of the tracking system to determine if concentrated reflections are directed at occupied structures, recreation areas, or roads and to adequately assess potential glint/glare from project construction/operation.

URS received input from San Luis Obispo County through correspondence with John McKenzie, Environmental Specialist, within the Environmental & Resources Management Division of the County Planning and Building Department (see Attachment VISRES-A to this sheet).

Per Mr. McKenzie's e-mail correspondence:

> *"Per the following excerpt (Sec.22.10.090), county staff is seeing that the height limit in the Agriculture category is 35 feet for any habitable structure. It would appear that most if not all of the solar facility would be considered unhabitable structures. If that is the case, exception #C.2.c.7 below, Public Facilities, would exempt such facilities from the height limit requirements."*

Exception #C.2.c.7 states

> "*Public utilities. Poles and structures for providing electrical and communications services."*

The tallest habitable structure proposed on-site is the Control and Administration Building. Per Mr. McKenzie's e-mail correspondence:

> *"Should a habitable structure be proposed above the 35 foot height limit, an exception request would normally be made before our Planning Commission. The following Conditional Use Permit finding for heights would be as follows: G. The modified height of insert height will not exceed the lifesaving equipment capabilities of the insert name of fire department, because insert reason. If this finding applies, we would suggest you work with CalFire to identify if the heights of these structures will pose a life safety threat."*

The Applicant will fulfill the criteria for the exemption by properly coordinating with CalFire, as identified, to ensure the 40-foot Administration building proposed on-site would be in compliance with their standards. Therefore, CESF would comply with County height regulations identified in the San Luis Obispo County Code (Title 22, Land Use Ordinance, 22.10.090.C.1(8)).

Attachment VISRES-A

Seth L Hopkins/SanDiego/URSCorp
12/06/2007 04:33 PM

To Amy Gramlich/SanDiego/URSCorp@URSCorp
cc
bcc
Subject Fw: Carrizo solar

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----- Forwarded by Seth L Hopkins/SanDiego/URSCorp on 12/06/2007 04:33 PM -----

jdmckenzie@co.slo.ca.us
12/06/2007 02:20 PM

To seth_l_hopkins@urscorp.com
cc
Subject Carrizo solar

Mr. Hopkins,

Per your request, the following is the county's response to the undergrounding of transmission lines and exceedance of the height limit within the Agriculture land use category.

Undergrounding

After review of the County's LUO Chapter on Electric Generating Plants, including the Photovoltaic Generating Facilities, it is the intent of this chapter for distribution lines to be placed underground whereever possible. However, staff also has concluded that this applies to offsite distribution lines, such as to substations or other major transmission lines/facilities. So, in this case, since there are no new off-site transmission/distribution lines as a part of this request (i.e., existing tie-in transmission lines are along edge of property) , no undergrounding of lines would apply or be required.

Attachment VISRES-A

Height Exceptions

Per the following excerpt (Sec.22.10.090), county staff is seeing that the height limit in the Agriculture category is 35 feet for any habitable structure. It would appear that most if not all of the solar facility would be considered unhabitable structures. If that is the case, exception #C.2.c.7 below, Public Facilities, would exempt such facilities from the height limit requirements.

C. Height limits. The maximum height for new structures is as follows, except where other height limits are established by planning area standards of Chapter 22.09 (Community Planning Standards). (For allowed fence heights, see Section 22.10.080.C.)

1. Maximum allowed height by land use category.

Land Use Category	Maximum Height
Agriculture, Rural Lands	35 feet
Commercial	
In Central Business District	45 feet
Elsewhere	35 feet
Industrial	45 feet
Office & Professional	35 feet
Open Space	25 feet
Recreation	35 feet
Public Facilities	45 feet
Residential	
Single Family, Rural and Suburban	35 feet
Multi-Family	
Low intensity	35 feet

Medium Intensity	35 feet
High intensity	45 feet

2. Exceptions to height limitations.

a. Commission modifications. Buildings and structures exceeding the heights permitted in Subsection C.1. may be authorized through Conditional Use Permit approval, provided the Commission first finds the project will not result in substantial detrimental effects on the enjoyment and use of adjoining properties, and that the modified height will not exceed the lifesaving equipment capabilities of the fire protection agency having jurisdiction.

b. Residential exceptions.

(1) Additional height. The height limitations specified by Subsection C.1 for residential buildings may be adjusted (Section 22.70.030) to allow additional height to a maximum of 45 feet, provided that the required side, rear and interior setbacks shall be increased one foot in width for each foot of height over 35 feet.

(2) Downhill lot. Where the average front-to-back slope of a lot is greater than one foot of fall in seven feet of distance (14.2 percent average slope) from the centerline of the street to the rear face of the proposed building, up to 5 feet may be added to the allowed height limit (Subsection C.).

c. Uninhabited structures. The height limits specified in Subsection C.1. do not apply to the following structures (measurement of height is from the ground, as set forth in Subsection A.):

(1) Radio and television receiving antennas. The type customarily used for home radio and television receivers, as well as amateur and commercial transmitting antennas, when 50 feet or less in height.

(2) Flagpoles. 50 feet or less in height.

(3) Agricultural structures. Barns, grain elevators, silos, water tanks, windmills, wind generators and all other similar structures not containing residential uses and located in the Agriculture, Rural Lands, Residential Rural, Residential Suburban and Industrial land use categories.

(4) Chimneys. No more than 100 feet in height located in the Industrial category; and all other chimneys and roof vents extending no more than three feet above the height limit

specified in Subsection C.1.

(5) Industrial. Industrial towers, non-portable equipment and other uninhabited structures no more than 60 feet in height located in an Industrial land use category.

(6) Construction equipment. All portable construction equipment.

(7) Public utilities. Poles and structures for providing electrical and communications services.

(8) Solar collectors. Not more than five feet above the height limit specified in Subsection C.1.

Should a habitable structure be proposed above the 35 foot height limit, an exception request would normally be made before our Planning Commission. The following Conditional Use Permit finding for heights would be as follows:

G. The modified height of insert height will not exceed the lifesaving equipment capabilities of the insert name of fire department, because insert reason.

If this finding applies, we would suggest you work with CalFire to identify if the heights of these structures will pose a life safety threat.

Please let me know if there are any additional questions you might have relating to this project.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 28: Please provide calculation used to calculate runoff and to estimate changes in flow rates between pre- and post construction. Please take into account that the soil treatment of the solar field may not have the same reduction permeability resulting from soil bonding agent (non-road) or weighting agent (road).

Response: Provided as an attachment to this sheet are the calculations used to calculate runoff and to estimate changes in flow rates between pre- and post construction.

Pre&Post Runoff Calculations	Q=CIA		
Stated in Section V	cm	in	
50-yr (24-hr) 0.43cm (0.17-in)/hr	10.32	4.08	*Source:*
Storm frequency (213-Ac-ft)	217	218	Project Report

Historical Rainfall Values (in)	
Jan	2.01
Feb	1.93
Mar	1.68
Apr	0.95
May	0.21
June	0.03
July	0.03
Aug	0.03
Sep	0.14
Oct	0.33
Nov	0.85
Dec	1.51
Avg	0.81
Total	9.70

Pre-Construction	Assumptions		*Sources*
	Relief	0.11	
	Soil Infiltration	0.12	San Louis Obispo County
Ruoff Coefficient ©	Vegetal Cover	0.14	Department of Public Works (H-3a)
	Surface Storage	0.06	
	CN Value (Total)	**0.43**	
Intesity	50yr-24hr (in/hr)	0.17	
Area (Ac)	Ac	640	Project Report
Volumetric Flow Rate (CFS)	**Pre-Construction**	**47**	

Post Construction	Assumptions		*Sources*
	Industrial	C (S < 2%)	San Louis Obispo County Department of Public Works
		Ac	
	Project Area (Solar Area)	620	Foot print of post, roadways, etc
	Clay, Adobe C_S	0.55	
Ruoff Coefficient ©	Pervious Area	434	70% of Total Area will be Pervious Runoff Coefficient Developmed Area H3; Footnote 3.
	C_S	0.95	
	Impervious Surface	186	
	Total Area	620	
	CN Value (Adjusted)	**0.67**	
Intesity	50yr-24hr (in/hr)	0.17	
Area	Ac	640	
Volumetric Flow Rate (CFS)	**Post-Construction**	**73**	

Estimated Volume (Total) (Ac-ft)	**Delta**	**36%**	Difference in the estimate Pre and Post runoff condition
517			

TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 29: There are no calculations included in Section 5.5; please provide calculations used in the analysis.

Response: Refer to Data Adequacy Request Response 28, above, for calculations used in Section 5.5.